GOULBURN-MURRAY WATER

Review of trading rules for the Ovens/King system

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Executive Summary

The Ovens/King Surface Water Diversions Catchment Committee (with support from the Murray Systems Water Services Committee) has made a request to G-MW to consider a proposal to allow the trade of spill reliability water share (SRWS) allocations. This request, combined with the requirements under the National Water Initiative to allow free trade where possible, has prompted review of the overall trading arrangements in the Ovens/King basin.

This paper outlines the current allocation and restriction policies for the Ovens/King system. It presents a number of options to liberalise trading, including allowing trade out of the system. The feasibility of each option is considered, both hydrologically and environmentally, but also in terms of the legalities and complexities for allocation policies, administration and accounting. Recommendations have been made as a result and, if approved, the target date for implementing the changes is 1 July 2012.

All options identified in the paper were considered feasible hydrologically in most circumstances. However, due to the unique allocation and restriction policies in the Ovens/King system, there are considerable complexities associated with trade liberalisation. These include legal constraints and issues for management and accounting, as well as customer understanding. This is particularly the case if trade is allowed out of the Ovens into the Murray and other zones, but is also an issue for trade within and between the Ovens zones. Cap considerations are relevant for trade out of the valley and are likely to lead to third party impacts.

The largest impediment to trade is the unique allocation policy that has been developed to reflect the characteristics of the Ovens/King system. The allocation method and nature of allocated water (subject to restrictions dependant on seasonal conditions) not only limits the ability for trade externally, it also places limitations on internal system trade (e.g. from King to Ovens). A change to the allocation method for the Ovens/King to that used in all other regulated systems (where allocation is based on resource availability and has a high reliability) would be required before significant liberalisation of trade rules could occur.

Current legislation and business systems are set up around this “traditional” allocation method where once water is allocated it can be guaranteed to be delivered. In contrast, HRWS in the Ovens/King system are allocated 100% at the start of the season and restricted when there is insufficient storage volume and unregulated flows to meet operational requirements. Current legislation does not have a clear legal mechanism to restrict use of entitlement once traded out of the system and business systems cannot manage the trade of this unique product. Hence, before significant liberalisation could occur, the restrictable nature of the Ovens/King product would need to be changed by amending the allocation policy.

Any change in allocation method would have implications for customer’s access to water. The small storage size compared to entitlement volume and system operating requirements would likely result in no (or very low) allocation to HRWS until late in the season in most years. Access to SRWS may be available and offset this issue by providing early season access to water. However, the implications of reduced reliability and access to water under a traditional allocation method are likely to far outweigh any

positive benefits that liberalised trade would achieve. In addition some users do not have access to SRWS (notably North East Water) and therefore would be considerably disadvantaged by such a change in allocation policy.

Trade of spill would also require changes to the allocation policy to enable 100% allocation at the start of the season, rather than retrospective allocation as occurs currently. This in turn would then require legislative change to enable use of the product to be limited to the spill period only. Legislative change will be a lengthy and costly process, and should only be investigated if there is sufficient demand and the costs can be justified. Limited term transfers are available as an alternative to effectively allow the trade of spill and could be used to gauge demand for this option.

It is proposed to create a new lower Ovens River trade zone and allow trade of HRWS from the Ovens and King rivers into this zone. Under this proposal new inter-valley trade (IVT) accounts would need to be created to monitor the amount of trade from the King to the lower Ovens, and also the Ovens to the lower Ovens. This would allow the potential for any back-trade between the Ovens and King zones to be properly managed. In the case of trade from the King to the lower Ovens, the King is required to deliver water to the lower Ovens to support the trade. On occasions such delivery could incur large losses or may not be able to be delivered (when the King is not flowing all the way), and so the Resource Manager needs time to arrange delivery.

Delivery also needs to occur at a time that has no material detrimental environmental impacts. This can be achieved through careful management and timing of releases. One of the main considerations is the need to have upper limits on summer flows. This is because slack water habitat could be adversely affected by an increase in summer flows required to meet downstream trade obligations. However, this problem could be mitigated by controlling the timing and size of flushes through the flexibility allowed by the management of the IVT account. For the environment, it is preferable for any downstream bulk transfers to occur in spring or autumn. Late season shifting of water to empty the IVT account could also cause an issue, for example delivery of a large volume of water in a short period of time. In these cases it may be necessary to set limits on the acceptable rates of rise and fall in flows to prevent adverse impacts.

The recommendations of the trading rules review are summarised below.

Recommendations for discussion – trading rules review

1. Create a new trading zone, zone 9C, for the lower Ovens (this is defined as the Ovens downstream of the confluence with the King) - Allow trade of high-reliability allocation and water shares into the new zone from zones 9A (mid Ovens) and 9B (King);
2. Use limited term transfers (LTTs) to effectively allow the following trade:
    a. spill-reliability allocation within zones 9A (mid Ovens) and 9B (King)
    b. spill-reliability allocation and water shares to the new lower Ovens trading zone (9C), from zones 9A (mid Ovens) and 9B (King);
3. Trade of HRWS and SRWS outside of the Ovens/King system is not recommended at this stage due to the differing characteristics of Ovens/King water shares to water shares in other areas and the resultant complexities and legal impediments of trading into these areas.

Table of Contents

EXECUTIVE SUMMARY II

1 INTRODUCTION 1

1.1 BACKGROUND TO THE REVIEW 1
1.2 OVENS/KING RIVER BASIN 1

2 ALLOCATION AND RESTRICTION RULES 3

2.1 CURRENT ALLOCATION POLICY 3
2.1.1 HRWS 3
2.1.2 SRWS 3
2.2 RESTRICTION POLICY 4
2.2.1 Basis of restrictions 4
2.2.2 Monthly restriction assessments 5
2.3 CARRYOVER RULES 6

3 TRADING RULES 7

3.1 EXISTING TRADING RULES 7
3.2 TRADE PRINCIPLES 7
3.3 RECOMMENDATIONS OF THE REVIEW - FOR DISCUSSION 8
3.4 TRADING OPTIONS AND POTENTIAL ISSUES 8
3.4.1 Overview of key issues 8
3.4.2 Summary of trading options 10
3.4.3 Discussion of individual options 11
3.4.4 Environmental considerations 19

4 PROPOSED TIMESCALES FOR THE REVIEW 22

5 APPENDICES 23

5.1 APPENDIX A - OVENS BULK ENTITLEMENT SCHEDULE 3 23
5.2 APPENDIX B – TRADING ZONES FOR VICTORIAN REGULATED WATER SYSTEMS 24

6 GLOSSARY OF TERMS 27

1 Introduction

1.1 Background to the review

The Northern Region Sustainable Water Strategy (NRSWS), published in 2009, identifies and analyses threats to water availability and quality in northern Victoria over the next 50 years. It was developed in light of the stresses experienced in the recent drought and the future uncertainty associated with climate change.

The strategy sets out actions to ensure that water entitlements are secure and aims to provide more choice and flexibility for entitlement-holders to manage the risks imposed by drought and climate change. The actions aim to improve certainty that water can be delivered when needed, with flexibility to match supplies with their water needs.

Chapter 5 of the strategy contains actions to review and improve trading rules to provide more opportunities for entitlement holders to buy and sell water as needed. Whilst there are no specific actions related to the Ovens/King system, there has been a separate request to G-MW from the Ovens/King Surface Water Diversions Catchment Committee (with support from the Murray Systems Water Services Committee) to consider a proposal to allow the trade of spill reliability water share (SRWS) allocations. This has prompted a review of the overall trading arrangements for the Ovens/King basin.

Section 2 of this paper outlines the current allocation and restriction policies for the Ovens/King system. Section 3 presents a number of options to liberalise trading, including allowing trade out of the system. The implications of each of these options are considered, both hydrologically and environmentally, but also in terms of the complexities for allocation policies, administration and accounting. Recommendations are presented in section 3.3.

Proposed timelines for the full review are outlined in section 4. The recommendations presented in this issues paper will be consulted and agreed with the Water Services Committee, and all Ovens/King entitlement holders if deemed necessary, prior to proposing final recommendations to the Minister.

1.2 Ovens/King River basin

The Ovens River basin is located in north-east Victoria and covers an area of 7,985 km^2. The area extends from the Murray River in the north, to the Great Dividing Range in the south and is bordered by the Broken River basin in the west and the Kiewa River basin in the east.

The Ovens River flows in a north-westerly direction from the high country near Mt Feathertop and Mt Hotham. The Ovens River and its upstream tributaries - the Buckland, Catherine, Dandongadale, Buffalo and Rose rivers - have their headwaters in the Great Dividing Range, in the section extending between Mt Cobbler and Mt Hotham. The King River, situated west of the Ovens River, has its headwaters on the Great Divide east of Mt Buller. The Ovens and the King Rivers meet on the riverine plain at Wangaratta. Below Wangaratta, the Ovens River meanders northward to flow into Lake Mulwala on the Murray River in the north-west corner of the Basin.

The main storages in the basin are Lake Buffalo on the Buffalo River and Lake William Hovell on the King River. They have capacities at full supply level of 24 GL and 13.5 GL respectively. The storages are used to regulate the flows of the Ovens and King rivers to meet downstream requirements of entitlement holders and the environment. Releases are made once unregulated flows in tributaries recede.

The Ovens/King basin is highly reliable with the storages expected to fill and subsequently spill in nearly every year. The storage capacity is low relative to the annual stream flow volumes, and only a small proportion of the annual stream flow can be harvested and stored. Lake Buffalo storage with a capacity of 24 GL, for example, accounts for only around 6% of the mean annual flow in the Buffalo River.

Entitlements within the Ovens/King comprise 26,165 ML of high-reliability water shares (HRWS) and 12,485 ML of spill-reliability water shares (SRWS).

2 Allocation and restriction rules

2.1 Current allocation policy

The standard allocation policies for all northern Victorian declared water systems involve making allocations in advance according to the volume of water in storage or guaranteed to be received into the storage. Customers cannot use water until an allocation is available. These standard allocation policies will not work in the Ovens due to the limited storage capacity available compared to the volume of entitlement. As a result of this, and with consideration of the size and reliability of the annual stream flow yield, operating and allocation procedures have been developed specifically for the system. These include use of a restriction policy to limit usage in dry years to ensure that critical water requirements can be met. Allocations in advance according to the volume of water in storage, as made for the other declared systems, are not made for the Ovens.

Entitlements within the Ovens consist of high-reliability water shares (HRWS) and spill-reliability water shares (SRWS).

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2.1.1 HRWS

- are used outside of the declared spill period when the system is being regulated by releases from storages;
- customers are granted an allocation of 100% HRWS on 1 July each year, which is recorded in the Water Register. This is similar to the procedure for unregulated systems and is in direct contrast to the policy in all other declared systems, where allocations are announced progressively according to the volume of water in storage;
- customers are allowed to access water until there is insufficient volume remaining in storage to meet operational requirements and entitlement, at which time use is restricted. Assessments against restriction curves are carried out monthly to determine whether restrictions on usage are required;
- meters are read at the end of the season to determine volume of HRWS usage against the initial allocation. If the volume used is greater than 100% of the customer's HRWS, the remainder becomes overuse and is chargeable.

2.1.2 SRWS

- can be used when the system is behaving as unregulated i.e. in the period when the storage is physically spilling, or G-MW declares it to be spilling;
- no formal allocation is made; instead access to SRWS is allowed during the declared spill period and is unrestricted;
- at the end of the specified spill period, customer meters are read and the volume of water used is recorded against the customer's SRWS. If the volume used is greater than 100% of the customer's SRWS, the remainder will be recorded against their HRWS or become overuse;
- if the storages start spilling again following the end of the declared spill period, no further usage of SRWS is allowed, any use is against their HRWS (as is also the case if water is taken before a spill period is declared).

2.2 Restriction policy

2.2.1 Basis of restrictions

Section 33F (3) of the Water Act 1989 states that –

The authority to take water under a water share is subject to any other provisions of this Act or any regulations or instruments made under this Act or a licence or permit issued under this Act regulating the following:-

(a) the place at which water can be taken;

(b) the times or rate at which water can be taken.

Section 8.1 of the Ovens Bulk Entitlement, as an instrument developed under the Act, sets out that supply of primary entitlements is subject to the restriction policy specified in Schedule 3. Schedule 3 of the Bulk Entitlement specifies that –

Where the Authority is unable to supply the full water requirements of primary entitlements, it must

(a) assess and restrict supplies to its authorised diverters, and

(b) require the other primary entitlement holder listed under Schedule 2 to this Order, to restrict the water usage of its customers;

in accordance with the following restriction policy:……..

Full details of Schedule 3 and the restriction policy are provided in Appendix A.

Use of the works licence

Works licences can be used to impose restrictions in line with section 71 of the Act, which provides for a works licence to be subject to:

"(ac) any condition that the Minister thinks fit –

(i) as to the maximum amounts of water that may be taken in particular periods and circumstances;"

Schedule 15 of the Act provided that upon the date of conversion of water rights and water licences, any works licence was deemed to be subject to any conditions contained in the take and use licence as to the maximum amounts of water that could be taken in any particular periods or circumstances through the works or as determined according to the conversion rules.

Some works licences contain a condition that restrictions can be imposed by notice, as follows: "When directed by the Authority, water must be taken in accordance with the rosters and restrictions determined by the Authority and advised to the licence holder."

Other works licences specify that "water may only be taken through the works specified in the works licence if, in a period of rationing or other restriction, it is taken in accordance with the share of flow represented by the specified extraction share .."

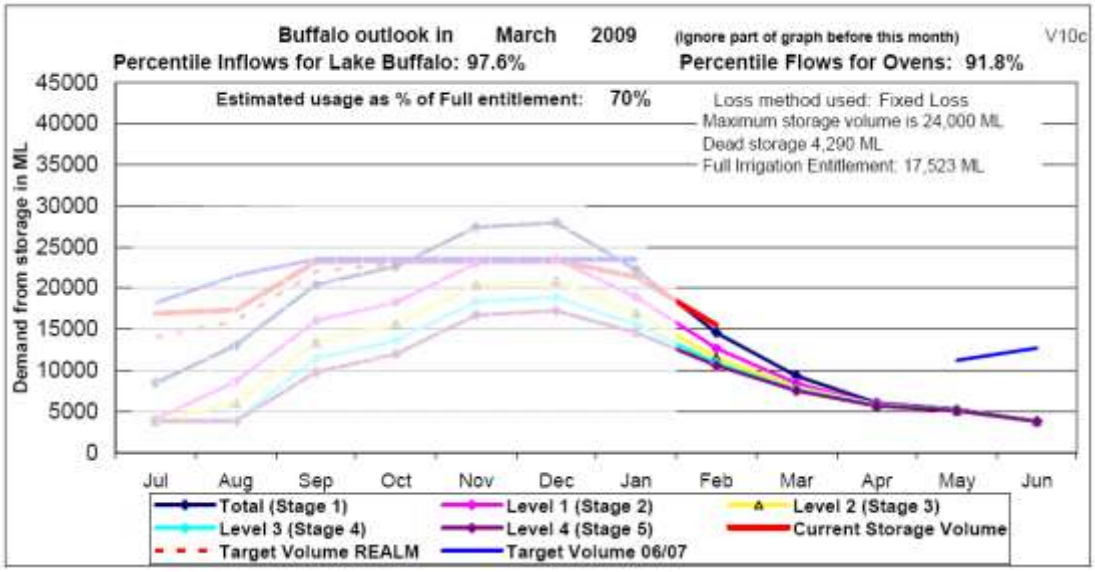
A third type of works licence provides for restrictions to be imposed by notice and then specifies the share of the flow that applies in a period of rationing.

As part of the works licence renewal process, a standard restriction condition will be developed and added to all licences.

2.2.2 Monthly restriction assessments

Restriction curves exist for Lake Buffalo and Lake William Hovell. The current set of curves was produced following the 2006/07 season when both storages failed to fill. They have been set to help ensure the storage fills and sufficient water is available for critical needs, even under the 2006/07 minimum inflow sequence.

An example of the monthly outlook graph is given below:



The stages of restriction (refer to the lines in the graph) are as follows:

- Total (Stage 1) - rostering - maximum 10% of entitlement over 10 days
- Level 1 (Stage 2) - 75% irrigation entitlement with a max 7.5% of entitlement over 10 days
- Level 2 (Stage 3) - 50% irrigation entitlement with a max 5% of entitlement over 10 days
- Level 3 (Stage 4) - 25% irrigation entitlement with a max 2.5% of entitlement over 10 days
- Level 4 (Stage 5) - suspension of irrigation

Each monthly assessment takes into account inflows to storage over the past 3 months (up to the end of the month preceding the date of the assessment). For Lake Buffalo, flows in the Ovens River at Myrtleford are used in addition to inflows to storage as part of the assessment. These inflows are then used to estimate expected inflows for the rest of the season. Potential demand from storage for the remainder of the season is assessed as the sum of urban demands, irrigation demands, losses and environmental compliance flows, less the demand that can be met from estimated inflows for the rest of the season.

The inflow assessment is as follows:

- Calculate inflows to storages and flows at Myrtleford for the last month, last two months combined and last three months combined.
- Work out the probability of exceedence (POE) of these flows based on the historic record (back to 1891 for storage inflows and back to 1962 for Myrtleford flows).

- Use the highest POE of the three durations (one, two or three months) to predict the inflows for the remainder of the season based on the historic record. A higher POE means a lower flow, resulting in a more conservative estimate for the season.

2.3 Carryover rules

Due to the small storage volumes in comparison to entitlement, there is no carryover available in the Ovens system.

At the end of the season any unused HRWS allocation is written off, with no ability to carryover.

3 Trading rules

3.1 Existing trading rules

There are two trading zones within the Ovens system (refer to Appendix B for an overview of existing trading zones and their locations):

9A – Ovens – Lake Buffalo; Buffalo River downstream of Lake Buffalo; Ovens River downstream of confluence with the Buffalo.
9B – King – Lake William Hovell; King River downstream of Lake William Hovell

Current trading rules allow trade of water shares (both high-reliability and spill-reliability) and trade of allocation (to high-reliability shares only) within zones 9A and 9B only, but with no trade between these two zones and no trade out of the system. Trade of spill allocation is not allowed, as it is currently only granted at the end of the spill period with volume set equal to the amount of water already used.

3.2 Trade principles

The NRSWS includes a number of principles to guide the development of trading rules, and these are as follows:

- Trade from one trading zone to another is generally permitted if the traded water can readily flow to the destination trading zone (that is, if the water can be physically delivered).
- Trade upstream, for example from the Murray into a tributary (that is, 'back-trade') cannot occur unless there has been previous trade the other way.
- Trade should not damage the environment or heritage assets – for example, there are limits on trade through the Barmah Choke to avoid summer flooding in the Barmah-Millewa Forest.
- Trade should not create impacts on third parties by eroding other people's entitlements or level of service – for example, trade from an unregulated system (where there is no guarantee that allocations can be taken) to a regulated system (where allocations once made are guaranteed) is only allowed as back-trade. However, trade should not be prevented where impacts on others are caused solely by increased utilisation of pre-existing 'sleeper' entitlements.

The Australian Competition and Consumer Commission (ACCC) has also made recommendations to the Murray-Darling Basin Authority (MDBA) on trading rules for inclusion in the Basin Plan. These are:

- Trade restrictions should exist only for hydrological reasons;
- Any trade restrictions should be specifically explained and justified.

In line with the above principles the starting point is that trading opportunities should be increased unless there are significant issues arising from hydrology, environmental impacts or third party effects. Trade is expected to lead to increased utilisation of water and therefore may have some impact on reliability for other entitlement holders. This in itself cannot be used as a reason for limiting trade, but it may be necessary to do some further investigation to understand the scale of the impact.

3.3 Recommendations of the review - for discussion

The recommendations of the trading rules review, for target implementation by July 2012, are summarised below. Detailed discussion of the options and issues associated with them is presented in the remaining sections of this chapter.

1. Create a new trading zone, zone 9C, for the lower Ovens (this is defined as the Ovens downstream of the confluence with the King) - Allow trade of high-reliability allocation and water shares into the new zone from zones 9A (mid Ovens) and 9B (King);
2. Use limited term transfers (LTTs) to effectively allow the following trade:
    a. spill-reliability allocation within zones 9A (mid Ovens) and 9B (King)
    b. spill-reliability allocation and water shares to the new lower Ovens trading zone (9C), from zones 9A (mid Ovens) and 9B (King);
3. Trade of HRWS and SRWS outside of the Ovens/King system is not recommended at this stage due to the differing characteristics of Ovens/King water shares to water shares in other areas and the resultant complexities of trading into these areas.

3.4 Trading options and potential issues

3.4.1 Overview of key issues

Due to the unique allocation and restriction policies in the Ovens/King system, there are considerable complexities associated with trade liberalisation. These include issues for management and accounting, as well as customer understanding. This is particularly the case if trade is allowed out of the Ovens into the Murray and other zones, but is also an issue for trade within and between the Ovens zones. Cap considerations are relevant for trade out of the valley and are likely to lead to third party impacts.

The largest impediment to trade is the unique allocation policy that has been developed to reflect the characteristics of the Ovens/King system. The allocation method and nature of allocated water (subject to restrictions dependant on seasonal conditions) not only limits the ability for trade externally, it also places limitations on internal system trade (e.g. from King to Ovens). A change to the allocation method for the Ovens/King to that used in all other regulated systems (where allocation is based on resource availability and has a high reliability) would be required before significant liberalisation of trade rules could occur.

Under current legislation and standard allocation policies, once water has been allocated it is guaranteed to be delivered. In contrast, HRWS in the Ovens/King system are allocated 100% at the start of the season and restricted when there is insufficient storage volume and unregulated flows to meet operational requirements. If the Ovens/King water shares were traded out with the current allocation policy in place, it would be difficult to enforce compliance to the restrictions in the source zone (Ovens or King) and the extra costs would need to be passed onto customers. To avoid the need to track Ovens water and hence enable trade out of HRWS allocation and entitlement, the restrictable nature of the Ovens/King product would need to be changed by amending the allocation policy.

However, changing the allocation method for HRWS in the Ovens to the standard method would have implications for customer's access to water. The small storage size compared to entitlement volume and system operating requirements would result in no (or very low) allocation to HRWS until late in the season. Access to SRWS may be available and offset this issue by providing early season access to water. However, the implications of reduced reliability and access to water under a standard allocation method are likely to far outweigh any positive benefits that the liberalised trade would achieve. In addition some users do not have access to SRWS (notably North East Water) and therefore would be considerably disadvantaged by such a change in allocation policy.

With such a significant change to the management of water other "innovative" options to improve access to water for irrigators could be considered. For example conjunctive use of groundwater and surface water, whereby surface water users may be able to access groundwater in periods of restriction and volumes in store are used to offset reductions in river flow. Another possibility could be the combination of SRWS and HRWS into one product, which could be used at any time until restrictions are announced. However, further investigation of allocation policies and innovative water management options are outside the scope of this paper.

Also unique to the Ovens/King is the retrospective allocation of water to an entitlement, as is the case of its SRWS. The allocation of water to SRWS before use would be a prerequisite to both internal and external trade of spill allocation. However, under current water entitlements legislation, once water is allocated it cannot be taken back, meaning that entitlement holders would still have the right to take water after the declared spill period. Legislative change would be required to restrict the use of spill allocation to the spill period only. These changes must be careful not to compromise the security of other types of water entitlements. Such legislative changes would be lengthy and costly, therefore they should only be investigated if there is sufficient demand and the costs can be justified. Limited term transfers are available as an alternative to in effect allow the trade of spill allocation and could be used to gauge demand for this option.

In general trade out is not recommended for either the allocation or entitlement of both SRWS or HRWS because the compliance enforcement effort required to maintain the unique characteristics of Ovens/King products in external systems would lead to increased costs and complexity for all customers.

3.4.2 Summary of trading options

The options for improved trade in the Ovens/King system are presented in the table below, together with a brief summary statement as to whether each option is considered feasible or not. A more detailed discussion of the options and the potential issues associated with each one is provided in Section 3.4.3.

Table 3-1: Trading options for the Ovens/King

Ref	Trading option	Comment
1	Do nothing – i.e. no change to existing rules and no trade out	**Option discounted** - does not fulfil the need to review and relax trading rules.
2A	Create a new trading zone for the lower Ovens and allow high-reliability allocation and water shares to trade into it from zones 9A (mid Ovens) and 9B (King)	**Option recommended** – this is the extent to which trade liberalisation is possible without impacting the Ovens unique allocation policy and the related access and reliability of Ovens/King HRWS. Considerable compliance enforcement and accounting issues, but can be handled. Date limits on trade likely to be required.
2B	Allow trade of HRWS (by 'tagging') externally to zone 6 (Vic Murray above the Choke), and trade of allocation externally to Zone 6 and other zones	**Option not recommended** – the required changes to the allocation policy would impact on irrigators' reliability and access to water. The costs of the prerequisite legislative change and change in the allocation policy for the Ovens system outweigh the benefits.
3A	Allow trade of spill allocation within existing trading zones	**Option not recommended** – considered feasible hydrologically; but requires significant legislative and administrative change. Limited term transfers are suggested as an alternative to in effect enable trade of spill allocation.
3B	Allow spill-reliability trade (allocation and water shares) into a new lower Ovens trading zone from zones 9A (mid Ovens) and 9B (King)	**Option not recommended**– considered feasible hydrologically; but requires significant legislative and administrative change. Limited term transfers are suggested as an alternative to in effect enable trade of spill allocation and water shares.
3C	Allow trade of SRWS and spill allocation externally.	**Option not recommended** – specified temporary access period for the product creates extra costs in compliance enforcement and accounting. Would require change in allocation policy to allocate ahead of use rather than retrospectively.

3.4.3 Discussion of individual options

Option 1 (discounted) – Do nothing i.e. no change to existing rules and no trade out

This option does not fulfil the need to review and relax trading rules and has therefore been discounted.

Option 2A (recommended) - Create a new trading zone for the lower Ovens and allow high-reliability allocation and water shares to trade into it from zones 9A (mid Ovens) and 9B (King)

With this option trade is still internal to the Ovens/King Basin, although some flexibility for customers is introduced by allowing trade from the King into the lower Ovens which is not currently possible, and also generating the opportunity for trade between zones 9A and 9B as back-trade.

The newly created lower Ovens trading zone (9C) would be the Ovens River downstream of the confluence with the King river. Zone 9C is a use zone only; existing water shares in this zone remain with a source zone of 9A and are subject to the trading rules of this zone. Trading zone 9A remains the same and is the Ovens River downstream of the confluence with the Buffalo River including the Buffalo River downstream of Lake Buffalo.

Restricting take in the destination zone

One of the main issues with this option is that there are separate restriction curves for Lake William Hovell and Lake Buffalo, and restrictions on use are imposed independently within the existing King and Ovens zones. Following trade, there would therefore be the need to be able to restrict use in the new use zone when restrictions were in force in the source zone. For example if water shares were traded from the King to the lower Ovens, and the King was subsequently on a restriction but the Buffalo was not, use against these shares would need to be restricted in line with the conditions in the King. As a result water share trade will be tagged so that the source zone of the traded share is known.

The restrictions can be imposed provided that the works licence contains a condition that allows the Authority to limit take through a notice process. This is one of the standard conditions in the water register condition set, but is not necessarily included as a condition on each works licence. The trading rule would allow trade only if the above condition is in place on the relevant works or if the works licence is amended to add the condition.

Trade of allocation from King to lower Ovens would be converted into Ovens allocation and would not be subject to restrictions in the King. However, there may be times where allocation cannot physically be delivered and trade of allocation would not be allowed. This restriction could be imposed through a specific trading rule allowing G-MW to refuse an allocation trade if it determines that delivery may not be possible. Trade of allocation would be allowed unless take restrictions were in force in either zone.

In those same circumstances, water should not be taken from a water share tagged from the King to the Lower Ovens – this would need to be done through the works licence restriction condition. Trade of water shares would be allowed at any time, but usage would be subject to the highest level of restriction in the use zone or source

zone. For example if a tagged King water share is in the lower Ovens use zone and restrictions apply in the Ovens but not the King, use of the King water share would be at the same level of restriction as the Ovens system. In this case, the diversification achieved by having different entitlements leads to greater risk because the tagged water share is subject to restrictions from both zones 9A and 9B.

Delivering water traded out of the King

New inter-valley trade (IVT) accounts would need to be created to monitor the amount of trade from the King to the lower Ovens, and also the Ovens to the lower Ovens. This would allow the potential for any back-trade between the Ovens and King zones to be properly managed.

In the case of trade from the King to the lower Ovens, the King is required to deliver water to the lower Ovens to support the trade. On occasions such delivery could incur large losses or may not be able to be delivered (when the King is not flowing all the way), and so the river manager needs time to arrange delivery.

In dry years trade downstream in the King or from the King to the lower Ovens may increase the level of rosters or the time rosters and restrictions are in place. This may occur due to the higher losses incurred when delivering water to downstream users from Lake William Hovell. There may also be third-party impacts in subsequent years due to delivery losses in dry conditions. However, due to the very reliable annual stream flow yield of the Ovens/King system, the magnitude of these impacts is expected to be small.

Delivery also needs to be done at a time that has no material detrimental environmental impacts. The environmental considerations associated with trade are discussed in section 3.4.4.

Summary

Given the characteristics of the Ovens system, this option represents the extent to which trade liberalisation is possible without impacting the Ovens unique allocation policy and the related access and reliability of the Ovens/King HRWS. There are considerable accounting issues and compliance enforcement in the new zone, but these costs are likely to be far smaller than for the other options considered in this review. Date limits on trade are likely to be required to manage the IVT account.

Implementation will require that -

- all high-reliability water share holders in the lower Ovens have their water shares and ABAs amended to change the ‘use’ trading zone to the lower Ovens – this is an administrative concept only and would not affect tradability as the ‘source’ trading zone would not change;
- G-MW institute procedures to prevent usage on tagged water shares by imposing restrictions in line with the highest level of restriction in either the source or delivery zone;
- the water register be changed to allow and account for this trade;
- trading rules be changed to enable -
    - trade of allocation until such time as take restrictions are in force in either zone
    - trade of tagged water shares at any time, provided the works licence at the buyer location contains the restriction condition

Trading rules would therefore allow trade as follows –

		From	
		9A (Ovens)	**9B (King)**
To	**9A**	Always	Back-trade
	9B	Back-trade	Always
	9C (use only)	Always	*Allocation:* permitted until take restrictions are in force in either the source or delivery zone *Tagged water share:* permitted at any time provided works licence contains the restriction condition

Note Water Shares of existing users in zone 9C will be tagged with a source zone of 9A. They will be able to trade their existing shares subject to the rules of trading zone 9A.*

Recommendation 1: Create a new trading zone for the lower Ovens and allow high-reliability allocation and water shares to trade into it from zones 9A (mid Ovens) and 9B (King).

Option 2B (not recommended) - Allow trade of HRWS (by 'tagging') externally to zone 6 (Vic Murray above the Choke), and trade of allocation externally to Zone 6 and other zones

Restricting 'take' in the destination water system

One of the main issues to highlight is that the HRWS product to be traded from the Ovens is very different to the HRWS product in other declared systems. Although an allocation of 100% HRWS is made at the start of the season, use can be restricted if necessary depending on the seasonal conditions and demand. If allocation or tagged water shares are traded out of the system there would need to be a mechanism for restricting use in the new zone when restrictions were in force in the source zone. Section 33AI of the Act allows the Minister to set conditions on the taking of water when it is being taken in another system. This may therefore work to enable the imposition of restrictions in downstream systems, however it would be difficult and costly to enforce the source zone restrictions in the external zone.

Separate ABAs would be required to keep the traded HRWS from the Ovens separate to conventional HRWS from another system. This would be relatively routine for a tagged water share, but not for allocation. Due to the restrictable nature of allocation in the Ovens Valley it must retain these characteristics even when traded to a location remote from the conditions of the home valley. In order to do this, it must be tracked and treated differently to allocation from other systems and the nature of existing trades – this creates the concept of 'tagged' allocation which is not in existence anywhere else. The creation of this new 'product', the accompanying legislative and system changes, and the costs of implementing them would be difficult to justify based on the Ovens system alone.

Due to the above constraints, a change to the allocation method for the Ovens/King to that used in all other regulated systems (where allocation is based on resource availability and has a high reliability) would be required before trade out of the

Ovens/King system could occur. This would remove the restrictable nature of the allocation and HRWS.

The implications of changing the allocation policy in terms of customer's access to water have previously been highlighted in section 3.4.1.

A related option to remove the need for restrictions in the destination zone would be the use of exchange rate trade, for example to trade HRWS from the Ovens system to zone 6 (Vic Murray above the Choke), with the shares subsequently becoming part of the Murray entitlement pool and receiving future allocations from the Murray.

However, exchange rate trade is no longer being used anywhere in the Murray Darling Basin other than in isolated cases, for example to 'unwind' previous exchange rate trades out of the Goulburn and Campaspe, and to allow trade from regulated systems to upstream unregulated winter-fill licences. The reason that exchange rate trade is not generally used is that it is too difficult to set a fair exchange rate with an uncertain future climate. Even if the future average allocation in each system was known, there would still be third party effects within a year. For these reasons, exchange rate trade is not permitted under the proposed Basin Plan trading rules.

Delivery of water traded out

IVT accounting would be complex, and there may be issues with delivery. Water in the IVT account would need to be delivered in the current season due to the limited storage capacity in the system. Storages in the Ovens/King spill almost every year, and any balance remaining in the IVT account in one year would be cleared at the start of the new year. This then reduces operational flexibility in the use of the IVT account, and would require more frequent monitoring to minimise the impact.

Other factors

Due to the restrictable nature of entitlements, the Ovens/King system behaves largely as an unregulated system. Any trade to external zones is essentially a trade from an unregulated system to a regulated system, and hence it creates the issues outlined above. Additionally, this may create an expectation or precedent for trading from unregulated to regulated systems elsewhere. Guaranteeing the delivery of traded water in cases where the resource is unregulated has the potential for third-party and environmental impacts. For instance, in the Ovens, water may need to be released from storage to support the traded-out water, whereas the in-valley usage might have been met from unregulated flows if the trade had not occurred. To minimise the impact, there would need to be a mechanism to allow delivery of IVT to be met through a mix of stored water and unregulated flows, in a pattern to be determined by the Resource Manager.

Summary

This option is not recommended for implementation because a change in allocation policy for HRWS in the Ovens would be required for the legal and operational framework needed to facilitate the option. However, changing the allocation method is highly likely to reduce reliability of supply for existing users and result in unacceptable third party impacts. Consideration of exchange-rate trade as a related option has been discounted, as this is in direct contradiction to the proposed Murray Darling Basin Plan trading rules.

Recommendation 3: Trade of HRWS outside of the Ovens/King system is not recommended at this stage due to the differing characteristics of Ovens/King water shares to water shares in other areas and the resultant complexities of trading into these areas.

Option 3A (not recommended) – Allow trade of spill allocation within existing trading zones

This option would create increased flexibility for customers by allowing trade of spill allocation within the Ovens zones (currently not possible). Trade of the spill-reliability water shares (SRWS) themselves is already possible.

Description

Spill allocation allows customers access to unregulated flows during a specified time period, when storages in the system are physically spilling or declared to be spilling by G-MW (there are often periods of controlled spilling from Lake Buffalo for example). Spill allocations are currently not posted to the Water Register in advance; instead usage is determined after the end of the temporary access period and credited to the Water Register retrospectively.

If trade is to be allowed, the spill allocation will have to be credited in the Water Register before take and use. G-MW would need to change its allocation policy and allocate 100% of SRWS at the start of the declared spill period.

Management mechanism

There are no hydrological problems with allowing this trade. However, as the flows are unregulated, trade would only be permitted within zones or downstream in line with state wide trade rules. As they are considered equivalent to unregulated flows, downstream trade does not create an opportunity for back-trade to upstream zones or between the Ovens and King.

A new ABA would need to be set up specifically to record and monitor details of the spill allocation made, even if it is not traded.

This creates added complexity for all customers, as they will each need two ABAs, one for the HRWS and the other for the SRWS, even if they have no intention to trade any spill allocation.

Legal barriers

If allocation is made up front, a mechanism is needed to recognise that the allocation is temporary and can only be used within the declared temporary access period. The

temporary access period will vary each season dependent on the season's conditions, and may differ for Ovens and King water shares.

Under the Act, it is not possible to remove allocation that has been made until the end of the season. Consequently there needs to be a mechanism to prevent 'take' of the water outside the access period. Analysis of the powers of the Act has not revealed a clear mechanism to allow this to occur.

Without such an existing mechanism under the Act, this option cannot proceed without legislative change. Seeking legislative change is a lengthy and costly process and is not recommended at this stage.

An alternative approach – limited term transfers

An alternative approach is to encourage the use of a limited term transfer (LTT) to achieve trade of spill allocation. The customer who wants to sell their right to spill allocation would lease (using an LTT) some or all of their SRWS to the buyer for the season. This alternative is already available, and enables the demand for the trade of spill allocation to be met. Its use would affect only the buyer and seller and would remove the need for all irrigators to have duplicate ABAs. However, it is a more complicated process for the seller and buyer than a trade of allocation, with greater fees involved.

Use of LTT means that the users who wish to undertake transfer of spill allocation will pay but those not undertaking the LTT will not be subject to costs for the large changes required to enable conventional trade of spill allocation. Effectively it is more of a 'user pays' mechanism.

In future, if demand for trade of spill allocation is high enough, and the cost of seeking legislative change can be justified, a long-term solution may be to implement the required changes to enable this trade.

Summary

Trade of spill allocation is not recommended because the current legal constraints mean that spill allocation use cannot be confined to the spill period. Limiting use to the spill period would require legislative change.

Under the current legislation, use of LTT is recommended as an alternative mechanism to in effect allow trade of spill allocation through the lease of some or all SRWS from seller to buyer for the season. LTT would enable access to water via the leased SRWS until the end of the spill period in any year, as follows:

		From	
		9A Spill	**9B Spill**
To	**9A Spill**	Always	No
	9B Spill	No	Always

Recommendation 2: use limited term transfers (LTTs) to in effect allow the trade of spill-reliability allocation within zones 9A (mid Ovens) and 9B (King).

Option 3B (not recommended) – Allow spill-reliability trade (allocation and water shares) into a new lower Ovens trading zone from zones 9A (mid-Ovens) and 9B (King)

This option has the same issues and legal constraints as option 3A.

It is recommended that limited term transfers (LTTs) are used to allow transfer of SRWS between users in this option. Using LTT, this option then builds on Option 3A by in effect allowing transfer of spill-reliability water shares and allocation from zone 9B (King) to the lower Ovens.

Transfers would be in-zone or downstream from 9A or 9B into 9C. Back-trade would not be allowed due to the unregulated delivery of the water.

As for option 3A, the spill allocation will be tracked by the LTT process and its use prevented at the end of the spill period. If this is done there are no hydrological issues because the rivers will be flowing freely.

LTT of spill-reliability water shares would require tagging, from the King to the lower Ovens, to ensure that use reflected the spill status of the source zone. So, for example, if Lake William Hovell was spilling, use of water against the traded SRWS would be possible even if Lake Buffalo was declared as no longer spilling.

Summary

Setting up rules and mechanisms for trade of spill allocation and water shares is not recommended due to current legal constraints and the need for legislative change.

Use of LTT is recommended as an alternative mechanism to in effect allow trade of spill allocation and water shares through the lease of SRWS from seller to buyer for the season. LTT would enable access to water via the leased SRWS until the end of the spill period in any year, as follows:

		From	
		9A Spill	**9B Spill**
To	**9A Spill**	Always	No
	9B Spill	No	Always
	9C Spill (use only)	Always (during Ovens spill)	Always (during King spill)

Recommendation 2: use limited term transfers (LTTs) to in effect allow the trade of spill-reliability allocation and water shares to the new lower Ovens trading zone (9C), from zones 9A (mid Ovens) and 9B (King).

Option 3C (not recommended) - Allow trade of SRWS and spill allocation externally

Under this option, a spill reliability water share (SRWS) could be tagged to zone 6, and the spill allocation could be traded to a spill ABA in any downstream trading zone (subject to Barmah Choke limits).

Both the traded water SRWS and allocation would require tagging to enable restrictions to be implemented on their use to ensure that the water is used within the spill period and that the water has the same restrictions as the source zone.

Legal basis

There is a legal basis to impose a take restriction on the water that has been traded – section 33AI allows the imposition of a condition on 'take' as part of a trading rule. Hence trade of the SRWS itself has a legal basis.

However this ability to limit the take use period in external zones does not facilitate the implementation of trade out of spill allocation because there is still no legal basis to restrict use of spill to the spill period in the home trading zone to allow up-front allocation which is an essential prerequisite for trading. Such trade cannot be legally supported without a solution for Option 3A.

Other issues

Trade of SRWS and their allocation outside the Ovens zones is considered to have third party effects and to be too complex to manage effectively.

Firstly, consider the trade of spill allocation. As per the trade of HRWS outside of the Ovens Valley (option 2B) it must retain its characteristics even when traded to a location remote to the home valley. This again creates the concept of 'tagged' allocation which is not in existence anywhere else.

For SRWS trade (and also for tagged allocation, if it was permitted), the issues are the same as for trade of HRWS (Option 2B), but exacerbated by the need to not just restrict usage, but prevent it altogether at the end of the spill period.

The temporary spill period means that there are considerations around travel time of spill flow to the new location. Administering rules around the start and end of the spill period would be difficult if trade was allowed to trading zones some distance away. This is likely to be an issue even if trade was limited to the immediate downstream zone (zone 6).

If its characteristics can be retained even when traded, third party effects will be minor, but the complexity and potential confusion for customers is still significant.

Tracking and management of the product becomes more difficult and creates extra workload once traded externally, due to the requirement to read meters in several different zones at the end of the spill period and ensure no further usage of the allocation. Such work would lead to start up costs for all customers for setting up the required tracking system and user-pays costs for customers that actually partake in the trade. The up-front costs for all customers would be difficult to justify given the small number of customers expected to use this trade option.

For the above reasons, this option is not recommended.

Recommendation 3: Trade of SRWS outside of the Ovens/King system is not recommended at this stage due to the differing characteristics of Ovens/King water shares to water shares in other areas and the resultant complexities of trading into these areas.

3.4.4 Environmental considerations

The majority of environmental issues associated with trade of either SRWS or HRWS for the Ovens/King system are related to within-year water availability and delivery. Avoiding high flows at the wrong time of year, maintaining low flows, and mimicking the natural hydrological characteristics of the river system are all important to its ecological function.

One of the main considerations is the need to have upper limits on summer flows. This is because slack water habitat could be adversely affected by an increase in summer flows required to meet downstream trade obligations. However, this problem could be mitigated by controlling the timing and size of flushes through the flexibility allowed by the management of the IVT account. For the environment, it is preferable for any downstream bulk transfers to occur in spring or autumn.

Late season shifting of water to empty the IVT account could also cause an issue, for example delivery of a large volume of water in a short period of time. In these cases it may be necessary to set limits on the acceptable rates of rise and fall in flows to prevent adverse impacts.

The environmental issues discussed in this section can be overcome through careful management and timing of releases, therefore it is considered that there are no major environmental constraints to the proposed trading options.

Trade of SRWS and allocation

Downstream trade of SRWS
Any SRWS trade downstream or out of the system will be when flows in the Ovens River catchment are unregulated which means that they are effectively in an ‘or natural’ state. This will benefit the Ovens system natural carriers between the trade service points as there will be higher flows than otherwise would have occurred. If the SRWS were traded out of the Ovens system then environmental benefit would be until the water meets the Murray River at Lake Mulwala.

Upstream trade of SRWS
Upstream trade in the Ovens system could have an environmental impact in the river reaches that are least buffered by unregulated flows. The reaches most likely to have this risk are those just downstream of the storages; namely the King and Buffalo Rivers.

If a large volume of SRWS was traded upstream to the King and Buffalo Rivers, and the use of these water shares was concentrated on the recession of high flows (i.e. the most likely time for use to occur), it is possible that the use could significantly reduce flows in the lower reaches of the King and Buffalo Rivers.

One of the environmental flow recommendations for the Buffalo River is to not go below 130 ML/d in the winter/spring period unless this is natural. The Ovens Bulk Entitlement does not protect Buffalo River flows in winter and there is currently no gauge in the lower reaches of the river. To avoid adverse impacts, this may require conditions to be put in place to avoid a significant daily extraction right being traded upstream.

Trade of HRWS and allocation

The current regulation of summer and autumn flows does have a negative environmental impact, however as the regulation of flows is targeted to meet consumptive use, this impact is offset to some extent by use. By the time that water reaches the lowest reach of the Ovens system (at Peechelba), it is largely reflective of the natural flow regime. If use of HRWS was not to occur within the Ovens (e.g. if water was traded out in summer), then there is a need to consider and manage the environmental implications of this.

A bulk release of HRWS in mid-summer is not desirable for the environment, whilst a modest increase in low flows above the current situation may only have a minor or negligible impact. The passing flow rules in the Bulk Entitlement protect low flows and endeavour to mimic natural flow variability. However they currently do not have an upper limit to avoid excessive regulated flows in summer and autumn.

Downstream trade of HRWS
Any HRWS trade downstream, or out of the system, will effectively be in a regulated state. The current environmental flow advice is that a range of variable low flows, within certain bounds, will not adversely affect the environment.

The reaches in the Ovens system just downstream of the storages do not have a narrow low flow range for which to operate regulated flows. The desirable summer - autumn range of releases from storages are:

- Lake Buffalo - in the range of 70 ML/d (or natural below) to 680 ML/d (or natural above);
- Lake William Hovell - in the range of 60 ML/d (or natural below) to 415 ML/d (or natural above).

These reaches are less likely to be a constraint to a steady transfer of HRWS downstream. These reaches also have fresh or large flow recommendations.

All reaches, except the lower Ovens River at Peechelba, have an absolute minimum summer - autumn environmental flow recommendation of at least 10 ML/d. It can be inferred from this that artificially wetting the lowest reach of the system in extreme dry years is not desirable or possible.

Preliminary analysis indicated that the most restrictive reach on delivery of regulated out-of-valley flows in summer and autumn will be the most downstream point, or Ovens River reach - Everton to the Murray River.

The desirable range of low flows in the summer-autumn period for the Everton to Murray River reach is 130 ML/d (or natural below). It is desirable that temporary fluctuations up to 260 ML/d also occur. Should the summer/autumn flows consistently fall below 260 ML/d, a winter/spring high flow fresh is desirable. In addition, a large fresh in summer/autumn of 2500 ML/d for >5 days would also be beneficial. However, without the addition of large unregulated inflows the delivery of a large fresh such as this will be difficult to achieve.

Summer/autumn flows above 130 ML/d at Peechelba are not necessarily detrimental. However if flows were to rise consistently above 260 ML/d, this wetting of the summer/autumn flow regime may pose ecosystem risks.

The main environmental flow risks are that increased flows:

- could be high enough to move sand into pools (i.e. reducing pool habitat) but not large enough to flush them out. The mid to lower reaches of the Ovens contain a lot of fine sediment. However, given the winter/spring flow regime is largely intact this is less of a risk for the Ovens than for other more highly regulated systems;
- could start to drown out important summer habitat such as shallow, low velocity water habitat (juvenile and fish larvae, macrophytes, bugs).

If increased summer base flows were likely to occur as a result of changes to HRWS trading rules (for example permanent trade out) further environmental advice and expert input would be desirable. This would help to understand the upper limits on regulated flows, including such things as inter-annual variability rather than one-size-fits-all rules.

The bulk transfer of HRWS in mid-summer is to be avoided. Such a release would best be associated with a natural flow event to ensure it is large enough (i.e. 2,500 ML/d for minimum 5 days) to achieve geomorphic and vegetation based flow objectives. Any further regulation of flow pulses in summer would need to be carefully understood and managed. There is a risk that the organic matter that has accumulated during a long dry period would produce poor water quality (i.e. blackwater and low dissolved oxygen scenario).

In general, it is preferable for the environment for any downstream bulk transfers of HRWS to occur in spring or autumn. The shape of the bulk release would also need to be consistent with the recommended high flow freshes and rates of rise and fall (for example, to avoid all flows being delivered in a concentrated short time period towards the end of the season).

Upstream trade of HRWS

The Ovens system Bulk Entitlement minimum summer – autumn passing flow rules provide good environmental protection from the upstream trade of HRWS.

The reaches within the Ovens system that could be affected by upstream trade are;

- the Ovens River upstream of the King Junction (measured at Rocky Point);
- the Ovens River downstream of the King River junction (measured at Peechelba);
- the King River upstream of the Ovens Junction (measured at Docker);
- the Buffalo River upstream of the Ovens Junction (measured at Downstream of Lake Buffalo).

In addition, as the Buffalo River and Ovens River upstream of the King junction do not have minimum passing flow rules for the June – October period in the Bulk Entitlement, they could also be at some risk from upstream trade.

For all of the above reaches these risks could see the November - May period as a concentration of within system daily extraction rights and use could result in a significant proportion of the minimum flows being taken.

4 Proposed timescales for the review

The recommendations presented in section 3.3 above will be consulted and agreed with the Water Services Committee, and also all Ovens/King entitlement holders if deemed necessary, prior to proposing final recommendations to the Minister. Initial consultation with the Water Services Committee will take place at the Regional meeting planned for 29 November 2011.

Following the submission of recommendations to the Minister, and subject to Ministerial approval, the final steps will be to announce the change and to prepare for implementation. This will include making the necessary changes to the trading rules engine and water register, as well as setting up the required IVT accounts and delivery arrangements.

The target date for implementation of the recommended changes is 1 July 2012.

5 Appendices

5.1 Appendix A - Ovens Bulk Entitlement Schedule 3

Schedule 3

Supply of Primary Entitlements

1. Supply Restrictions

Where the Authority is unable to supply the full water requirements of primary entitlements, it must

(a) assess and restrict supplies to its [1]authorised diverters, and

(b) require the other primary entitlement holder listed under Schedule 2 to this Order, to restrict the water usage of its customers;

in accordance with the following restriction policy:

Restriction level	Supply to [2]authorised diverters#	Supply to urban areas[3] to be restricted in a manner calculated to reduce usage to supply rates equivalent to:##
Level 1	75% of full agricultural demand	Summer urban demand* less 50% of restrictable urban demand**
Level 2	50% of full agricultural demand	Summer urban demand* less 80% of restrictable urban demand**
Level 3	25% of full agricultural demand	Summer urban demand* less 95% of restrictable urban demand**
Level 4	0% of full agricultural demand (irrigation banned)	Summer urban demand* less 100% of restrictable urban demand**

Supply restricted by limiting pumping by its customer to specific times to achieve the specified reduced demand

Supply restricted by limiting its customers to specific times and the method of external water usage

*[4]**Summer urban demand** means the average actual supply rate in ML per day recorded over the preceding five years in December, January and February plus an allowance for new large water users established in the last five years.

[5]restrictable urban demand** means the summer urban demand less the average actual supply rate in ML per day recorded over the preceding five years in June, July and August plus an allowance for new large water users established in the last five years.

and any agreement made under section 124(7) of the Act.

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[1] Schedule 3 words substituted - Ref No. 2

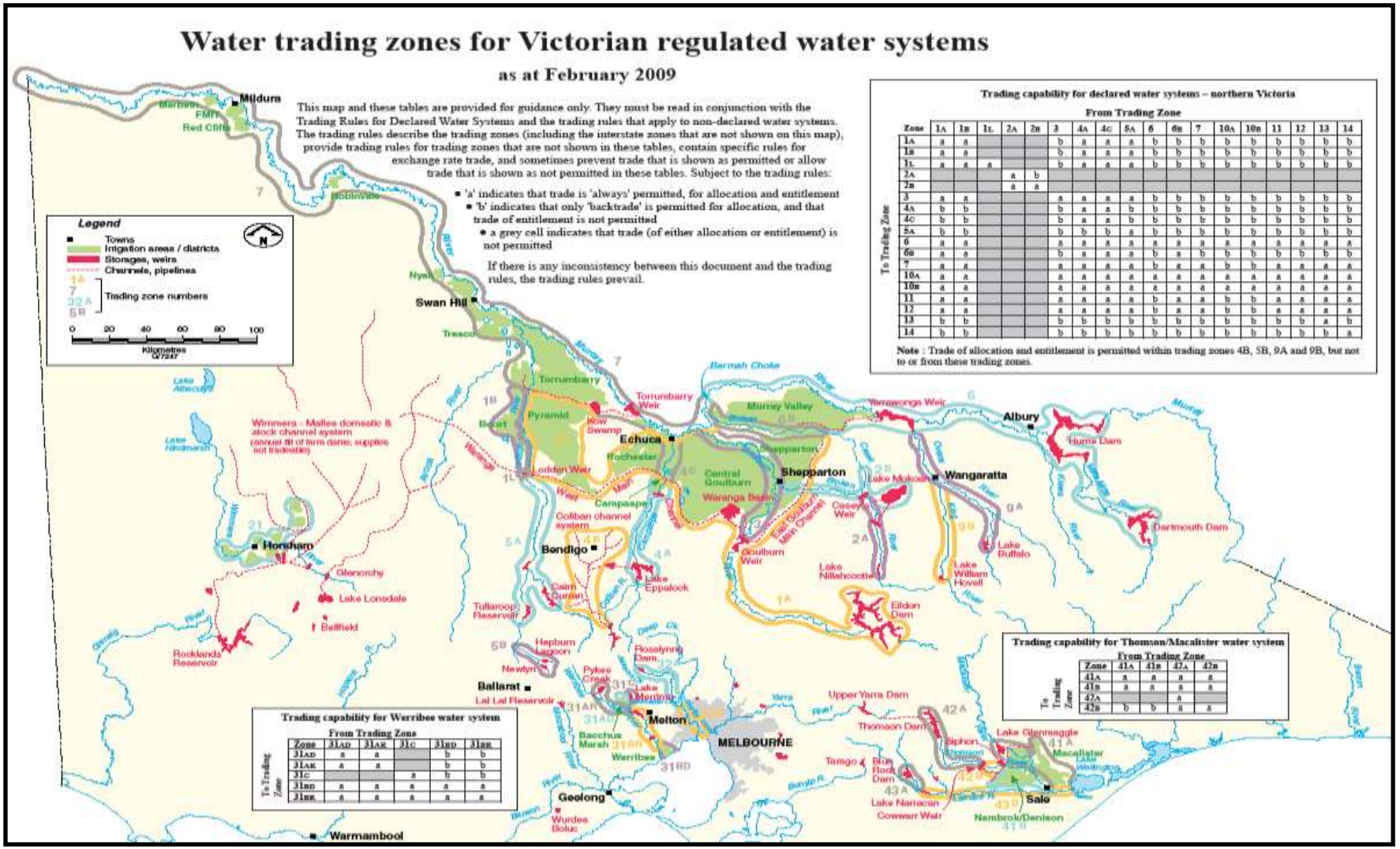
[2] Schedule 3 words substituted - Ref No. 2

[3] Schedule 3 words in Table deleted - Ref No. 2

[4] Schedule 3 definition substituted - Ref No. 3

[5] Schedule 3 definition substituted - Ref No. 3

5.2 Appendix B – Trading zones for Victorian regulated water systems



Trading Zone	Trading Zone description
1A	**Greater Goulburn** Lake Eildon; Goulburn River from Lake Eildon to Goulburn Weir; Lake Nagambie; Shepparton, Central Goulburn, Rochester and Pyramid-Boort irrigation areas except the Boort irrigation area.
1B	**Boort** Boort irrigation area
1L	**Loddon Weir Pool**
2A	**Broken: Nillahcootie to Casey's Weir** Lake Nillahcootie; Broken River from Lake Nillahcootie to top of Casey's Weir pool.
2B	**Broken: Casey's Weir to Goulburn River** Casey's Weir pool; Broken River from Casey's Weir pool to the Goulburn River; Upper Broken Creek from Broken River to Waggarandall Weir, including Major Creek; Lake Mokoan.
3	**Lower Goulburn** Goulburn River downstream of Goulburn Weir.
4A	**Campaspe** Lake Eppalock; Campaspe River from Lake Eppalock to Waranga Western Channel; Campaspe irrigation district.
4B	**Coliban channel system** Coliban channel system.
4C	**Lower Campaspe** Lower Campaspe River, from downstream of the Waranga Western Channel to the River Murray
5A	**Loddon** Tullaroop Reservoir; Tullaroop Creek from Tullaroop Reservoir down to Loddon River; Cairn Curran Reservoir; Loddon River from Cairn Curran Reservoir down to top of Loddon Weir Pool; Serpentine Creek system upstream of Bear's Lagoon.
5B	**Bullarook** Hepburns Lagoon, and downstream to Bullarook Creek; Newlyn Reservoir; Bullarook Creek from Newlyn Reservoir to Creswick Creek.
6	**Vic Murray Dartmouth to Barmah** Lake Hume; River Murray from Lake Hume to Barmah Choke; Lake Dartmouth; Mitta Mitta River below Lake Dartmouth; Murray Valley irrigation area, excluding Lower Broken Creek.

6B	**Lower Broken Creek** Lower Broken Creek downstream of Katamatite.
7	**Vic Murray Barmah to SA** River Murray from Barmah Choke to the South Australian border; Torrumbarry irrigation area; Tresco irrigation district Nyah irrigation district; Robinvale irrigation district; Red Cliffs irrigation district; Merbein irrigation district; First Mildura irrigation district (Note – this now includes the previous trading zone 8)
9A	**Ovens** Lake Buffalo; Buffalo River downstream of Lake Buffalo; Ovens River downstream of the confluence with the Buffalo River.
9B	**King** Lake William Hovell; King River downstream of Lake William Hovell.
10A	**NSW Murray above Barmah Choke** River Murray from Lake Hume to Barmah Choke
10B	**Murray Irrigation Ltd areas** Murray Irrigation Ltd areas, including Wakool Irrigation District
11	**NSW Murray below Barmah Choke** River Murray from Barmah Choke to SA border (including the Edwards/ Wakool system and the Western Murray Irrigation District).
12	**South Australian Murray** River Murray in SA and Trust districts
13	**Murrumbidgee** Murrumbidgee Irrigation and Colleambally Irrigation areas; Murrumbidgee and Tumut below Burrinjuck and Blowering reservoirs (including Yanko, Colombo and Billabong Creek systems)
14	**Lower Darling** Menindee Lakes and the Darling River downstream of the Menindee Lakes

6 Glossary of Terms

This section defines the terms used throughout the document.

Term/Acronym	Description
ABA	Allocation bank account
ACCC	Australian Competition and Consumer Commission
DSE	Department of Sustainability and Environment
GL	One gigalitre (one thousand megalitres)
G-MW	Goulburn-Murray Water
HRWS	High-reliability water share
IVT account	Inter-Valley Trading account
LRWS	Low-reliability water share
LTT	Limited term transfer
MDBA	Murray-Darling Basin Authority
NECMA	North-East Catchment Management Authority
NRSWS	Northern Region Sustainable Water Strategy
OOW	Office of Water
SRWS	Spill-reliability water share
SWA	Spillable water account