



## A Data on water trading in Western Australia

This section summarises the water trading that already occurs in WA.

Water entitlements, in the form of an existing license to withdraw water issued under the *Rights in Water and Irrigation Act, 1914* ("RiWi"), can currently be traded subject to approval by the DoW. The Statewide Policy No.6: Transferable (Tradeable) Water Entitlements for Western Australia sets out Government policy in relation to such transfers.<sup>1</sup>

The REU has examined this trade in some detail in its recent report:

In general terms, examples of the capacity to trade under existing legislation include:

- The capacity of individual farmers to privately negotiate a price for the a transfer of a license to take water;
- The capacity of an irrigation cooperative to negotiate a water transfer to a water utility in exchange for a payment to be used for irrigation delivery system upgrades; and
- The capacity of an irrigation cooperative to similarly transfer water to another user such as a large industrial undertaking.<sup>2</sup>

### A.1 Trading data

The following is a summary of water trades between 2002-03 and 2006-07.<sup>3</sup> The information shows that, generally, the number of trades has been limited and the volume of entitlements traded is small. While several large trades have occurred, these have been the exception. The approach and findings of the DoW paper are outlined below.<sup>4</sup>

#### *Approach*

The DoW's interrogated its Water Resource Licensing data base (WRL) to identify water trades completed between July 2002 and June 2007. Efforts were made to exclude transfers of licences due to land and business ownership change and where a licensee moved operations to a separate location with the same water entitlement. Trades were double-checked where they occurred in resources in which the licensed entitlements totalled less than 85 per cent of the allocation limit. Most of these cases were found to be uncompleted transfers, property or business ownership changes or were not proceeded with. These were removed from subsequent analysis.

<sup>1</sup> WA Water and Rivers Commission, 2001.

<sup>2</sup> Resource Economics Unit, Inquiry into Competition in the Water and Wastewater Services Sector: Water Trading Issues, Prepared for the Economic Regulation Authority, 30<sup>th</sup> October 2007, page 11.

<sup>3</sup> The same information was provided to the REU for its study.

<sup>4</sup> The rest of the material in this section is drawn from the DoW's summary.

Nevertheless, it is likely that not all transfers were included. Transfers due to a change in land and/or business ownership are not easy to distinguish from a “true” trade in water entitlements as the application process is essentially the same. This is especially the case if a new licence number is issued when the application is received. Transfers can be approved before the resource is fully allocated. While the need to purchase entitlements when new entitlements could still be granted appears unnecessary, there can be sound resource management reasons for approving trades before a resource is fully allocated. For example, trading water entitlements is preferable to granting additional entitlements if the trade avoids placing increased pressure on a local part of the resource or an important wetland.

The DoW’s records exclude trades within irrigation cooperatives, because these are administered by the particular cooperative, and individual irrigators hold a certificate of water entitlement from the cooperative rather than a license under the RiWI Act.

Under the National Water Initiative reforms, the last water entitlements of a particular resource are to be released through a market mechanism such as auctioning or tendering. This is intended to establish a clear initial price signal to guide subsequent water entitlement trading. Such mechanisms have not been used historically in WA. Thus the start dates for water entitlement trading in particular resources have not been clearly specified.

Accepting these limitations, the following pages summarise trades in water entitlements in WA that have been recorded over the last five years.

### *Permanent groundwater trades*

Tables A1 and A2 present details of trades in groundwater entitlements between 1 July 2002 and 30 June 2007. A total of 58 permanent groundwater trades were recorded, and occurred in 24 separate groundwater management sub-areas. The groundwater entitlements traded totalled 2,994 ML, with the mean and median trade being 51.6 ML and 21.6 ML respectively. This represents only 1.4 per cent of the committed allocations in the sub-areas where trades have occurred.

The greatest number of trades occurred in the Swan (13) and Wanneroo (20) Groundwater Management Areas. Within the Wanneroo Groundwater Management Area most trades occurred in the Carabooda (6) and Mariginiup (8) sub-areas (see Table A3). These trades represent 3.4 per cent and 7.4 per cent of the committed allocations in each sub-area.

The largest single trade was 317 ML and occurred in the Lake Preston South Sub Area of the South West Coastal Management Area. A limited number of larger applications to trade (including one above 2,000 GL) were received but not completed.

**Table A1: Permanent groundwater trades by Groundwater (GW) area, sub-area and aquifer**

GW Area Name	GW Sub-area Name	Aquifer Name	Trades		Allocated ML
			No	Sum ML	
Perth	Perth South Confined	Perth - Leederville.	1	3	5,372
Wanneroo	Nowergup	Perth – Superficial	1	6	2,793
Busselton-Capel	Donnybrook	Perth - Upper Leederville	1	10	2,590
South West Coastal	Lake Preston	Perth – Leederville	1	20	420
Carnarvon	Basin 1	Carnarvon – Superficial	1	36	7,564
Bunbury	Bunbury Yarragadee Confined	Perth - Yarragadee South.	1	90	20,197
Gingin	SA 3	Perth - Leederville.	1	130	3,356
Gingin	Seabird	Perth - Superficial Swan	1	270	20,849
South West Coastal	Lake Preston South	Perth - Superficial Swan	1	317	10,997
Swan	South Swan	Perth – Superficial	2	19	4,058
Swan	East Swan	Perth – Superficial	2	39	946
Broome	12 Mile	Canning – Broome	2	48	894
Mirrabooka	Landsdale	Perth – Superficial	2	64	1,387
Busselton-Capel	Bslt-Capel Yarragadee Conf'd	Perth - Yarragadee South.	2	150	89,256
Wanneroo	Neerabup	Perth - Superficial	2	150	2,636
Gingin	SA 6	Perth - Leederville - Parmelia.	2	271	7,607
Mirrabooka	State Forest	Perth - Superficial	2	331	798
Busselton-Capel	Quindalup - Vasse	Perth - Upper Leederville.	3	52	1,840
Wanneroo	Lake Gngangara	Perth - Superficial	3	80	8,863
Cockburn	Thompsons	Perth - Superficial Swan	4	77	6,375
Swan	Swan Confined	Perth - Leederville.	4	167	5,454
Swan	Central Swan	Perth – Superficial	5	31	1,720
Wanneroo	Carabooda	Perth - Superficial	6	276	8,183
Wanneroo	Mariginiup	Perth - Superficial	8	358	4,860

Source: WA Department of Water

**Table A2: Number of permanent groundwater trades by financial year**

	2002-03	2003-04	2004-05	2005-06	2006-07
No of Trades	12	12	7	15	12

Source: WA Department of Water

### *Temporary groundwater trades*

Temporary rights to water are granted through the approval of agreements to take water under an existing licence. These agreements relate to the rights to take water in 12 month periods (usually a financial year). Approvals to take water can be repeated over several years.

Over the last five years, 12 annual agreements to take water under an existing groundwater licences have been approved. These have totalled 14,650 ML, or averaged 2,930 ML pa over the five years. Almost 90 per cent of the amount temporarily traded has been taken under two licences. The first and largest was an agreement to take 3,940 ML in 2005-6 and 2006-7 under a licence held in the Yarragadee Confined Subarea of the Busselton-Capel Management Area. The second was an agreement to take 1,679 ML in 2002-3, 2003-4 and 2004-5 under a licence held in the Cockburn Confined Subarea of the Cockburn Management Area.

### *Surface water trades*

From July 2002 to June 2007, 16 permanent trades in surface water have been recorded in ten surface water management sub-areas. These have totalled 6,251 ML (see Table A3) and been dominated by three trades in the Harvey River Basin. A number of the permanent trades of less than 10 ML are probably associated with land ownership changes. Over the same five years, there have been eight temporary trades. These have averaged 3,843 ML pa, and have been dominated by five temporary trades, again in the Harvey River Basin.

**Table A3: Permanent trades of surface water, by river basin, 2002/3 – 2006/7**

River Basin	Sub-Area	Permanent		Temporary Trades		
		Total ML	No.	Total ML over 5 yrs	Average ML pa	No.
Ashburton River	Ashburton River Basin	0	0	2	0	1
Busselton Coast	Margaret River Tributaries	13	1	0	0	0
Harvey River	Drakesbrook and Samson Brook	3,900	2	10,300	2,060	3
Harvey River	Harvey River	20	2	0	0	0
Harvey River	Harvey River and Logue Brook	2,150	1	8,650	1,730	2
Moore-Hill Rivers	Lennard Brook	18	1	0	0	0
Murray River	Serpentine River	40	5	0	0	0
Preston River	Preston River Tributaries	8	1	0	0	0
Swan Coastal	Canning River	6	1	0	0	0
Swan Coastal	Marbling Brook	11	1	0	0	0
Warren River	Treen Brook Catchment	85	1	0	0	0
Warren River	Upper Lefroy Catchment	0	0	150	30	1
Warren River	Warren River System	0	0	115	23	1
<b>Total</b>		<b>6,251</b>	<b>16</b>	<b>19,217</b>	<b>3,843</b>	<b>8</b>

Source: WA Department of Water

All the large surface water trades have been associated with an agreement between Harvey Water and the Water Corporation to pipe the supply of irrigation water in the Harvey and Waroona Districts and use the water so saved to supply the IWSS. The agreement is being phased in from 2004-05 to 2009-10. The associated water entitlement trades are being assessed and approved each year as each stage of the piping projects proceeds. By 2009-10, entitlements totalling 17.1 GL/a are expected to be permanently traded from Harvey Water to Water Corporation.

### *Trading prices*

The prices at which water entitlements have been traded have not been well documented. While the application form to transfer water entitlements includes space for the trading price to be provided, the field is often left blank. As many applications are also associated with changes of land ownership, DoW has not insisted that a transfer price be specified on each application. Some applications have erroneously included the \$200 transfer fee as the transfer price. Given these limitations, only 11 cases of permanent trade in groundwater were found to have a reliably documented trading price. These are listed in Table A4, ranked in order of increasing trading price.

*Table A4: Permanent trades where the price was reliably documented*

<b>GW Area Name</b>	<b>GW Sub-area Name</b>	<b>Financial Year</b>	<b>GW Subarea Name</b>	<b>Aquifer Name</b>	<b>Transfer Volume -ML</b>	<b>Price - \$/ML</b>
Wanneroo	Mariginiup	2004-5	Mariginiup	Perth - Superficial	31	\$488
Mirrabooba	Landsdale	2006-7	Landsdale	Perth - Superficial	40	\$500
Wanneroo	Mariginiup	2003-4	Mariginiup	Perth - Superficial	24	\$500
Wanneroo	Mariginiup	2003-4	Mariginiup	Perth - Superficial	18	\$500
Wanneroo	Carabooda	2002-3	Carabooda	Perth - Superficial	10	\$1,000
Wanneroo	Nowergup	2006-7	Nowergup	Perth - Superficial	6	\$1,000
Gingin	SA 6	2005-6	SA 6	Perth - Leederville - Parmelia.	40	\$1,100
Wanneroo	Neerabup	2006-7	Neerabup	Perth - Superficial	100	\$1,500
Busselton-Capel	Donnybrook	2006-7	Donnybrook	Perth - Upper Leederville	10	\$1,650
Wanneroo	Neerabup	2005-6	Neerabup	Perth - Superficial	50	\$1,650
Busselton-Capel	Quindalup - Vasse	2005-6	Quindalup - Vasse	Perth - Upper Leederville	15	\$2,200

Source: WA Department of Water

While the trading prices for permanent groundwater water entitlements have ranged from \$488/ML to \$2,200/ML, there is insufficient information to draw any trends in the trading price of groundwater water entitlements since 2002-3.

The prices of temporary trades in groundwater entitlements were only reliably recorded in two cases. These were \$68 ML pa and \$220 ML pa (\$0.068/kl and \$0.22/kl respectively) and occurred in the Carabooda Sub-area of the Wanneroo Groundwater Management Area and the Bunbury Yarragadee Confined Sub Area of the Bunbury Groundwater Management Area respectively.

Trading in surface water entitlements has been dominated by the inter-sectoral trade between Harvey Water and Water Corporation, where irrigation entitlements are being traded to public water supply entitlements over six years. An overall price per ML can be inferred from Water Corporation's payments to Harvey Water for the costs of the piping Project. By 2009-10, when the full 17.1 GL pa is expected to be permanently traded, Water Corporation will have paid Harvey Water \$72 million towards the piping project. This is equivalent to a permanent trade price of \$4,210 per ML (or \$4.21/kl).

## **A.2 Trading within the cooperatives**

### **A.2.1 Harvey Water**

Harvey Water is the trading name of the irrigation water provider cooperative serving 558 member irrigators in the Shires of Waroona, Harvey and Dardanup. It is a fully private organisation which was privatised from the Water Corporation in 1996 as a result of the Council of Australian Governments and National Competition Policy.

The Harvey Water Irrigation Area (HWIA) is located to the west of the Darling Scarp on the Swan Coastal Plain, about 100km south of Perth. It covers an area of 112,000 hectares (around 75km long and 15km wide) in three Irrigation Zones: Harvey, Waroona and Collie.

Irrigators own water in the form of shares in the co-operative plus a corresponding certificate of water entitlement. The entitlement to water can be leased for a season, or sold outright. Irrigators own water in the form of shares in the co-operative plus a corresponding certificate of water entitlement.

Records show that over 10 years of trading about 10 per cent of annual water sales relate directly to temporary trades and about 1 per cent of sales relate to permanent sales. Trades and prices generally increase in dry years. Three distinct markets have developed in each of the three irrigation districts for different reasons. Harvey Water plays no direct role in water trading or price setting but has facilitated auctions each season to assist the trading process.

Table A5 shows annual water sales by district within the Harvey Water Cooperative. Annual sales have fluctuated over the last ten years with an average annual sale of approximately 81,000 ML.

**Table A5: Harvey Water annual water sales by district (ML)**

District	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05
Waroona	6,942	6,563	7,299	5,954	5,644	9,149	8,622
Harvey	40,888	37,895	43,027	30,441	26,088	42,004	41,462
Collie North	34,360	31,230	37,045	31,658	30,452	48,886	42,456
<b>TOTAL</b>	<b>82,190</b>	<b>75,688</b>	<b>87,371</b>	<b>68,053</b>	<b>62,184</b>	<b>100,039</b>	<b>92,540</b>

Source: Harvey Water

Table A6 and Table A7 show the quantity (ML) and price (\$/ML) of water trades between 2001-02 and 2006-07. The average price per ML has fluctuated for both temporary and permanent trades.

**Table A6: Water trade in temporary transfers**

District		2001-02	2002-03	2003-04	2004-05	2005-06	2006-07
Waroona	ML	295	1,469	2,656	2,417	350	806
	Ave \$/ML	12	16	14	16	14	22
Harvey	ML	6,350	7,069	2,892	5,075	1,451	9,298
	Ave \$/ML	14	18	17	18	18	70
Collie North	ML	2,941	2,375	2,782	2,013	758	806
	Ave \$/ML	11	10	19	8	6.5	8

Source: Harvey Water

**Table A7: Water trade in permanent transfers**

District		2001-02	2002-03	2003-04	2004-05	2005-06	2006-07
Waroona	ML	136	10	166	95	121	17
	Ave \$/ML	81	475	191	204	175	180
Harvey	ML	34	524	38	31	96	994
	Ave \$/ML	450	475	525	525	430	517
Collie North	ML	113	150	240	859	457	628
	Ave \$/ML	41	40	30	26	19	20

Source: Harvey Water

## A.2.2 Gascoyne Water Cooperative Limited

Gascoyne Water is a private cooperative with a similar institutional structure to Harvey Water. There are 179 members in the cooperative who are engaged almost exclusively in horticulture.

Gascoyne Water sources its water through two broad mechanisms.

- Private ground water bores which access Basin A – any trading in this water is essentially limited to an irrigators immediate neighbours; and
- A piped supply scheme which accesses Basin B-L – trading occurs in this water which is extracted from the public supply scheme and which Gascoyne Water acquires on behalf of members. The only other significant user in the area is the town of Gascoyne.

Gascoyne Water permits trading between members and it has been occurring since 2003 for both temporary and permanent water. The data on that trading is outlined below. It general involves small quantities and the prices for temporary water typically reflect the fixed charges that irrigators incur. More recently, more permanent trading is occurring as the market develops.

Gascoyne Water operates the trading system which is anonymous. Sellers contact Gascoyne Water and indicate the quantities they have to sell and their preferred price. Buyers do likewise and Gascoyne Water facilitates the trade. All details other than the number of trades and the volumes involved remain anonymous.

Table A8 below shows a summary of data regarding water delivery in the Gascoyne Water Cooperative in 2007.

*Table A8: Water delivery data for Gascoyne Water Cooperative, 2007*

Water Delivery Data for 2007	2007 (Calendar Year)	
	December	YTD
Irrigation Water delivered kl this month	590,748	5,230,031
Irrigation Water delivered kl same month last year	565,282	4,881,937
Increase kl(over same month last year)	25,466	348,094
Increase %	4.5%	7.1%
CCW Water Delivered kl this month	10,577	91,975
CCW Water Delivered kl this month last year	7,929	51,823
Increase kl	2,648	40,152
Increase %	33%	77%
Total Metered delivery kl	590,748	
Master Meter delivery kl	614,466	
Water losses kl   %	23,718	3.9%
Annual Metered Delivery kl	5,231,075	
Annual Master Meter Delivery kl	5,293,826	
Annual Losses kl	62,751	
Annual Losses %	1.2%	

Source: Water report for the month of December 2007, Gascoyne Water Cooperative Ltd



Table A9 and Table A10 below show the number, volume, date and percentage of total water delivered for permanent and temporary trades within the Gascoyne Water Cooperative in 2007.

**Table A9: Permanent trades, 2007 (Total water delivered in 2007 = 5,230,031kl)<sup>5</sup>**

Trades	Volume (kl)	Date	% of total delivered
1	20,000	01-Jan-07	0.4
2	10,000	10-Jan-07	0.2
3	8,000	11-Jan-07	0.2
4	12,000	11-Jan-07	0.2
5	40,000	11-Jan-07	0.8
6	10,000	15-Jan-07	0.2
	<b>100,000</b>		<b>1.9</b>

Source: Water report for the month of December 2007, Gascoyne Water Cooperative Ltd

**Table A10: Temporary trades, 2007 (Total water delivered in 2007 = 5,230,031kl)**

Trade	Volume (kl)	Date	% of total delivered
1	30,000	02-Apr-07	0.6
2	10,000	01-May-07	0.2
3	20,000	01-Jun-07	0.4
4	10,000	18-Jul-07	0.2
5	10,000	31-Jul-07	0.2
6	10,000	10-Aug-07	0.2
7	5,000	28-Aug-07	0.1
8	15,000	28-Aug-07	0.3
9	30,000	05-Oct-07	0.6
10	12,000	09-Oct-07	0.2
11	15,000	10-Oct-07	0.3
12	10,000	16-Oct-07	0.2
13	10,000	29-Nov-07	0.2
14	5,000	29-Nov-07	0.1
15	7,000	04-Dec-07	0.1
16	5,000	05-Dec-07	0.1
17	5,000	05-Dec-07	0.1
18	4,000	10-Dec-07	0.1
19	10,000	10-Dec-07	0.2
20	5,000	10-Dec-07	0.1
21	4,000	10-Dec-07	0.1
22	3,000	10-Dec-07	0.1
23	1,000	10-Dec-07	0.0
24	1,000	10-Dec-07	0.0
25	1,000	17-Dec-07	0.0
26	5,000	19-Dec-07	0.1
27	3,000	20-Dec-07	0.1

<sup>5</sup> Includes removal of trades 1214, 1255 and 1266 due to apparent property transfers and trade 1327 due to occurring in January 2008.

Trade	Volume (kl)	Date	% of total delivered
28	3,000	20-Dec-07	0.1
29	11,000	20-Dec-07	0.2
30	2,000	20-Dec-07	0.0
31	3,000	20-Dec-07	0.1
	<b>265,000</b>		<b>5.1</b>

Source: Water report for the month of December 2007, Gascoyne Water Cooperative Ltd

### A.2.3 Ord River Irrigation Area

The Ord River Irrigation Area (ORIA) receives its water from Lake Kununurra and it is diverted at two main off-takes: the Packsaddle Pump Station and the M1 Off-take. Water is gravity fed to farms via a series of earth lined open supply channels, using a range of flow regulator structures.

The combined delivery system consists of approximately 159 kilometres of earth lined channels and is controlled by approximately 120 flow regulators. Water is delivered through the supply channels by manual operation of the channel control and check-structures to reach supply points, where water enters individual farm lots. Customers order water the day before it is required and supply points are scheduled to receive water at times that facilitate ease of operation and distribution efficiency.

Ord Irrigation is a private cooperative. It currently has 129 properties connected to the irrigation system. Members of the cooperative are allocated 17 ML/hectare per annum regardless of whether it is used or not. They can sell all of their entitlement on a temporary basis or up to 5 ML/hectare on a permanent basis.

There has only been one trade to date. This involved a user who wanted to extend their area under irrigation. The cooperative sold the additional water at \$100/ML after generating the 'additional' water from improvements in its conveyancing system.

The cooperative is in the process of introducing a higher charge for usage above the allowed allocation limit in order to encourage trading and better management of use. The charge for usage within the allocation is \$2.64/ML, the new charge for water above allocation will be \$10/ML.

There is a possibility of further trade if Stage Two of the Scheme is developed perhaps with the hydro scheme and possibly with new irrigators in WA and the Northern Territory, if it proceeds. At the present time, however, there is no scarcity to create a major impetus for trade.