

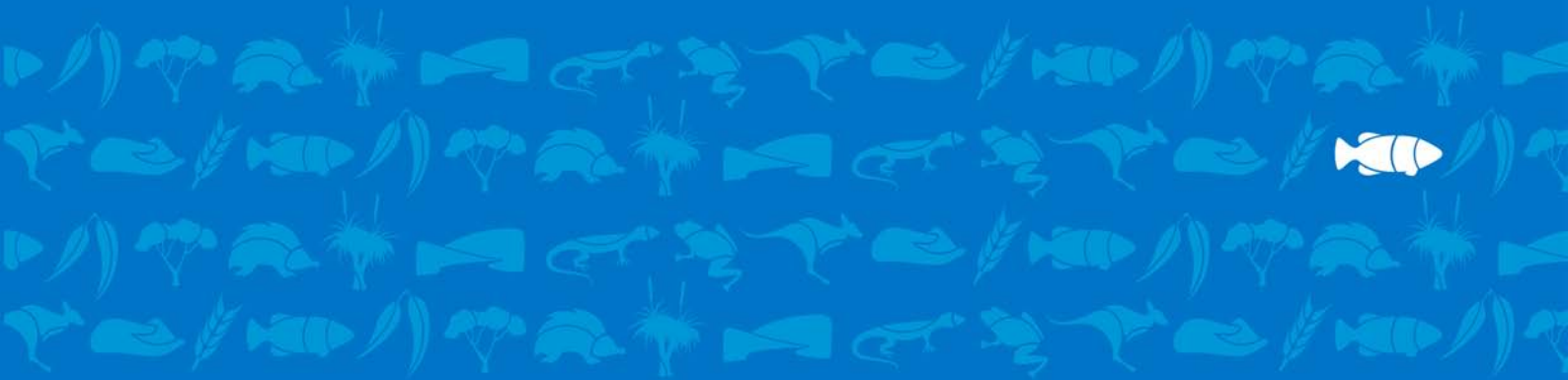


Government of South Australia
South Australian Murray-Darling Basin
Natural Resources Management Board

2009-2010

South Australian Murray-Darling Basin Natural Resources Management Board

MALLEE PRESCRIBED WELLS AREA ANNUAL WATER USE REPORT



MALLEE PRESCRIBED WELLS AREA

ANNUAL WATER USE REPORT

2009/2010

Date: August 2011

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This Annual Water Use Report 2009/2010 provides a summary of Annual Water Use Report forms submitted by licence holders in the Mallee Prescribed Wells Area (MPWA), pursuant to Section 8 of the *Water Allocation Plan for the Mallee Prescribed Wells Area* (2000).

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- Rob and Joy Ziersch, Monitoring contractors for the SA MDB NRM Board who provided an update on the status of water level and salinity monitoring in the region.
- Licence holders and water users in the MPWA who completed the Annual Water Use Report forms in 2009/2010

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INTRODUCTION

This is the 8th consolidated Annual Water Use Report for the Mallee Prescribed Wells Area (Mallee PWA) and has been prepared by the South Australian Murray-Darling Basin Natural Resources Management (SA MDB NRM) Board.

A water licensee holding an allocation for use of the prescribed water resource is obliged as a condition of the licence to complete an Annual Water Use (AWU) Report form **each year**, regardless of the level of usage of the resource. Failure to submit an Annual Water Use Report form constitutes a breach of licence and Section 127 (6) of the *Natural Resources Management Act 2004* provides for the imposition of an Expiation fee (fine) of \$750 in this event.

Water use within the expanded prescribed boundaries in the Hundreds of Bandon, Vincent, Wilson, Hooper, Marmon-Jabuk and Area A (the New Area) is excluded from this report because it is unlicensed as yet and are not required to complete an Annual Water Use Report.

METHOD

This report provides a summary of the water use information provided by licence holders in the Mallee PWA for the water use year from 1st July 2009 to 30th June 2010. It includes water licences for the purposes of Irrigation (136 licences, including 126 for growing crops, 4 schools, 4 sporting clubs and 2 local government recreational areas), Intensive farming (55), Town Water Supply (4 licences for 7 towns), and Industrial purposes (2 vegetable packing sheds)

The number of licences, allocations, water usage and licence purpose may have varied after 30th June 2010 and these changes will be reflected in the following year's Annual Water Use Report.

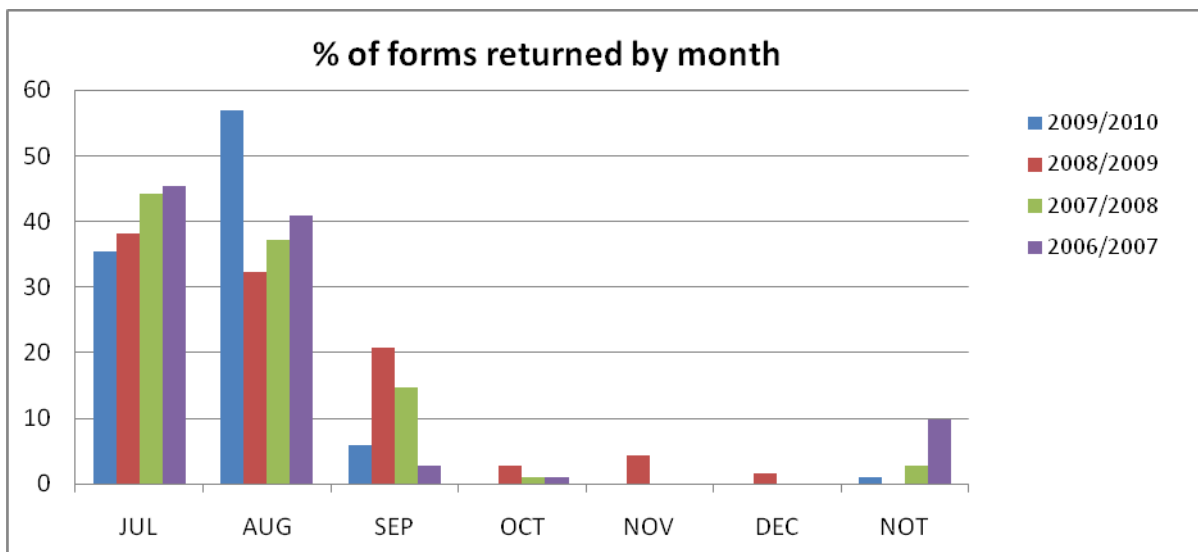


Figure 1: Rate of returns in 2009/2010 compared to the previous three years

There was a 92% return of AWU report forms by the end of August, which is a major improvement on previous years. Only 2 forms remained outstanding at the end of September. The Licences with outstanding AWUR report forms have a history of nil water use and this is again expected for the 2009/2010. The non-returns have not impacted on the overall water use information provided in the following Summary report.

The AWU report has been compiled using the best available water use information provided by Department for Water (DfW) meter readings and a reconciliation of additional meter readings and crop estimates where needed which were provided on the AWU report forms by licence holders. The Author would like to reiterate the importance of correctly completing the AWU report form (even if activity on the licence seems insignificant). A 'completed' form is not only a reporting requirement of the licence, but the more information that licence

holders can provide on the AWU report forms the better quality the Summary report will be. This also contributes to maintaining high quality of monitoring data in the Mallee.

RESULTS

ALLOCATION AND WATER USE

Table 1: Total Water Allocations for the Mallee Prescribed Wells Area.

Hundred/Zone	Alloc 09/10 (ML)	No. of licences	Alloc 08/09 (ML)	No. of licences	Alloc 07/08 (ML)	No. of licences
9A North	3835	5	3835	4	3835	4
10A	9236	44	9236	44	9237	45
11A	6627	15	6627	15	6627	17
ALLEN	2115	14	2115	14	2115	14
ALLENBY	1237	9	1237	9	1165	8
AULD	1902	2	1902	2	1902	3
BEWS	4615	22	4615	22	4910	24
BILLIATT	2233	5	2233	5	2233	5
CHESSON	1283	7	1283	7	1283	7
COTTON	2520	16	2520	16	2591	17
DAY	1494	6	1494	6	1199	6
KEKWICK	1914	6	1914	6	1914	6
KINGSFORD	2832	6	2832	6	2832	6
MCPHERSON	1556	9	1556	9	1555	9
MINDARIE	2324	6	2324	6	2324	6
MOLINEUX	432	6	1404	6	432	6
PARILLA	3944	14	3944	14	3946	15
PRICE	1834	11	1834	11	1834	11
	51,933		52,904		51,935	

Note: Allocations per Hundred vary slightly from Table 3 due to town water supply licences being reported separately in Department for Water (DFW) records.




-  There were no new transfers of allocations in 2009/2010. Five temporary transfers expired on 30th June 2010. All the returns of temporary transfers occurred within the respective Hundred or Border Zones, there was no return of temporary transfer allocations across Hundreds. Therefore there was no change to the total allocations per Hundred or Border Zones.
-  A new licence was created in 9A north which acquired allocation from an existing licence in 9A North.
-  Allocations in Molineux are the same as stated 2007/2008. The allocations indicated in 2008/2009 mistakenly included an allocation that had been surrendered to the Minister and is no longer available.

Table 2: Total Water Use for the Mallee Prescribed Wells Area

Hundred/Zone	09/10 (ML)	% of alloc	08/09 (ML)	% of alloc	07/08 (ML)	% of alloc
9A	1300	34	1923	50	3220	84
10A	10605	115	11505	122	14651	159
11A	4319	65	4338	66	5766	87
ALLEN	944	45	898	43	783	37
ALLENBY	318	26	280	23	594	51
AULD	210	11	0	0	0	0
BEWS	4750	103	5187	105	5924	121
BILLIATT	1662	74	1520	68	1214	54
CHESSON	83	6	229	18	162	13
COTTON	1605	64	2215	93	2677	103
DAY	1605	107	1936	130	1057	88
KEKWICK	80	4	33	2	33	2
KINGSFORD	1225	43	1487	55	1841	65
MCPHERSON	118	8	137	9	122	8
MINDARIE	770	33	2287	98	1231	53
MOLINEUX	0	0	2	1	0	0
PARILLA	7984	202	7926	194	9700	246
PRICE	858	47	909	50	923	50
	38,437		42,812		49,901	

- 💧 Table 2 presents all water use for a licensed purpose. This information has been taken from annual water use reports and verified with meter reading information collected by DFW.
- 💧 The sand mine at Mindarie ceased using water for the mining operation in October 2009. The mine company continued to use smaller requirements of water in processing the stockpile of raw materials, plus the care and maintenance of the processing plant near the town of Mindarie, until February 2010. These events have led to a significant decrease in water use in the Hundred of Mindarie for 2009/2010.
- 💧 The overall decrease in water use from 2008/2009 to 2009/2010 can be attributed to decreases in water use for 9A, 10A, Bews, Cotton, Day, Kingsford, Mindarie. The decrease in water use for these Hundreds and Border zones is generally due to same or less area of crops grown but with less water applied per hectare.
- 💧 There were increases in water use in the Hundreds of Allen, Auld, Billiatt, Kekwick and Parilla, although the increase in water use for these Hundreds is considered relatively minor.

Table 3: Permissible Annual Volume (PAV) in ML per Hundred and Border Zone

Hundred / Zone	Orig PAV (100%)	Min PAV (80%)	Max PAV (150%)	Current licensed alloc.	Licensed alloc. as % base PAV
9A	3840	3840	3840	3835	100%
10A	8519	8519	8519	9236	108%
11A	6862	6862	6862	6627	97%
ALLEN	2590	2072	3885	2115	82%
ALLENBY	1740	1392	2610	1237	71%
AULD	2390	1912	3585	1902	80%
BEWS	3170	2536	4755	4615	146%
BILLIATT	2410	1928	3615	2233	93%
CHESSON	1470	1176	2205	1283	87%
COTTON	3150	2520	4725	2520	80%
DAY	1490	1192	2235	1494	100%
KEKWICK	2420	1936	3630	1914	79%
KINGSFORD	1860	1488	2790	2832	152%
MCPHERSON	1930	1544	2895	1556	81%
MINDARIE	1549	1239	2323	2324	150%
MOLINEUX	2150	1720	3225	432	20%
PARILLA	2440	1952	3660	3944	162%
PRICE	2320	1856	3480	1834	79%
TOWN SUPPLY	500			423	85%
Total PAV (ML)	52,800	55,209	78,365	52,355	100

Notes: Slight variations in allocations per Hundred occur between Table 1 and Table 3 due to town water supply licences being reported separately in DFW allocation.

Table 4: Water Extractions per Category in the Mallee Prescribed Wells Area, 2009/2010






WATER USE	09/10 (ML)	% of Use	% of PAV	08/09 (ML)	% of Use	% of PAV	07/08 (ML)	% of Use	% of PAV
Town Water Supply	267	0.66	0.51	306.7	0.7	0.6	308.7	0.6	0.6
Sports Clubs	82	0.20	0.16	82.7	0.2	0.1	106.1	0.2	0.2
Local Government	165	0.41	0.32	178.1	0.4	0.3	216.3	0.4	0.4
Schools	112	0.27	0.22	106	0.2	0.2	111.6	0.2	0.2
Stock and Domestic	2,250	5.52	4.33	2,250	5.0	4.3	2,250	4.3	4.3
Irrigated Crops	37,119	91.23	71.5	40,118	89.1	75.8	48,097	92.2	91.1
Intensive farming	203	0.50	0.39	188.6	0.4	0.4	214.8	0.4	0.4
Industrial	489	1.20	0.94	1,799.5	4.0	3.4	846.7	1.6	1.6
TOTAL USE ML	40,687	100%	78.4	45,030	100%	85.1%	52,151	100%	98.8%
PAV	51,933			52,907			52,781		

IRRIGATION WATER USE

Table 5: Total Area and Volume Applied (ML) per Crop Type

No. of crops	Crop Type	Area (Ha)	Volume (ML)	Avg ML/Ha	Max ML/Ha	Min ML/Ha
19	Cereal	620	672	1.16	2.63	0.12
1	Broombush	6	22	3.63	3.63	3.63
7	Carrots	246	2415	9.74	13.11	7.62
1	Date palms	0.5	0.4	0.80	0.80	0.80
1	Flowers	1.5	8.7	7.31	7.31	7.31
11	Lucerne Hay	152	1238	7.42	13.33	2.87
6	Lucerne Pasture	36	132	4.02	7.15	0.52
3	Mixed Hay & Pasture	83	88	1.23	2.10	0.20
1	Native plants	0.25	0.31	1.23	1.23	1.23
8	Olives	486	1900	3.31	6.26	0.70
11	Onions	498	4192	8.50	11.18	4.56
3	Pistachios	225	754	3.36	4.00	2.95
1	Pomegranates	130	210	1.62	1.62	1.62
102	Potatoes Commercial	3940	24951	6.65	22.29	1.93
4	Potatoes Seed	96	345	3.7	4.07	2.54
2	Turf Commercial	24	190	7.93	8.80	7.06
181	Total	6,545	37,119			

Note: 1 Ha = 2.47 acres. 1 ML = 1,000 KL.

-  Table 5 refers to the water used by 'Taking Irrigation' licences used on commercial irrigated crops. This table does not include irrigated water use for sporting grounds, Local Council recreational areas and school grounds or agricultural plots in schools (refer Table 4).
-  Overall there were 74 hectares less crop area irrigated and 3,100 ML less water used for irrigated crops in 2009/2010 compared to 2008/2009.
-  There were fewer hectares of cereal, lucerne hay, lucerne pasture, mixed hay / pasture and olives. As the 2009/2010 was a wetter rainfall year than 2008/2009 it is understandable that less area of irrigated fodder was grown, as there were good pastures available across the agricultural land. The olive area irrigated significantly decreased (less 460 ha) as there was a change of ownership of land and water licence, whereby olives were not irrigated in 2009/2010.
-  There was an increase in crop areas grown for onion and potatoes, with a decrease in the average water use per hectare compared to the 2008/2009 year.
-  There was an expansion of the date palm and pomegranate plantations. These crops are young and their water use is low, although water use is expected to increase over the next 8 – 15 years.

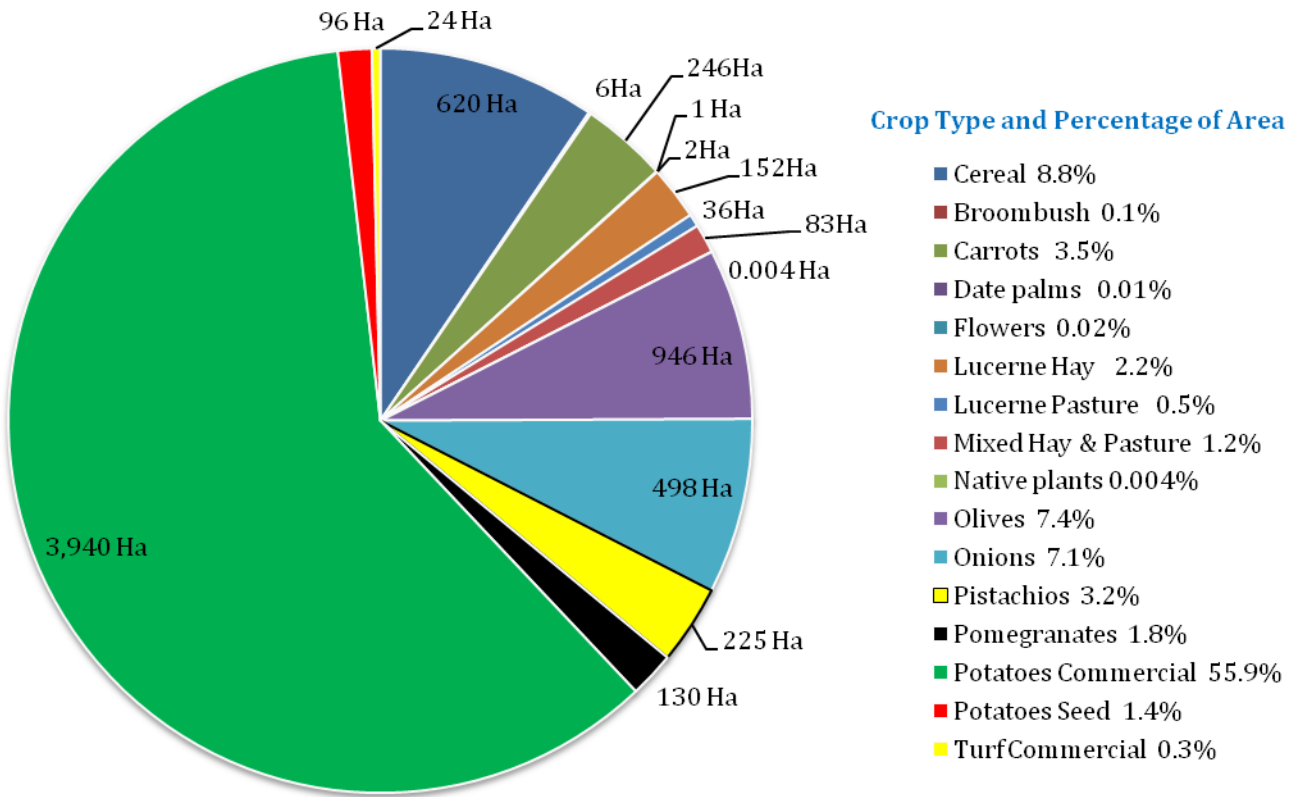


Figure 2: Total Irrigated Volume in 2009/2010

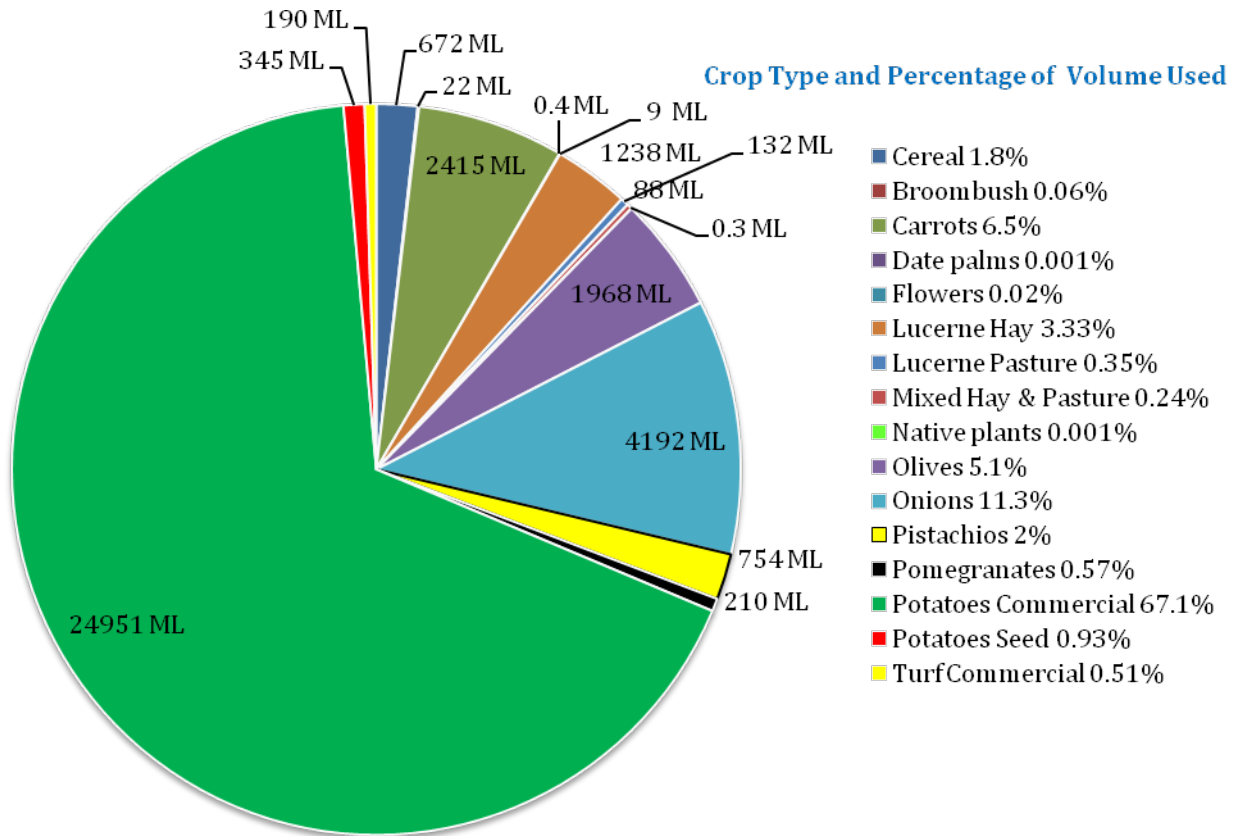





Figure 3: Total Crop Areas Irrigated 2009/2010


Table 6: Types of Irrigation Systems Used for Irrigated Crops

No. of Growers 2009/2010	Irrigation System	Crops Grown	2008/2009	2007/2008	2006/2007	2005/2006
47	Centre Pivot	Barley, Carrots, other Cereals, Lucerne Hay, Mixed Hay and Pasture, Onions, Potatoes Commercial, Potatoes Seed, Commercial Turf	46	48	42	40
10	Drip	Broombush, Native plants, Olives, Pistachios, Pomegranates, Flowers	9	9	8	6
1	Handline	Lucerne Hay	2	1	2	0
8	Sprinklers	Cereal, Lucerne Hay, Lucerne Pasture, Olives, Potatoes Commercial, Commercial Turf	7	8	8	6
1	Micro Sprinklers	Olives	1	1	2	2
2	Travelling Irrigator	Lucerne Hay, Lucerne Pasture	2	2	1	3
1	Bubblers	Date Palms	1	1	0	0
70			68	70	63	57

- 

There has been a steady increase in the number of centre pivots for annual crops over the last few years. This correlates to increases in potato and cereal crops grown with centre pivots during the same period.
- 

The increase in potato crops has been expected with some crops usually grown from the River Murray area being grown in the Mallee area during strict water restrictions placed on River Murray water licences.
- 

Cereal crops provide a good follow on crop after potato crops have been harvested, providing good ground cover during dry periods. This may have been a reason for the increase in cereal crops grown under centre pivot irrigation systems.
- 

Several new permanent crop types (e.g. date palms and pomegranates) have started in Mallee in the last three years, most of them becoming established with a drip irrigation system.

INTENSIVE FARMING WATER USE

Table 7: Intensive Farming water use per Stock type, 2009/2010.

No. of Farms	Stock Type	No. of Stock	Use in KL	% Use of Total
6	Cattle	675	19,716	6.84%
10	Pigs	58,627	261,124	90.63%
1	rabbits	150	164	0.06%
4	Sheep	1,974	5,129	1.78%
1	Yabbies/Marron	n/a	2,000	0.69%
21	Total		288,133	

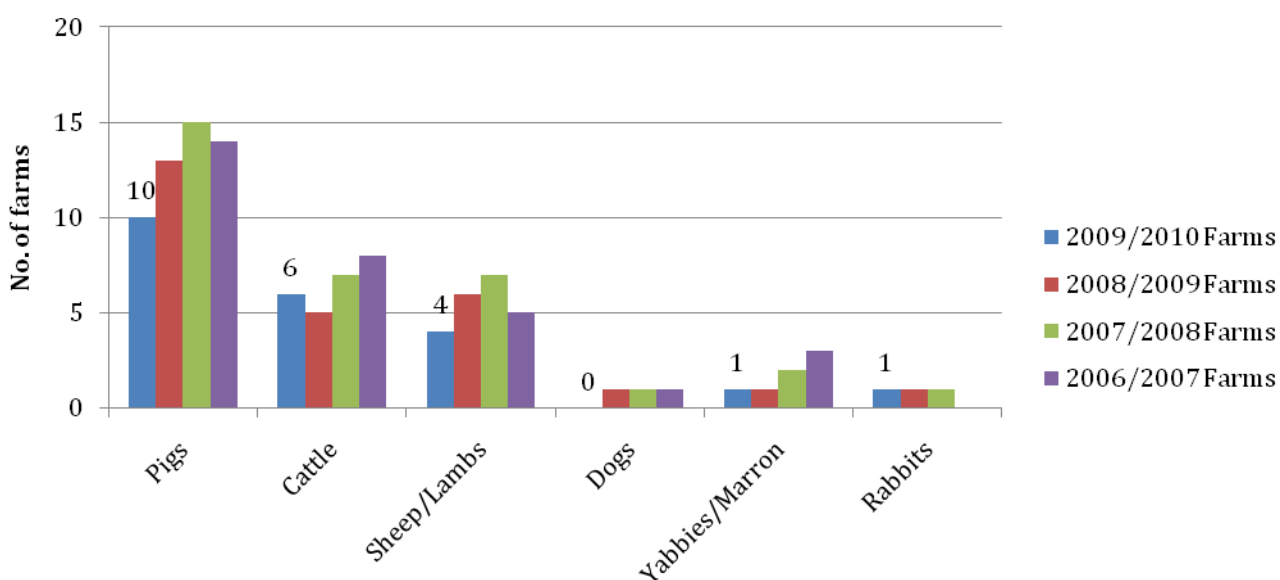


Figure 4: Number of Intensive Farms in 2009/2010 compared to previous years

- 💧 Piggeries continue to be the dominant type of intensive farming operation in the Mallee, although the number of piggeries in the area has declined over the previous three years. The number of Cattle and Sheep feedlots have also declined over previous years.
- 💧 There was no report submitted to indicate the dog breeding facility was in operation during 2009/2010.
- 💧 The rabbit and yabby/marron farm numbers remained stable.
- 💧 There were 34 Intensive farming licences that were inactive during 2009/2010. This number is similar to previous years. Licences which indicate inactivity as an intensive farm, are likely to be keeping stock, although as free range in broadacre paddocks.

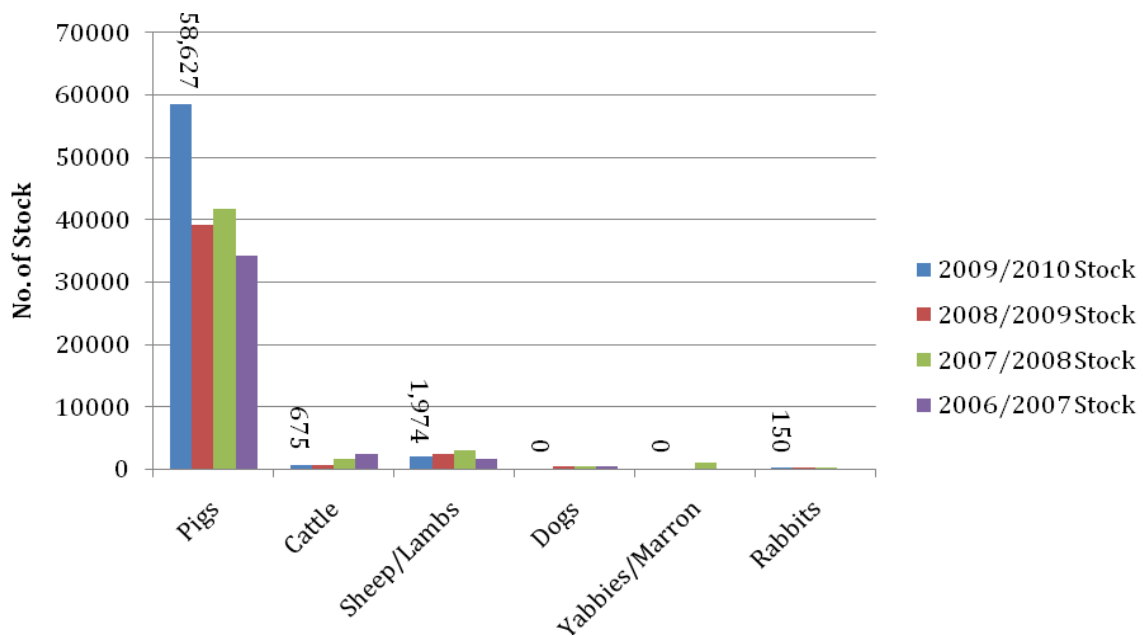


Figure 5: Number of Stock kept in Intensive Farms in 2009/2010 compared to previous years

- Although the number of Piggeries decreased in 2009/2010, the number of stock kept in piggeries increased. This indicates some expansion within remaining businesses.
- Although there is a farm present for yabbies/marron, no stock numbers are available.
- Cattle and Sheep stock numbers remain fairly stable, over previous years, although with some decline in 2009/2010.

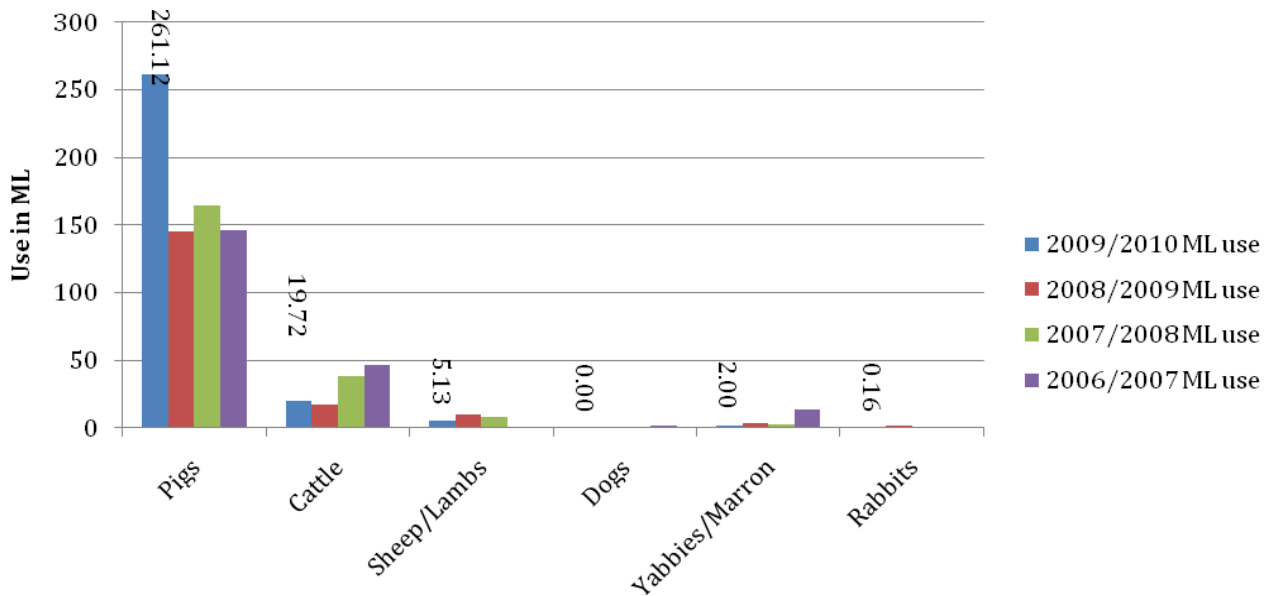


Figure 6: Volume of water used per Intensive farm type in 2009/2010 compare to previous years.







- The total volume of water used for pigs increased in 2009/2010. This is inline with an increase in the number of pigs kept. Further calculations indicate the actual volume used per head decreased for pigs in 2009/2010 compared to 2008/2009. There was also a decrease in volume used per head for cattle.
- Usage for rabbits was too small to register on the graph, but it has been estimated to be approximately 3 Liters per day for drinking and cleaning of facilities.

PROBLEM AREAS

Table 8: Reported cases of Problem Areas.

Water Use Year	Perched Water Table	Water Logging	Soil Salinity	Poor Water Quality	Iron Bacteria	Drawdown
2009/2010	1	5	5	6	34	10
2008/2009	0	4	4	8	27	6
2007/2008	1	5	2	8	31	16
2006/2007	1	3	3	5	23	11
No. of Licences with continued* problem.	1	4	3	5	25	4


*Continued problem means one or more years that the problem has occurred in either consecutive years or occasional years (on and off).


-  **Perched water table** – only one Licence holder in the northern Mallee had an issue with a perched water table, but also commented that the problem is not getting worse and hadn't been indicated as a problem on the annual water use report for this licence holder since 2004/2005.
-  **Water logging** – is a yearly problem for one licence holder. Water applied is minimal for the crop type and it is presumed soil type and drainage issues are the cause of the water logging. In a couple cases water logging has been occurring in areas where winter crops are grown and more water is applied than the net irrigation requirements of the crop.
-  **Soil salinity** – reasons for soil salinity issues are varied amongst the cases presented. Reported cases of soil salinity are generally occurring in the Northern Mallee area. One case is linked to a water logging problem that is occurring at the same sight. One property is not applying water through irrigation, only rainfall is received and there has been dry soaks reported in two paddocks for several consecutive years. Several soil salinity cases are on irrigated properties. There may be links to water being applied to patches of heavy soil, where drainage is not very good and salts are being brought to the surface from clay underlying top soil and an accumulation of salts from the applied irrigation water that is not able to flush through the heavier soil layers.
-  **Water quality** – Details have not been provided by licence holders to establish if water quality issues relate to salinity increase or perhaps murky water from iron bacteria or carbonates coming up with the water. Two cases of water quality decline have been indicated in area where there should be low salinity, good quality water, indicating there maybe issues with the individual bore, such as leakage in the casing from the above lying aquifer which has much high salt content.
-  **Iron Bacteria** – There was a higher number of cases reported for iron bacteria than previous years. Many are repeated cases from previous years. Most of these cases report the situation is ongoing, managable and being treated.
-  **Drawdown** – number of cases has risen in 2009/2010 after a drop in reported cases in 2008/2009, but still the number of cases is not considered alarming given the reported cases are within the known intensive irrigation areas such as around Pinnaroo and other parts of 10A border zone, Parilla, Hd Bews (Lameroo area). The majority of the irrigation in the Mallee occur on a moving/rotational basis whereby different irrigation bores may be used from year to year, which changes the location of reported drawdown cases. In some reported drawdown cases the bore affected may have supply issues not related to drawdown caused by irrigation, such as corrosion or casing blockage and silt/sand build up in the bottom of the bore. Regular monitoring of water levels in and around irrigation areas constantly occurs by SA MDB NRM Board contractors (Rob and Joy Ziersch) and Department for Water staff, which provides useful information into where drawdowns are being caused by irrigation.


SOIL MOISTURE MONITORING EQUIPMENT

Table 9: Number of Irrigators using Soil Moisture Monitoring

Soil Moisture Monitoring Equipment	2009/2010 No of Irrigators	Compared to 2008/2009 results
Tensiometer	17	10
Capacitance	7	8
Gypsum Blocks	2	1
Neutron Probe	4	1
"Dig hole n check"	49	35
Total	79	55

-  Table 9 figures suggest the number of irrigators using soil moisture monitoring equipment has increased, although a comment was made in the 2008/2009 annual water use report, that the 2008/2009 results may have been due to irrigators not completing the section of the form.

-  It is positive to see Irrigators still using soil moisture monitoring technology alongside the practical method of digging the soil and checking the health of the crop. The SA MDB NRM Board encourages further uptake of monitoring and recording technology to improve the understanding of crop water use in the Mallee by Irrigators and potentially provide water use efficiency data to the region.

-  The SA MDB NRM Board still has some equipment available for trialling and use by Mallee irrigators. Irrigators interested in trialling the equipment on their property should contact the Board's Berri office on 08 8580 1800.




FUTURE WATER USE PLANS

Table 10: Future Plans for Irrigated Area and Water Use

No. reports	Year	Area (in Ha) [#]	ML [#]	Usage may reach (ML)
27	2010/2011	1635.00	2752.53	39871.53
18	2011/2012	635.00	1947.98	39066.98
11	2012/2013	338.50	1460.48	38579.48
8	2013/2014	294.00	874.00	37993.00
5	2014/2015	240.00	520.00	37639.00

Increasing area and/or water use.

Next year plans are additional to current figures. Subsequent plans are additional to the previous year, so are cumulative over time




-  The plans indicated are for actual area of crops, not Hectare Irrigation Equivalent (HaIE).
-  Crops for which increases in area are expected include Olives, Date Palms, Garlic, Lucerne (hay and pasture), cereal, potatoes (commercial and seed) and commercial turf.
-  Crops for which increases in volume only (ie. increased ML/Ha application rates) are expected include olives and date palms.

There is no proven commitment to these plans; hence these figures are only used as 'rough' estimates. Many of the plans for increased production are dependent upon constraining factors such as seasonal factors, economics, management area and available water.

Table 11: Intensive Farming Plans for Future Stock Numbers and Water Use

No. reports	Farm type	Next year Volume (KL) [*]	Next year Stock numbers [*]	increase stock no's 2011/2012	increase stock no's 2012/2013
4	Pigs	5000	More	1000	3460
1	Sheep	more	900	900	-
1	Unspecified	500	500		
6	Total	5,000+	1,400+		

Next year plans are additional to current figures but show the net change after any decreases have been taken into account.

-  Six licence holders reported plans to increase stock numbers and/or water use in the coming years. These figures are provided as a general indication only. Not enough details were provided to give a good indication of the total additional water use the increase in stock numbers is expected to require.
-  In 2009/2010 there were 58,627 pigs kept in intensive farms. The future plans for additional stock numbers for piggeries would mean an increase of 8.5%. The number of sheep kept in intensive farms in 2009/2010 was 1,974. The future plans are for additional 900 sheep per year for the next two years, leading to an additional 45% - 90% of intensively kept sheep.
-  Future stock numbers and water requirements were not provided beyond 2012/2013.

WATER RESOURCES MANAGEMENT IN THE MALLEE

Allocations

The 2009/2010 total allocations = 51,933 ML, which remained within the 52,800 ML Permissible Annual Volume for the Mallee Prescribed Wells Area. One new licence was issued in Border Zone 9A. The new licence obtained the allocation by transferring from an existing licence within the same border zone (9A).

The allocations for Molineux for 2008/2009 was reported as 1,404ML (see Table 1), the 2009/2010 total allocations for Molineux reverted back to 432 ML as it was in 2007/2008, after it was identified there was an incorrect inclusion of an allocation in 2008/2009.

Usage

The volume of water used in the Mallee PWA in the 2009/2010 water use year was 40,687 ML (see Table 4), a decrease of 4,343 ML from 2008/2009. Licensed use accounts for 38,437 ML (see Table 2). Irrigation water use was 3,000 ML less in 2009/2010 than 2008/2009, due to less irrigated crop area grown and also in some cases less ML/ha of water used per irrigated crop area. Town water supply use also decreased in 2009/2010.

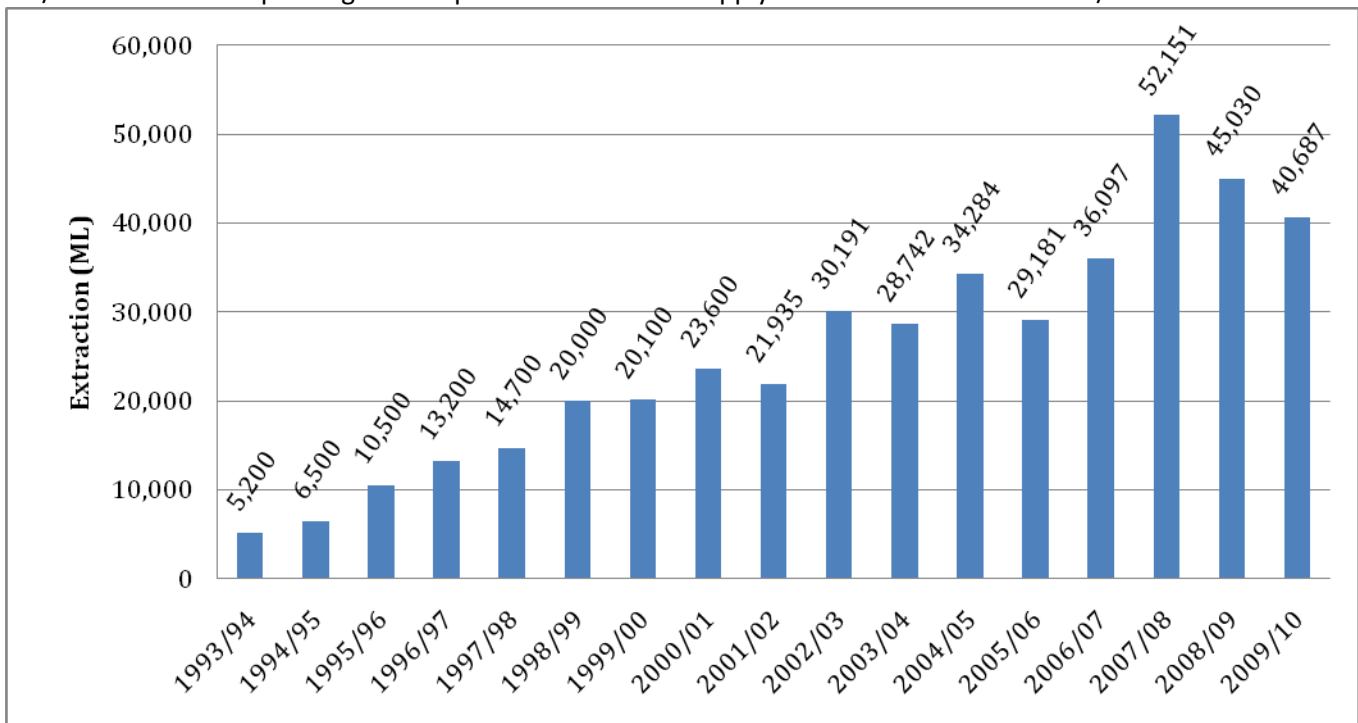


Figure 7: Extraction history in the Mallee Prescribed Wells Area

Water Flow Meters

The Department for Water (DfW) undertook routine meter readings throughout the 2009/2010 Water Use Year (1 July 2009 to 30 June 2010). Meter readings were taken at several stages throughout the water use year including the start reading in June-July 2009, then late November 2009 – early January 2010, late February 2010 – mid March 2010 and end meter reads June-July 2010. A total of 247 meters were read from 129 licensees in the Mallee Prescribed Wells Area.

Licence holders are encouraged to read their own meters as a measure of crop and stock water use and to observe if the meter is operating correctly. If the meter needs to be removed for repairs or for relocation, the DfW must be notified in advance to ensure a meter reading can be taken before the meter is removed. DfW also require notification of the new location so that a new seal can be placed on the meter and readings taken in the future. The contact phone number for Mallee Licence and permits is 8595 2053.

Development of the draft Water Allocation Plan for the Mallee Prescribed Wells Area

During 2009/2010 the draft Water Allocation Plan (draft Plan) for the Mallee Prescribed Wells Area was fine tuned by the SA MDB NRM Board, with the Mallee Water Resources Committee, in consultation with Department for Water staff. The draft Plan also went to Crown Solicitors for legal opinion on ability to implement policies as they were stated in the draft Plan.

On 30th June 2010 the Border Groundwater Agreement Review Committee announced through a public gazettal notice that it amended the Border Groundwater Agreement's Permissible Annual Volumes (PAV's) for the Designated area. The Designated area includes Border Zones 11A south, 10A and 9A north within the Mallee Prescribed Wells Area. The *Natural Resources Management Act 2004* is subject to the Border Groundwater Agreement as amended from time to time (s.4(2)(b), NRM Act), therefore the draft Plan is required to be consistent with the Border Groundwater Agreement. As such the PAV and Annual allowable volumes within the draft Plan are within the limits and consistent with the Border Groundwater Agreement.

WAP development in 2010/2011

Minister Caica (Minister for Environment and Conservation) approved the release of the draft Plan for consultation with the public in October 2010. The public consultation period was open from the 21st October until 14th January 2011. This allowed the draft Plan to be distributed and the policies to be discussed with the general public. The SA MDB NRM Board provided many opportunities for the key stakeholders to gain an understanding of the draft Plan and to make comment through providing fact sheets, news articles and advertising in the media, holding public meetings, information sessions and encouraging people to call and meet with staff to discuss the draft Plan. Written submissions were provided by people with suggested changes to the draft Plan.

A total of 25 submissions were received on the draft Plan with comments ranging from general support to concern regarding final volumetric allocations to irrigation licences.

All submissions and minutes from public meetings have been provided to Minister Caica, along with the proposed final Water Allocation Plan, which incorporated any suggested changes to the draft Plan that were support by the SA MDB NRM Board. At the time this report was printed the SA MDB NRM Board was waiting to hear Minister Caica's decision to support and adopt the recommended final Plan.

Automatic Weather Stations

The SA MDB NRM Board continues to maintain an automatic weather monitoring network. It is accessible from the website: <http://www.samdbnrm.sa.gov.au>. Look for 'NRM Weather' under Quick Links. Refer to APPENDIX 2: MAP OF MONITORING SITES – MALLEE PRESCRIBED WELLS AREA for the location of the Mallee Prescribed Wells Area automatic weather station sites.

To access latest weather reading for a particular weather station, click on the relevant site from the map. If you choose a weather station from the list to the left hand side of screen you can view the daily summary for that site or choose to view a summary, monthly or yearly data for that particular weather station site. You can also download data within a chosen time frame.

Figure 8 - Figure 11 on the following pages show comparisons of rainfall and evapotranspiration (ET_o) using some of this data, recorded by Automatic Weather Stations (AWS) at Wanbi, Wilkawatt, Peebinga and Pinnaroo.

All four weather stations sites recorded above average rainfall for the year (Wanbi = 335 mm, Wilkawatt = 461 mm, Peebinga, = 317 mm, Pinnaroo = 395 mm). The rainfall was 55% – 70% higher than the recorded average. The rainfall amount and pattern in which it fell in the 2009/2010 water use year was favourable for many crops, indicated by the reduced mega litre per hectare required by many of the major crops and contributing to the 3,000 ML decrease in water use for irrigated crops in 2009/2010 compared to 2008/2009.

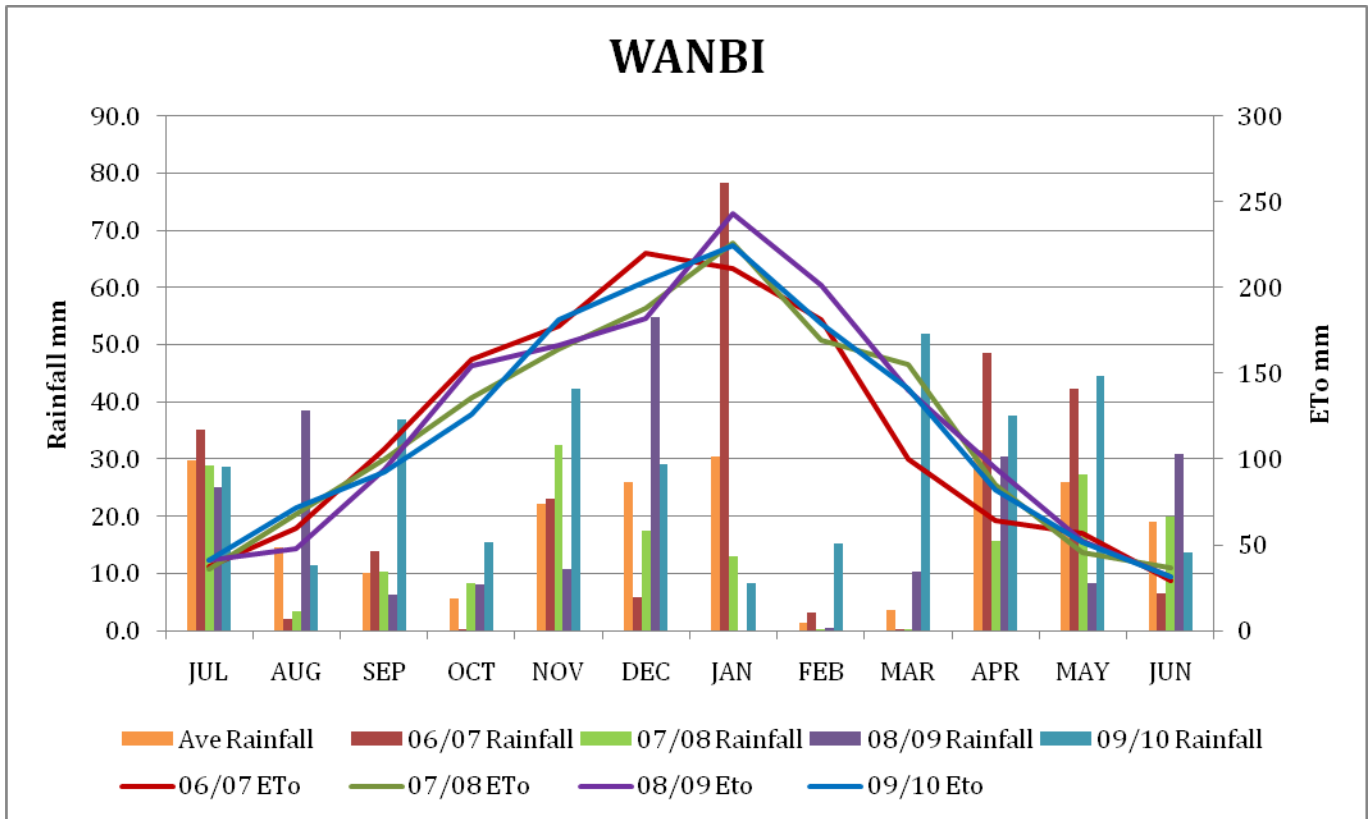


Figure 8: Comparison of rainfall and evapotranspiration recorded at Wanbi

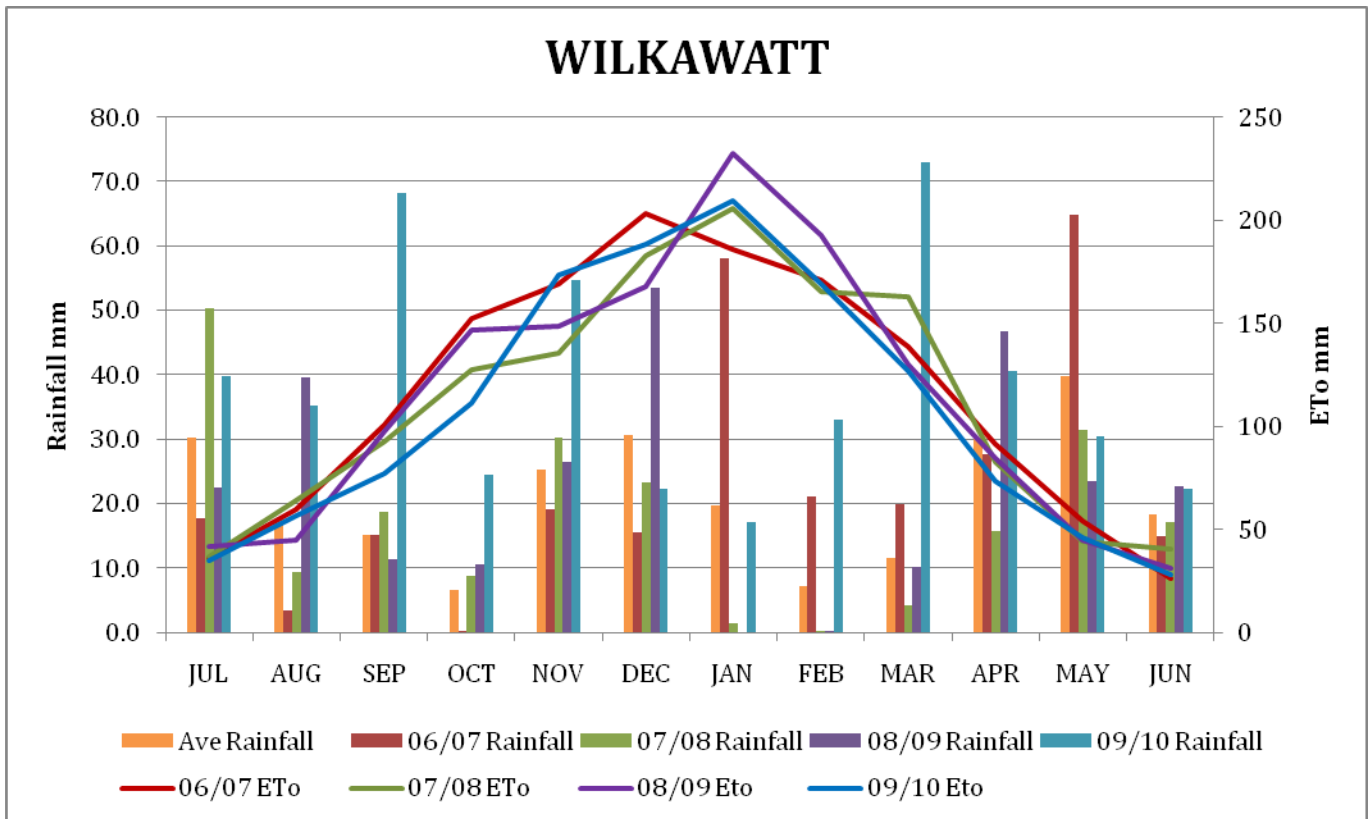


Figure 9: Comparison of rainfall and evapotranspiration recorded at Wilkawatt

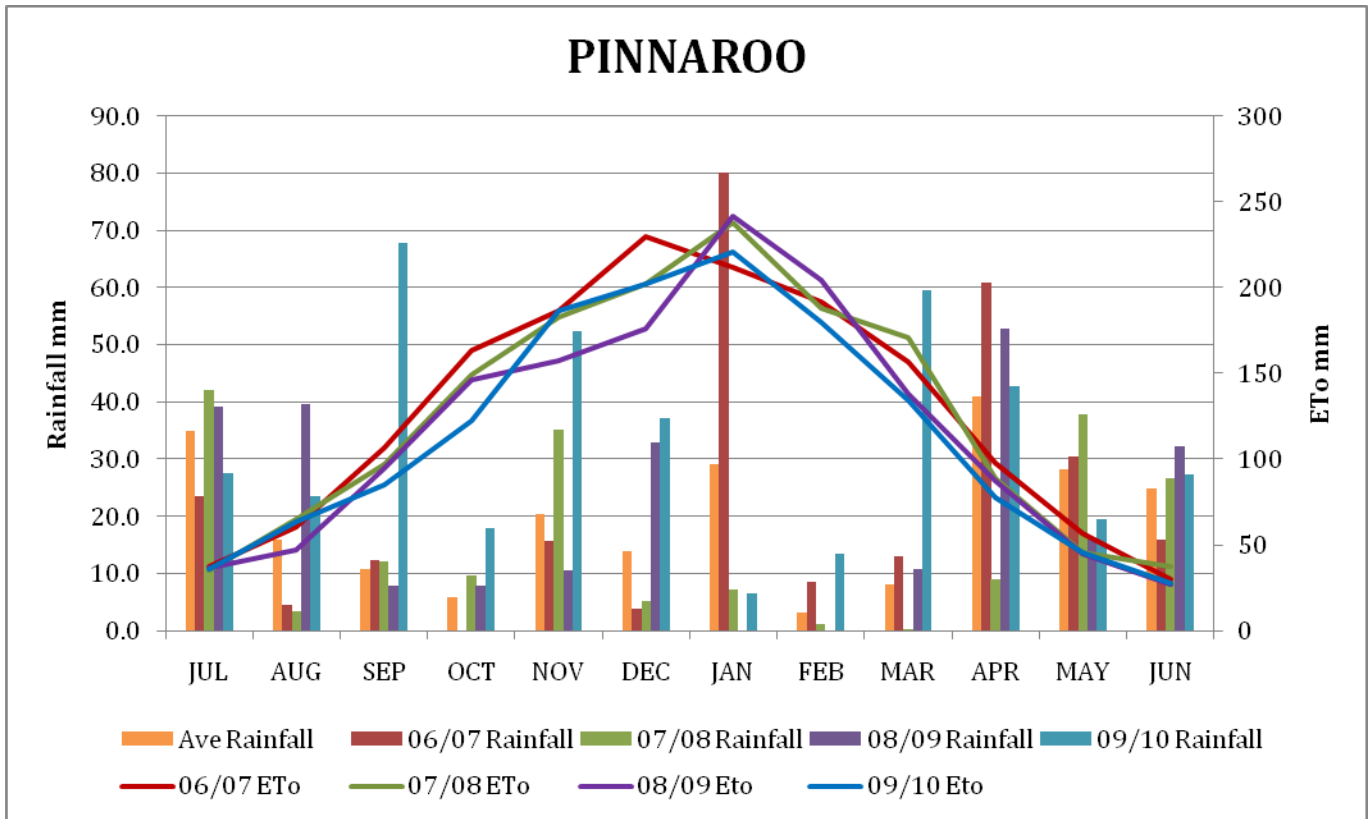


Figure 10: Comparison of rainfall and evapotranspiration recorded at Pinnaroo

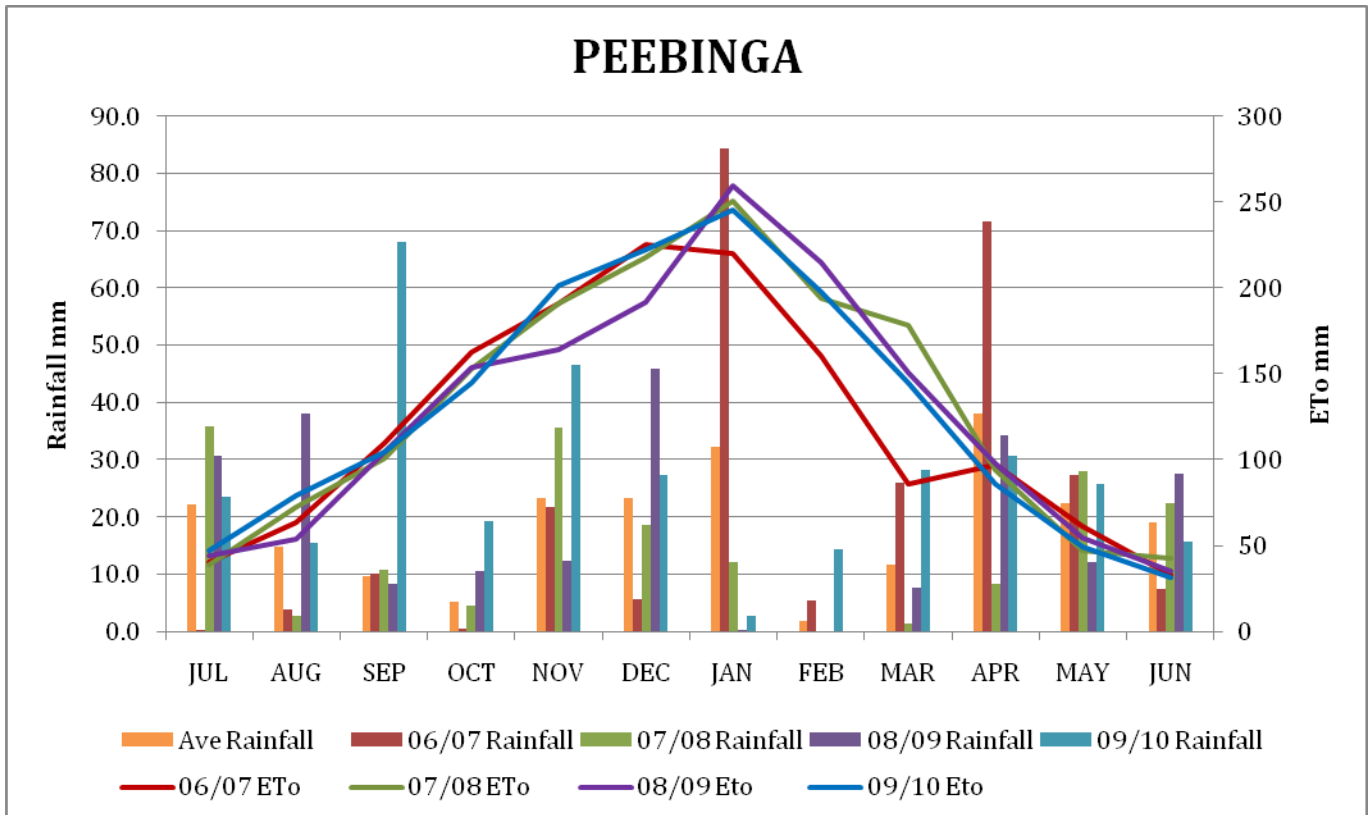


Figure 11: Comparison of rainfall and evapotranspiration recorded at Peebinga

Groundwater Monitoring

Drawdown

An extensive network of observation wells of approximately 60 bores monitors the 3 aquifers in the Mallee Prescribed Wells Area. Most wells are monitoring the Murray Group Limestone aquifer, which is widely developed for irrigation.

Graph 12 below shows some typical groundwater level hydrographs from across the Mallee PWA. KKW1 is at Paruna where there is no irrigation, hence it does not show any drawdown impacts. The general trend at three sites in irrigation areas (Refer APPENDIX 2: MAP OF MONITORING SITES – MALLEE PRESCRIBED WELLS AREA, PEB24 in Zone 10A, PEB 25 in Zone 11A, and PLL 14 in Hd Parilla) was stable, indicating a state of equilibrium. However in 2007, increasing demand as a result of greatly reduced allocations in the Riverland, has led to changing pumping regimes and increased drawdowns in Zones 10A and 11A. The drawdowns appear to have stabilised in Zone 11A, but decreased significantly in Zone 10A during the 2009/2010 irrigation season.

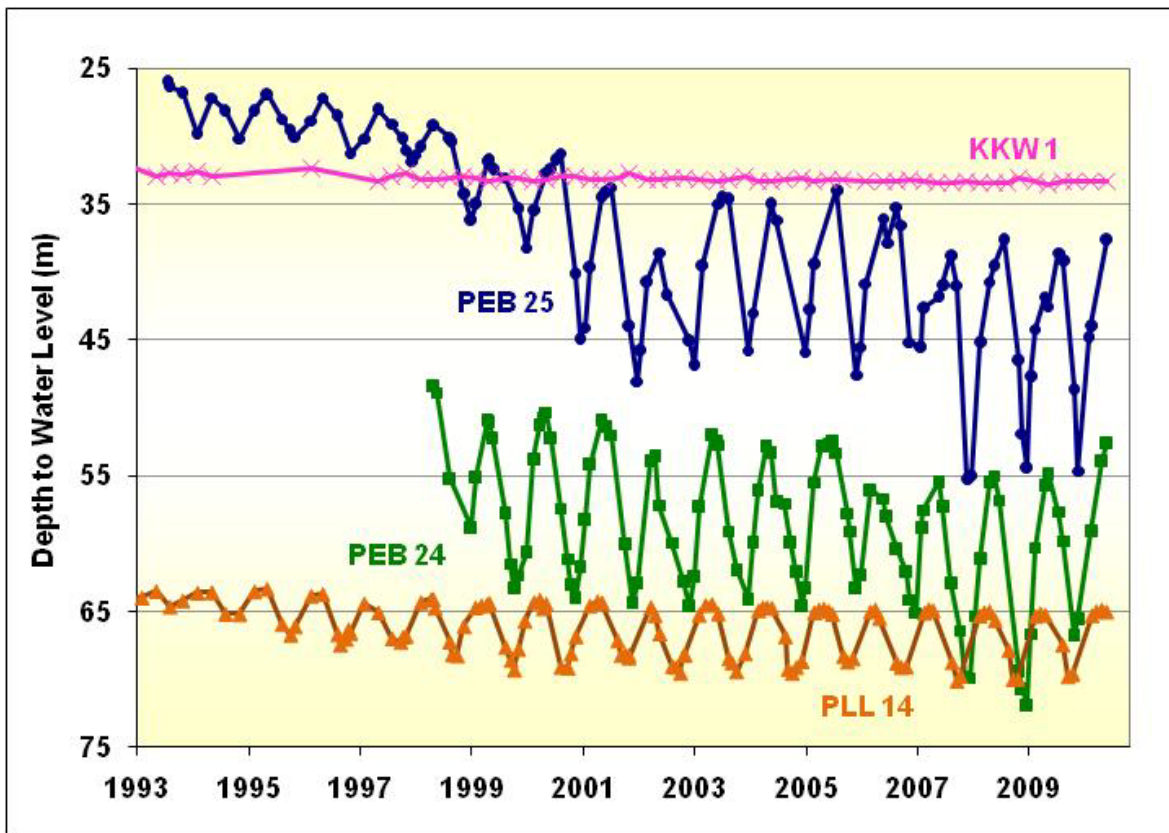


Figure 12: Monitored drawdowns in the Mallee Prescribed Wells Area

Groundwater Monitoring

Salinity

The salinity monitoring has shown little change over the years in the confined portion of the aquifer where most extractions are occurring, as shown by which is not surprising given the slow movement of groundwater (about 1m/yr). The network is continually being extended to include more sites and monitoring of some areas is occurring more frequently.

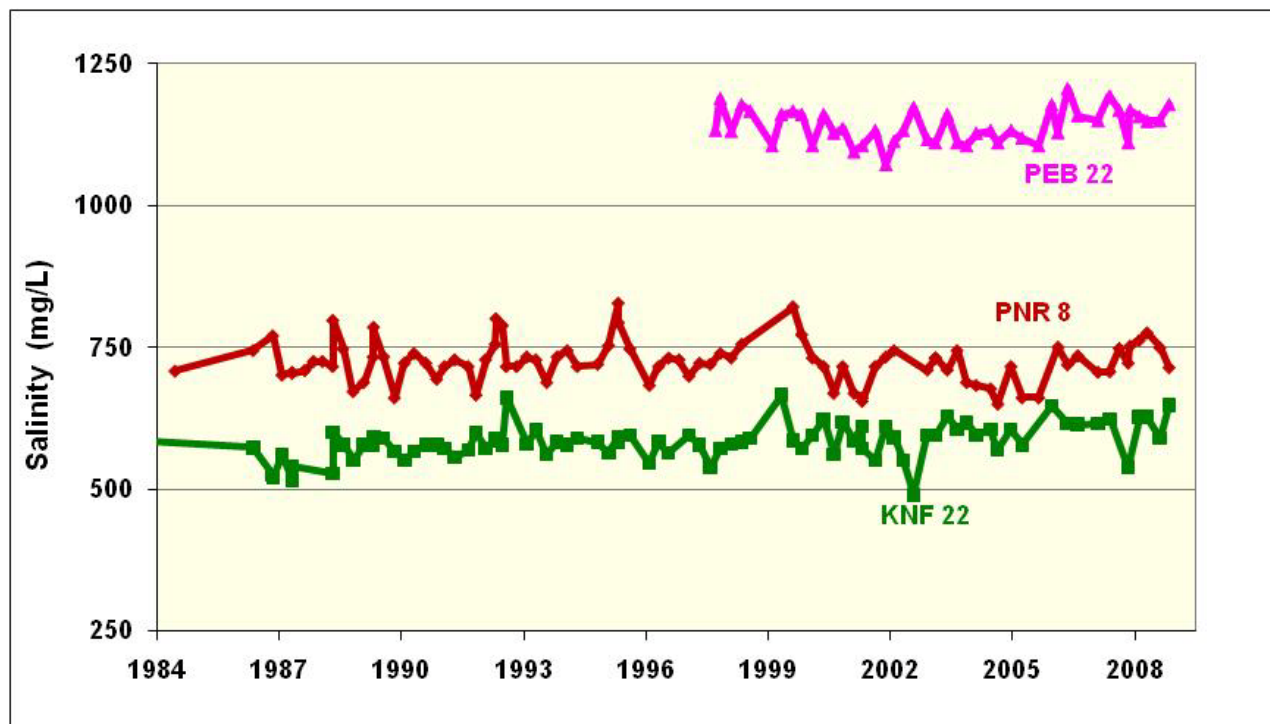


Figure 13: Monitored salinity in the Mallee Prescribed Wells Area

Monitoring data for all observation wells can be accessed online through OBSWELL by using the following link and entering "Mallee" in the network name box. <https://obswell.pir.sa.gov.au>

APPENDIX 1: CROP SUMMARY FOR EACH HUNDRED OR BORDER ZONE

The following information is provided for commercial crops only and excludes water use and hectares irrigated on recreational turf, schools and sporting grounds.

ZONE 9A	Area (Ha)	Volume (ML)	ML/Ha
Potatoes	225	1217.4	5.4
Potatoes seed	30	76.2	2.5
Mixed hay / pasture	30	5.9	0.2
Total Irrigation	285	1299.5	

ZONE 10A	Area (Ha)	Volume (ML)	ML/Ha
Carrots	28	367.0	13.11
Cereal	221	331.0	1.50
Flowers	1.5	8.7	5.80
Lucerne pasture	16.5	33.6	2.03
native plants	0.25	0.3	1.23
Olives	12	15.1	1.26
Onions	52	373.3	7.18
Potatoes	1501	9030.8	6.02
Turf commercial	24	190.4	7.93
Total Irrigation	1856.3	10350.3	

ZONE 11A	Area (Ha)	Volume (ML)	ML/Ha
Carrots	84	689.8	8.21
Cereal	4	0.5	0.12
Olives	143	619.2	4.33
Onions	30	271.0	9.03
Pistachios	225	754.0	3.35
Potatoes	366	1982.2	5.42
Total Irrigation	852	4316.7	

ALLEN	Area (Ha)	Volume (ML)	ML/Ha
Cereal	62	63.2	1.02
Lucerne hay	91.6	868.5	9.48
Lucerne pasture	1	4.9	4.93
Total Irrigation	154.6	936.7	

ALLENBY	Area (Ha)	Volume (ML)	ML/Ha
Lucerne pasture	6	42.9	7.15
Potatoes seed	66	269.0	4.08
Total Irrigation	72	311.8	

AULD	Area (Ha)	Volume (ML)	ML/Ha
Pomegranates	130	210.45	1.62
Total Irrigation	210.45	210.45	

BEWS	Area (Ha)	Volume (ML)	ML/Ha
Potatoes	644	4522	7.02
Total Irrigation	644	4522	

BILLIATT	Area (Ha)	Volume (ML)	ML/Ha
Lucerne hay	1.2	8.05	6.71
Potatoes	191.5	1653.58	8.63
Total Irrigation	192.7	1661.63	

CHESSON	Area (Ha)	Volume (ML)	ML/Ha
Broombush	6	21.75	3.63
Cereal	17	2.00	0.12
Date Palms	0.5	0.4	0.80
Lucerne hay	2	24	12.00
Total Irrigation	25.5	48.15	

COTTON	Area (Ha)	Volume (ML)	ML/Ha
Cereal	160	103.44	0.65
Lucerne pasture	3.5	21.56	6.16
Olives	8	31.56	3.95
Potatoes	241.8	1297.54	5.37
Total Irrigation	413.3	1454.10	

DAY	Area (Ha)	Volume (ML)	ML/Ha
Lucerne hay	26	85.54	3.29
Onions	120	760.48	6.34
Potatoes	124	752.45	6.07
Total Irrigation	270	1598.47	

KEKWICK	Area (Ha)	Volume (ML)	ML/Ha
Cereal	40	42	1.05
Total Irrigation	40	42	

KINGSFORD	Area (Ha)	Volume (ML)	ML/Ha
Olives	320	1225.4	3.83
Total Irrigation	320	1225.4	

McPHERSON	Area (Ha)	Volume (ML)	ML/Ha
Lucerne hay	13.6	67.37	4.95
Lucerne pasture	8.8	28.90	3.28
Total Irrigation	22.4	96.26	

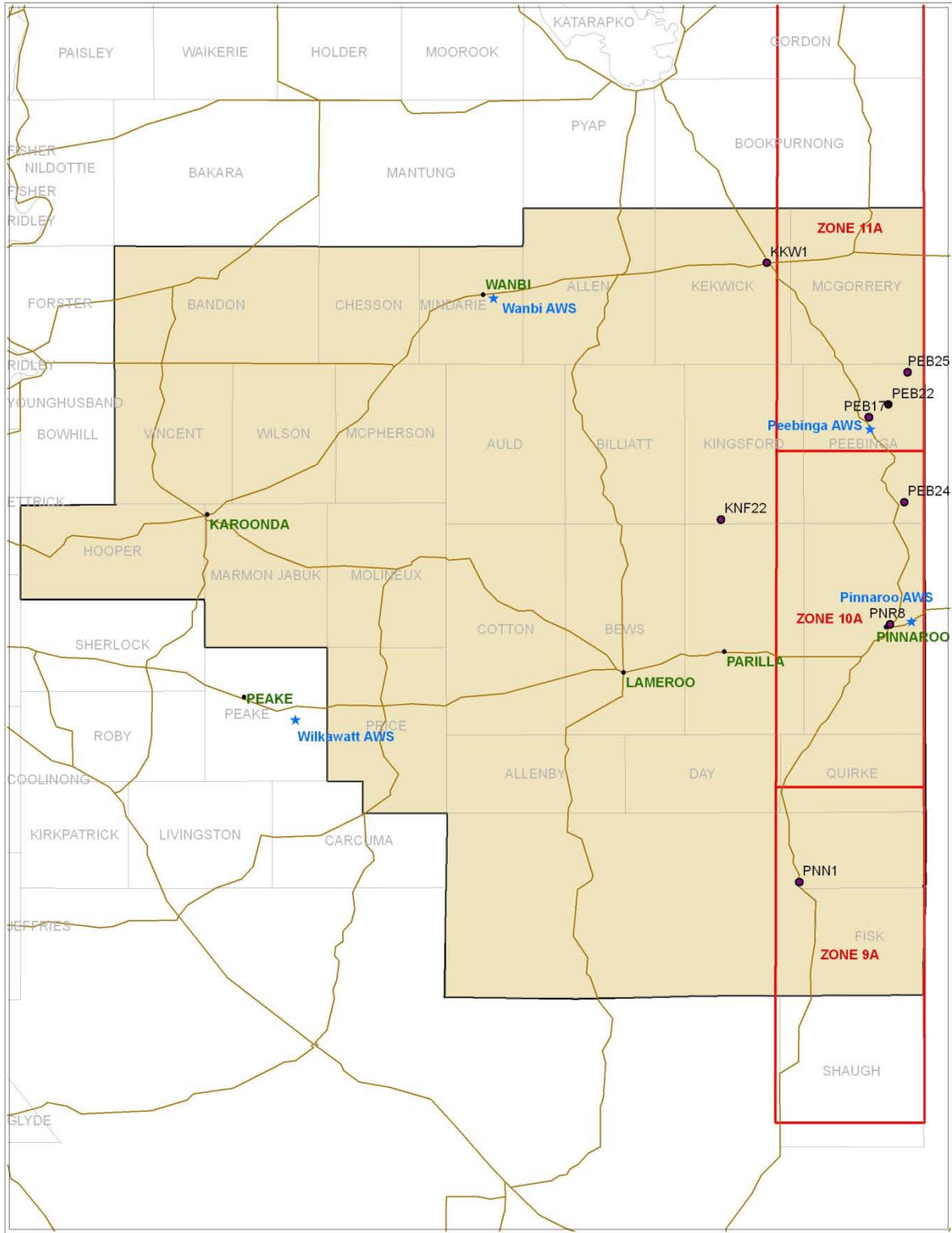
MINDARIE	Area (Ha)	Volume (ML)	ML/Ha
Cereal	40	53	1.32
Lucerne pasture	12	160	13.33
Mixed hay/pasture	53	82	1.55
Total Irrigation	105	295	

No crops were grown in Molineux

PARILLA	Area (Ha)	Volume (ML)	ML/Ha
Carrots	134	1358.32	10.14
Cereal	76	84.88	1.12
Olives	3	8.92	2.97
Onions	316	2790.55	8.83
Potatoes	501	3705.92	7.40
Total Irrigation	1030	7948.58	

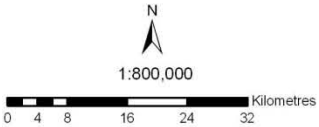
PRICE	Area (Ha)	Volume (ML)	ML/Ha
Lucerne hay	6	25.00	4.17
Potatoes	146	788.61	5.40
Total Irrigation	152	813.61	

APPENDIX 2: MAP OF Monitoring sites – Mallee Prescribed Wells Area



Legend

- Towns
- Roads
- Obswells
- ★ AWS - Automatic weather Stations
- Border Zones
- MPWA
- Hundreds



 **Government of South Australia**
 South Australian Murray-Darling Basin
 Natural Resources Management Board

Map produced on 2 December 2008
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