



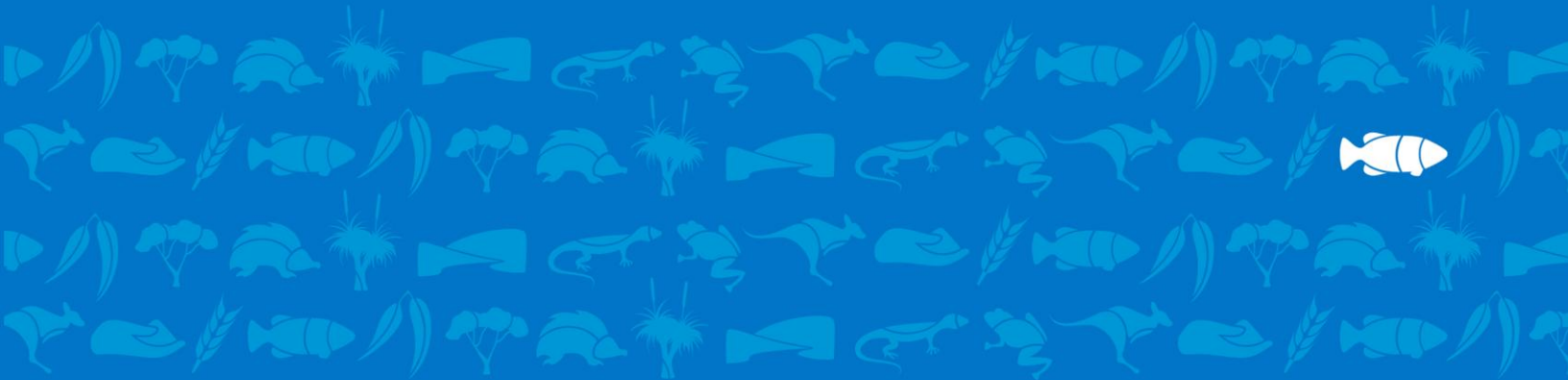
Government of South Australia
South Australian Murray-Darling Basin
Natural Resources Management Board

2010-2011

South Australian Murray-Darling Basin Natural Resources Management Board

MALLEE PRESCRIBED WELLS AREA

ANNUAL WATER USE REPORT



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2010/2011

Date: May 2012

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This Annual Water Use Report 2010/2011 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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- 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 2010/2011

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INTRODUCTION

This is the 9th 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.

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 2010 to 30th June 2011. 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 2 Industrial purposes (packing sheds).

The number of licences, allocations, and water usage and licence purpose may have varied after 30th June 2011 and these changes will be reflected in the following year's Annual Water Use Report.

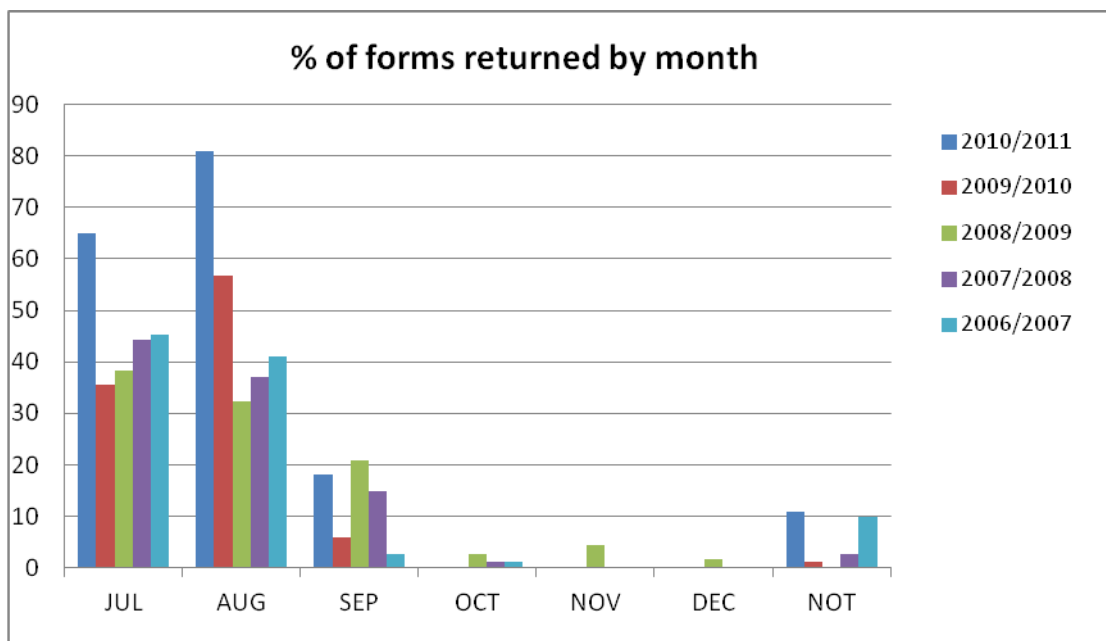


Figure 1: Rate of returns in 2010/2011 compared to the previous four years

There was an 89% (21 non returns by total licences 197) return of AWU report by the end of August. The AWU report has been compiled using the best available water use information provided by Department for Water (DfW) metered water use and a reconciliation of additional meter readings and crop estimates where needed, using the information provided in 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 10/11 (ML)	No. of licences	Alloc 09/10 (ML)	No. of licences	Alloc 08/09 (ML)	No. of licences
9A North	3835	5	3835	5	3835	4
10A	9630	45	8992	44	8992	44
11A	5855	17	6627	15	6627	15
ALLEN	2148	13	2115	14	2115	14
ALLENBY	1237	9	1237	9	1237	9
AULD	1902	3	1902	2	1902	2
BEWS	4461	23	4615	22	4615	22
BILLIATT	2233	5	2233	5	2233	5
CHESSON	1234	7	1283	7	1283	7
COTTON	2520	16	2520	16	2520	16
DAY	1494	6	1494	6	1494	6
KEKWICK	1908	5	1914	6	1914	6
KINGSFORD	2832	5	2832	6	2832	6
MCPHERSON	1555	10	1556	9	1556	9
MINDARIE	2323	5	2324	6	2324	6
MOLINEUX	1404	5	1404	6	1404	6
PARILLA	3928	15	3944	14	3944	14
PRICE	1805	10	1834	11	1834	11
TOWN SUPPLY	423	4	423	4	423	4
TOTAL	52,727		53,084		53,084	

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

Hundred/Zone	10/11 (ML)	% of alloc	09/10 (ML)	% of alloc	08/09 (ML)	% of alloc
9A	1471	38	1300	34	1923	50
10A	6585	71	10605	115	11505	122
11A	3837	58	4319	65	4338	66
ALLEN	442	21	944	45	898	43
ALLENBY	438	35	318	26	280	23
AULD	1	0	210	11	0	0
BEWS	3452	75	4750	103	5187	105
BILLIATT	782	35	1662	74	1520	68
CHESSON	42	3	83	6	229	18
COTTON	1123	45	1605	64	2215	93
DAY	1584	106	1605	107	1936	130
KEKWICK	273	14	80	4	33	2
KINGSFORD	135	5	1225	43	1487	55
MCPHERSON	68	4	118	8	137	9
MINDARIE	342	15	770	33	2287	98
MOLINEUX	2	1	0	0	2	1
PARILLA	5487	139	7984	202	7926	194
PRICE	35	2	858	47	909	50
	26,100		38,437		42,812	



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.

- 💧 Usage has decreased in the majority of active Hundreds since the 2007/2008 year, especially in Hundreds 10A, Bews, Cotton, Day, Kingsford, Mindarie. The decrease in water use for these Hundreds and Border zone 10A is generally due to same or less area of crops grown, but with less water applied per hectare. This could be in part due to the increase in rainfall during the 2010/2011 growing season.
- 💧 There were increases in water use in the Hundreds of Kekwick and Allenby. Although the increase in water use for these Hundreds is considered relatively minor, there is an upward trend, indicating increased use in these Hundreds.

Figure 2: Total Water Use for the Mallee Prescribed Wells Area in the past 3 years

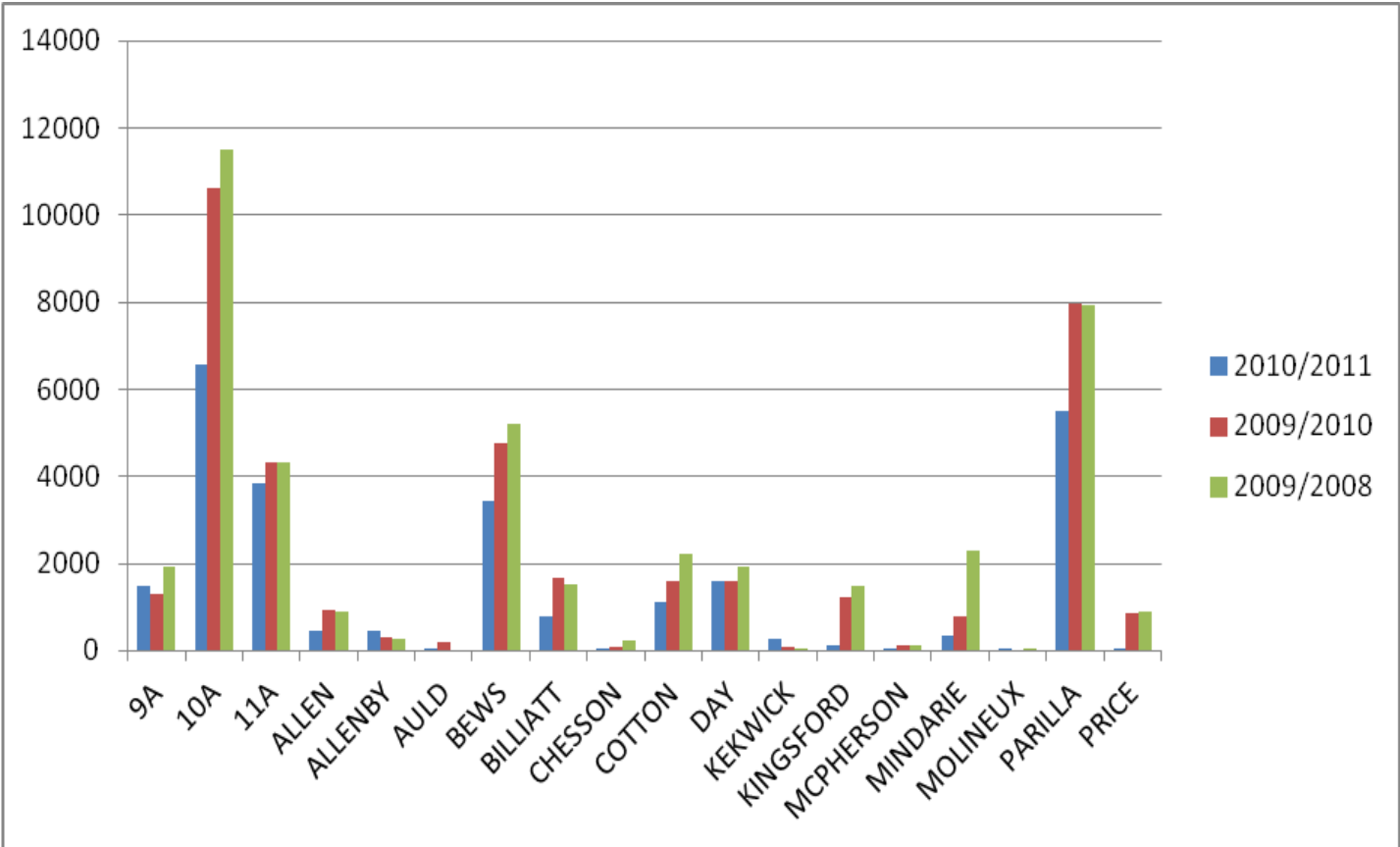


Table 3: Permissible Annual Volume (PAV) in ML per Hundred and Border Zone

Hundred / Zone	Orig PAV (100%)	Min PAV (80%)	Max PAV (150%)	Current licensed alloc.	Licensed alloc. as % base PAV
9A North	3840			3835	
10A	8519			9630	
11A	6862			5855	
ALLEN	2590	2072	3885	2148	83%
ALLENBY	1740	1392	2610	1237	71%
AULD	2390	1912	3585	1902	80%
BEWS	3170	2536	4755	4461	141%
BILLIATT	2410	1928	3615	2233	93%
CHESSON	1470	1176	2205	1234	84%
COTTON	3150	2520	4725	2520	80%
DAY	1490	1192	2235	1494	100%
KEKWICK	2420	1936	3630	1908	79%
KINGSFORD	1860	1488	2790	2832	152%
MCPHERSON	1930	1544	2895	1555	81%
MINDARIE	1549	1239	2323	2323	150%
MOLINEUX	2150	1720	3225	1404	65%
PARILLA	2440	1952	3660	3928	161%
PRICE	2320	1856	3480	1805	78%
TOWN SUPPLY	500			423	85%
Total PAV (ML)	52,800			52,727	

Table 4: Water Extractions per Category in the Mallee Prescribed Wells Area, 2010/2011






WATER USE	10/11 (ML)	% of Use	% of PAV	09/10 (ML)	% of Use	% of PAV	08/09 (ML)	% of Use	% of PAV
Town Water Supply	182	0.69	0.35	267	0.66	0.51	306.7	0.7	0.6
Sports Clubs	19	0.07	0.04	82	0.20	0.16	82.7	0.2	0.1
Local Government	89	0.34	0.17	165	0.41	0.32	178.1	0.4	0.3
Schools	36	0.14	0.07	112	0.27	0.22	106	0.2	0.2
Stock and Domestic	4	0.02	0.01	2,250	5.52	4.33	2,250	5.0	4.3
Irrigated Crops	25,670	97.85	48.68	37,119	91.23	71.5	40,118	89.1	75.8
Intensive farming	205	0.78	0.39	203	0.50	0.39	188.6	0.4	0.4
Industrial	9	0.03	0.02	489	1.20	0.94	1,799.5	4.0	3.4
TOTAL USE ML	26,234	100%	47.7	40,687	100%	78.4	45,030	100%	85.1%
PAV	52,729			51,933			52,907		

IRRIGATION WATER USE

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

Crop Type	Area (Ha)	Volume (ML)	Avg ML/Ha
Broom-bush	6	22	3.6
Canola	82	50	0.6
Carrots	258	1684	6.5
Cereal	184	32	0.2
Date palms	1	2	2.1
Fruit Trees	2.5	213	85.3
Lucerne Hay	366.68	973	2.7
Lucerne Pasture	205.06	234	1.1
Medic/Vetch seed	40	7	0.2
Mixed Hay and Pasture	78	80	1.0
Native plants	0.25	0	0.0
Olives	578.6	605	1.0
Onions	487	3597	7.4
Pistachios	224.8	871	3.9
pomegranates	130	1	0.0
Potatoes Commercial	4241.5	16830	4.0
Potatoes Seed	120	349	2.9
Turf Seasonal (Commercial)	4	6	1.5
Unknown	-	258	-
Total	7009 Ha	25,814 KL	

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

-  Table 5 refers to all ‘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 to Table 4).
-  Unknown refers to the metered use for licences for which there was not information provided, or whose forms were still outstanding at the time of producing this report. Therefore, details of crop types and areas were not available.
-  Overall there was an increase in irrigated crop area of 464 hectares, with a decrease in water used for irrigation of 11,305 ML in 2010/11 compared to 2009/10.
-  There was an increase in crop areas grown for potatoes, olives, lucerne hay and lucerne pasture, with significant decreases in the average water use per hectare compared to the 2009/10 year.
-  There was a significant decrease in the cereal crop areas, with a corresponding decrease in water use per hectare compared to the 2009/10 year.

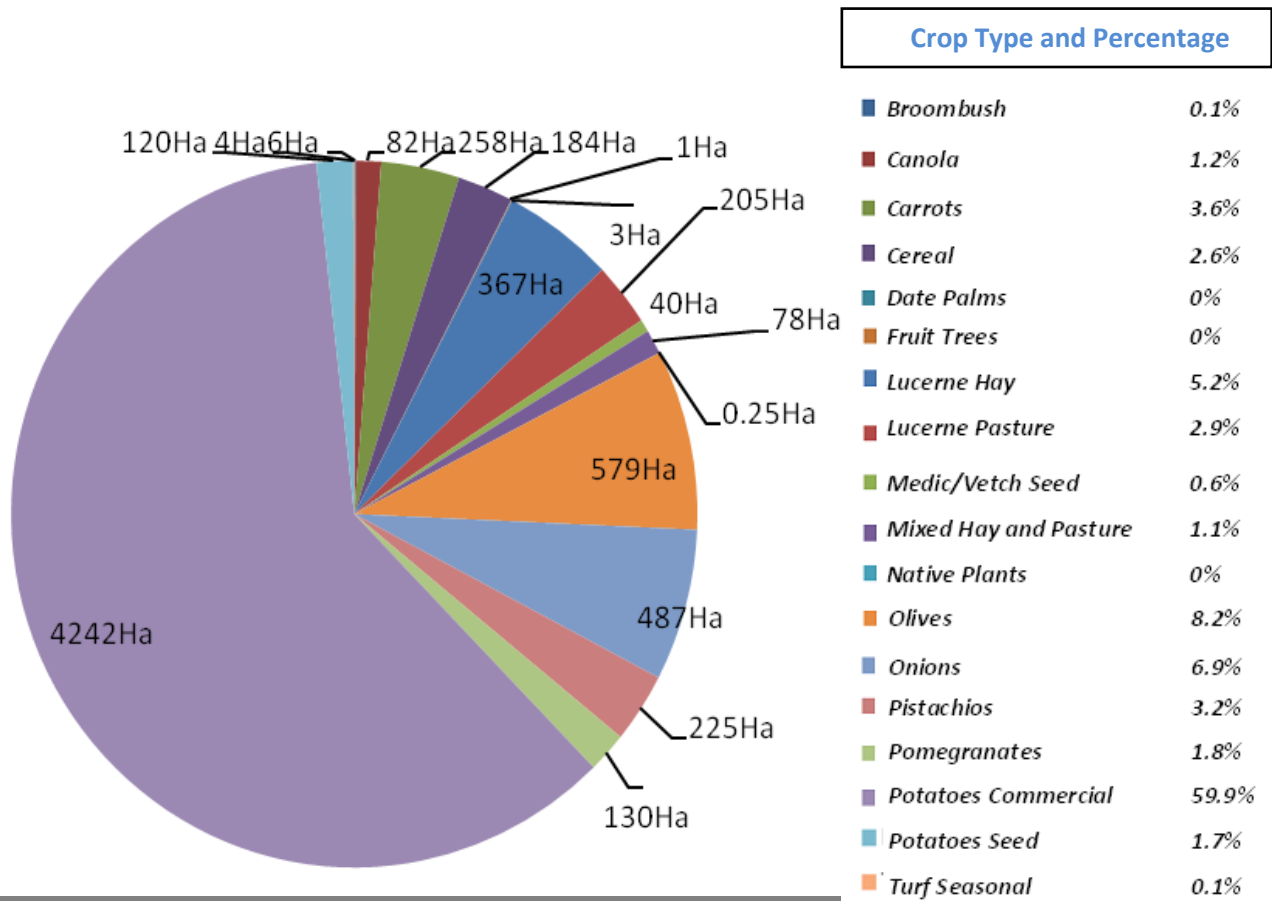


Figure 3 (above): Total Crop Areas Irrigated 2010/2011

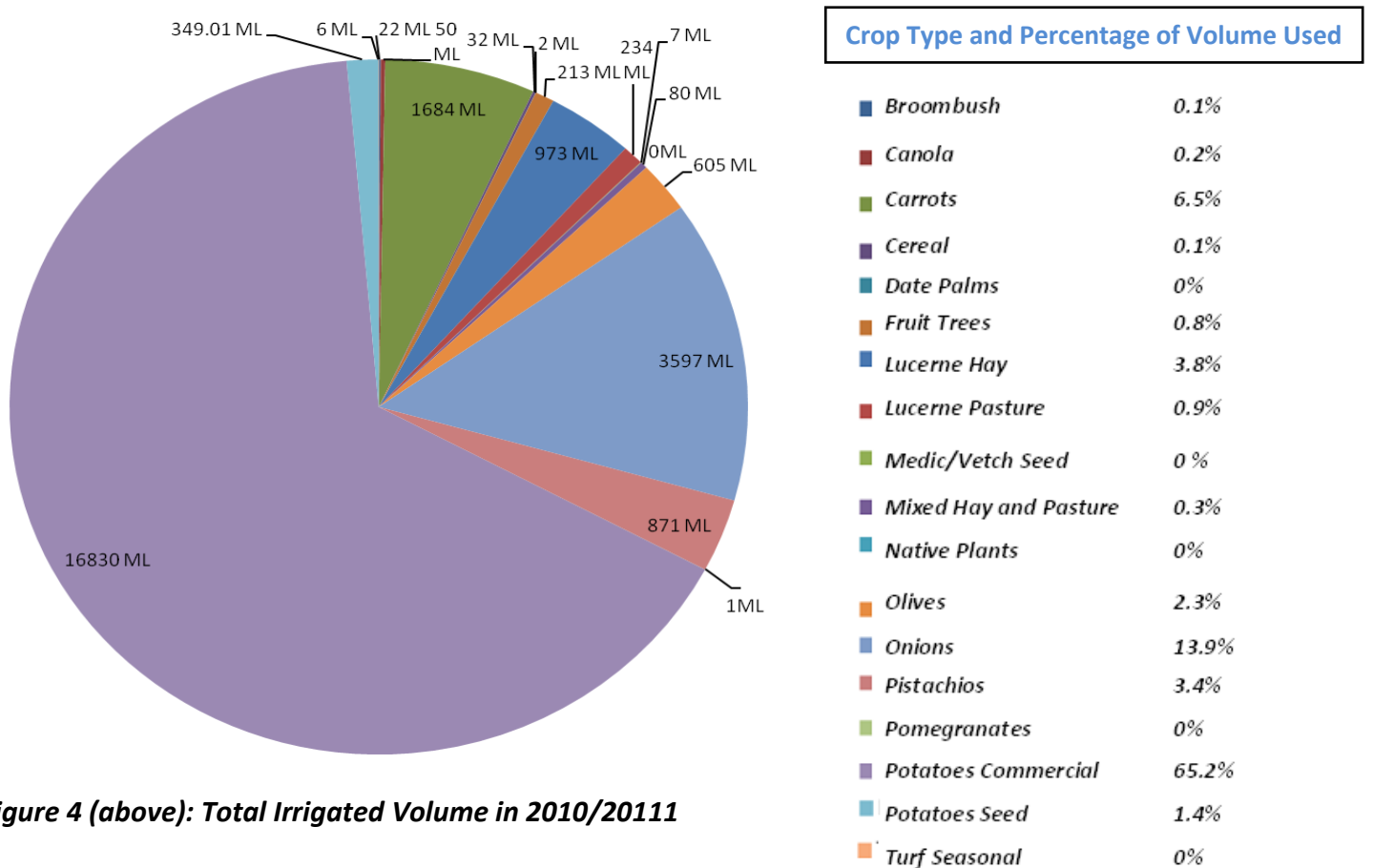


Figure 4 (above): Total Irrigated Volume in 2010/2011

SOIL MOISTURE MONITORING EQUIPMENT

Table 6: Number of Irrigators using Soil Moisture Monitoring

Soil Moisture Monitoring Equipment	2010/2011 No. of Irrigators	Compared to 2009/2010 results
“Dig Hole and Check”	46	17
Capacitance	6	7
Gypsum Blocks	4	2
Neutron Probe	1	4
Tensiometer	12	49
Total	69	79

- 💧 Table 6 figures suggest that irrigators are using direct, hands on methods for monitoring soil moisture.
- 💧 Mallee irrigators still have the opportunity to trial soil moisture monitoring equipment. Irrigators interested in taking advantage of this offer should contact DENR on 08 85801800.

FUTURE WATER USE PLANS

Table 7: Future Plans for Irrigated Area and Water Use

No. reports	Year	Area (in Ha) [#]	ML [#]	Usage may reach (ML)
16	2011/2012	337	1907	27,740
10	2012/2013	454	1270	27,103
7	2013/2014	315	938	26,771
5	2014/2015	166	642	26,475
4	2015/2016	150	503	26,336

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 volume only (ie. increased ML/Ha application rates) are expected include olives and date palms.
- 💧 No intensive licence use holder reported plans to increase stock numbers and/or water use in the coming years.

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.

WATER RESOURCES MANAGEMENT IN THE MALLEE

Allocations

The 2010/2011 total allocations = 52,727 ML, which remained within the 52,800 ML Permissible Annual Volume for the Mallee Prescribed Wells Area.

Usage

The volume of water used in the Mallee PWA in the 2010/2011 water use year was 26,234 ML (see Table 4), a decrease of 4,343 ML from 2009/2010. Licensed use accounts for 26,100 ML (see

Table 2). Irrigation water use was 11,500 ML less in 2010/2011 than 2009/2010, due to high rainfall in this period and as a result less ML/ha of water used per irrigated crop area. Town water supply, sporting clubs, local government, schools all also decreased their use in 2010/2011.

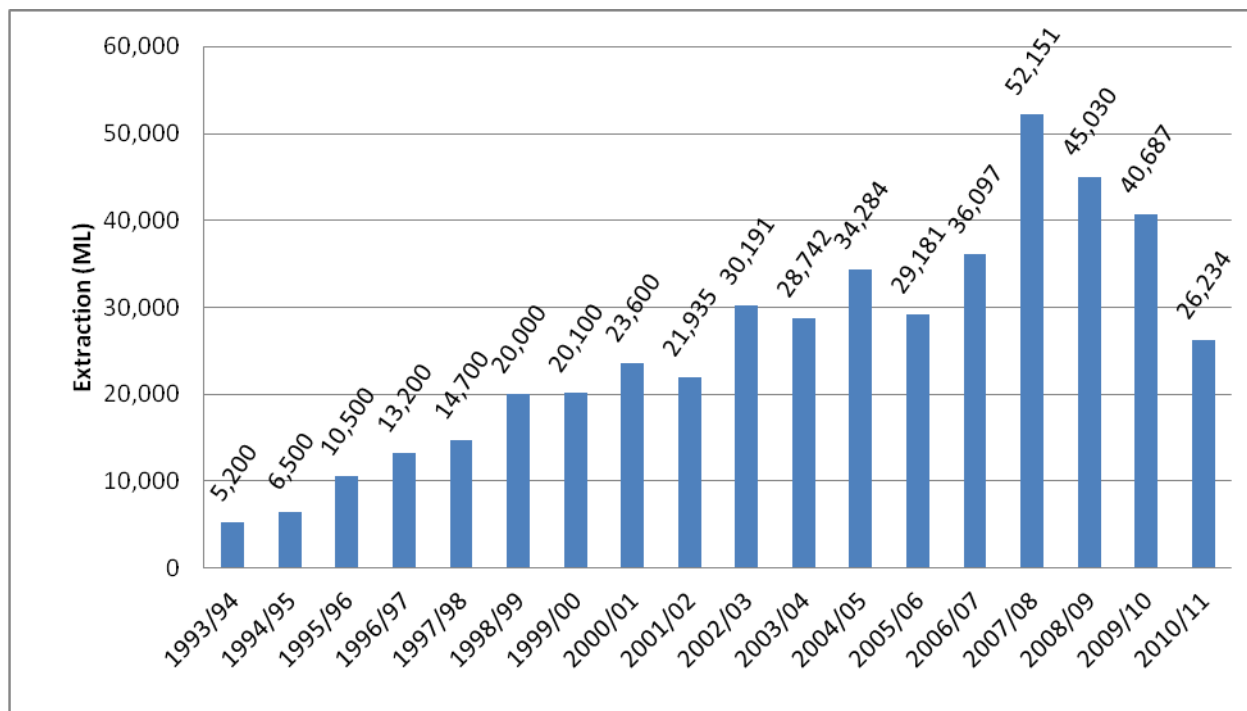


Figure 5: Extraction history in the Mallee Prescribed Wells Area

Water Flow Meters

The Department for Water (DfW) undertook routine meter readings throughout the 2010/2011 Water Use Year (1 July 2010 to 30 June 2011). Meter readings were taken at several stages throughout the water use year including the start reading in June-July 2010, then late November 2010 – early January 2011, late February 2011 – mid March 2011 and end meter reads June-July 2011. A total of 232 meters were read from 208 licensees in the Mallee Prescribed Wells Area.

License 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 2010/2011 the draft Water Allocation Plan (draft Plan) for the Mallee Prescribed Wells Area was finetuned by the SA MDB NRM Board, with the Mallee Water Resources Committee, in consultation with Department for Water staff.

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 (Government Gazette Number 43, 1 July 2010, p3265, 3266). 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. The Minister adopted the draft plan with amendments on May 2 2012. This plan can be viewed at www.samdbnrm.sa.gov.au.

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 1: 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.

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.

Figure 9 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 1: 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 2010/2011 irrigation season.

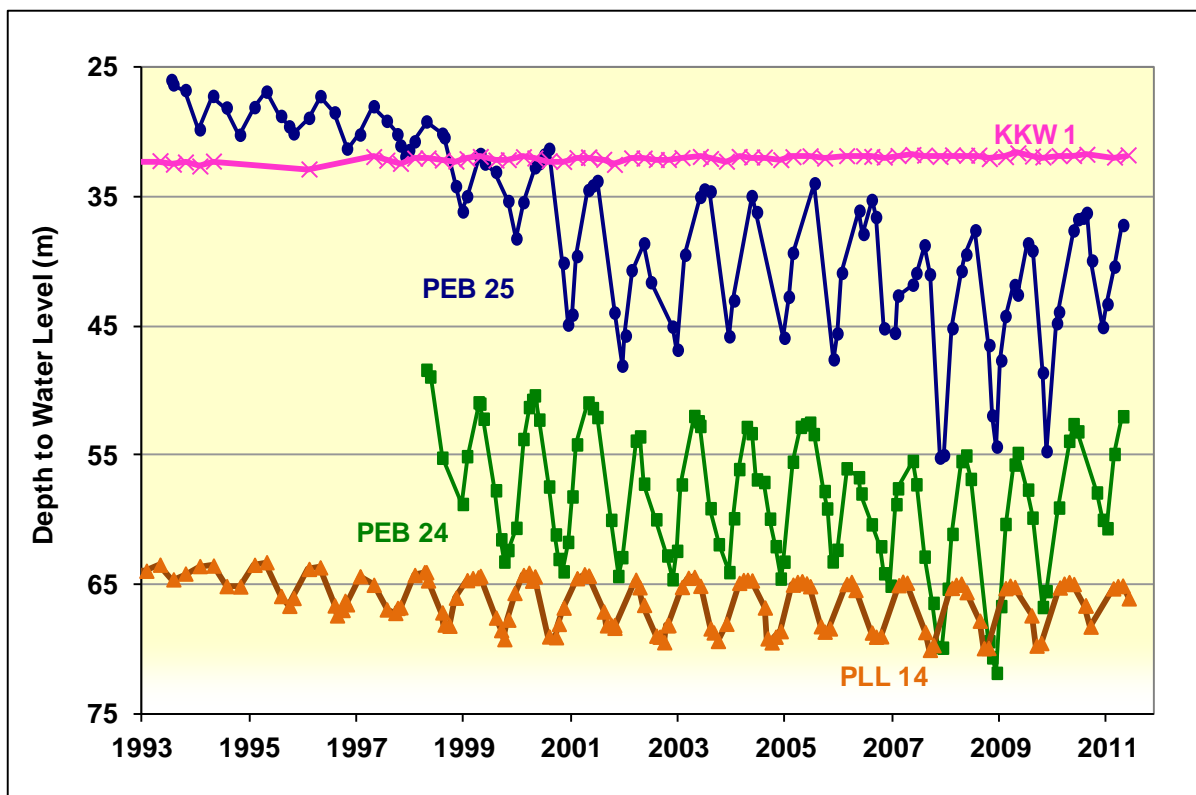


Figure 6: Monitored drawdowns in the Mallee Prescribed Wells Area

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.

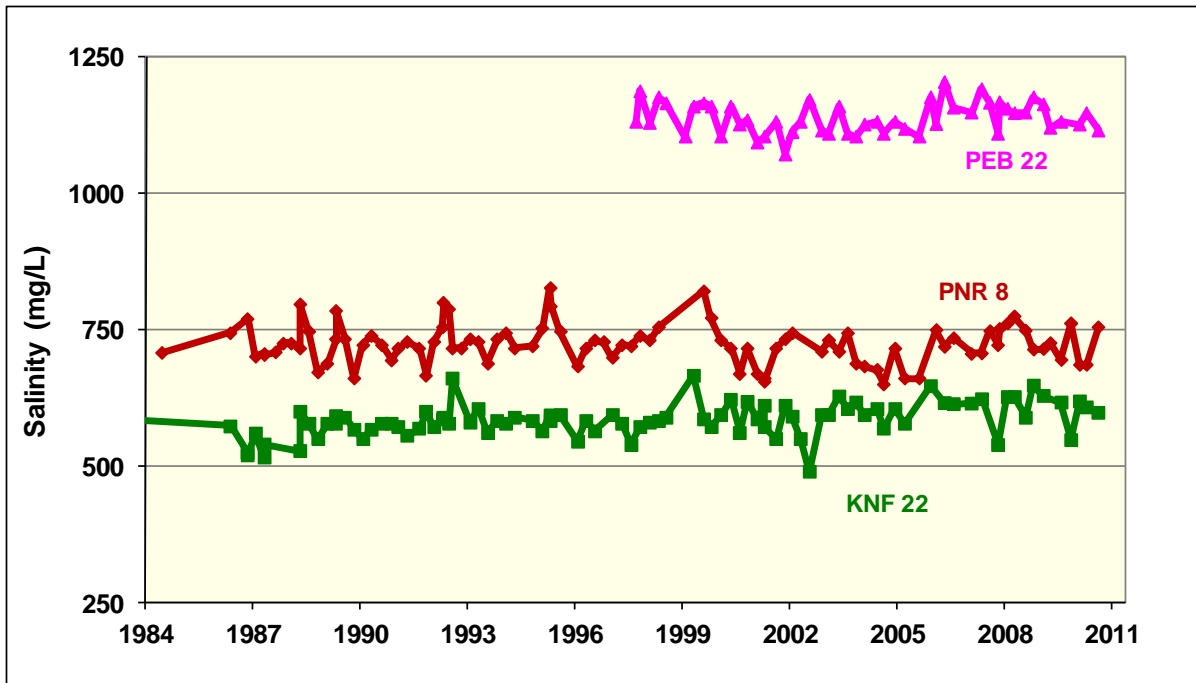
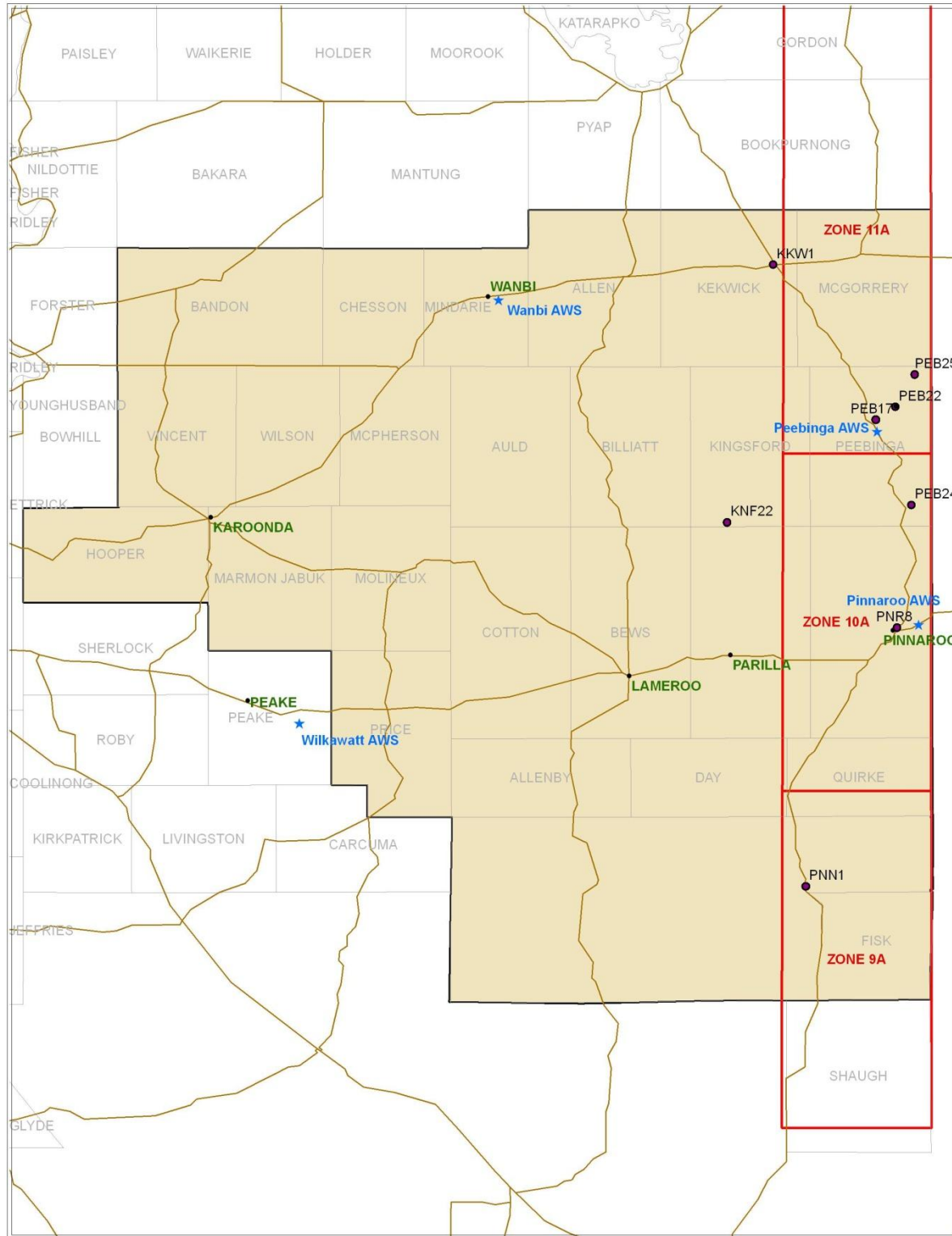


Figure 7: Monitored salinity in the Mallee Prescribed Wells Area

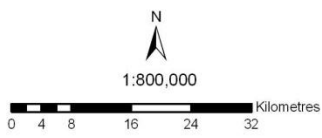
Monitoring data for all observation wells can be accessed online through OBSWELL by using the following link and entering "Mallee" in the network name box. <https://obswell.pir.sa.gov.au>

APPENDIX 1: MAP OF Monitoring sites – Mallee Prescribed Wells Area



Legend

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



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