

Coleambally LWMP five-year review

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Coleambally Land and Water Management Plan Review

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- ▶ Without the actions prescribed in the LWMP, it was estimated that the area of Coleambally underlain by shallow watertables would be 50,000 ha by 2013
- ▶ Progress with implementing on-farm LWMP works has been steady over the first five years but it is now obvious that some of the time-lines for achieving targets were very ambitious
- ▶ A number of new recommendations have been developed for a revised LWMP with strong emphasis on net recharge management and improving local biodiversity

The Coleambally community has just completed a five-year review of its Land and Water Management Plan. The community recognises the need to manage net recharge in order to ensure the long-term prosperity of the region. Some hard decisions have been made by the community and these combined with some innovative measures should help to ensure that watertables can be contained even when high rainfall seasons return.

The Coleambally Irrigation Area (CIA) was developed during the 1960s with the provision of irrigation water diverted from the Murrumbidgee River. Large pastoral leases were resumed and approximately 80,000 ha of the land was gazetted as an irrigation area. Subdivisions resulted in 311 large area mixed farms and 22 smaller horticultural farms. The town of Coleambally was built within the CIA to service the farming community.

The Coleambally Land and Water Management Plan (LWMP) was developed by the local community in response to concerns about rising watertables in the late 1980s and early 1990s. The 30-year LWMP commenced in July 1999, with a cost-sharing commitment from the community for 86% of the total \$119 million cost of the plan. The State Government agreed to meet the remaining 14% of the cost.

The objectives of the LWMP were focused on ensuring that the CIA remains viable and sustainable. The actions required to achieve these objectives were to:

- maintain productivity, profitability and social well-being
- control net recharge so that the area of land affected by salinity does not exceed more than 15% of the total area
- control drainage water quality
- manage salt loads in accordance with the Murray-Darling Basin Commission Salinity and Drainage Strategy

- control the external effects of groundwater flow from the CIA
- address the decline in natural resource habitat in the region

The main tools proposed to achieve the above objectives were:

- whole farm planning
- rice growing on suitable soils
- perennial vegetation
- landforming
- on-farm recycle systems and water storages
- deep groundwater pumping

No plan predictions

Prior to irrigated agriculture, watertables were about 20 m below the surface. Estimates established during the development of the LWMP suggested that the area of the CIA with shallow watertables (less than 2 m from the surface) was predicted to rise to 50,000 ha by 2013 and 60,000 ha by 2023 if no further watertable/salinity management actions were taken. It was predicted that at least 25% of the land area would be salt affected by 2023.

Actual trends

Over the 10-year period from 1981 to 1991, watertables in the CIA rose dramatically. In 1983–84, 1000 ha were underlain by shallow watertables. By September 1996, after two unusually wet years there were 44,000 ha with shallow watertables. Since then there has been a favourable trend in shallow watertable decline. In September 2004 the area with watertables within 2 m of the surface had fallen to 1500 ha. This was the result of improved farming and irrigation practices, better farm layouts, drier seasons and lower



irrigation allocations. While this is a great result, the area with watertables between 2 and 3 m in September 2004 was 27,000 ha (Figure 1).

There is no room for complacency because there is potential for this area to rise rapidly with a return to better seasonal conditions and higher irrigation allocations.

The area of salt affected land was 16% in September 2004.

Implementation progress

Progress with implementing on-farm LWMP works has been steady over the first five years but it is now obvious that some of the time-lines for achieving targets were very ambitious. EM31 surveying has almost been completed for the whole CIA. This provides an excellent tool for guiding appropriate land use on farms. Whole Farm Planning and the installation of recycle systems and on-farm storages are progressing steadily though a little behind the original targets. This is largely due to the current run of dry seasonal conditions and low water allocations.

Five-year review

A community committee was established to oversee the review and local farmer Peter O'Connor was elected Chairman. A co-ordinator was employed for twelve months to manage the review process.

In order to focus attention on the long term, Peter asked the committee and the community to constantly refer to the following question when considering changes to the LWMP:

What do we need to do for Coleambally to be here and be viable in 200 years?

The committee, in conjunction with the community, developed a number of new recommendations for the revised LWMP which had a strong emphasis on managing net recharge to the watertable and improving the local biodiversity of the region.

Soil salinity

It is no secret that salt is the greatest enemy of irrigation areas. Salt contained in irrigation water can induce primary salinisation of the root zone while salt that moves up from the groundwater into the root zone causes secondary salinisation. Secondary salinisation poses the greatest threat to the CIA. The only way to control secondary salinisation in the CIA is to keep watertables below the root zone. Primary salinisation can then be managed by utilising a small portion of irrigation water to leach salt down past the root zone.

Net recharge management

The way to keep watertables below the root zone is to control net recharge to the watertable. Although the original LWMP had a strong emphasis on controlling net recharge it became evident during the review that some more simple and practical methods are required for each landholder to take responsibility for the net recharge on every farm.

A number of strategies have been endorsed by the community to contain net recharge in the CIA:

- reclassify marginal rice ground over two years using soil sodicity testing
- rice area & total farm water use linked to net recharge for each farm
- rice area & total farm water use linked to the area of CIA watertable less than 2m

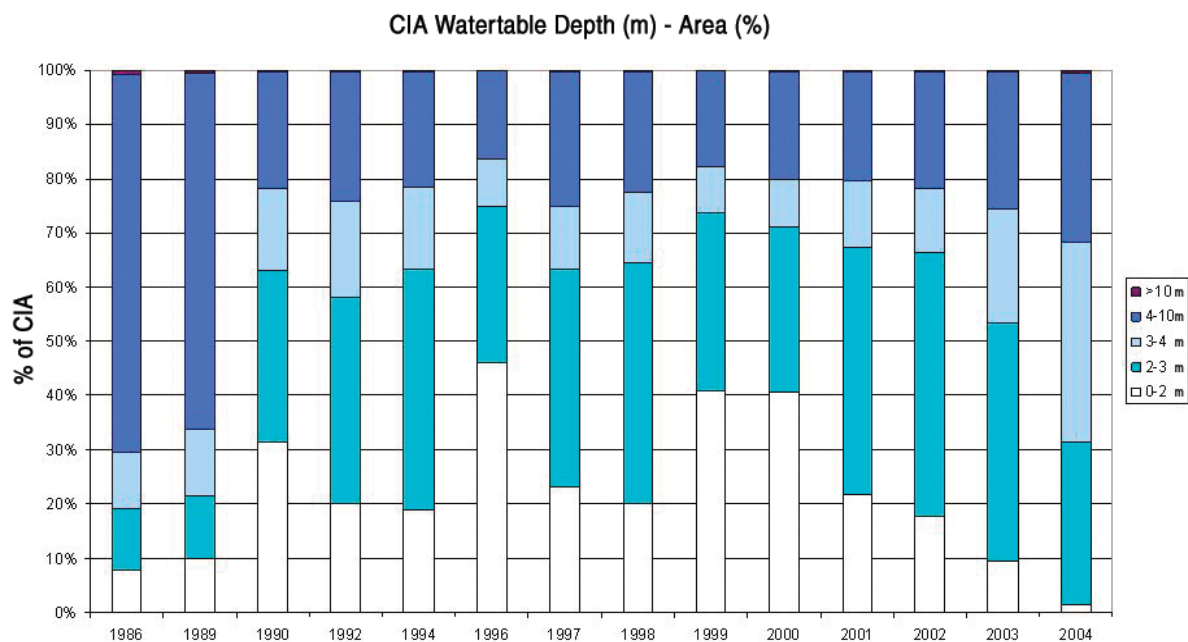


Figure 1 A combination of improved farming and irrigation practices, and dry seasons has seen the area with shallow watertables decline. However there is potential for this to change rapidly with a return to better seasons and more irrigation



- cropping offset ratios that alleviate the need to reduce rice area
- watertable target of the CIA area less than 2 m reduced from 40,000 ha to 10,000 ha
- full-time net recharge management officer to be employed
- new financial incentive for activities that reduce net recharge
- new financial incentive for change of land use that will lead to significant reductions in net recharge

Cropping options to manage watertables

Shahbaz Khan and John Zirilli (Charles Sturt University, Wagga Wagga) undertook a project for the LWMP review which explored the idea of using 'cropping' offset ratios to manage net recharge. The research showed that different ratios are required for different watertable depths ranging from 0.5 ha of lucerne to balance the recharge from 1 ha of rice with a watertable depth of 2 m, to 2.5 ha of lucerne where the watertable depth is 3 m.

Maintaining rice area

The community decided that rice area should be reduced from 30% to 25% of farm area if there are not sufficient actions taken to offset the recharge caused by growing rice. One of the actions can be to utilise the Swagman Farm Model to demonstrate that net recharge for the farm is within acceptable limits. Another way is to use plants to draw out the groundwater. 'Offset ratios' have been established for this purpose. The ratio for perennial plants is 1:1 and annual crop sown into rice stubble 2:1.

If there is more than 10,000 ha of the CIA with watertables less than 2 m from the surface, the rice area reduces to 21% of farm area unless sufficient 'offset works' have been undertaken to further constrain net recharge.

Total farm water use

The intention of the net recharge policy was not to single out rice growers but because rice is grown on the vast majority of farms in the CIA it was decided that a simple offset ratio system would appeal to many landholders.



Figure 2 A strong emphasis in the revised LWMP is placed on maintaining and enhancing biodiversity

However, all farms will need to comply with a maximum upper limit of 6.5 ML/ha of total farm irrigation water use. This reduces to 5.5 ML/ha if there is more than 10,000 ha of the CIA with watertables less than 2 m from the surface. If there is water usage above these limits the landholder will need to demonstrate that net recharge is being contained.

Biodiversity

A strong emphasis has been placed in the revised LWMP on the importance of maintaining and enhancing the local biodiversity. The Coleambally district is extremely fortunate to have some large areas of native vegetation remaining. Although many of these patches are not on farms, they can be complemented by protecting and enhancing what is present on farms. Areas of native vegetation on farms managed for conservation can be counted as part of an offset ratio for rice growing as outlined above.

Martin Driver (PlainSense Vegetation Management, Deniliquin) compiled a CIA Landscape Report and a CIA Landscape Strategy for the LWMP review. The emphasis from his work was on processes to help willing landholders and to encourage those who could be tempted with some expertise and financial assistance.

The revised LWMP contains new initiatives for biodiversity which include: the employment of a full-time biodiversity officer; the establishment of financial incentives for biodiversity works; and targets for protection, enhancement and replanting of locally native vegetation.

Catchment Action Plan

The Murrumbidgee Catchment Management Authority is currently developing the Murrumbidgee Catchment Action Plan. Although this was not available when the LWMP was being revised, its predecessor, the Murrumbidgee Blueprint was used extensively to formulate appropriate targets and actions for the CIA that link with catchment wide and state wide targets.

Murrumbidgee Catchment Management Authority

The Murrumbidgee Catchment Management Authority (MCMA) has assumed responsibility for the management of LWMPs in the Murrumbidgee catchment. A management committee comprised of agency and community representatives has been established to oversee the implementation of the Coleambally LWMP and to report to the MCMA. A good working relationship is being developed between the Coleambally community and the MCMA.

Funding

Funding for the LWMP review was provided by the State and Federal Governments (25% each) and Coleambally landholders (50%).

Further information

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