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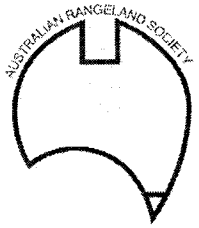

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MANAGING SALT AND WATER ON THE CHOWILLA FLOODPLAIN

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INTRODUCTION

The Chowilla floodplain is located 250 kilometres north-east of Adelaide in the Riverland region of South Australia, approximately 40 kilometres north-east of Renmark. It straddles the South Australian and New South Wales borders covering a total area of 17 700 hectares. Chowilla is one of six sites in the Murray-Darling Basin identified as an Icon Site; and it is also part of the Riverland Ramsar Wetland. The floodplain contains a complex system of creeks, wetlands and floodplain habitats including the largest remaining area of River red gum woodland in the lower River Murray. It also supports a significant population of Murray Cod and a diverse range of terrestrial and aquatic biota.

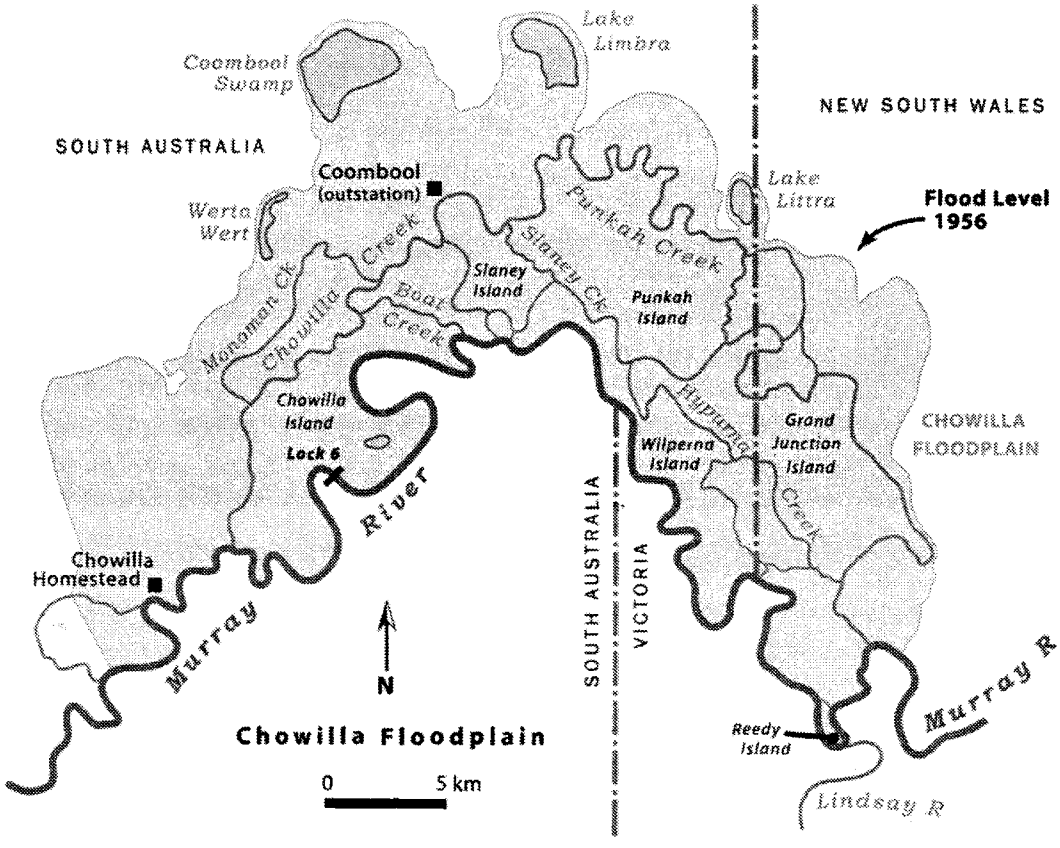

Figure 1: The Chowilla floodplain boundary

As part of The Living Murray Initiative First Step Decision, three broad ecological objectives were established for the Chowilla Floodplain Icon Site. These are:

To maintain high biodiversity values of the Chowilla floodplain:

- High value wetlands maintained;
- Current area of River red gum maintained; and
- At least 20% of the original area of Blackbox vegetation maintained.

The Chowilla anabranch, like most of the lower River Murray floodplain is under significant threat. The accumulation of salt in the soil profile and lack of flooding is causing severe stress and death of River red gum and Blackbox vegetation over the majority of the floodplain. Only one third of River red gum trees on Chowilla are currently classified as healthy and it is predicted that the majority of these will also experience a decline in health in the next 10 years without significant intervention. Other key threats to the Icon Site include obstructions to fish passage, grazing pressure (which has recently been removed from 83% of the floodplain) and pest plants and animals.

To combat the threats to Chowilla, an Integrated Natural Resource Management Project has been established. As part of the project, short-term actions have been undertaken including weir pool raising and pumping water into temporary creeks and wetlands fringed by River red gums. Due to the low likelihood of significant flow being returned to the river and the urgency of the environmental problems, engineering solutions such as groundwater interception and construction of major flow management infrastructure have been proposed. These solutions carry potential risks such as increased river salinity and barriers to fish movement and these are being assessed as part of the investigations.

WHAT WILL HAPPEN IF WE DO NOTHING?

Chowilla contains approximately 3600ha of River red gum forest and 5000ha of Blackbox woodland. To maintain the health of these high priority areas, flooding is required every 2-3 years for River red gums and every 5-7 years for Blackbox. Under natural conditions, a flood event of 80 000ML/day occurred every 2-3 years and would provide water to the majority of the River red gums on Chowilla. An event of that magnitude has not been experienced since 1993. This lack of flooding in conjunction with ongoing salt accumulation in the floodplain soils has resulted in widespread decline in tree health throughout the floodplain. Recent surveys by Department for Water, Land and Biodiversity Conservation (DWLBC) and CSIRO have show the percentage of healthy trees (River red gum, Blackbox and River coobah) on Chowilla has dropped from 54% in 1993 to 24% in 2006. The distribution of healthy River red gums is such that virtually no healthy trees remain in areas of the floodplain away from permanent watercourses. Even trees along permanent watercourses are in decline as a result of decreasing soil moisture and saline groundwater in the root zone due to lack of flooding in the last 10 years.

The salt and moisture-stress damage at Chowilla is predicted to get worse because of the continuing absence of flood events. CSIRO modelling has predicted that, under the current water regime, approximately 2500ha of River red gums, along with 4500ha of Blackbox on the Chowilla floodplain will be dead or severely stressed within the next 30 years. While the lower River Murray has experienced prolonged drought events in the past, the combination of reduced flooding and elevated saline groundwater at Chowilla is inducing a major death event. This rapid and ongoing decline in tree health observed at Chowilla may compromise achievement of *The Living Murray* objectives for this Icon Site unless a flooding regime to promote widespread recovery and recruitment is reinstated as a matter of urgency.

The current situation with only 24% of trees in a healthy condition is likely to be a threshold beyond which permanent damage to the Chowilla ecosystem occurs. River red gums and Blackbox are keystone species for the system and, as such, once their populations drop to unsustainable levels a cascade effect will occur where damage will occur to all other species dependent, directly or indirectly, upon those keystone species. The "do-nothing" scenario is clearly not acceptable.