Chap 1 Introduction

This document is part of the review of the Goulburn Broken Regional Catchment Strategy. The risk posed by dryland salinity has been revealed to be much larger than previously thought. It will not be possible to protect large areas of the catchment from degradation and so it is important the Goulburn Broken Dryland Salinity Management Plan focuses on the identification and protection of key assets. The protection of these assets will require a radical shift in the way works are delivered and in the community's participation in identifying and working towards the appropriate natural resource management outcomes.

The salinity plan is built on the interim end of valley targets set by the Murray Darling Basin Commission. These targets are that salinity and salt loads be maintained within 100% of current levels in the Goulburn River at Goulburn Weir and within 136% in the Broken River at Casey's Weir. To go any way to meeting these targets will require massive landscape change, at scale not seen since the 1840's.

This document deals with the issue of dryland salinity, there are other natural resource issues in the dryland that need to be managed. The protection of assets will be used to develop a more integrated approach to catchment management over the next three years.

The Goulburn Broken Dryland Salinity Management Plan

This Review of the Goulburn Broken Dryland Salinity Management Plan forms part of the Goulburn Broken Regional Catchment Strategy (RCS). The RCS sets the overall strategic direction for natural resource management in the catchment. This Dryland Salinity Management Plan deals specifically with the issue of dryland salinity.

This Review is timely. It provides the opportunity to draw on the experience of the past twelve years of salinity plan implementation, and to shape our response to the newly recognised challenges posed by dryland salinity. In the last five years there has been a significant increase in our understanding of the threat posed by dryland salinity. Our understanding of the processes by which salt is mobilised in the landscape now allows us to more effectively target where works are required, and recommend the type of works required.

The Goulburn Broken Dryland Salinity Management Plan (GBDSMP) was first prepared in1989 as part of a co-ordinated State response to the salinity problem as recognised then. In 1990 the Victorian Government endorsed the Plan, and implementation commenced. The original Plan was based on knowledge available at the time, and it assumed that the works identified would restore a hydrological balance in the catchment. In hindsight, this was never achievable.

After 12 years of implementation, dryland salinity remains a major concern for the catchment community. Recent projections (DNRE, 1999) indicate that a significant proportion of the catchment, particularly on the Broken and Goulburn Plains, is likely to become affected by high watertables and salinity over the next 100 years. Revised estimates from the Murray Darling Basin Commission (MDBC, 1999) indicate that an additional 165,000 tonnes of salt per year will be generated from dryland salinity in the Goulburn Broken catchment within a 100 year timeframe.

This additional salt threatens the condition of the Murray River downstream, a water resource of critical importance. The increase in dryland salinity also threatens important assets within the catchment including water quality, productive land, urban infrastructure, heritage sites and biodiversity.

The strategic approach to salinity management has been greatly enhanced by the recent establishment of end of valley targets by the MDBC, with the agreement of State Government. These targets have been set so as to limit increases in the salinity of the Murray River, as measured at the benchmark site at Morgan in South Australia. End-of-valley targets have been set for the Goulburn and Broken Rivers, and these now provide the context for salinity management within the catchment.

Addressing the problem of increased salinity across the Goulburn Broken Dryland will require a radical shift in land use in key parts of the catchment. It is essential that the catchment community is engaged in discussions concerning the future condition of the catchment, and in negotiating their response to the challenges of dryland salinity. Responses to the dryland salinity problem will need to encompass the aspirations and regional development objectives of the catchment community.

About the catchment

The Goulburn Broken Dryland covers 1.8 million hectares, of which 600,000 hectares is forested, mainly in the southern and eastern parts of the catchment.

At present, approximately 260,000 tonnes of salt is generated annually in the Dryland. Of this, some 94,000 tonnes enter the Shepparton Irrigation Region, and over 22,000 tonnes are diverted to irrigation regions further west. The balance of over 143,000 tonnes reaches the Murray River and contributes to the salinity downstream. The salt leaving the catchment accounts for around 23 EC units in the Murray River at Morgan.

For the purposes of salinity management, the Dryland catchment is divided into five sub regions: Goulburn Highlands, South West Goulburn, Goulburn Plains, Broken Highlands and Broken Plains (Figure 1).

Goulburn Highlands

The Goulburn Highlands varies from flat alluvial valleys and undulating foothill country, to very steep mountainous country in the south and east. It covers an area of 8,380 square kilometres, approximately 50% of which is cleared. Rainfall varies from 650 mm in the north-west to more than 1200 mm in the east and south. The Goulburn Highlands is the major source of good quality water in the Goulburn River (over 3,000,000 ML/yr). The main land use is grazing with an increasing occurrence of hobby and lifestyle farms.

South West Goulburn

The South West Goulburn covers and area of 2,973 square kilometres with only 20% remaining forested. Rainfall varies from 600 mm in the north to over 900 mm in the south. The dominant land use is grazing. The area has a high proportion of absentee landowners and is increasingly dominated by small hobby farms and lifestyle properties. This area generates the highest salt loads of anywhere in the catchment (on average 31 tonnes of salt per km^2 per year).

Goulburn Plains

The Goulburn Plains covers an area of 1,798 km^2 of which 87% has been cleared for mixed grazing and cropping. There are also significant areas of high value viticulture and a growing thoroughbred horse industry. Annual rainfall across the area varies between 500 and 600 mm.

Broken Plains

The Broken Plains lies mostly north of the Broken River and (along with the northern section of the Goulburn Plain) is the area at highest risk of future salinisation. It covers an area of 1,164 km^2, of which only 8% remains uncleared. Rainfall varies from less than 500mm/yr in the north-west to just under 800 mm in the south-east. The main land use is mixed cropping and grazing, with small irrigation developments in the north around Yarrawonga and surrounding Lake Mokoan.

Broken Highlands

The Broken Highlands is an area of high relief, covering 3,036 km^2. It is reasonably well forested, with 34% remaining uncleared. Rainfall ranges from 800 mm in the north to over 1200mm on the eastern boundary. The area is mostly used for grazing, although there are some small horticultural and viticultural developments in the area.

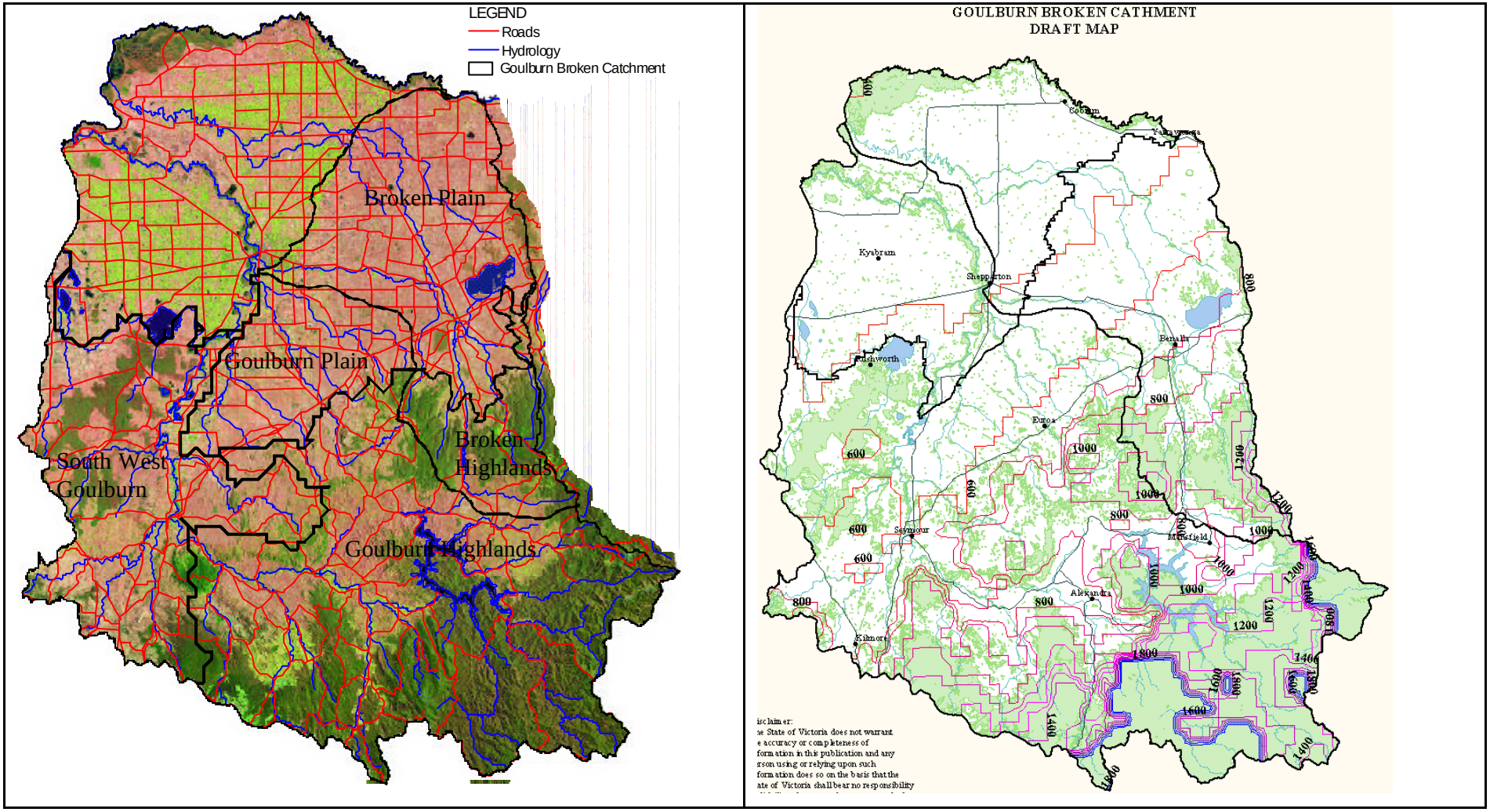

Figure 1 Goulburn Broken Salinity regions and rainfall isohyets

Policy context

Murray Darling Basin Salinity Management Strategy (2001-2015)

The objectives of the Basin Salinity Management Strategy (MDBC, 2000) are to:

- maintain the water quality of the shared water resources of the Murray and Darling Rivers for all beneficial uses - agricultural, environmental, urban, industrial and recreational
- control the rise in salt loads in all tributary rivers and, through that control, protect their water resources and aquatic ecosystems at [community] agreed levels
- control land degradation and protect important terrestrial ecosystems and productive farm land, cultural heritage, and built infrastructure at [community] agreed levels
- maximise net benefit s from salinity control across the Basin

The Basin Salinity Management Strategy (BSMS):

> "…establishes the framework for State salinity management strategies, catchment management strategies and Land and Water Management Plans to work together to achieve common objectives. It sets out a process to identify key community values and assets at risk, develop targets to protect them, and establish a 15 year program of works and landscape change…"

An important step in this process has been the establishment of interim end of valley targets for salinity. These targets define the limits to acceptable increases in salinity and average salt loads, over the period 2001 to 2015, for each of the major catchments within the Murray Darling Basin. End-of-valley targets are measured at defined points near the downstream ends of each catchment. For the Goulburn Broken Dryland these targets are:

> Goulburn River at Goulburn Weir – salinity and salt loads to be maintained within 100% of current levels
>
> Broken River at Casey's Weir – salinity and salt loads to be maintained within 136 % of current levels

The Ultimate Salt Loads study (DNRE, 1999) provided the background information on Victorian catchments for the Murray Darling Basin Salinity Management Strategy. In this study, the Goulburn Broken was recognised as the Victorian catchment most at risk from dryland salinisation.

The State and Federal Governments have jointly agreed to work towards meeting the interim end of valley targets. Much work needs to be done to determine exactly how targets can be met, and putting in place the necessary infrastructure and policies to support the changes that are necessary. This will coincide with continued implementation of catchment works and the expansion of downstream salt interception works. Interception works are seen as *"the program of engineering works needed to 'buy time' and short term relief from salinity to the shared rivers"*.

It is recognised in the BSMS that, in the longer term, the more cost-efficient solutions to dryland salinity rest with major land use change. Balancing the twin approaches of land use change and engineering works is an important focus of the BSMS.

State Salinity Strategy

The Victorian Government also recognises that management of the salinity problem "…will require a mix of strategic measures" and again emphasises the need to achieve this, in part, through major land use change. To achieve this will require the development of improved co-operative arrangements with communities.

The document **Salinity Management in Victoria: Future Directions** (Victorian Government, 1999) identifies State salinity targets for the next 15 years. They are:

- By 2015, there will be a real reduction in the environmental and economic impacts of salinity.
- By 2005, critical recharge zones within catchments will be identified, with 40 to 60 per cent of these critical areas revegetated by 2015.

- By 2005, a quarter of agricultural production will be produced from natural resources that are managed within their capacity. By 2015, this will increase to half the value of agricultural production.

In order to achieve this, the State has identified the key steps in the process as being:

- the development of partnerships for integrated catchment management;
- improving the understanding catchment processes;
- developing appropriate actions for particular landscapes;
- building skills and the capacity for change; and
- underpinning new initiatives with an adherence to the principle of increasing water use efficiency.

Regional context

The Goulburn Broken Catchment Management Authority (GBCMA Priorities Document, 2002) has recognised that the major degradation issues facing the catchment are:

- dryland and irrigation salinity;
- water quality;
- river and floodplain management;
- pest plants and animals;
- declining biodiversity;
- soil acidity and sodicity; and
- other non-environmental issues.

It is further recognised that "*the impacts of unchecked watertable rises and salinity (in both the dryland and irrigation areas) are of significant economic, environmental and social concern".*

The GBCMA has set a high priority on developing and implementing Best Management Practices throughout the catchment and across industries in recognition that *"the continued viability of the dryland region is threatened by the continuation of unsustainable practices."*

The objectives of the Goulburn Broken Catchment Management Authority are to integrate across natural resource issues and to balance the needs of the dryland and irrigation zones with particular reference to water quality and water supply.

The CMA recognises that improved management of natural resources needs to be considered in conjunction with continued economic development of the region. It is critical that natural resource outcomes are achieved along with social and economic outcomes for the community.

Integrated catchment management

This document deals mainly with the issue of dryland salinity. Because the proposed solutions are aimed at large scale landscape change it is important that other issues are captured, in particular the likely impact on biodiversity and ecosystem function. The means of doing this is still to be developed but will be built on a model of assessing assets, their values and the risks posed to those values. In the first instance this will be done at the program scale and later applied to the sub catchment scale and finer where appropriate. At the same time other issues of water quality, water supply, soil acidification, soil erosion and pest plants and animals will be incorporated.

Community Consultation

Community consultation has been a major factor throughout the development and implementation of the Goulburn Broken Dryland Salinity Management Plan. Continued community consultation will be vital for the successful implementation of this Plan Review. It is expected that even stronger community engagement processes will need to be established as Plan implementation develops.

The GBCMA has established a robust system for community involvement in natural resource management across the catchment, centred on the Implementation Committees of the CMA.

This Draft Review document has been developed with the assistance of community input through the GBCMA Implementation Committees, and reflects broad community involvement in the salinity program.

Comments on the document are now invited and will be used to further refine the direction of dryland salinity management in the Goulburn Broken Dryland into the future.