

# Victorian catchment management approaches to salinity investment

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## Introduction

Of the 56 natural resource management (NRM) regional organisations in Australia, the ten Victorian Catchment Management Authorities (CMAs) have had the longest involvement with regionally based salinity planning. Each Victorian CMA has a plan to address dryland issues, most with an emphasis on salinity management.

There is now a recognition that salinity is much harder to tackle with available budget than believed a decade ago (Ridley and Pannell 2005). Both Commonwealth and State governments have acknowledged that there needs to be greater targeting and a shift in focus from threat based to an asset-based approach (Adamson 2007). This shift towards an asset-based approach was reflected in the renewal of regional catchment strategies during 2003 but the asset classes are extremely broad (e.g. land, vegetation), making prioritisation of specific, localised assets difficult. While subsequent revisions of sub-strategies and plans have progressively been aligning with an asset-based approach, there have been varied interpretations of what this means.

The Salinity Investment Framework (SIF3) has been developed and successfully trialled in the North Central region to assist with effective salinity prioritisation and planning (Ridley and Pannell 2008). Results have been so promising that an asset-based approach is now being used to renew the region's dryland plan, with plans also for using such to develop the new Regional Catchment Strategy.

With this background, there was interest to explore the progression of other Victorian CMA regions with respect to alignment to spatially explicit asset-based approaches such as SIF3. The aims of this paper are to explore: 1) the compatibility of current Victorian CMA plans with a spatially-explicit asset-based approach; 2) the interest of Victorian CMA regions to progress further with this approach.

## Materials and methods

A desktop review of the relevant Victorian CMA regional dryland plans was undertaken. All of the plans are focussed on salinity management except for that of Goulburn Broken CMA, which is currently under review and will address other threats to assets in addition to salinity. The plans were assessed for their compatibility with an asset-based approach against the following criteria: specific assets identified; asset values ranked; level of threat to asset considered; capacity to influence threat considered; interventions linked to assets; level of adoption assessed; distinction between dispersed and localised assets made; range of interventions considered; intervention type based on public benefit; key research and development gaps identified. The paper by Ridley and Pannell (2008) outlines implementation steps for SIF3.

Following desktop assessments of the plans, meetings were held in most regions with the relevant senior dryland staff to discuss the trial of SIF3 in North Central region along with associated results and learnings. This discussion was used as a starting point to discuss their interest in progressing with the SIF3 approach to asset management.

## Results and discussion

The Victorian CMA dryland management plans have some features aligned with an asset-based approach. For example, the Corangamite, Glenelg Hopkins, North East, Wimmera and West Gippsland plans each identify some high-value spatially explicit assets. Other plans such as Mallee and Port Phillip and Westernport identify areas of high threat and then within these only identify broad assets (Table 1).

While threat from salinity has been considered in all plans, it is not always clear how this has been assessed. Some regions used depth to groundwater information from the National Land and Water Resource Audit (SKM 2000), which is now known to over-estimate risk of shallow watertables, along with the mapped presence of salinity. A later version of mapped depth to watertables is now available, although it still has limitations (Pannell et al. 2007).

No region used state-of-the-art computer modelling to link interventions to likely outcomes. Groundwater Flow Systems (GFS) were used by the Corangamite, Glenelg Hopkins, North East, Port Phillip and Westernport, West Gippsland (limited use) and Wimmera regions to help assess the likelihood of response to treatment in reducing groundwater levels. This often resulted in identifying areas for treatment way too large to be protected with available resources and current land-use options. We suspect that this result will also be the case when Mallee and Goulburn Broken regions complete their new plans. It is highly unlikely that the broad scale interventions proposed in the plans will result in the protection of identified high-value assets from salinity, as has been found to be the case in the North Central CMA region (Ridley and Pannell 2008).

While a range of intervention types were mentioned in all plans, activities were generally limited to biological treatment (establishment of perennial pastures, remnant vegetation protection and revegetation) through the use of extension and small, temporary incentive payments. No plan considered the potential adverse impact on water yield from this activity, although Goulburn Broken intends to incorporate this information in their new version. Corangamite and Wimmera were the only regions to partially consider the adoptability of salinity-management options at the farm level. Overall the Wimmera CMA plan is the most progressed in regards to a spatially-explicit asset-based approach.

There has been a positive response from several CMAs regarding the implementation of a spatially-explicit asset-based approach with strong indications that there is a preference to consider additional threats beyond salinity. We are embarking upon new work on a tool to do this, with a preliminary version developed. The new framework is called the Investment Framework For Environmental Resources (INFFER). CMAs are keen to move away from single-threat-based plans (e.g. salinity) for a number of reasons, not least of which is that a number of dry years have substantially reduced the prominence of salinity.

In addition to the North Central CMA (and the South Coast Regional NRM group in WA), with whom we are already working, the North East CMA has indicated they will also partner with us and use the implementation of INFFER as the basis for the renewal of their Regional Catchment Strategy. The North East CMA Board, CEO and staff have all indicated their interest and willingness to participate. The Glenelg Hopkins, West Gippsland and Mallee CMAs have also expressed potential interest in pursuing a spatially-explicit asset-based approach and we will engage with these regions further. Corangamite and East Gippsland CMAs have indicated they would like further information on the trial of SIF3 in North Central and development of INFFER.

**Table 1 Alignment of dryland management plans with an asset-based approach in Victorian Catchment Management Authority regions**

Region	Features of plan aligned with asset-based approach	Incompatibilities of current plans with an asset-based approach <sup>A</sup>
Corang-amite	Clusters of high-value assets identified Threat, urgency and adoptability considered GFS (Groundwater Flow Systems) used in identifying the actions Range of interventions mentioned	Target areas too large to protect Link between interventions and assets unclear High-public-value assets not discriminated well
Goulburn Broken	Current plan being renewed	
Glenelg Hopkins	Some spatially explicit assets identified Salinity hazard considered	Areas too large to protect Link between interventions and assets unclear High-public-value assets not discriminated well No consideration of farm-level economics and adoptability
Mallee	Current plan being renewed	
North East	GFS used in identifying the actions to protect and enhance assets Clusters of threatened assets identified Range of intervention options considered	Areas too large to protect High-public-value assets not discriminated well Actions not tightly linked to protection of the assets at threat No consideration of farm-level economics and adoptability
Port Phillip Western-port	GFS used to determine the likelihood of response to treatment Consideration given to urgency of the risk	Areas too large to protect Link between interventions and assets unclear High-public-value assets not discriminated well Farm level economics and adoptability not considered
Wimmera	Good use of science, including GFS Identifies some high-value spatially explicit assets Considers a wide range of intervention options	Areas too large to protect No prioritisation of assets that are critical to protect Activities not tightly linked to high-value assets
East and West Gippsland	Some spatially explicit assets identified GFS used to determine the likelihood of response to treatment A range of interventions is considered	Areas too large to protect Link between interventions and assets unclear Require better GFS information High-public-value assets not discriminated well

<sup>A</sup> In all cases there was limited or no consideration of public vs private benefits and no distinction between localised and dispersed assets. Unless otherwise indicated, the regions used a narrow suite of policy tools.

## Conclusions

Several Victorian CMAs have already embarked on the journey towards a spatially-explicit asset-based approach. The Wimmera CMA appears to be the most progressed. All current plans contain target areas that are likely to be too large to be protectable within available resources. While a range of intervention types were mentioned in all plans, activities were generally limited to biological treatment, mostly planting of perennial pastures and native vegetation enhancement or planting. The dominant policy tools used were extension and incentive payments. Only two regions seriously considered the adoptability of perennial pasture options. We believe that SIF3 and INFFER have large potential to assist regions prioritise public investments more strongly. The reasons for this include that it:

- provides a framework to better assess public and private benefits of intervention;
- assists regions to think more critically about the highest-value assets and the need for even tighter targeting on smaller areas containing high-value spatially explicit assets;
- provides guidance about use of science and community priorities to value assets;
- helps greater confidence in achieving salinity benefits from management intervention;
- provides confidence to embark upon a broader range of interventions to manage salinity.

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