

Catchment Management Bodies and the CRC for Plant-Based Management of Dryland Salinity

David Pannell, 10 March 2004

1. Intended audience for this document

Members and the Board of the CRC. A version for external audiences is also available.

2. Purposes

- (a) To develop a consistent and logical approach in the CRC's relationships with Catchment Management Bodies (CMBs) that is consistent with our strategic aims.
- (b) To help the CRC appropriately exploit opportunities and avoid risks

The CRC has also prepared a document describing the diverse structures and arrangements for catchment management in different states: "Catchment management bodies in four Australian states: structures, legislation, and relationships to Government agencies".

3. The national policy context for CMBs

Under the Australian constitution, the State Governments are responsible for natural resource management (NRM). However, the Commonwealth government has played an increasingly influential role by virtue of its control of large programs of supplementary funding for NRM.

One of the key changes that the Commonwealth has introduced using its funding programs as leverage is an increased reliance on CMBs. CMBs now play a pivotal role in the delivery of national policy programs for NRM in rural and regional areas. The National Action Plan for Salinity and Water Quality (NAP) and round 2 of the Natural Heritage Trust (NHT2) both rely heavily on CMBs for prioritisation and delivery of public funds for NRM works in the CMBs' regions.

There have been tensions between the Commonwealth, the States and CMBs about the roles of States in planning and delivery of NRM. As noted earlier, the States have constitutional responsibility. However, the design of the NAP and NHT2 appears to be intended to reduce the role and influence of the States. States have resisted this to varying extents. Commonwealth officers express concerns about the States engaging in "cost shifting" (i.e. using Commonwealth funds to meet state responsibilities). State agencies also express concerns about cost shifting by the Commonwealth (e.g. the Commonwealth using NAP resources to pay for its own administration).

The tensions have had (at least) two unfortunate consequences:

- (a) Of the three factions, the States have by far the greatest technical expertise and data needed for NRM planning, but in most states they are limited to a supporting role, able to contribute only to the extent that CMBs allow. NSW seems to have been a partial exception to this, in that Department of Land and Water Conservation (now renamed the Department of Infrastructure, Planning and Natural Resources) played a very strong role in development of the regional "blueprints". With recent changes in arrangements in NSW it appears unlikely that DIPNR will be able to retain such a strong role.

- (b) In an attempt to demarcate the role of Commonwealth funding and distinguish it from state responsibilities, program funds are constrained to be spent predominantly on works on private land, rather than on public land or on state-wide programs. The requirement for new matching funding means that state funds are affected by this constraint as well. The effect is to divert state funding away from public lands and state-wide programs and towards private lands. This detracts substantially from the achievement of real salinity outcomes (see section 6).

4. Variation in CMBs

CMBS vary state-by-state in terms of their age, access to resources, statutory basis, human resources, access to technical expertise, profile in their communities and their names (Catchment Management Authorities in Victoria and New South Wales, Catchment Councils in Western Australia, Natural Resource Management Boards in South Australia). Illustrating one extreme, Victorian CMBs are well-established, relatively well resourced, professionally run, with statutory backing and relatively high profiles. Western Australian CMBs were only established relatively recently, are very poorly resourced, are reliant on voluntary community inputs to a significant extent, have no statutory basis (indeed they have often been in conflict with State Government agencies) and generally have very low profiles in their regions. Arrangements in New South Wales and South Australia have recently been modified to move them nearer to the Victorian model of a Catchment Management Authority with statutory backing. Further details of arrangements in each of these four states (which are the states of primary current concern to the CRC) are provided in the supporting document ‘Catchment management bodies in four Australian states: structures, legislation, and relationships to Government agencies’.

5. The scope of CMBs

Under the NAP/NHT, CMBs are to address all regional NRM issues, not only salinity. Some consider salinity to be a relatively minor issue in the context of their broad mandate. Some recognise salinity as a high impact issue, but consider it relatively intractable and so reduce its priority for funding to some extent.

Not all of the regions with significant salinity problems are specified as priority regions under the NAP (other than in Western Australia). Indeed, some of the choices made by the Commonwealth about which regions to include are rather puzzling.

Within the regional plans that are being developed, actions in response to salinity are commonly embedded within ‘integrated’ packages of measures that are intended to address a range of NRM issues, including protection of native biodiversity, soil conservation and water quality issues other than salinity (e.g. nutrients and sediment). Nevertheless, they do contain specific targets for salinity.

6. What recent research implies about the role of CMBs

Hydrologists now believe that the extent of perennial vegetation needed to prevent groundwater rise on a catchment scale is very much greater than the sorts of levels discussed in the 1980s and early-to-mid 1990s. Clever placement of small areas of perennials within a sub-catchment is now seen to be rarely a realistic option. (Exceptions to this are discussed below). To fully manage watertables at most locations throughout Australia, establishment of

perennials on at least 50% of the landscape is needed (e.g. National Land and Water Resources Audit, 2000; Campbell et al., 2000; George et al., 1999b; Hatton and Nulsen, 1999; Stauffacher et al., 2000). Smaller areas would have predominantly local effects (e.g. George et al. 1999a found most stands of woody perennials in WA had no measurable effects beyond 30 m from the edge of the stands). As well as large scales being required, the off-site salinity benefits of establishing perennials can often be long delayed (by decades or even centuries in the case of salinity in waterways) (e.g. Hatton and Samala, 1999; NLWRA 2000; Bell et al. 2000).

Notwithstanding differences between east and west, these conclusions about scale and long lags apply broadly, particularly in areas with lower rainfall. There are exceptions, of course, most often in locations where watersheds are smaller and rainfall is higher. For example, in the Western Slopes of New South Wales, areas with high salt storage and high recharge rates are being identified. Prioritisation of interventions can sensibly be based on this and other information. Note, however, that this does not imply that small-scale interventions can control water-tables and saline discharges across these whole regions. Rather, the process is one of identifying priority sub-regions where intervention is most justified, and sub-regions where lesser salinity impacts will be tolerated. Within the high priority sub-regions, substantial changes in land use are still required. Another complication is that in high rainfall regions of water-resource catchments, establishment of perennials to control watertables can have negative impacts on fresh surface water flows which would otherwise have diluted river salinity and increased water yield.

Research into adoption of new land management systems by commercial farms highlights that large-scale adoption depends substantially on the financial attractiveness of the proposed systems (e.g. Cary and Wilkinson, 1997; Sinden and King 1986; Pannell 2001a). (Close to cities, landholders tend to have a greater mix of motivations and objectives, especially hobby farmers and the like.)

Economic research has shown that the farm-level economics of currently available perennials are positive in some locations, but very rarely on a scale that would be sufficient to fully manage rising watertables (Hajkowicz and Young, 2000; Kingwell et al. 2003; Bathgate and Pannell 2002). If it was intended that farmers should be compensated for the economic losses they would incur in establishment of perennials on the scale required to fully manage salinity, the extent of public funding provided through the NAP would need to be increased by perhaps 50 to 100 fold. (This is not to imply that this would be a good use of public funds.)

Clearly, the NAP provides only enough money to effectively address a very small minority of the land that is posing a salinity threat. For threatened terrestrial assets, this means effectively protecting only a small minority of the threatened assets. For threatened water resources, it means very carefully selecting those areas where the net benefits of intervention would be greatest. If CMBs attempt to spread their funds more widely and thinly, the probability is that little of the money will achieve effective outcomes. The practical reality is that CMBs can only afford to protect a small number of terrestrial assets of outstanding public value, and these would often be assets that are amenable to protection by localised engineering treatments, rather than by revegetation of agricultural lands (Pannell, 2001b). And they can afford to revegetate only small areas in threatened water-resource catchments, which should be areas with high salt storage, high recharge, responsive groundwater systems, low runoff of fresh water, and relatively favourable economics for the perennials.

The consequence of this is that comprehensive establishment of perennials on a large scale will not be achieved by CMBs. The economics of current perennial options mean that spreading their money thinly across large areas will not achieve the changes the CMBs seek. If they spend their money wisely, they will not attempt it, as it would mean that their resources are not available for the more targeted investments where they can make a real difference.

These observations have the consequence that R&D (as part of a strategy of industry development) is of outstanding importance to complement the role of CMBs and ensure that more than just iconic assets are protected from salinity (Pannell, 2001b). There seems to be no prospect of adoption of perennials on anything approaching the desired scale without outstanding success from industry development efforts. The necessary R&D includes not just straightforward farming systems research with high probability of success, but crucially also more risky research attempting to develop brand new perennial plants and industries to allow perennials to be grown profitably across the full range of environments and regions.

The findings reported above also mean that options for making productive use of salinised resources are of great importance, since most of the salinisation that has already occurred will not be reversed, and a significant proportion of the threatened salinity is not practically preventable (George et al., 1999b; Campbell et al., 2000).

It seems that few CMBs have a realistic appreciation of the limits of their effective role in relation to salinity, and few if any will target their investment in salinity in a way that is as tightly focused as the research indicates they should. Much of their planned efforts to encourage establishment of perennials on private land will achieve little other than highly localised effects on watertables.

7. R&D needs of CMBs

There are two broad categories of outputs from R&D that are relevant to achievement of the objectives of CMBs.

1. Information for planning and prioritisation of works. (e.g. information on which assets are at risk, the degree of risk, the technical feasibility of works to protect them, the costs of those works, and the likely responses of land holders).
2. New technologies that are more effective and/or less costly to implement. (e.g. new species of perennial plants that are profitable in areas that currently lack profitable perennials).

It is crucial for the CRC to be clear about this distinction. To the extent that they are concerned with R&D, the CMBs are predominantly focused on outputs in category 1, which is understandable given their requirement to develop and implement regional NRM plans. The CRC, on the other hand, is primarily concerned with outputs in category 2. We do produce some outputs that could be useful in category 1 (e.g. in Subprograms 9 and 10), but we do so primarily in order to support our planning and evaluation of efforts in category 2.

8. Opportunities and risks for the CRC

We will find our expertise in category 1 embraced with enthusiasm (e.g. this has been very apparent in talks with some government officers). However, we need to be careful about the nature and level of our involvement with CMBs. There are already considerable efforts in various agencies going into the provision of R&D outputs in category 1. Given the earlier

discussion, it is clear that category 2 is absolutely crucial to achieve long-term large scale salinity management outcomes, yet it is probably not being effectively addressed other than in the CRC. If we allow our resources to be diverted towards category 1, the potential benefits appear small, while the costs in terms of reduced category 2 outputs may be large.

We might have looked to CMBs to provide funds for R&D and other components of industry development. It would make a lot of sense for them to do so. However there are several reasons why we should not hold great hopes of success in this area.

- There is a requirement that all regional plans involve extensive consultation with the “community”, which in practice primarily means an engaged subset of the farming community.
- Those in the farming community who are engaged with NRM planning expect that funds will be spent on works on private land, and they believe that this is appropriate.
- The Commonwealth position is that funds should be primarily spent on works on private land. There have been some minor exceptions to this (e.g. the Engineering Evaluation Initiative in WA; the NRM research centre in SA), but these are small investments and having them accepted has proven extremely difficult. The Commonwealth has the power to enforce its position through the process of accreditation of plans.
- Limited budgets. Compared to the task they have been set, all CMBs have tiny budgets. Being aware that the CRC is already resourced, CMBs may be inclined to rely on outputs coming from our existing funding.
- Intense competition for funds. As the conduit for most NRM funds, CMBs are overrun with people trying to sell them services and expertise of widely varying quality and relevance. Many are tired of being told what they need.
- Most CMBs lack knowledge of salinity research results and their implications, as outlined earlier. The Commonwealth NAP program is not requiring CMBs to catch up with the science and face its implications.

Nevertheless, there are political and practical reasons why the CRC should have some engagement with CMBs and the NAP. Amongst those players who have not come to terms with the implications of research presented earlier, the NAP is considered to be the “main game” in relation to salinity, and a decision by us not to engage with it may be viewed negatively by some stakeholders and possibly future reviewers of the CRC.

Some CMBs are aware (or can be convinced) that development of profitable perennial land uses is important to achieve their objectives, and will be willing to offer at least indirect/in kind support to the CRC, particularly for participatory research/extension in their regions.

CMBs have a role in providing oversight/coordination of NRM-related activities in their regions, and so may be aggravated if we do not advise them of relevant projects and events occurring within their regions. We can avoid risks flowing from this if we keep communication channels open.

If we do successfully cultivate relationships with CMBs, we may ultimately be able to convince at least some of them of the importance of the CRC’s role, particularly the limited potential of CMBs to address broad-scale salinity issues without the CRC. They may prove useful allies in future discussions with the Commonwealth or CRC reviewers.

9. Agreed policy and strategy

1. CRC resources, including in-kind resources, should not be used to support regional planning of on-ground works by CMBs other than in exceptional circumstances, as judged by the CEO.
2. The management and communication teams of the CRC will work to improve communication and relations with CMBs in a variety of ways.
3. Program Leaders and Subprogram Leaders need to be aware of CMBs and the need to communicate with them about projects and activities occurring in their regions, both as a matter of courtesy, and to seek their advice and support. This communication should be done in consultation with the CRC's node managers and/or communication team.

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