
Study area: Goulburn Valley, Victoria, Australia. Map courtesy Peter Smith, Spatial Vision.

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Abstract

This thesis investigates the evolution of government and public roles in salinity management within the Goulburn Valley, an important agricultural region of north-central Victoria. I argue that approaches to salinity management in the Goulburn Valley have altered over time to reflect variations in the connection between government and local communities. From 1905, the Victorian Government (as represented through its administrative body for water resources, the State Rivers and Water Supply Commission (SRWSC)) was led by a combination of developmentalist ideology and financial caution to install throughout north-central Victoria the fatal combination of extensive irrigation systems without adequate drainage. Despite early evidence of salinity problems resulting from their actions, the SRWSC did not experience a serious challenge to its institutionalised pattern of top-down advice and authority until the 1970s, when proposals for large-scale evaporative disposal schemes for salinity management met with angry responses from the farming community. Following an examination of community responses to two of the most controversial of these, the Lake Tyrrell and Mineral Reserve Basins salinity management schemes, I re-evaluate the subsequent Girgarre salinity control project in its historical context as a turning-point in government attitudes to community consultation. Through a close analysis of key policy documents, I then show how salinity management in the Goulburn Valley has developed since Girgarre to incorporate increasing levels of community participation, and proceed to examine the Australian Landcare movement as an effective, though flawed, system for community-based natural resource management. The thesis concludes with an assessment of the Goulburn Valley’s current situation, and emphasises very strongly the need for genuine community participation to ensure effective salinity management.
Declaration

This is to certify that –

(i) the thesis comprises only my own original work except where indicated in the preface,

(ii) due acknowledgement has been made in the text to all other material used,

(iii) the thesis is 30,000 words in length, inclusive of footnotes but exclusive of tables, maps, appendices and bibliography.

Signed: …………………………………………………………………………………….

(Hilary Susan Howes)
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List of Abbreviations

CFL   Department of Conservation, Forests and Lands
CMA   Catchment Management Authority
DARA  Department of Agriculture and Rural Affairs
DPI   Department of Primary Industries
DSE   Department of Sustainability and Environment
GASSAG Girgarre and Stanhope Salinity Action Group
GDSMP Goulburn Dryland Salinity Management Plan
GIRDAC Goulburn Irrigation Region Drainage Action Committee
ICM   Integrated Catchment Management
KIRSAC Kerang Irrigation Region Salinity Action Committee
MRB   Mineral Reserve Basins
PPWC  Parliamentary Public Works Committee
RWC   Rural Water Commission\(^1\)
SIR IC Shepparton Irrigation Region Implementation Committee
SIRLWSMP Shepparton Irrigation Region Land and Water Salinity Management Plan
SPAC  Salinity Program Advisory Council
SPIG  Salinity Program Implementation Group
SPPAC Salinity Pilot Program Advisory Council
SRWSC State Rivers and Water Supply Commission
UDV   United Dairyfarmers of Victoria
VFF   Victorian Farmers Federation

\(^1\) Note that the SRWSC was renamed the RWC in 1984; the Department of Water Resources (DWR) was created at the same time ‘to provide independent advice on policy matters’ (Russ, *The Salt Traders*, 178).
Introduction

The water table rose, and the alkali [salt] being a deadly poison to plant life, desolated the areas affected.²

The grass just disappeared, died ... and it was bare ground. With a little bit of white, fluffy sort of a stuff on top of the ground ... we hadn’t ever seen it before, and we couldn’t understand just what was the matter with this long strip of soil that wasn’t producing any grass any more.³

These extracts vividly describe the effects of salinity, a land degradation process that currently affects some 5.7 million hectares of land in Australia.⁴ Since the 1980s it has frequently been described as ‘the single greatest threat facing the [Australian] environment’.⁵ Though salinity does occur naturally in some parts of Australia, the vast majority of Australia’s salt-affected areas result from human activity. Human-induced salinity is essentially a product of land clearing, and the subsequent replacement of trees and other deep-rooted native perennials with shallow-rooted annuals (introduced grasses and crops). Because the replacement vegetation has less ability to absorb natural rainfall, increased volumes of water penetrate below the root zone to underground aquifers. Over time, these ongoing accessions to subsurface waters cause the watertable to rise. The dissolved mineral salts which are present in much of Australia’s groundwater cause plants to become dehydrated, wilt and eventually die. Even where groundwater is not particularly saline, high watertables (within two metres of the soil surface) cause waterlogging and result in decreased plant vigour and damage to soil structure. In irrigated areas, water is applied to the soil in greater quantities and with greater frequency than under natural rainfall conditions. The consequent increase in the amount of water

³ Interview, Brian Williams, 11 August 2006.
passing through the soil adds to the effects of deforestation and vegetation change, accelerates the development of waterlogging and salting symptoms, and further exacerbates the difficulty of their management. In many irrigated areas, seepage of water from unlined distribution channels adds to the problem.\footnote{Further detail on salinity processes may be found in Ann Young, \textit{Environmental Change in Australia since 1788} (Melbourne: Oxford University Press, 1996), 51-63, and Peter Cullen, ‘Salinity’, in \textit{Ecology: An Australian Perspective}, eds Peter Attiwill and Barbara Wilson (Oxford and New York: Oxford University Press, 2003), 474-87.}

This thesis examines the evolution of government and public roles in salinity management within the Goulburn Valley, an important agricultural region of north-central Victoria, Australia (Fig. 1). The Goulburn Valley is primarily an irrigated region, supporting mainly horticultural and dairying activities, though it also includes areas of dryland farming (cropping and grazing). The farming practices associated with these land uses have generated substantial wealth since their establishment, but they have also produced a range of land degradation and water quality problems, notably soil salination and its associates, waterlogging and soil structural decline. These problems have

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{fig1.png}
\caption{The irrigated areas of the Goulburn Valley.}
\end{figure}
economic, environmental and social costs, all of which must be managed to ensure the long-term viability of the region.

Management strategies addressing salinity problems have changed, and continue to change, in response to a range of factors. Naturally, the diversity of primary industries within the Goulburn Valley has necessitated a corresponding diversity in the management techniques and strategies used. However, approaches to salinity management in the Goulburn Valley have also altered over time to reflect variations in the connection between government and local communities. These variations have been influenced by changing popular and scientific understandings of salinity processes and by shifting political and community priorities, as well as by economic and social developments on the national and global scale.

This thesis argues that the nature of the relationship between government and community in Victoria during its farming history has been critical in determining the State’s approach to salinity management. Changes in this approach correlate closely with changes in each group’s understanding of its own role, and that of the other, in managing the State’s water resources and the problems resulting from their use. The most important change has been the gradual transition away from downward imposition of management strategies by government authorities and scientific ‘experts’, towards greater community consultation and participation and a focus on locality-specific management. Increasingly vocal community challenges to government management of salinity issues were instrumental in driving these management changes.

The effects of these developments in management policy and practice are observable throughout rural Victoria, and examples of salinity management in various areas of the state will be used to illuminate the particular regional focus of this thesis. However, I have chosen to focus on the Goulburn Valley, as an appropriate microcosm of wider salinity management issues, for several reasons. As Victoria’s irrigated heartland and the most economically valuable agricultural area in the state, the Goulburn Valley has attracted significant scientific and political attention from its earliest settlement, and has
been the site of many pioneering projects in salinity management. This concentrated attention has produced a wealth of documentary sources suitable for historical analysis; it has also made the area a centre of controversy at times, particularly during the 1970s and 1980s, when the disproportionate government attention and funding paid to the Goulburn Valley attracted the ire of farming communities from other areas, scuttling some of the state’s grandest saline disposal schemes, and precipitating new approaches to salinity management.

I have selected the Girgarre district, one of the Goulburn Valley’s dairying centres, as a case study for the thesis. As the site of Victoria’s first large-scale artificially constructed evaporative disposal basin, Girgarre represents an important stage in the development of site-specific management strategies. Previous analyses have tended to interpret the existence of controversy regarding the basin’s construction as evidence of failure on the part of government to engage local communities successfully. I argue, however, that these controversies in fact represented a critical turning-point in the Victorian government’s approach to community consultation, and showed the success of community rebuffs to previously proposed top-down salinity management schemes.

Complementing its primary focus on the relationship dynamics between government authorities and rural communities, this thesis identifies and describes significant points and processes in the development of salinity management strategies in the Goulburn Valley, and investigates the various factors influencing the adoption of specific strategies, practices and technologies during the period of study (1886-present). I locate this investigation within a broader discussion of important developments in scientific knowledge and technological sophistication, transitions in environmental, agricultural and economic thought, and changing cultural trends, during the period under study.

The thesis is located primarily within the discipline of environmental history, although it necessarily incorporates elements of agrarian history, social history, and history of science. Essentially, the existence of environmental history was made possible by recent historical developments in the culture and philosophies of the Western world; the writing
of histories which focus on the dynamic and reciprocal relationship between humans and
the non-human environment has accompanied the rise of ecological consciousness since
the 1970s. Before this time, prevailing understandings of the non-human world as simply
a collection of “resources” ordained for human use impeded recognition of the value of
this kind of history. This is not to suggest that environmental history emerged fully
formed from a vacuum; clear antecedents include historical geography, palaeogeography,
landscape history, nature writing, and the microhistorical approach of the Annales
school.7 However, the comparatively recent development of environmental history as a
recognised academic discipline perhaps accounts for the particularly clear parallels in this
field between the history and its associated historiography – the growth of interest in, and
concern for, the natural world, and the emergence of a discipline which enables historians
to examine the past through the prism of these concerns.

Most comprehensive Australian environmental histories, including Bolton’s Spoils and
Spoilers,8 Lines’ Taming the Great South Land,9 and Beale and Fray’s The Vanishing
Continent10, have discussed issues of land degradation and water quality issues, with
salinity as one of the foremost concerns. Popular works on water resources and water use
history in Australia – for example, Keating’s The Drought Walked Through11, and
Fullerton’s more recent Watershed12 – have also addressed questions of irrigation and
salinity. The publication of three major environmental histories of salinity in Australia
within the past decade (Russ, The Salt Traders,13 Beresford et al., The Salinity Crisis,14

7 Of particular significance are the Annalistes’ studies of mentalité, notably Emmanuel Le Roy Ladurie’s
Le Carnaval de Romans, 1579-1580 (1980) and Montaillou, village occitan (1975), Carlo Ginzburg’s Le
fromage et les vers: L’univers d’un meunier du XVIe siècle (1980), and Fernand Braudel’s La Méditerranée
et le Monde Méditerranéen a l’époque de Philippe II (1949). Eamon Duffy’s The Voices of Morebath:
Reformation and rebellion in an English village (2001) is a more recent example.
8 Geoffrey Bolton, Spoils and Spoilers: A history of Australians shaping their environment. 2nd ed. (North
9 William J. Lines, Taming the Great South Land: A History of the Conquest of Nature in Australia (North
10 Bob Beale and Peter Fray, The Vanishing Continent: Australia’s Degraded Environment (Rydalmere,
11 Jenny Keating, The Drought Walked Through: A history of water shortage in Victoria (Melbourne:
Department of Water Resources Victoria, 1992).
13 Peter Russ, The Salt Traders: A History of Salinity in Victoria (East Melbourne, Vic.: The Department of
the Premier and Cabinet, State of Victoria, 1995).
and Sexton, *Silent Flood*)\textsuperscript{15}, along with the inclusion of a case study of the Goulburn-Broken catchment’s salinity problems in Walker and Salt’s *Resilience Thinking*,\textsuperscript{16} clearly indicates the continuing relevance of salinity as an environmental issue of major concern, with additional economic, political and social repercussions.

However, these and similar works tend to focus on describing the particular attitudes and land-use practices underlying the emergence of land degradation and salinity as major economic and environmental concerns. The considerations involved in managing these problems, though they have attracted a seemingly endless array of scientific studies, have received less attention from historians than they deserve. Two major exceptions to this general rule are Barr & Cary, *Greening a Brown Land*,\textsuperscript{17} and Russ, *The Salt Traders*; their detailed descriptions and evaluations of past and present salinity management strategies sit well with my own approach.

The two works most influential to my approach, however, are not strictly environmental histories, though much of their content would be equally effective in an environmental history framework. The first, James C. Scott’s *Seeing Like a State*, falls into the broad category of socio-political history;\textsuperscript{18} the second, Elinor Ostrom’s *Governing the Commons*, might best be described as institutional and policy analysis applied to natural resource management.\textsuperscript{19} Both works use case studies to critique state control (and, in Ostrom’s case, privatisation) of natural resources. Scott criticises authoritarian state planning, particularly large-scale schemes for social improvement which have ignored local customs and practical knowledge in favour of what he terms a ‘high-modernist

\textsuperscript{14} Quentin Beresford et al., *The Salinity Crisis: Landscapes, Communities and Politics* (Crawley, WA: University of Western Australia Press, 2001).
\textsuperscript{15} Michael Sexton, *Silent Flood: Australia’s Salinity Crisis* (Sydney, NSW: ABC, 2003).
\textsuperscript{17} Neil Barr and John Cary, *Greening a Brown Land: The Australian Search for Sustainable Land Use* (South Melbourne, Vic.: Macmillan, 1992).
ideology’, this being ‘a muscle-bound version of … the rational design of social order … a faith that borrowed … the legitimacy of science and technology’.\textsuperscript{20} It is not difficult to see the relevance of this analysis to the ideology-laden debates which accompanied the introduction and extension of irrigation infrastructure in Victoria. Ostrom extends this analysis, arguing that state control and privatisation of resources, the two dominant policy solutions to common-pool resource problems, both err in viewing individuals jointly using a common-pool resource as ‘helpless … caught in an inexorable process of destroying their own resources’.\textsuperscript{21} She offers a range of case studies in which voluntary organizations have been successful, to a greater or lesser extent, in solving their own common-pool problems. Both authors effectively warn against political ideologies which restrict community participation in natural resource management, or disregard its importance. Their arguments have helped direct my own thinking on community and government roles in natural resource management, though the case studies they examine vary widely and differ in many respects from the specifics of the Goulburn Valley’s situation.

Two significant works on water-use history, Worster’s \textit{Rivers of Empire} and Powell’s \textit{Watering the Garden State},\textsuperscript{22} have also been of considerable importance to this thesis. The former addresses the socio-political dimensions and continuing repercussions of historical irrigation development in America; the latter considers these issues in relation to water supply in Victoria. Both works have been influential methodologically; Powell’s discussions of irrigation and (more briefly) salinity have also provided important historical context, while Worster’s observations offer valuable comparative insights.

The additional resources required to write a history of this kind are many and varied. By its nature, environmental history incorporates not only the more traditional studies of

\textsuperscript{20} Scott, \textit{Seeing Like a State}, 4.
\textsuperscript{21} Ostrom, \textit{Governing the Commons}, 8.
social and political history, but also elements of physical geography, land- and water-use (agrarian) history, history of science, and socio-political history. In addition to the environmental histories already mentioned, histories of irrigation and water resource development, among them Hallows and Thompson’s *A History of Irrigation in Australia*\(^\text{23}\) and Blackburn’s *Pioneering Irrigation in Australia to 1920*,\(^\text{24}\) are clearly relevant to the study of an area in which irrigated agriculture is so significant. Davidson’s *Australia Wet or Dry?*,\(^\text{25}\) arguably the first academic challenge to Australia’s unbridled enthusiasm for ever-expanding irrigation schemes, is an historic document in its own right. Unpublished academic works, particularly Sinclair, ‘Making the Deserts Bloom’, and Cook, ‘The Garden of Australia’, have also furnished valuable analyses of relevant aspects of Victoria’s irrigation history.\(^\text{26}\)

The dynamics of settlement in the Goulburn Valley and other areas of Victoria have attracted their fair share of scholarship. Powell’s *The Public Lands of Australia Felix*\(^\text{27}\) is of course the signature work in this area, although its focus is broad rather than localised. Martin’s research into *Irrigation and Closer Settlement in the Shepparton District 1836-1906*\(^\text{28}\) is of particular interest as a detailed investigation of water supply and settlement dynamics in a significant district of the Goulburn Valley. Lake’s *The Limits of Hope*\(^\text{29}\) remains the authoritative work on soldier settlement schemes in Victoria, the social pressures and ideological forces underlying their establishment, and the political, economic and social repercussions of these schemes for both soldier settlers and the

\(^{23}\) Peter J. Hallows and Donald G. Thompson, *The History of Irrigation in Australia* (Mildura, Vic.: ANCID, First Mildura Irrigation Trust, 1995).
wider community. The environmental costs of soldier settlement, which fall outside the scope of the aforementioned works, have been examined by Russ and by Barr and Cary, and are of particular importance to the authors of *The Salinity Crisis*, who attribute the disastrously widespread and severe salinity of the West Australian Wheatbelt very largely to the West Australian government’s devotion to their ‘ideology of development’ via clearing, settlement and mass wheat production, which led them to ignore reports of salinity by landowners and the warnings of expert scientists even as late as the 1980s. The development of salinity in Victoria’s irrigated districts was in many respects very similar; developmentalist pressures, in particular, were equally influential in shaping the Victorian government’s approach to salinity management until well into the 1970s, and are discussed in detail in the first chapter of the thesis.

Local histories, though necessarily different in approach and focus from an environmental history, can often serve as repositories for information which is difficult to find elsewhere, particularly in relation to the details of early European settlement and the establishment of rural communities in the Goulburn Valley. Forster’s centenary history of Waranga\(^{30}\) and Bossence’s histories of Kyabram, Tatura and Numurkah\(^{31}\) have been helpful in this respect. Biographies of individuals involved in Victoria’s irrigation development, notably Alfred Deakin and the Chaffey brothers,\(^ {32}\) have also supplied valuable information on the attitudes and preoccupations of these figures, and the vicissitudes of water supply and irrigation during the late nineteenth and early twentieth centuries.

Primary sources of particular importance include extracts from the *Victorian Parliamentary Papers*, notably the Royal Commissions of 1916 (Closer Settlement in the Irrigable Districts) and 1925 (Soldier Settlement), and numerous articles printed in the *Journal of Agriculture Victoria*; these have supplied vital details of the development and


early management of salinity and waterlogging in the Goulburn Valley and other parts of Victoria, as well as many valuable insights into scientific understandings and government attitudes influencing approaches to salinity management. From the 1970s onward, policy documents on salinity management, complemented by information drawn from newspaper reports and from my own interviews with individuals involved in salinity management in the Goulburn Valley, have been the most significant primary sources for this thesis. Unpublished archival sources such as lands department records and minutes of salinity committee meetings proved difficult to obtain, and were to a large extent rendered superfluous by the great wealth of material available in the primary sources mentioned above. However, further studies in this field might reasonably expect to obtain interesting supplementary information and/or site-specific detail from such sources.

Regarding the interview process, potential interviewees, including local landowners, members of Landcare groups, and employees of government departments dealing with salinity, were contacted initially through field days held by the Goulburn Valley Science and Citizenship Project. Interviews were semi-structured, focusing on each participant’s individual experiences and understandings, and were conducted either in the company of research assistant Robin Landvogt or on a one-to-one basis. All stages of the interview process were carried out in strict accordance with the requirements of the University’s Human Research Ethics Committee. I am aware that the use of oral sources for historical research has been complicated by recent studies showing the reconstructive and contextual nature of memory. However, where oral testimonies are necessary to supplement written records insufficient for the purposes of study, a close comparison of these testimonies with each other and with the textual records available can substantially reduce the inaccuracies of remembered material. More importantly, however, oral sources reveal understandings and interpretations of historical events whose importance is not dependent on their factual accuracy. The inclusion of interview-derived material in this thesis is not intended to produce statistically significant results, but to add individual

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and personal insights which both complement and challenge the conclusions of published analyses.

The first chapter of the thesis demonstrates the developmentalist mentality and downward authority of government and scientific ‘experts’ which characterised salinity management in the Goulburn Valley and other irrigated districts in Victoria during the period 1880-1970. I discuss the implementation of land-use practices which resulted in the development of waterlogging and salinity problems from the beginning of the twentieth century, and trace the progressive recognition of these problems at both a community and an official level, and the emergence of individual, community and government attempts to deal with them. My approach is analytical rather than narrative; although the latter is a necessary step in establishing a groundwork of historical facts on which to build further analysis, I am more interested in the underlying attitudes and approaches prevalent amongst farmers, scientists and government officials during the period of study. Why, for example, were settlers who complained of salinity problems initially ignored by government? Why were their (often legitimate) concerns about declining productivity largely downplayed? Why, also, were early warnings from expert water engineers regarding the necessity for adequate drainage in irrigation areas generally ignored? Chapter One examines the interlocking ideological, political, economic, social and personal factors underlying particular political visions, policy decisions and land-use practices which contributed to the rapid degradation of agricultural land in the Goulburn Valley during the first half of the twentieth century. It argues that state government ideologies which understood irrigation as an instrument for social and moral improvement helped breed an institutionalised disregard for alternative views (particularly community and scientific concerns) which was of crucial significance in determining the nature of salinity management – characterised predominantly by delay and ineffectiveness – in Victoria up until 1970.

Chapter Two re-analyses the Girgarre evaporation basin, a salinity control project completed in 1987, as a turning-point in government attitudes to public inclusion and participation. Russ (The Salt Traders) and Barr and Cary (Greening a Brown Land), who
discuss the Girgarre basin in some detail, have largely reproduced the conclusions of *The Social Impact of Salinity in the Shire of Deakin and Waranga*, a report produced by John Sawtell and John Bottomley for the Goulburn Regional Advisory Council in 1989.\(^{34}\) Sawtell and Bottomley’s report presents the Girgarre basin as a scheme imposed primarily to satisfy political objectives, without adequate involvement or participation of interested landholder groups. I argue that this depiction is misleading. From its inception in 1905, Victoria’s State Rivers and Water Supply Commission (SRWSC), the premier water authority in the state, had established a pattern of deciding what was in farmers’ best interests and then implementing it, with little consideration of any feedback from the farmers themselves. Until well into the 1980s, the culture amongst Victoria’s water managers was one of downward advice and authority. Girgarre was significant precisely because it challenged this culture. Negative reactions to the earlier Lake Tyrrell and Mineral Reserve Basins (MRB) schemes, where lack of community consultation was a major factor in the ultimate failure of government proposals for salinity management, substantially affected the bureaucratic approach to the subsequent proposals for, and discussion of, construction of the Girgarre basin. My analysis of these opposing viewpoints, in the context of the political and community debates surrounding the earlier schemes, forms the core of Chapter Two, with information derived from interviews with key participants in the Girgarre project representing a substantial part of the primary material.

The final chapter of this thesis evaluates developments in management strategies in the Goulburn Valley from 1980 to the present as a new phase in the level of grassroots community involvement in salinity management. I consider the gradual transition from large-scale engineering works to individual farm plans, the formation and continuation of Landcare and associated community groups in the Goulburn Valley, transitions in scientific understandings of salination processes, and the development of technologies which enable a more preventive approach to salinity. I focus especially on the increasing participation of local communities in salinity management, and the ongoing development

of programs and institutions which allow more equal and flexible partnerships between government institutions and local communities. I also discuss some of the major directions for current and future research in this area, arguing in particular that recent pseudo-scientific and scientific studies which question the recharge-discharge model of hydrology and emphasise the efficacy of local rather than regional management techniques should not be understood to undermine the importance of community cooperation for effective salinity management.
Chapter One: Developmentalism and downward authority

From purely local management we have swung round to the opposite – Government management by a Commission. I think the ideal system lies between … the people do not know all, neither do the Commissioners.\(^{35}\)

Introduction

Though much has been written about the physical causes of Australia’s salinity problems – by which I mean principally climatic and geological conditions, and the effects of particular land-use practices – salinity in Australia is as much the result of social and political failure as of environmental predisposition and technological inadequacies. Yet this web of intangibles, what we might call social, political, economic and ideological propellants, has until recently received little scholarly attention. Two notable exceptions are Beresford et al., *The Salinity Crisis*,\(^ {36}\) and Harris, ‘Development and Damage: Water and Landscape Evolution in Victoria, Australia’,\(^ {37}\) which examine the political and economic stimuli underlying the development, respectively, of salinity in the West Australian wheatbelt and the irrigated districts of Victoria. In this chapter I focus their approach to landscape analysis on the Goulburn Valley. I argue that the tardiness and ineffectiveness which characterised responses to salinity in Victoria’s irrigated heartland from the 1890s to the 1970s were largely the result of a philosophy of natural resource management which was governed by narratives of science-based economic and social progress encouraging an institutionalised disregard for contradictory scientific evidence and community concerns. Two documents bookend this discussion. One, the Victorian Irrigation Act of 1886, launched the state’s official irrigation development; the other, the 1970 *Murray Valley Salinity Investigation* (the ‘Gutteridge Report’),\(^ {38}\) was the first official recognition of salinity in the Murray-Darling Basin as a systemic problem requiring urgent and concerted management action. Between these two dates, the

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\(^{36}\) Beresford et al., *The Salinity Crisis*.


expansion of irrigated agriculture in Victoria, the rising incidence of associated waterlogging and salinity problems, and the responses of landowners, politicians, water institutions, and agricultural ‘experts’ to such problems, are the focus of the chapter.

My aim above all is to explain the failure of Victorian governments, institutions and local communities to respond to increasing evidence of salinity and to manage it effectively in the Goulburn Valley prior to the 1970s. I argue that this failure cannot be attributed primarily to ignorance; unlike the processes of dryland salinity, which were not described until the 1920s,39 those relating to irrigation salinity were substantially understood even before the introduction of irrigated agriculture to Victoria. Observations of irrigated areas in North America, India, and Europe, and open acknowledgement of the importance of drainage in such areas by Victorian authorities, rarely translated into the instalment of adequate drainage systems in the Goulburn Valley or other irrigated areas, even after salt problems had become apparent.

Stephen Trudgill has identified four main barriers to effective environmental action: agreement barriers (“what constitutes an environmental problem?”), knowledge barriers, technological barriers, and economic/social/political barriers.40 All four kinds are arguably recognisable in the Goulburn Valley’s salinity history. While salinity and waterlogging were acknowledged as problems wherever they were found to occur, the actual and potential severity of these issues was consistently underestimated, with landowners and scientists tending to demonstrate more concern than politicians and water managers; consequently, there was no real agreement between these groups as to whether or not salinity constituted an environmental problem. These difficulties were compounded by an imperfect knowledge of the environmental conditions (soils, climate, and hydrology) of the irrigated districts, and by technological limitations, notably the relatively primitive condition of irrigation technology during the late nineteenth and early twentieth centuries, and the prohibitive expense of installing the more effective irrigation

39 W.E. Wood, ‘Increase of Salt in Soil and Streams following the Destruction of the Native Vegetation’, Journal of the Royal Society of Western Australia 10(7), 1924, 35-47.
and drainage systems then available. This thesis contends, however, that it is necessary also to recognise the ideological and political forces which drove irrigation forward, even in the face of an increasingly evident salinity crisis: the desire for wealth creation and agricultural expansion, the perceived benefits of the rural life to individuals and to society as a whole, the progressivist views which understood land and water as natural resources to be developed and not ‘wasted’, and the economic pressures which necessitated rapid implementation and expansion of irrigated agriculture to keep the agricultural industry competitive in export terms. A prevailing faith in the capabilities of science and technology led to overoptimistic assessments of the suitability of certain areas for irrigation, and a tendency, at an official level, to dismiss criticisms of irrigation or concerns regarding developing waterlogging and salinity problems as anti-progressive doomsaying. Assisted by the relatively acquiescent mores of the pre-1960s era, this tendency hardened over time into a culture of almost exclusively top-down advice and authority. Social dilemmas, such as the pressure to provide for returned soldiers following the First and Second World Wars, and the personal preoccupations of influential individuals and groups, also contributed. The ultimate results of this potent cocktail were a climate of prevailing blindness and inertia, and a salinity problem which remains unlikely to be solved absolutely in the foreseeable future.

Salinity is not a new problem, nor is it confined to Australia. Worster, who has described it as ‘the oldest and most endemic form of water decline associated with all hydraulic societies’, supplied a grim catalogue of salt-affected lands worldwide in the mid-1980s: 60,000 acres of fertile cropland per year in Pakistan, ten percent of Peru’s agricultural land, substantial areas of Afghanistan, India, northern Mexico, Syria and Iraq. Recent estimates for Australia suggest 5.7 million hectares of land at risk of or affected by dryland salinity alone, increasing to 17 million hectares at high risk within 50 years; within the Murray-Darling Basin, over 100,000 hectares of irrigated land are currently

41 Worster, Rivers of Empire, 319.
42 Ibid., 320.
Though the extent of salination worldwide was far smaller during the late nineteenth and early twentieth centuries, the evidence for irrigation-induced salinity even then was certainly sufficient to have given Victorian irrigation pioneers pause for thought. There is little benefit and less virtue in assigning blame for the mistakes of the past, particularly when our current conduct could hardly stand an equal scrutiny. Nevertheless, taking into account the warnings expressed from the 1880s on by both landowners and scientists, it is evident that irrigation developments in the Goulburn Valley and other parts of Victoria were pushed onward not only by ignorance, but to some extent by wilful blindness. The social, ideological and economic motives underlying this political myopia equally lay behind the onset of salinity in Victoria’s irrigated districts.

**Victoria’s irrigation beginnings: Alfred Deakin**

Irrigation had been attempted locally by various enterprising individuals in Victoria from the 1850s, but the question of irrigation on a large scale was not seriously considered before the 1880s. In response to a series of severe droughts in southern Australia, which lasted from 1877 to 1881 and ‘brought hardship and privation to the settlers in the northern plains’, the Victorian Government appointed a Water Conservancy Board in 1880 to report on water supply and irrigation on the northern plains. The reports of this Board led in 1881 to an Act providing for the establishment of waterworks trusts closely linked to local councils and aided by State loans, and concerned primarily with the supply of water for domestic and stock purposes. To provide for irrigation, a further Act, the Waterworks (Water Conservation Amendment) Act, was passed in 1883. Concerns regarding the scale of expenditure required for irrigation schemes led in 1884 to the appointment of a Royal Commission on Water Supply, to ‘inquire into the question of Water Supply, and into other matters relating thereto’; in the multiple progress reports

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46 Hallows and Thompson, *History of Irrigation*, 18.
subsequently submitted by the Commission to Parliament, its President, the Hon. Alfred Deakin, found the opportunity to express his intense and passionate personal belief in the capacity of irrigation to bring both material and moral prosperity to its practitioners.

Deakin, who became Minister of Public Works and Water Supply in 1883, turned the campaign for irrigation into a crusade. He saw in irrigation, not simply drought-proofing and stock and domestic supplies, but the opportunity ‘to secure permanence and prosperity to our agriculture, and a wealth and populousness to our country districts, which without irrigation they could never hope to attain.’\(^{48}\) He confidently predicted the glowing future of an irrigated Victoria:

> When the whole of this continent becomes well settled, or even settled in all its parts, it may be possible for the valleys of the Murray and the Goulburn to hold something like the position which that of the Po does in Northern Italy, and by the careful utilization of their waters to become densely peopled, splendidly productive, and enormously wealthy.\(^{49}\)

Deakin also acknowledged an economic push in addition to the pull of prospective wealth. Farmers growing single crops were losing out to competition from primary producers in other colonies, notably India and South America; wheat and wool were subject to drastic price fluctuations. Asserting that ‘the safety of the farmer lies in the variety of his products’, Deakin concluded that ‘the days of profitable wheat exportation are drawing to a close … [i]n dry districts the first and essential, if not the sole, remedy is irrigation and its variety of products.\(^{50}\)

The economic benefits of irrigation, however, constituted only half the vision. Deakin saw irrigation as an agent of moral and intellectual improvement, and he was not alone in these views. The widely-held ‘yeoman ideal’ valued measures conducive to the

\(^{50}\) *Ibid.*, 44-5.
establishment of small, independent farmers. Irrigation, which was seen to ‘[tend] to the subdivision of great estates and the increase of small holdings’, would break the power of the squatters and open up the land to genuine yeomen; furthermore, by compelling landowners ‘to co-operate for common purposes’, it would encourage the development of community spirit and self-determination. The result, Deakin predicted, would be ‘a superior class of small farmers’, leading ‘a semi-communal life, favorable to education, individuality, and mental activity … thus according admirably with the pursuits of citizens capable of controlling democratic institutions and undertaking local self-government.’

Others besides Deakin believed in the moral value of agriculture and the superiority of the rural life. Biblical and historical precedent identified cultivation of the soil as the cornerstone of human society, and farming as ‘the one original and fundamental occupation; all other businesses and professions are either its offshoots or its parasites.’ Within this worldview, the vitality and character of the people, as well as the stability of the nation, depended upon maintaining a strong rural population. Urban life was considered to represent a deterioration from humankind’s natural state; cities were compared to ‘huge cancers’, sapping the health and strength of their inhabitants, and destroying the ‘national fibre’ of Australia. It was therefore a matter of national importance to encourage ongoing agricultural occupation of Victoria’s open spaces; and irrigation, which promised high financial returns from small areas of land and security from the vagaries of climate, formed an indispensable part of this aim. Even cautious individuals accepted it as essential for the complete utilisation of Victoria’s inland regions; those less cautious couched their discussions of irrigation in blatantly

52 Deakin, ‘Irrigation in Egypt and Italy’, 41.
55 A.S. Kenyon, Engineer for Agriculture and certainly no uncritical advocate of irrigation, nevertheless stated that ‘[i]n the Northern areas and to some extent in the South, the full use of the land can only be made by means of irrigation’ (A.S. Kenyon, ‘Experimental Farms. The Work at Wyuna’, *J. Agric. Vic.*, 5(8), Aug 1907, 451).
soteriological language. Francis Myers, travelling correspondent of *The Argus*, introduced his 1891 pamphlet *Irrigation; or, the New Australia* with these words:

I believe in practical, scientific irrigation with all my heart and soul and strength. I know too well what, in its absence, life in the bush of Australia has become … old men have become debauched and degraded to the state of absolute brutes … young men and boys have fled from it to the city as to a haven of refuge … I know also how in those cities the curse of pauperdom, of vagrancy, of lowest vices and crime increase terribly … sedition, anarchy, and all blackest forms of socialism are bred, and while the rich and beautiful country is un-tilled and un-utilised, the cities are thronged with wolf-eyed multitudes, eager only each for the other’s substance.

For the existence of such conditions I blame chiefly … the unnecessary harshness and brutality of our bush life. For its removal I look chiefly to the gentler order which shall follow a general introduction of irrigation.56

More cautious voices had little chance against such high expectations and glowing prophecies. Deakin’s enthusiasm for irrigation had not blinded him to its problems. He had noted, during his travels in Egypt and Italy, the development of waterlogging and salting through insufficient drainage, ‘aggravated by extravagance in the use of water’.57 His comparisons of irrigation in the Old and New Worlds had convinced him that though it was ‘often possible in a new country to omit drainage works, at all events for some time … where considerable volumes of water are employed, they soon become an essential part of every scheme, and it is clear that it is always cheaper and easier to make this provision at the outset.’ 58 Deakin recommended preventive management, maintaining that it was ‘highly desirable that [drainage should be installed] when it can be done most cheaply, efficiently, and comprehensively, that is, at the initiation of a scheme’.59 He also emphasised the need for education, warning that although the issue of drainage might not manifest itself in familiar forms in a new country, ‘it will present itself in some shape … [and] we should provide against it in advance, and be prepared

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57 Deakin, ‘Irrigation in Egypt and Italy’, 11.
58 Ibid., 44.
59 Ibid., 31.
with knowledge of foreign remedies for it’. However, Deakin’s recommendations, good in themselves, were largely overwhelmed in the initial struggle to establish an effective and efficient system of irrigation.

Victoria’s 1886 Irrigation Act bifurcated irrigation development into colonial socialism (via locally controlled irrigation trusts) and free enterprise (the Canadian Chaffey brothers’ irrigation colonies in Renmark and Mildura). Within twenty years, however, it became evident that neither strategy had succeeded in developing an efficient system of irrigation. The Mildura colony encountered a variety of obstacles, most notably the lack of a railway link with the Melbourne market; seepage and salt troubles, though acknowledged by the Mildura Royal Commission as having contributed to the colony’s failure, were largely overshadowed by the greater scandal of the Chaffey brothers’ dramatic financial collapse. The irrigation trusts failed for different reasons. According to Lionel Frost, Victorian farmers of the late nineteenth century ‘were at best lukewarm supporters of irrigated agriculture’; those who did make use of irrigation water generally considered it only as a supplement to the existing farming system. As a rule, they were disinclined towards intensive cultivation and small-scale irrigation farms, and preferred to stick with what they knew: wheat, sheep, and dairy cattle. The ‘sparing and irregular use’ made of irrigation water under the original trust system, though far friendlier to Victorian soils than later intensive methods, meant that farmers were simply not using (and therefore not paying for) enough water to offset the debt burdens of the trusts.

In 1905, the Victorian Water Act abolished all existing irrigation trusts. In their place, it introduced the State Rivers and Water Supply Commission (hereafter SRWSC), ‘a new form of corporate body [designed] to bring about efficient, centralized control throughout

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60 Ibid.
61 For a more detailed account of the irrigation trusts and the Mildura episode, see Powell, Watering the Garden State, 117-27.
the State’.\footnote{J.M. Powell, \textit{Environmental Management in Australia, 1788-1914. Guardians, Improvers and Profit: An Introductory Survey} (Melbourne: Oxford University Press, 1976), 135-6.} Determined to avoid the financial woes of the irrigation trusts, which were believed to have failed principally ‘through inability to compel landowners to make reasonable use of the irrigation facilities that had been provided at such great cost’,\footnote{L.R. East, ‘Water Supply Problems in Victoria’ (Melbourne: SRWSC, 1939), n.p.} the SRWSC introduced a compulsory charge which ‘required farmers to pay for a minimum amount of water … whether they used it or not’.\footnote{Harris, ‘Development and Damage’, 177; see also Powell, \textit{Environmental Management in Australia}, 136.} Though this charge proved insufficient to cover the entire costs of water supply, management and maintenance,\footnote{SRWSC Chairman Ronald East complained in a 1939 address that inadequate funds for maintenance ‘since the commencement of water supply development’ had resulted in ‘a constant deterioration of the works … [a]t the present time many costly structures essential to the State water supply systems are in a most unsatisfactory state’ (East, ‘Water Supply Problems in Victoria’, n.p). By 1969, Davidson could still argue that irrigation was not a profitable investment, since ‘farmers on all Australia’s major irrigation schemes are supplied with water at a price which is only sufficient to pay the operating expenses of the schemes and not the interest on the capital invested in them’ (Davidson, \textit{Australia Wet or Dry?}, 3).} it effectively encouraged excessive water use and stifled innovation for the next seventy years.\footnote{See Harris, ‘Development and Damage’, 177.} To the early irrigation trusts, salinity management had been irrelevant; under the trust system, irrigation water was seldom used in sufficient quantities to cause noticeable changes in watertable levels.\footnote{Irrigators within the Goulburn Valley were further protected by relatively deep watertables; salinity developed more slowly in the Goulburn Valley than in many other irrigated areas. See footnote 145 for further details.} To the managers of the SRWSC, however, salinity quickly became an increasingly salient nuisance. The water-intensive farming practices needed to make irrigation economically viable were also those best calculated to trigger rapid and extensive salination. As a consequence, Victoria’s water managers found themselves faced with an impossible conundrum. The remaining sections of this chapter discuss the SRWSC’s approach to salinity management in Victoria during the first half of the twentieth century.

\textbf{The religion of irrigation: Elwood Mead}

The religious connotations of irrigation have attracted their share of scholarly attention. Worster and Tyrrell have examined the Judeo-Christian expression of America’s
irrigation dream; Bellanta has discussed the religiosity of Victoria’s irrigation imagery and language, especially in relation to Deakin (famously portrayed as Moses striking the rock by *Punch* in June 1886 (Fig. 2)) and the work of journalist William E. Smythe. Similar language was adopted by early irrigation historians, Ernestine Hill describing the Renmark irrigation settlement as ‘a paradise of living green’, Deakin as ‘a youthful St Paul’, and Chaffey as a ‘redeemer of deserts’, while J. A. Alexander’s Chaffey became a Christ-like figure who ‘won the wilderness’ and ‘conquered the desert’, whose arrival was an ‘advent’ and whose opponents were ‘jackals’.  

These forms of discourse were symptomatic of a wider climate of opinion in which ‘irrigation [was] not about drains, pumps, pipes, and dams, but about dreams’. Curiously, though, discussions of Victoria’s irrigation visionaries largely overlook the more subtle religious overtones (though not the practical contributions) of perhaps the most influential irrigation advocate after Deakin: Elwood Mead.

![Fig. 2: 'Striking the Rock' (Alfred Deakin as Moses), Punch, 3 June 1886](image)

Mead, professor of irrigation institutions and practice at the University of California, held the position of Chairman of the State Rivers and Water Supply Commission (SRWSC), Victoria’s top water job, from 1907 until his return to America in 1915. A fervent promoter of irrigation, he took upon himself the task of converting the masses to the irrigationists’ creed. He was tireless in his efforts, publishing countless articles on the practice and benefits of irrigation, and touring the countryside to spread its gospel. As a foreign academic and expert, his advice was revered and his recommendations

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73 Alexander, *Life of George Chaffey*.
assiduously followed. For some settlers, following Mead’s advice had serious negative consequences. Nevertheless, his biographer suggests that ‘Mead’s departure was genuinely regretted by most of the people with whom he worked in Australia’, including many settlers whom Mead knew personally and in whose welfare he ‘had always shown an interest’.  

The efforts of Mead and other advocates to promote irrigation were based, as has already been indicated, largely on economic motives. The necessity of recouping the expenses incurred by the State through construction of large-scale irrigation works (water storages and distribution channels) was a strong incentive for the introduction of compulsory water rates for irrigation districts. Mead, on whose recommendation these charges were introduced, admitted after the construction of the Goulburn Irrigation Scheme (1887-91) that it had ‘cost the State an immense sum of money’, though he added that ‘the returns from this expenditure will be all that can be desired’. The SRWSC’s determination not to replicate the financial collapse of Victoria’s irrigation trusts gave an additional edge to their insistence that farmers use the water provided for them by the State.

Economic considerations were undoubtedly of principal importance to Mead and his fellow Commissioners. Under the strength of their conviction that irrigation was central to Victoria’s social progress, however, their insistence that farmers use the water provided for them was frequently expressed in moral terms. Mead described opposition to irrigation as ‘a situation in which the inclination of the individual runs counter to the welfare of the state’; he spoke of ‘the responsibility of the State to develop its latent resources’, and claimed that ‘Northern Victoria has now reached a stage in its development when agricultural methods must change if there is to be further growth … if

78 The 1905 Water Act abolished the locally controlled irrigation trusts established by Deakin and replaced them with the State Rivers and Water Supply Commission as a central administrative body. McCoy attributes the failure of the Trusts to ‘inadequate control of water resources and inadequate water conservation [and] their inability to impose charges which would render them financially viable’ (McCoy, ‘Historical Development of Irrigation in Victoria’, 18).
we are to have success we must work for it.'

Mead further asserted that while farmers in wholly arid areas ‘[welcomed] the canal as a means of escape from intolerable conditions … [t]hey all believe in irrigation, and practise it’, those in semi-arid districts were not so staunch. ‘The ardent convert to irrigation during a drought becomes a backslider when it rains. For a time, at least, there is a reluctance to submit to the order and system which irrigated agriculture requires, and a continual balancing of the merits and drawbacks of watering from canals or from the clouds.’ He bewailed the dilatoriness of Goulburn Valley farmers in adopting irrigated crops, concluding, in impassioned italics:

More important than all other considerations is the fact that the most useful functions of irrigation canals in Victoria is [sic] to lessen the hazards and losses of dry years, to save money and relieve the misery of helpless starving dumb animals. *This purpose will never be fulfilled so long as the land under canals is used as pastoral areas. When dry years come the irrigator is protected, but he is in no condition to extend aid to the pastoralist on non-irrigated land.*

Through such reasoning Mead cast himself and fellow irrigationists as social and economic benefactors. Farmers who took advantage of the benefits provided them were wise; those who refused were foolish and prodigal. One might as well read Aesop’s fable of the Grasshopper and the Ants. The moralistic and often patronising treatment of farmers who hung back from wholeheartedly embracing irrigation farming is evident in the writings of many irrigation advocates, who, though they protested the importance of practical experience in successfully establishing irrigation in Victoria, tended to ignore this experience when it conflicted with what they wished to believe. The initial reluctance of Victorian agriculturists to adopt irrigation practices, for financial reasons, doubt of its efficacy, or simply a disinclination to alter their accustomed farming styles,

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81 Ibid., 262.
82 Deakin stated that ‘there is no teaching so pregnant as that of practice in the field … without it no theoretical knowledge can be thoroughly assimilated. What we must aim at is the training, by experience, of a body of waterers … whose practical knowledge, accumulated by season after season of watchful experiment, will enable us to work out a system of our own’ (Deakin, ‘Irrigation in Egypt and Italy’, 45).
encouraged its advocates to dismiss their concerns as ignorance. Doubt had no place in the religion of irrigation.

Mead considered hesitant landowners selfish, short-sighted and irrational. He declared ‘the attitude towards irrigation of the land-owners’ to be the ‘one serious obstacle’ to the development of irrigated agriculture in northern Victoria: ‘as a class, [the landowners] do not believe in irrigated agriculture, and they are not willing to do the things which success in irrigation requires’.83 The objections of a landowner from the Rodney district, whose letter was published in the Argus of 30th June 1909, were contemptuously dismissed. To the claim that ‘the bulk of our land is not suited for irrigation … The water is cheap enough … but the results obtained from its use … is [sic] not such as to induce us to use it freely’, Mead retorted: ‘[i]f this statement is true, then the State has wasted a quarter of a million pounds on distributaries in the district.’84 Perhaps, as Mead claimed, this landowner’s ‘sweeping condemnation’ of the suitability of the soil and water of the Rodney district for irrigation was unjustified in its scope. However, his own confidence in the potential of the district – ‘I have never known a new irrigated area where the prosperity of farmers under irrigation is more assured’85 – was no less sweeping, and seemingly was not supported by any very systematic study of the area.86 Doubtless some irrigators did enjoy ‘the most gratifying success’ in their crops, but others found their land unresponsive to irrigation, and were reluctant to pay for water which it did not benefit them to use. To Mead, though, such individuals represented a hindrance to the full development of irrigated agriculture in the Goulburn Valley. Victoria’s early irrigation difficulties had come to be ‘widely conceptualized in the various government departments as an unusual example of the waste of good engineering by inexpert local administration’.87 The circumstances of the irrigation trusts’ failure made it more plausible to construe unwilling irrigators as obstructive than to accept that their land might indeed be unsuited to irrigation.

84 Ibid.
85 Ibid., 491.
86 Evidence to this effect was given during the 1916 Royal Commission on Closer Settlement in the Irrigable Districts (see below).
87 Powell, Environmental Management in Australia, 135.
Certainly Mead was not unjustified in promoting irrigation’s benefits. The dry seasons immediately following the 1886 Irrigation Act had sparked heated and extensive debate on the issues of water storage and dam construction, and supplied ample evidence of the misery experienced by settlers unprepared against the vagaries of climate and rainfall. Irrigation, in addition to private water storage, was the farmer’s best insurance against drought in a country where climate and soil conditions did not favour European crops or sedentary agriculture. Mead, however, in his enthusiasm to make the benefits of irrigation as widely available as possible, neglected to emphasise the need for caution, and recommended practices which were obviously harmful. As the former state engineer of Wyoming and member of the American Society of Irrigation Engineers, and ‘one of the most widely travelled and knowledgeable authorities on [irrigation] in the entire arid world’, he must have been aware of the damage caused by salination in irrigation districts elsewhere in the colonies. Nevertheless, he downplayed the risks associated with irrigation, and did not adequately address the need for drainage of irrigated land.

**Irrigation as progress: the State Rivers and Water Supply Commission**

To most parliamentarians and water authorities in the early decades of the twentieth century, progress in irrigated areas meant increased settlement and extension of infrastructure. By 1910, J. E. Jenkins, Secretary of the Lands Purchase Board, was able to report to Parliament that ‘[o]ver 34,800 acres in Irrigation Districts have been purchased and are being subdivided as Irrigation Settlements’. The SRWSC’s Annual Report for 1910-11 recorded 142,857 acres of land under irrigated culture, proudly noting

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89 The idea that irrigation would be equally beneficial wherever it was applied is reminiscent of the ‘centralizing logic’ and ‘state simplification’ which Scott considers characteristic of high-modernist ideology (Scott, *Seeing Like a State*, 3, 212).

90 Worster notes that by 1891 four to five thousand square miles in the North-West Provinces of India were reported to have been damaged by salination, while salt problems in California had been studied and written about, at an academic level, from the early 1880s (Worster, *Rivers of Empire*, 153-4).

this as ‘an increase of 13,086 acres over the area irrigated in the previous year’. 92 During the same year £13,300 was expended on new works (principally distributary channels and outlets) within the Rodney District, and £72,720 on Goulburn Main Channels and Distributary Works, including 117 miles of distributary channels in the parishes of Bamawm, Rochester West, Nanneella, Koyuga, and Tongala, and a system of distributary channels throughout the Shepparton Irrigation and Water Supply District, an area of 3,500 acres. 93 At a time when Victoria’s finances were still recovering from the devastating effects of the 1890s depression and the Long Drought, these substantial sums attest to the perceived importance of rapid irrigation development to the State.

Bigger was better in the irrigation creed; water not used was water gone to waste. 94 Though the SRWSC noted that ‘new activity is being manifested, land is being graded, lucerne and other fodder crops seeded, orchards and vineyards planted … [o]ver 700 acres of new orchards have been planted in Rodney this season’, 95 they added with regret:

Last season irrigators in Victoria only diverted 4 per cent. of the total flow of the Murray, and only used 2 per cent. of the total flow of the Goulburn. The extension of irrigated agriculture to the extent which this unused water supply makes possible means so much to Victoria that no precaution should be neglected which will insure [sic] its complete success. 96

Experts in intensive agriculture from ‘noted irrigation districts’, added the authors, who had visited the Victorian irrigation areas, had ‘united in admiration for their resources and surprise at the neglect to use the great opportunities they present’. 97

93 Ibid., 15, 18.
94 For one example of many, see L.C. Bartels, ‘Irrigation Experiments at Werribee’, J. Agric. Vic. 22(1), January 1924, 37: ‘Irrigation farming is of ever-increasing importance in Victoria, and in the future most of the water now running to waste in our rivers will be impounded to serve large areas of land which need only moisture to make them productive.’
96 Ibid., 23.
97 Ibid.
These views, compounded by the need to recoup the expenses of water supply works, resulted in ‘inefficiencies [dominating] the Victorian irrigation industry over the bulk of the twentieth century’.\textsuperscript{98} In addition, some of Victoria’s irrigation ‘experts’ actively promoted practices which would now be considered extremely imprudent. F. de Castella, Government Viticulturist, reported from his travels in Spain

the extent to which winter irrigation is practised. Though it was approaching midwinter, olives, vines, and even wheat were everywhere being watered, usually by flooding … The great aim of the farmer in the drier parts of Spain is to well soak the subsoil in winter, by irrigation, wherever this is possible.\textsuperscript{99}

Disregarding the widely differing environmental conditions of the two countries, De Castella declared his observations ‘a lesson for Victoria … [t]here is no doubt that we could with advantage utilize much of our surplus water in the same way.’\textsuperscript{100}

Other experts advocated restraint in watering and an awareness of the nature of the soil. E.E. Pescott, Principal of the Burnley School of Horticuture, advised orchardists that ‘a good watering should be given to the trees after each picking, so as to improve the quality of any fruit remaining on the tree’, but added that ‘[u]nless the soil is well drained, a heavy flooding should not be resorted to.’\textsuperscript{101} A.S. Kenyon, Engineer for Agriculture, was cautious in recommending winter irrigation, suggesting that ‘[i]n many parts of the State, winter crops get sufficient moisture from the heavens for all their requirements, at any rate with proper cultivation’, though acknowledging at the same time that ‘in other localities – over the greater part of our Northern districts – winter crops require additional moisture in many, nay, most years’.\textsuperscript{102} Kenyon did not consider irrigation a magic bullet; he declared ‘[c]ultivation without irrigation … to be preferable to irrigation without cultivation’,\textsuperscript{103} and later stated that summer crops ‘may be successfully grown, without

\textsuperscript{98} Harris, ‘Development and Damage’, 177.
\textsuperscript{100} \textit{Ibid}.
\textsuperscript{101} E.E. Pescott, ‘Orchard and Garden Notes’, \textit{J. Agric. Vic.} 9(1), Jan 1911, 63.
\textsuperscript{103} Kenyon, ‘Drainage and Irrigation’, 206 (original emphasis).
artificial aid in watering, over large areas where they are at present either whole or partial failures, by the adoption of improved methods [of cultivation]. There is little doubt, however, that glowing reports of the benefits of irrigation, an imperfect communication of its risks, and a prevailing view that water not used for human purposes was ‘wasted’, combined with the financial pressure imposed by compulsory water rates to encourage widespread overwatering.

Endemic inefficiencies were compounded by the primitive nature of early twentieth-century irrigation technology. Flooding and furrow irrigation delivered large volumes of water more or less indiscriminately, and were only marginally assisted by techniques such as grading and subsoil ploughing, which in any case were prohibitive in terms of both labour and expense. Those who did recognise the ‘ills attendant upon irrigation’ could recommend little beyond ‘careful and economical use of water’, and, for severe cases, the installation of tile or agricultural pipe drains. These, too, were expensive; Kenyon acknowledged a cost for installing tile or pipe drainage of ‘as much as £6 or £7 per acre’, and confined his recommendation of it principally to ‘orchard lands, and … like crops where the capital value of the producing land is high’. Though he described a complete system of drainage for trees and vines as ‘a matter or life and death’, adding hopefully that ‘general adoption [of the tile or pipe system] should lead to the establishment of tile-making works in the locality, and consequent cheapening of the tiles’, the costs of implementing such a system were sufficient to discourage most irrigators.

Irrigation enthusiasts, meanwhile, had faith that science would provide technical solutions to their environmental problems. Deakin’s confident prediction that

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105 In many cases even this minimal level of intervention was lacking; Kenyon emphasises that ‘the letting of water on to a paddock to find its way as best it can over the surface forming islands and leaving pools is not a [distributing] system, though unfortunately only too common in practice’ (ibid., 34). On questionable irrigation practices, see also Russ, The Salt Traders, 72.
106 Kenyon, ‘Drainage and Irrigation’, 207.
107 Ibid.
108 Scott describes ‘self-confidence about scientific and technical progress’ as a central tenet of high-modernist ideology (Scott, Seeing Like a State, 4).
modern science, which has contributed so enormously to industrial development … in connexion with irrigation [will experience] future triumphs [which] will be rapid, signal, and fruitful\textsuperscript{109} was supported by glowing reports of vast and profitable crops printed in local newspapers, and by bulletins and pamphlets issued and ‘lavishly circulated in Britain and America’ in connexion with irrigable closer settlement.\textsuperscript{110} The Department of Agriculture also made much of experimental ventures which demonstrated the potential of technology to adapt seemingly unfavourable land for agricultural purposes. At an experimental farm on the Barwon River, several hundred acres of low-lying swamp land were converted between 1905 and 1908, via irrigation channels, underground piping, and levee banks, from ‘waste ground that in its unimproved state was useless’ to land ‘of high agricultural value’. Soil samples had yielded salt ‘to such an extent that doubts were expressed as to the land proving suitable for general cultivation’, yet dairy supervisor McFadzean reported triumphantly:

from a 65-acre paddock of salty ground … there has been harvested something like 550 tons of green maize without any manuring; and on appearance that land now can be classed as equal to anything in the district …

He concluded, with superabundant confidence, that ‘[t]he ultimate success of the whole undertaking [demonstrated] the economic potentiality of many thousands of acres of apparently useless land’.\textsuperscript{111} Such views encouraged a dangerous disregard for the problems associated with irrigation, and a disinclination to take action even when their effects had become evident.

The spectre at the feast: salinity emerges in the Goulburn Valley

The emergence of salinity in Victoria’s irrigation regions was not long delayed. A mere decade after Deakin’s Irrigation Act, a Royal Commission into the Mildura Settlement found numerous farmers experiencing irrigation-related salinity problems, though these

\textsuperscript{109} Deakin, ‘Irrigation in Egypt and Italy’, 7.
\textsuperscript{110} These bulletins were later found to have contained ‘not only grossly extravagant and incorrect but obviously wrong statements’ and ‘[m]ost immoderate assertions’ (Johnstone et al., ‘Royal Commission on Closer Settlement’, 38).
\textsuperscript{111} McFadzean, ‘A Farm in the Making’, 492, 497-8, 500, 502.
concerns were largely overwhelmed by scandals surrounding the Chaffey brothers’
dramatic financial collapse.112 Ten years later, Kenyon, once again an isolated voice of
cautions, drew attention to problems of over-irrigation and insufficient drainage in
Victoria: seepage and deaths of fruit trees in Mildura and Bendigo, loss of soil structure,
and damage to cereal crops.113 He also alluded to the experiences of irrigationists in
other countries, including a Commission on the effects and causes of alkali [salt] in the
Aligarh district of Northern India, which had ‘reported in effect that the introduction of
irrigation increased the alkali areas, both by seepage from the channels, and by excessive
use of water in irrigating’, and a statement by the editor of the Chicago *Irrigation Age*
that ‘[t]he constant pouring of water upon the soil in many of the older irrigated districts
has resulted in creating a water table near the surface … formerly fertile tracts of land
have become converted into swamps’.114 But though the evidence linking irrigation and
salinity was accumulating, it was not yet able to mobilise any fundamental change in
irrigation practices. The successes of irrigated farming, more positive, more immediate
and (at this stage) more numerous than its failures, were sufficient to support the
irrigationists’ pre-existing ideology of utilitarianism and progress.

A further decade produced more dramatic proof of salinity’s growing menace. The final
report from the 1916 Royal Commission on Closer Settlement discussed, in addition to
such issues as administration, finances, and the role of the State in the future development
of irrigable settlement, the emergence of salinity at the Mead settlement in Cohuna.115
The Commission declared that ‘due to an immensely greater volume of water being put
upon the land than it was accustomed to … [t]he water table rose, and the alkali being a
deadly poison to plant life, desolated the areas it affected … [a]t Mead already about
1,200 acres out of 11,000 have been affected, rendering the land temporarily unfit for
production of any kind.’116 The development of this ‘alkaline trouble’ was attributed to a
combination of flooding of local creeks, channel seepage, irrigation, and a clay subsoil

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114 Ibid., 208-9.
116 Ibid., 28.
which hindered subterranean drainage. The SRWSC, under scrutiny for its tardiness in implementing ‘remedial efforts’, made a poor but (for our purposes) revelatory showing in its attempts at self-defence. Commissioner John Dethridge asserted that ‘no anxiety was felt by the Water Commission until about the end of 1910, although it was aware of patches of alkali-affected land in the Cohuna district since the days of the administration of the old trusts’. However, this still left three years of inaction unaccounted for before commencement of a main drainage channel to remove saline water. Dethridge attributed the delay to SRWSC deliberations as to the cause of the trouble, ‘and in the last contingency … whether the cost of [a drainage] system would be warranted as against the abandonment of affected portions.’ Mead, added Dethridge, had ‘expressed the view that there would be certain patches which would become so bad that it would be the best policy to [wait in order to] determine them … to attempt to put into effect any scheme before you knew just what was going to be bad and what was going to be fairly good would be to incur the risk of a very heavy expenditure, which might, after all, not be required.’

Dethridge’s comments reveal the pragmatic difficulties underlying management of a complex environmental problem. While irrigationists were certainly unwilling to recognise that salinity challenged their narratives of social and moral improvement, they were also unable to command sufficient funds, knowledge, or technology to deal with it effectively. We must remember that financial pressures still constitute a significant check on the implementation of otherwise desirable environmental management strategies. The SRWSC doubted whether a successful drainage scheme was ‘practicable at a reasonable cost’, and had initially considered ‘whether the proper course might not be to transfer or abandon the settlement on the badly-affected blocks’. The Commission, though, retorted that ‘the raising of the water table would in any case have waterlogged the land, which would have had the same effect on vegetation as the alkali. Everything points to the necessity for this land to have been drained before settlement

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117 Ibid.
118 Ibid.
119 Ibid., 29.
120 Ibid.
occurred.’121 By their judgement the SRWSC’s delay was indeed negligent – to say nothing of their failure to install a drainage system initially.

Much of the Commission’s criticism was directed specifically at Elwood Mead. Commissioners found ‘no doubt at all that his colleagues allowed Mr. Mead’s opinions to sway them in this matter of dealing with the salt trouble.’122 Dethridge testified that ‘We certainly attached the utmost importance to his views … We naturally regarded it as a thing coming peculiarly within his scope … I would say it was undoubted that he had the experience.’123 Mead ‘had come from the position of Director of Irrigation and Drainage Operations in the United States of America, a country with an immensely greater area than we have under irrigation, and with very many difficulties of that sort; we knew from actual publications in print that he was familiar with those problems’.124 Mead’s publications in Victoria, however, were largely aimed at promoting the benefits of irrigation. The Commissioners, while they acknowledged Mead’s reputation as ‘an eminent irrigation engineer’, added that his role as Chairman of the SRWSC had required him to step outside his field of experience:

> the exigencies of the position forced him to devote himself to the purchase of land which he considered to be suitable for intensive culture and the direction of cultural methods for the development of the settlements. When he, perforce, had to step into these spheres he made mistakes, which account to a large extent for the unsatisfactory condition of a large part of the movement as it now stands.125

The above indicates that Mead’s overseas experience could equally be construed as a hindrance. Hugh McKenzie, Minister of Water Supply, asserted in Mead’s defence that ‘it was very difficult for a man to come from America to a country with different conditions and say what was suitable land here.’126 During the early stages of irrigation development and expansion in Victoria, however, knowledge was scant and experts few;

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121 Ibid., 32.
122 Ibid., 29.
123 Ibid.
124 Ibid.
125 Ibid., 23.
126 Ibid., 24.
individuals recognised as having superior experience or qualifications in the field were, perforce, too much relied on, and ‘in the absence of any other person’ were expected to supply advice on matters outside their area of expertise. With political, ideological and economic imperatives urging extensive settlement and rapid expansion of irrigated agriculture, decisions were made in haste and without sufficient preparation or preliminary research; the result, unsurprisingly, was, in the Commission’s diplomatic understatement, ‘mistakes’.

To lay the blame solely on Mead would be unjust. The SRWSC and other agricultural ‘experts’, who had failed to take seriously the concerns of settlers in irrigated areas, were also culpable. Even after a salinity problem had been recognised at Cohuna, the SRWSC’s dealings with affected landowners displayed a certain amount of callousness. These settlers, ‘[i]n addition to the prospect of having to bear the comparatively heavy cost of the main channels to carry away the salt-charged waters … [had] to face the cost of making lateral drains on their properties’, expenses which were ‘never contemplated when they took up the land.’\textsuperscript{127} Others who had ‘planted lucerne and fruit trees on areas which … proved to be salt basins’ had received no warning ‘as to the danger of so doing.’\textsuperscript{128} The Commission criticised both the SRWSC’s lack of foresight in establishing the Cohuna settlement, and their failure to act promptly when problems first began to appear. Dethridge’s defence of the SRWSC’s actions suggests disregard for the hardships suffered by settlers:

he honestly believed the danger was not so great, and that the thing [salinity] should be allowed to develop so that he would know what he was doing, and, in those circumstances, the settlers might just as well cultivate the doubtful places. It was more an expenditure of labour than capital on their part, and when matters developed he would know what advice to give.\textsuperscript{129}

The SRWSC did eventually attempt to mitigate the difficulties of settlers whose land was most severely affected. The affected portions of each allotment were excised, and their

\textsuperscript{127} Ibid., 32-3.
\textsuperscript{128} Ibid., 31.
\textsuperscript{129} Ibid.
owners given an additional area to work ‘while their land [was] unproductive’; settlers were also given the choice of ‘being bought out and paid for their improvements’. To settlers prepared to stay on, the SRWSC allowed ‘free water to wash out the salt’, and financial advances for the reclamation of their land. The Royal Commission added its own recommendations to these management strategies: greater care in the use of water, greater attention to surface tillage, and better preparation and grading of land before irrigation. They also recommended ‘a systematic inquiry … to find the best means of supplying drainage’.

Sadly, though not surprisingly, official inertia was again permitted to override official recommendations. The 1925 Royal Commission on Soldier Settlement, examining the difficulties experienced by soldier settlers, noted that ‘[o]n irrigation areas, blocks, which when taken up appeared suitable, have proved to be unsuitable owing to salt trouble after watering.’ Once again, their recommendation was that ‘to prevent further development of the salt trouble … necessary drainage works be put in hand as expeditiously as possible’. A minority report by Commissioner H. J. Wiltshire took up these issues in greater detail; Wiltshire declared that some areas utilised for soldier settlement had never been suitable, even at the time of their acquirement, including the districts of Cohuna, Tresco, Woorinen, Nyah, Merbein, and Mildura, all of which were suffering from ‘salt and seepage troubles’. He suggested that the Water Commission had been negligent in allowing settlement in these areas:

As this salt and seepage trouble has ruined many fine areas of land prior to the inauguration of [the] soldier settlement scheme, the Water Commission should have been cognizant of the risk which the settlers took in irrigating this land. It seems to be fairly

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130 Ibid.
131 Ibid.
132 Ibid., 30.
134 Turnbull et al., ‘Royal Commission on Soldier Settlement’, 17.
well established that there is considerable risk of salt trouble arising in almost all of the
dried fruit areas.  

In the Mead settlement, in particular, the area of salt-affected land had increased from 1,200 of 11,000 acres to 5,000 acres out of 34,000; and, as a further affront, the drainage system then proposed was ‘still uncompleted, although we are told that a very complete scheme is now under construction.’ Wiltshire observed that ‘without a proper system of drainage, it seems inevitable that all soils with an alkaline sub-strata must finally reach the stage when no vegetable growth can survive … seepage will cause serious damage if unchecked, even if there is no salt in the subsoils, by drowning out fruit trees, lucerne, &c.’ He concluded that ‘drainage must be proceeded with wherever salt is present in subsoils, at the same time as the digging of the irrigation ditches … the most elementary precaution … [it] should be inaugurated in all irrigation schemes in such saline areas at the initial stage.’ His final recommendation – ‘[t]o install a drainage system on all irrigation areas at the inception as a safeguard against salt and seepage troubles’ – recalled Deakin’s; and, like Deakin’s, it was given only to be ignored.

Subsequent years, in fact, saw an almost complete separation between community and scientific experience on the one hand, and government policy on the other. The woes of Mildura irrigationists were followed in 1906-7 by a wet season which led to substantial tree losses in Bendigo, and warnings of the same for Goulburn Valley orchardists.  

Salinity in fact developed more slowly in the Goulburn Valley than in many other areas, mainly due to differences in soil type and relatively deep watertables; a 1910 soil survey reassured Goulburn Valley farmers that ‘the presence of hurtful salts is a

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136 Ibid., 50.
137 Johnstone et al., ‘Royal Commission on Closer Settlement’, 28.
139 Ibid.
140 Ibid.
141 Kenyon, ‘Drainage and Irrigation’, 207.
142 See Cook, ‘The Garden of Australia’, 181, and Gutteridge Haskins & Davey, Murray Valley Salinity Investigation Vol. 1, 273-95, for details. On average, Goulburn Valley watertables at first settlement occurred at depths of 20 to 30 metres. It was noted, though without apparent alarm, that in some cases the subsurface water was salty; in the Echuca Village settlement, for example, blockholders putting down bores discovered ‘two distinct streams – one as salt as sea water; the other fresh, but highly charged with minerals’ (Riverine Herald, 8 February 1896).
negligible quantity, though occasionally a close observer may detect a faint efflorescence in isolated spots.\textsuperscript{143} Dethridge reported in 1916 that ‘at Ardmona, where irrigation had been established for many years, and throughout the Rodney and Kyabram districts, there had been no salt trouble … at Shepparton there had been a little seepage, [but] no salt to speak of had occurred.’\textsuperscript{144} Waterlogging, though, had been a problem from the outset. The ‘retentive subsoil’ meant that ‘often less than an inch of rain [was] sufficient to waterlog the surface’.\textsuperscript{145} By the late 1920s, severe floods had forced a number of Stanhope settlers to leave their blocks.\textsuperscript{146} Others found their farms waterlogged for much of the year, and were unable to grow lucerne on the sodden soil;\textsuperscript{147} salt appeared on the soil surface on some lower lying properties.\textsuperscript{148} Orchardists in nearby Shepparton experienced similar problems.\textsuperscript{149}

The SRWSC juggernaut, meanwhile, rolled relentlessly on, perfectly convinced of the rightness of its efforts to extend irrigation farming throughout the state, and generally content to blame inconvenient outbreaks of salinity on the settlers themselves.\textsuperscript{150} Ignoring the findings of the 1916 Royal Commission, the judges of the 1929 Cohuna Irrigated Farm Competition (two of whom were SRWSC Commissioners) blasted ‘Cohuna settlers generally’ for lack of judgment and ‘misuse of water’, which they claimed had ‘blighted’ the ‘bright prospects with which closer settlement was first

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\textsuperscript{144} Johnstone et al., ‘Royal Commission on Closer Settlement’, 29.
\textsuperscript{146} H.R. Jewell described this retentive subsoil as ‘a heavy clay layer or clay pan close to the surface, the depth at which it appears varying from 6 to 15 inches’ (W.R. Jewell, ‘Some Soil Types of Victorian Irrigation Areas’, \textit{J. Agric. Vic.} 29(12), 1931, 599). Kenneth Garland later confirmed that ‘losses of fruit trees do occur from time to time in the Shepparton Region due to surface waterlogging as distinct from water table-salinity effects … These losses are really an expression of the inability of the land surface and the surface soil layers to rid themselves of excess water in years of exceptionally high rainfall’ (K.R. Garland, \textit{The Salinity Problem in the Goulburn-Murray Irrigation District}, vol. 1 (Government of Victoria Technical Report Series No. 27, Department of Agriculture, August 1980), 23-4).
\textsuperscript{149} Ibend.
\textsuperscript{150} Powell states that the interconnection of irrigation development and ‘closer settlement’, and the SRWSC’s consequent importance as a regional planning authority, led to ‘a high degree of independence’ and ‘a unique sense of self-esteem, which was … very hard to shake’ (Powell, \textit{Environmental Management in Australia}, 137).
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established’. Frank Read, Horticultural Research Officer in charge of investigations of ‘soil alkali’ in the Tresco settlement near Swan Hill, bypassed his own findings that Tresco’s salt problems were largely the result of the settlers’ financial limitations to accuse them of mismanagement:

If our [irrigation farmers], from the beginning, had realized the necessity, and taken the trouble to find out what happened to the irrigation water when it percolated away out of sight, it is inconceivable that their errors would have persisted – as they most assuredly have done – unto the second and third generations.

Barr and Cary add that during the 1925 Royal Commission the SRWSC ‘tried to portray [Stanhope] settlers as lazy grumblers’. Such institutional scorn appears particularly ill-judged considering that the SRWSC themselves had earlier acknowledged settlers to be ‘earnest and industrious men … but, as a rule, they lack experience, and have limited capital’. Other experts adopted a more sympathetic tone, but seemed equally incapable of recognising the financial and technological forces trapping irrigationists in a permanent cycle of inefficiency.

During the 1930s and 40s, attempts to manage waterlogging and salinity problems were generally sporadic rather than systematic, and reactive rather than pre-emptive. For both financial and ideological reasons, irrigation continued to take precedence over drainage; drainage services rarely kept pace with irrigation farm developments. In

152 Frank M. Read, ‘“Soil Alkali” Investigations at Tresco’, J. Agric. Vic. 28(2), February 1930, 65-90. Additional papers on the topic may be found in J. Agric. Vic. 29(11), November 1931, 551-72, and 31(3), March 1933, 140-5.
154 Barr and Cary, Greening a Brown Land, 219.
155 Mead et al., ‘SRWSC Sixth Annual Report’, 22.
156 Senior Irrigation Officer Bartels, for example, attributed the salination of Mallee lands simply to farmers being ‘most reluctant to alter their methods’ (L.C. Bartels, ‘Irrigation Practices’, J. Agric. Vic. 30(12), December 1932, 568. Ostrom warns against ‘basing policy on the presumption that the individuals involved are helpless’ (Ostrom, Governing the Commons, 14); the case here seems more to be that policymakers at this time were unable or unwilling to address the causes of irrigators’ helplessness.
157 According to Russ, the SRWSC ‘gave priority to the construction of irrigation supply channels and storages rather than to any provision for surface or sub-surface drainage’; drainage was ‘implemented
areas where salination and/or waterlogging were clearly affecting economic productivity, including parts of Cohuna, Nyah, and Merbein, the SRWSC responded to farmers’ concerns by installing communal surface and subsurface drainage. Saline drainage water from these areas was diverted either into local waterways (with adverse effects on water quality for irrigators downstream) or into natural depressions (wetlands and freshwater lakes) which served as ‘evaporation basins’, confining and concentrating the salt. The Shepparton region, favoured for its high agricultural productivity and yields, fared better in these respects than many districts; surface drains were commenced near Shepparton and Rochester following the wet years of 1916-17, and further drainage was installed at nearby Tongala in the late 1930s.159

Preventive action during this period, however, was limited almost exclusively to the (very slow) replacement of earthen channels and drains with concrete ones following the Second World War. Investigations into land reclamation and improved irrigation methods were conducted on community-owned research farms established in the salt-affected districts of Kerang, Swan Hill, Woorinen, and Maffra, but the insights gained through these locally-based experiments were rarely applied elsewhere.160 The relatively dry conditions prevailing during the 1940s161 temporarily reduced watertable levels across the Goulburn Valley, further encouraging both farmers and government advisors to underestimate the severity of future problems.

slowly and only when salinisation of land and water affected a majority of farmers’ (Russ, The Salt Traders, 88). See also E.P. Eckholm, quoted in ibid., 93.
158 One exception was the irrigation district of Robinvale, established in 1948. Robinvale was the first irrigation district in Victoria to be fully piped, and was also installed with subsurface drainage shortly after irrigation commenced; Russ suggests that the latter was a reaction to ‘the experiences gained in Merbein, Nyah, Red Cliffs, and Tresco’ (Russ, The Salt Traders, 93).
160 For a detailed discussion of the activities of the Tragowel Plains (Kerang region) research farm, see Barr and Cary, Greening a Brown Land, 243-9; also Russ, The Salt Traders, 96-103.
161 See monthly rainfall data for this period from Bureau of Meteorology stations 81044 (Shepparton), 81048 (Tatura Post Office) and 80028 (Kyabram Post Office).
Despite mounting evidence of its problems, Victoria’s irrigation dream persisted well into the 1950s and 60s. Suggestions of physical and economic limits to irrigation drew indignant responses from irrigation communities. The *Shepparton News*, which described irrigation as the key to Shepparton’s ‘surging progress’ and claimed that Australia was ‘a water economy … as solid as any Rock of Gibraltar’, dismissed the failure of some to ‘appreciate the importance of irrigation’ as merely ‘the old story of familiarity breeding contempt’. Despite their best endeavours, however, the ‘contemptuous’ were unable to dent political confidence in the worth of extending irrigation. Additions to the Goulburn irrigation system’s storage capacity, most notably the 1955 enlargement of the Eildon Weir, allowed Goulburn Valley irrigators to access greatly increased quantities of water, though generally without the necessary ability or incentives to use it efficiently. Tatura dairy farmer Brian Williams recalled:

> The Eildon Weir was enlarged and completed in the mid-1950s, and before that we all had much smaller water rights … there wasn’t a great deal of water about to use. Then in the 50s we had this terrible lot of rain [Fig. 3], Eildon filled up in the one season after it was finished … after that they increased our water rights … irrigating really sort of took off, … [they were encouraging us to irrigate more, for better production] and, well, selling more water, I think! Anyway, people took up the offers, and almost everybody increased their water rights considerably … [water was] dirt cheap … [my father was paying] the likes of ten pounds a year … now you pay tens of thousands! … So you had a series of wet years in the 50s, and then more extensive irrigating in the 60s, and this is what sort of did the damage … it was all too much for the system, and the salt began to rise, the watertable rose, and it went on.

Norm Mitchelmore, former secretary of the Goulburn Irrigation Region Drainage Action Committee (GIRDAC), added that ‘people connected with the old State Rivers and Water Supply Commission used to say, “We’ve got unlimited water in the Goulburn system … we’ve got the water, use it”’. He described this as ‘almost a blasphemous comment these

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162 These are best expressed in Davidson, *Australia Wet or Dry?*, though this was not published until 1969. For additional discussion of doubts raised on economic grounds, see Powell, *Watering the Garden State*, 247-55.
164 McCoy, ‘Historical Development of Irrigation in Victoria’, 41.
165 Interview, Brian Williams, 11 August 2006.
days’ – a perceptive remark, since it brings the story of Victoria’s irrigation religion to its logical conclusion.

Salinity in Victoria’s irrigation districts, then, was in the long run as much the product of ideological forces as of physical (environmental, technological, and economic) limitations. The visionary dreams and science-fuelled optimism of the state’s irrigation pioneers allowed them to overlook, not only the environmental problems caused by their belief, but the concerns of individuals and communities experiencing those problems. Even when the impacts of salinity became at last too serious to ignore, this institutionalised disregard for community concerns did not immediately dissolve, but remained clearly evident in the initial efforts of Victoria’s water institutions to manage the menace they had helped create. Community input into salinity management was won in Victoria only through a series of dramatic and often bitter battles, and it is to this bellicose period in the Goulburn Valley’s salinity history that I now turn.

Fig. 3: Local boys rowing a boat down Craven Rd, Tatura, after flood rains, March 1955. Photo courtesy Brian Williams.

166 Interview, Norm Mitchelmore, 10 August 2006.
Chapter Two: Including community – Lake Tyrrell to Girgarre

Coming up with the answers for salinity control requires complex balancing of technical and social solutions. It is no good having the right technical solutions if they will never be socially acceptable.167

Introduction

This chapter demonstrates that the Girgarre evaporation basin, an early salinity management scheme which remains in operation today, was a turning-point in government attitudes to community consultation in Victoria’s salinity history. It will show that existing historical analyses of the basin present an unjustifiably negative view of its social impacts and community reception. Russ (The Salt Traders) and Barr & Cary (Greening a Brown Land),168 largely as a result of their reliance on an earlier assessment of the basin which focused specifically on its limitations, have overemphasised the shortcomings of the consultation process underlying the basin’s construction, and have failed to acknowledge its historical significance as part of the process of developing effective and realistic salinity management strategies for the Goulburn Valley.

I contrast the Girgarre basin with two predecessors, the Lake Tyrrell and Mineral Reserve Basins schemes. Though these three projects adopted essentially the same approach to salinity management from an engineering perspective, their trajectories through the social and political realms were significantly different. I argue, from a comparison of planning and policy approaches and community responses, that community support and localisation of management were crucial in differentiating the Girgarre project from its predecessors, and that these factors were vital in explaining the successful completion of the former scheme and the eventual abandonment of the latter. Central to this argument is my assertion that community opposition to the Lake Tyrrell and Mineral Reserve Basins schemes was instrumental in altering subsequent government and community approaches to salinity management, both in Girgarre and farther afield. I conclude by assessing the legacy of the Girgarre basin, both on a community scale as a self-contained

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Evaporation basins

Saline disposal basins (‘evaporation basins’), formed either from natural depressions and lakes or constructed artificially, represent one of three main options for the disposal of large volumes of saline drainage water in the Murray-Darling Basin.\(^{169}\) Relatively low salinity groundwater can sometimes be reused for irrigation purposes, but higher salinity water drained or pumped from irrigation areas must be otherwise disposed of. Apart from evaporative disposal to land, the other two options are disposal to streams and rivers, and disposal using a pipeline to the sea; of these, the former has become increasingly unpopular in consideration of potential social and environmental impacts downstream, while the latter has generally been assessed as uneconomic (though, as will be discussed later, it has more than once been raised as a serious alternative to evaporative or river disposal). As the lowest cost option currently available for disposal of high salinity drainage water, evaporation basins have become ‘a major technique for the disposal of saline waters in the Murray Basin’, and have been extensively used in Victoria (Mildura/Merbein, Red Cliffs, Woorinen, Nangiloc-Colignan) and southern NSW (Wakool and Tullakool irrigation areas).\(^{170}\) Of the more than 180 saline disposal basins currently in use in the Murray-Darling Basin, most are located in the Riverland (South Australia) and Sunraysia (Victoria) regions.\(^{171}\)

Despite their advantages, evaporation basins as a disposal method are not without problems. Large areas of land are required for evaporative disposal; except in the case of naturally saline lakes, these areas are inevitably rendered sterile. Selecting suitable sites


is often difficult, as the most convenient sites from an engineering standpoint are not always those consistent with minimal environmental, socio-economic and aesthetic impacts. Although problems such as seepage of basin contents to surrounding farmland, insects, and unpleasant odours can generally be minimised by good design and ongoing monitoring, Christen et al. have suggested that the unforeseen occurrence of such side-effects in earlier regional scale basins has ‘led in many cases to poor community perception of disposal basins’. Finally, long-term maintenance of evaporation basins can be costly; impermeable linings, if used, generally have a guaranteed life no longer than 20 years, and without some form of flushing or salt harvesting, most evaporation basins progressively fill with salt and eventually become inoperative. These and related issues became central to the community debates which surrounded first the Lake Tyrrell and Mineral Reserve Basins schemes and later the Girgarre evaporation basin; the success or failure of all three schemes depended ultimately on the successful negotiation and eventual resolution of community concerns surrounding their construction.

The Lake Tyrrell scheme

The Lake Tyrrell scheme was first mooted in the 1970 *Murray Valley Salinity Investigation*, commissioned three years earlier by the River Murray Commission (RMC) and completed by consultants Gutteridge, Haskins and Davey (hence ‘the Gutteridge Report’). Its publication marked the first recognition, at an official level, of waterlogging and salinity as serious regional problems in Victoria. Though the deleterious effects of shallow saline watertables and poor irrigation practices had been experienced, locally and intermittently, for decades (see Chapter One), the Gutteridge Report quantified the extent of these problems, and painted an alarming picture of the future for the Riverine Plains in the absence of major remedial measures: 1.9 million acres out of 3.9 million salt-affected by the year 2020, with annual losses in gross value of production estimated at over $15 million. The significance of this publication in the

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history of salinity management can scarcely be overstated; Cook describes its release as ‘a turning point in Victoria with respect to perceptions of irrigation and its potentially damaging impacts on the land’, while according to Russ, the report ‘became standard reference for many subsequent salinity studies’. Those involved in salinity management in the Goulburn Valley know it simply as ‘the Bible’.

Following extended descriptions of the factors contributing to salinity in the Murray Valley, the Gutteridge Report outlined detailed proposals for regional and valley-wide schemes to address the salinity problem. Central to these, particularly for the Kerang and Shepparton regions, was the Lake Tyrrell scheme (Fig. 4). This involved the extension of an existing scheme diverting saline water from Barr Creek, since the 1930s ‘the single biggest point source of salinity for the Murray River’, into Lake Tutchewop, commissioned as a drainage lake by the SRWSC in 1968, and three smaller adjacent lakes. As an initial step to relieve the effects of waterlogging and salinity, the consultants had recommended immediate extensions to surface drainage throughout the irrigation areas of Kerang, Shepparton, Deniliquin, and Wakool. In order to handle the increased drainage flows resulting from these extensions without worsening the salinity problem in the Murray River, they proposed that

the existing Lake Tutchewop scheme … should be extended to include Lake Tyrrell – a large lake some 60 miles to the north-west of Kerang township – and two smaller adjacent lakes. This would allow the almost complete diversion of the Barr Creek flows and their disposal by evaporation.

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177 Cook, ‘The Garden of Australia’, 188.
179 The continuing use of religious language to describe aspects of salinity management (see also quote from Norm Mitchelmore, footnote 166) offers an interesting avenue for further investigation. Unfortunately, a detailed examination is beyond the scope of this thesis.
Under this scheme, increased volumes of highly saline groundwater from the Kerang area could be diverted to Lakes Tutchewop and Tyrrell, which would act as natural evaporation basins; the resulting reduction of saline flows into the Murray would allow other irrigation regions to pump large amounts of less saline groundwater into surface drains emptying into the river, without raising salinity in the Murray to unacceptable levels. The economic benefits of this scheme, in terms of prevented production losses, were expected to be most significant in the Shepparton region; in Deniliquin and Wakool rates of return were calculated as marginal, and in Kerang a negative return was predicted. However, unquantifiable economic and human costs – lowered farm incomes,

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183 Note that ‘tolerable’ levels of salinity in the Murray at this time were calculated with reference only to the limiting values for irrigated crops. The environmental consequences of increased river salinity were of negligible importance to the compilers of the Gutteridge Report, as evidenced by their inclusion, for serious consideration, of the so-called ‘Supply Channel Scheme’, first proposed in 1967, which ‘depend[ed] upon the construction of artificial channels for conveyance of irrigation water, the River Murray itself carrying all drainage effluent’ (Gutteridge Haskins & Davey, *Murray Valley Salinity Investigation*, 208-25).
migration from affected areas, and reduced use of regional infrastructure and existing irrigation works – were cited as sufficient justification for the proposed works.\footnote{184}

Cook has observed with some perspicacity that the Gutteridge Report ‘redirected the “visionary fervour” of … water managers and engineers away from the further expansion of irrigation and towards drainage schemes and the control of watertables’.\footnote{185} Faith in the power of engineering technologies to control the natural environment had been shaken by the report’s findings, but it had not yet crumbled. Instead, Victoria’s water managers turned their attention from grand plans for watering the state to equally ambitious schemes for dewatering it. Despite increasing external criticism of the enormous public and private investment in irrigation in Victoria – most notably from economist Bruce Davidson, whose influential \textit{Australia Wet or Dry?} (1969) argued that irrigation from a national perspective was an uneconomic investment – the extensive and expensive Lake Tyrrell scheme was eagerly seized upon by the State Rivers and Water Supply Commission (SRWSC). In their 1975 report \textit{Salinity Control and Drainage: A Strategy for Northern Victorian Irrigation and River Murray Quality} they described the scheme as ‘an essential item’ in a broader ‘strategy for the consolidation of existing large-scale irrigation development’, without which additional surface and sub-surface drainage works in the Shepparton Region could not be fully implemented.\footnote{186}

Implicit in the SRWSC’s proposal was their belief that the Lake Tyrrell scheme was essentially sound from an engineering perspective, though more recent assessments have suggested that its position as a discharge area for regional groundwater would have required further study.\footnote{187} Economically, too, its advocates considered Lake Tyrrell justifiable. The Gutteridge Report admitted that the scheme was ‘uneconomic from a National viewpoint’, but concluded that it would circumvent unacceptable human and

hidden economic costs. The SRWSC went further, asserting that ‘[e]stimated future benefits in terms of the protection of agricultural production alone in the Shepparton Region are sufficient to justify proposed drainage works in that region and the complementary Lake Tyrrell Scheme’, and describing the $10 million required for construction of the Lake Tyrrell scheme as ‘deferred’ costs necessary for the permanent survival of northern Victoria’s irrigation industries.

In one sense, the SRWSC were correct. Irrigated agriculture in Victoria had from the first been founded on insufficient drainage, partly (though not wholly) as a result of economic concerns, and this foundation had ultimately proved unsustainable. However, the solution they proposed quickly came under attack. During the five-year Parliamentary Public Works Committee (PPWC) inquiry into the Lake Tyrrell scheme, objections emerged which not only helped to overturn the scheme itself, but called into question a way of thinking about the relationship between farmers and water institutions that had existed virtually unchallenged for nearly a century.

Community opposition to the Lake Tyrrell scheme was composed of several strands. The strongest opposition came from dryland farmers in the Mallee region. These farmers, represented by the Ultima and District Dryland Farmers Protection League, feared that increased saline inflows to the lake could turn the surrounding farmland to salt. Moreover, Mallee farmers naturally resented the suggestion that they should accommodate the waste products of irrigation when they had never experienced its benefits. Kerang farmers, meanwhile, were disappointed by the SRWSC’s evident focus on Shepparton irrigators; unmollified by assurances that the Lake Tyrrell scheme would ‘provide a firm basis for future planning of comprehensive drainage improvements in the Kerang Region’, they ‘accused SRWSC officials of deliberately tying the

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188 Gutteridge Haskins & Davey, Murray Valley Salinity Investigation, 429.
189 SRWSC, Salinity Control and Drainage, 1-2.
192 SRWSC, Salinity Control and Drainage, 2.
Shepparton drainage and Lake Tyrrell scheme proposals together at their expense’. Though the Lake Tyrrell scheme was intended as a coordinated blow against salinity statewide, Norm Mitchelmore, former secretary of the Goulburn Irrigation Region Drainage Action Committee (GIRDAC), has suggested that in fact it ‘tend[ed] to separate the views of the Goulburn Valley from the views of the Kerang region’. Following hearings and tours of salt-affected areas by a select committee of politicians and officials, these views were presented to the PPWC inquiry by the Department of Agriculture.

The magnitude of community backlash to the Lake Tyrrell scheme took its proponents by surprise. The Gutteridge Report had envisioned the construction of the Lake Tutchewop/Tyrrell diversion as ‘a measure of support for the Mallee Zone farmers’; they had anticipated community opposition only to the use of Lake Boga, from ‘Swan Hill residents who use[d] the lake for recreation’, and had accordingly excluded it from their final proposal, except as a temporary storage. The SRWSC, who envisioned the scheme as a unique opportunity to protect both the northern irrigation districts and River Murray water quality, had seen only its social advantages; the proposed program would protect ‘established economic and social structures’ from disruption, and would prevent displacement of farmers and the abandonment of arable land. As the premier water authority in the state, they had been more accustomed to give advice than to receive it. During the glory days of irrigation they had established a pattern of deciding what was in farmers’ best interests and then implementing it, with little consideration of any feedback from the farmers themselves. Their 1975 strategy promised ‘due attention to operational and environmental factors’, but did not acknowledge the legitimacy of farmers’ concerns.

Victoria’s farmers, however, were no longer prepared to accept without question solutions imposed on them from above. Probably the ‘new politico-cultural forces

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194 Interview, Norm Mitchelmore, 10 August 2006.
197 Ibid., 2.
unleashed’ during the sixties were partly responsible for their new-found assertiveness; the ‘diversification and liberalisation’ instigated by youth culture during this period resonated at all levels of Australian society, and may well have served to shake the stranglehold of bureaucracy and top-down management of water resources which had so long remained unquestioned.  

Ostrom argues that the capacity of individuals to extricate themselves from natural resource dilemmas ‘varies from situation to situation’; this argument is readily applicable to a single group (Victorian farmers) varying as a result of time and social change. For Victoria’s farmers, community salinity and drainage groups such as the Kerang Irrigation Region Salinity Action Committee (KIRSCAC), the Goulburn Irrigation Region Drainage Action Committee (GIRDAC), and the Ultima and District Dryland Farmers Protection League offered them a forum for their concerns and a unified voice; unhappy with the high-handedness of the state’s water managers, they called increasingly during the late 1970s and into the 1980s for recognition of their own agency as both managers and dependents of the land, and for a share in decisions affecting land and water quality. As ‘assertion[s] of community’, acknowledging ‘a common interest among a specific group of people [farmers] against another, equally defined, group of people [government water authorities]’, these groups were in some respects the forerunners of today’s international and transnational social movements.

The Mineral Reserve Basins
In 1978, with the PPWC inquiry still in progress, the SRWSC decided to split the Lake Tyrrell scheme into two stages. Stage 1 was to link Lake Tutchewop with three naturally occurring depressions (the ‘Mineral Reserve Basins’) 10 km due west, between Mystic Park and Tresco; Stage 2 would involve a connection from the Mineral Reserve Basins to Lake Tyrrell, 70 km further west. It was envisaged that Stage 1 would correspond with ‘Phase A’ groundwater pumping installations – initiated by the Victorian Government in

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199 Ostrom, Governing the Commons, 14.
1974/75 as an emergency measure to protect horticultural areas, particularly orchards, in the Shepparton Region – ‘in such a way as to avoid any nett detriment to River Murray quality below Swan Hill’. The SRWSC considered that Stage 1 ‘could be built and operated on a stand alone basis’, stating that ‘[a]lthough the Stage 1 works would remain an integral part of a full Lake Tyrrell Scheme, when and if Stage 2 is carried out, approval and construction of Stage 1 would not necessarily imply a commitment to Stage 2’.

Forewarned by community reactions to the original Lake Tyrrell Scheme, the SRWSC took pre-emptive action, producing and distributing copies of an Environmental Effects Statement to landholders and other interested parties in July 1978. The Statement covered the background, objectives and justification of Stage 1; it described the proposed works, existing conditions and likely effects, and included consideration of alternative schemes. The ‘most significant adverse effect’ of the scheme, namely ‘the loss of private land either by direct acquisition for basins or by salinisation resulting from raised watertables caused by the use of the basins’, was estimated to affect only three properties, or 800 ha in total; the owners of these properties would either be bought out by the SRWSC, or would receive compensation payments ‘for reduced productivity of affected land’. In September 1978 the SRWSC submitted their proposal for the Lake Tyrrell Scheme Stage 1 (the “Mineral Reserve” Basins Scheme, hereafter MRB) to the PPWC inquiry, asserting that it would enable ongoing installation of Phase A groundwater pumps protecting ‘6600 ha of orchard … [representing] more than 450 individually owned properties’, and stressing that the MRB scheme could ‘be considered on its own merits, regardless of the outcome of continuing investigation on the possibility of a further extension to Lake Tyrrell’. From the SRWSC’s perspective, the proposed two-stage division must have seemed a sensible compromise. Stage 1, less ambitious, less

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202 Ibid.
205 Ibid., 9-10.
206 SRWSC, ‘Submission to the Parliamentary Public Works Committee’s Inquiry into Salinity Control and Drainage. The Lake Tyrrell Scheme – Stage 1. (The “Mineral Reserve” Basins Scheme)’ (13th September, 1978), 6, 14.
expensive and (it was hoped) less contentious than the original scheme, was more likely to gain speedy PPWC approval; the SRWSC could operate it as a stand-alone scheme to complement the Phase A pumps, while still retaining the option of extensions to the full Lake Tyrrell scheme at a later stage.

PPWC approval was indeed granted in October 1980, and in April 1981 construction of the MRB scheme commenced. In the meantime, though, community opposition was again growing, this time predominantly from farmers in the Kerang Region. Those with land adjacent to the basins ‘did not want their land taken or to leave it, no matter what compensation the Government offered’, nearby landholders feared for their own land, anticipating more extensive salinity damage than the SRWSC’s Environmental Effects Statement had estimated. The Kerang Northern Times ran articles slamming the basin proposal as a ‘bandaid’ and calling for alternative solutions. Many of the scheme’s opponents favoured a pipeline to the sea, though the SRWSC had estimated the cost of such a scheme at $19 million, compared to estimated costs of $2.13 million for the MRB scheme. When attempts to halt the scheme through local diplomacy failed, two Mallee farmers issued a Supreme Court injunction against the SRWSC, claiming that the MRB scheme would raise the watertable in farms around the Basins and thereby disrupt farming operations, particularly cereal growing, in the area. They also claimed that the SRWSC was acting beyond its powers in implementing the scheme, and that it had failed to carry out adequate research before beginning the project.

207 Auditor-General of Victoria, Salinity, 70.
208 Russ, The Salt Traders, 164.
210 SRWSC, ‘Submission to the Parliamentary Public Works Committee’s Inquiry’, 11.
211 T.B. Green, A Country Legal Practice (Swan Hill, Vic.: Koestler Press, 1988), 44. T.B. Green acted as solicitor for the plaintiffs (the Mallee farmers) in the MRB court case; Chapter 8 of his autobiography, ‘The Scandal of the Case of Jewson and Others v. The Rural Water Commission’, supplies a detailed account of the case.
The SRWSC, convinced that their scheme was the most effective option available for disposing of Barr Creek effluent, had dismissed alternatives as uneconomic. 212 Consultants Maunsell and Partners, commissioned by the State Ministers of Water Supply to assess the economic viability of state salinity control and drainage projects, had supported this assessment, concluding in their 1979 report *Murray Valley Salinity and Drainage* that the MRB scheme was economic, though they dismissed the Lake Tyrrell extension as ‘an expensive way of improving Murray water qualities’.213 Opponents of the MRB scheme, however, insisted that increases in costs associated with land acquisition and with additional pumping and monitoring of rising groundwater would undermine the scheme’s economic viability; as evidence of their claims, they supplied an up-to-date cost-benefit analysis which indicated that the scheme would not attain the four percent return government target.214 Though the Victorian Salinity Committee urged in 1982 that ‘the conflict surrounding the Mineral Reserve Basin and Lake Tyrrell schemes should be resolved as soon as possible’,215 legal action dragged on for a further four years.

In 1986 the court action was eventually overturned. The judgement in March found in favour of the SRWSC (since 1984 renamed the Rural Water Commission),216 though it declined to comment on the economics of the scheme. In December of the same year, however, the then Minister for Water Resources announced that the MRB scheme would be deferred indefinitely.217 Though the scheme’s discontinuance was attributed at the time to unfavourable cost-benefit analyses, general opinion saw clear political motives for the abandonment of a contentious and unpopular project. John Dainton, Chairman of the Salinity Pilot Program Advisory Council (SPPAC, discussed further in Chapter Three), recalled:

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214 Auditor-General of Victoria, *Salinity*, 70.
216 The SRWSC was renamed the RWC in 1984; the Department of Water Resources (DWR) was created at the same time ‘to provide independent advice on policy matters’ (Russ, *The Salt Traders*, 178).
[the RWC] won the court case, and yet Swan Hill declared a public holiday, because of the disaster, and they invited everyone to come along, including political parties, and all political parties marched … the Nats, the Libs, and Labor, were all marching down Swan Hill Street, and then of course it was all over … the local politicians just walked away from their own party.218

The fact that the scheme, at the time of its deferral, had incurred $7.3 million total expenditure, including $3.2 million for land acquisitions in addition to the construction of never-used infrastructure,219 indicates the tenacity of the SRWSC’s approach to salinity management. The RWC, having reigned unchallenged for decades in their previous incarnation as the darling of successive State governments and sole arbiter, through their management decisions, of the destinies of settlers who were generally inexperienced and easily intimidated, failed to understand the significance of opposition from a well-informed and well-organised group of farmers who were supported by their community and by their local politicians. Their sustained investment in so contentious a project suggests that they continued to believe, despite all evidence to the contrary, that the objecting farmers would eventually ‘fall into line’.

The disastrous economic outcome of the MRB conflict was not its only legacy. It also led to an increase in public awareness – and, in many cases, suspicion – of evaporative disposal of saline wastes. Most importantly, though, the scheme’s failure led directly to an increased awareness within government of the need for thorough and adequate community consultation in salinity management. According to the Salinity Bureau, the importance of community consultation became ‘an issue for special emphasis’ in the subsequent development of salinity control strategies as a direct result of the problems which had arisen from the MRB scheme.220 The Auditor-General’s report on the Mineral Reserve Basins concluded that

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218 Interview, John Dainton, 8 August 2006.
219 Auditor-General of Victoria, Salinity, 71.
220 Ibid.
[t]he experiences of the Scheme reinforce the importance of a thorough community and departmental consultation process and economic evaluation in the development of evaporation basins … [including] an assessment of the full impact of any damage likely to occur from leakage and a comparison of projected costs against savings from salinity reductions.221

Why did the Lake Tyrrell and MRB schemes fail? Russ has identified the following four points as the main factors which hampered the implementation of the Gutteridge Report’s grand drainage plans: first, a lack of clear consensus about controversial drainage solutions; second, the expense of public salinity control, and government unwillingness to protect marginal farmland; third, the environmentally unfriendly nature of many drainage schemes; fourth, the ‘ongoing, complex inter-state rivalries and political differences’ to which funding of expensive drainage schemes was subject.222 With regard to the failure of the Lake Tyrrell and MRB schemes, I would argue that Russ’s first factor – that of lack of consensus – was most significant. Though the schemes were expensive, they were intended primarily to protect the Shepparton Region, Victoria’s most valuable irrigated area and the source of 20% of Australia’s total horticultural production,223 which could hardly be considered marginal farmland. Since the proposed works fell entirely within Victorian borders, inter-state rivalries had little impact; and the SRWSC had been sufficiently in touch with the Zeitgeist of the 1970s to include consideration of environmental effects at all stages of the project. It was farmer opposition which split the Lake Tyrrell scheme in two, and eventually scuttled the MRB scheme also; not merely a lack of consensus between farmers, politicians and planners, but a deliberate refusal by rural communities to accede to a scheme which they saw as detrimental to their own interests.

The Girgarre evaporation basin

In comparison to the Lake Tyrrell and Mineral Reserve Basins schemes, the Girgarre evaporation basin exhibits both superficial similarities and profound differences. From

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221 Ibid., 73.
223 SRWSC, *Salinity Control and Drainage*, 5.
an engineering perspective, all three schemes were based on evaporative disposal of highly saline drainage water for the protection of valuable irrigated land. However, at thirty hectares the Girgarre basin is a much smaller project than the other two; moreover, while Lake Tyrrell and MRB were natural depressions, the Girgarre basin was entirely artificially constructed. Although this inflated capital costs significantly, it also allowed better control of potentially damaging seepage, which had been one of the most significant concerns surrounding construction of the Mineral Reserve Basins. More importantly, the Girgarre basin did not involve transportation of saline wastes from elsewhere; unlike the “export the problem” mentality which was the other prime cause of dissatisfaction with the Lake Tyrrell and MRB schemes, the Girgarre basin “[kept] the problem where the problem was in the first place”. It was equally significant, from a social perspective, that the Girgarre basin was the first major salinity management project in which government had made real efforts to consult and work with the local community. For these reasons, the Girgarre basin, though not unanimously welcomed, did enjoy significant local support, whereas the Lake Tyrrell and MRB schemes had been uniformly opposed by local communities from their inception. The localisation of the Girgarre basin meant that the separation of benefits from disadvantages, so injurious a cause of ill-feeling in the earlier schemes, was not applicable within the Girgarre community.

The Girgarre salinity control project (Fig. 5), of which the evaporation basin is a part, incorporates three separate groundwater extraction pumps. One of these discharges highly saline water into the basin from late spring to early autumn, or occasionally, ‘at times of very high flow in local drains and the Murray River’, into the surface drainage

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225 Interview, Anonymous 2, 8 August 2006.
226 These times were selected to maximise watertable control at key seasons of the year; ‘summer is probably the time when most of the salt damage is done, when the watertable is high so you’ve got the maximum capillary return, so you could have at least one period in the summer when you’re … reducing that capillary return. And if in the winter-spring you had rain, that was the time when you would expect the leaching, so it’d be nice to have the watertable down a bit in that time as well.’ Initially the three pumps were run ‘virtually continually, just to make sure we got the response as quickly as we could’, but it was later decided that this was ‘probably not cost-effective’ (Interview, Anonymous 2, 8 August 2006).
The other pumps extract lower salinity groundwater which is then discharged into the nearby Deakin Main Drain. The project is located in the Stanhope-Girgarre area, an irrigated dairying district in the Shepparton region which has experienced intermittent soil and water salting for over 40 years. Although early drainage problems in the area were alleviated in the 1930s by the construction of the Deakin Main Drain, increased irrigation following the intensification of dairying farming in the 1950s led to further deterioration of low-lying areas, particularly after the wet winters of 1978 and 1981.

Fig. 5: Girgarre evaporation basin.

Despite this long history of drainage and salinity problems, or even (perhaps more accurately) because of it, the issue of salinity was not raised until the early 1980s, and then by a newcomer to the district. Henry Vegter, a dairy farmer from Phillip Island,

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228 Sawtell and Bottomley, The Social Impact of Salinity, 4.
229 Barr and Cary, Greening a Brown Land, 227.
discovered salt-affected land on his newly-acquired Girgarre farm beside the Deakin Main Drain in 1981, and sought government advice to alleviate the problem. However, laser landforming failed to restore the productivity of the affected area, and when Vegter installed a spear-point pumping system to lower the groundwater he found that at 20,000 EC it was too saline for either irrigation reuse or disposal into nearby drains.\footnote{Sawtell and Bottomley, \textit{The Social Impact of Salinity}, 4.}

Many long-time residents of the area had been reluctant to acknowledge salinity as a problem, partly because they saw rising and falling watertables as part of a natural cycle,\footnote{Barr and Cary, \textit{Greening a Brown Land}, 228.} and partly for fear of the possible impact of public awareness of the salinity problem on the sale value of their land.\footnote{Sawtell and Bottomley, \textit{The Social Impact of Salinity}, 5.} The lingering perception that salinity on one’s land was a sign of personal failure, perhaps linked to earlier government accusations of ignorance and poor management,\footnote{Barr and Cary, \textit{Greening a Brown Land}, 227.} may also have kept farmers silent; one farmer suggested that “You don’t talk about it [salinity]”,\footnote{Sawtell and Bottomley, \textit{The Social Impact of Salinity}, 4.} while another commented that ‘it was early days in the salinity scene, and [salinity was] still pretty much a dirty word’.\footnote{Interview, Anonymous 1, 14 December 2005.}

Vegter, however, wanted action. With a handful of others, he formed the Girgarre and Stanhope Salinity Action Group (GASSAG) to lobby government departments and farmer organizations. This in itself was a significant step, since it meant that the initial impetus for the project came from the affected community itself rather than from an external body. A 1982 submission sent by GASSAG to the Parliamentary Salinity Committee stimulated DAV and SRWSC to conduct a joint hydrogeological and soil salinity survey of a 5000-hectare area in the Stanhope-Girgarre area, 66% of which was found to be suffering salt-related production losses. The SRWSC, having decided to implement a pilot project in the area, then hired consultants to develop a range of salinity control proposals for the ‘Vegter Locality’.\footnote{Sawtell and Bottomley, \textit{The Social Impact of Salinity}, 5.}
From the consultants’ findings, the SRWSC identified ‘seven options involving groundwater pumping’; a non-pumping option of landforming and re-layout was dismissed due to insufficient information. Each option was assessed on the basis of economic rate of return, capital costs, and method of saline water disposal, and involved various configurations of groundwater pumps discharging to evaporative disposal basins and/or the Deakin Main Drain. The SRWSC favoured option 5, in which ‘sites 2 & 3 would outfall to the Deakin Main Drain and Site 1 would dispose to a 30 ha. evaporation basin constructed on 35 ha of the worse salt-affected part of Mr H. Vegter’s property’. GASSAG’s submission had proposed a pipeline to the sea, but the group’s impetus was waning, and by 1985 GASSAG had ‘disappeared under the pressures and divisions of the Milk War’.

The primary aims of the Vegter Locality Salinity Project were twofold. Firstly, the SRWSC wished ‘to provide immediate relief to the most severely affected properties in the study area’; they also saw the proposed solution as ‘an opportunity to more accurately assess … the effectiveness, costs, and benefits of groundwater control by pumping in other localities with similar conditions’. The project would also benefit from both State and Commonwealth Government funding. High capital costs and low rates of return were justified by the project’s pilot status, and its potential to produce information of value for future evaporative disposal schemes.

During the planning phase of the project, public meetings were held at the local hall and the options explained for community consideration by representatives of the Department of Agriculture and Rural Affairs (DARA) and the SRWSC. Water table, soil salinity and groundwater re-use maps were also circulated to landholders in the area. Though the issue was never put to the vote, Sawtell & Bottomley suggest that the majority of those

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238 Ibid., 34.
239 Sawtell and Bottomley, The Social Impact of Salinity, 5. The Milk War was an unrelated but extremely divisive community conflict based around proposed industrial action by dissatisfied dairy farmers, including withholding Melbourne’s milk supplies.
who showed interest in the project supported option 5, also the preferred option of the DARA and SRWSC, and that ‘the evidence at that stage pointed to people being highly supportive of the chosen option’.242 Again, this is in significant contrast to community reactions to the Mineral Reserve Basins scheme, which from the project’s inception had been consistently negative.

By 1985, however, unease had developed in the community regarding the proposed basin. Many fears were expressed, some better founded than others. Some people feared that the basin and accompanying publicity would have adverse effects on property values in the area, a concern exacerbated when one farmer received ‘a letter from a real estate agent stating that properties in close proximity to the proposed project site were unsaleable’. 243 Irrigators downstream of the proposed basin were concerned that increased discharge from the project area into the Deakin Main Drain would make their water supply more saline. Others with private irrigation pumps feared the effects of the Vegter Locality pumps on their own groundwater supplies. Concerns were also raised regarding the corrosive effects of air-borne salt on machinery and houses, and the possibility of unpleasant odours and algal or insect infestations. Sawtell & Bottomley explicitly state that adverse publicity from the Mineral Reserve Basins scheme ‘fuelled the opposition to the Girgarre Project’. 244 More generally, though, there was concern that Girgarre had suddenly become identified as a very saline area … the fact that the evap [sic] basin might go in confirmed to people [that] this is a saline area … there was a lot of resistance just built around the fact that “we don’t want to be identified as the salt capital of Victoria”.245

Existing analyses of the Girgarre basin, while they offer different and valuable insights, have tended to overemphasise the management deficiencies of the project, at the expense of its practical success and real significance in the history of salinity management in the region. Barr & Cary’s discussion is restricted largely to explanations of farmers’

242 Sawtell and Bottomley, The Social Impact of Salinity, 8.
243 Ibid., 9.
244 Ibid.
245 Interview, Anonymous 2, 8 August 2006.
understandings of salinity, and the reasons for their lack of interest in salinity control; other elements of the Girgarre project are dealt with cursorily or not at all, and the project’s success is assessed from an economic point of view only. Russ, though he has put considerable effort into providing a balanced account, does not sufficiently acknowledge the bias created by the aims of Sawtell & Bottomley’s original report, nor the limitations of information provided by a relatively small number of interviewees. The subsequent inclusion, in the same chapter, of the Warrenbayne-Boho Land Protection Group as a parallel and very positive case study of salinity management encourages readers (though Russ does not explicitly compare the two) to view the Girgarre case study unfavourably by comparison – a largely invalid exercise, since land use and consequently salinity management options in the two areas were, and still are, extremely different.246

Both Russ and Barr & Cary rely heavily on *The Social Impact of Salinity in the Shire of Deakin and Waranga* (1989), a report completed by John Sawtell and John Bottomley for the Goulburn Regional Advisory Council (GRCC),247 which examined the Girgarre salinity control project as part of a set of case studies. Sawtell & Bottomley based their analysis on interviews with Girgarre farmers and local government officials. Sawtell & Bottomley’s report, as its title indicates, was written as a study of the social impacts of salinity, focusing on two areas of concern: the impact of salinity-related farm productivity losses on the social structure of rural communities, and the collective and individual responses of these communities to ‘the need to address salinity control issues’.248 The GRCC, in commissioning the study, was particularly concerned with ‘the ability of local government and the community to respond to the social impact of salinisation’. Consequently, the authors concentrated primarily on the conflicts within and between the community and government departments during planning and instalment of the basin, offering suggestions for the improvement of these processes. The report was

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247 Sawtell and Bottomley, *The Social Impact of Salinity*.
248 Ibid., 1.
published too soon after completion of the basin for the consultants to be able to judge the long-term success of the scheme.

This success has in fact been considerable. The basin currently protects 17 farms (1000 hectares) from saline watertables; predictions of clogging by salt accumulations have proved unfounded, and the area has become a haven for local and migratory waterbirds. Though some aspects of the planning and consulting processes involved could certainly have been improved, it is important to remember that this project was carried out at a very early stage in the history of community consultative management, and that in the aftermath of Lake Tyrrell and the ongoing fallout from the MRB battles, both government authorities and community members were struggling to find new ways to communicate and cooperate on questions of rural land and water use, and new frameworks within which to develop innovative and satisfactory strategies for successful salinity management.

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It is timely now to re-evaluate the Girgarre basin, both in its historical context and with reference to present circumstances, using a combination of published documents, government reports, and interviews with key figures in its development. Over a decade has elapsed since the publication of even the most recent analysis of the Girgarre basin. A reconsideration from the vantage point of twenty years later reveals new and valuable insights into the development and dynamics of salinity management in the Goulburn Valley.

It is appropriate first to revisit Sawtell & Bottomley’s report, since this forms the basis of the later analyses I am critiquing. I have already mentioned that this report was commissioned specifically ‘to investigate the ability of local government and the community to respond to the social impact of salinisation’, with the aim of producing ‘an action framework … a set of strategies that provides a planned approach to address the
social impacts of salinity from a local government perspective. The criticisms of the Girgarre project most important for this analysis are those made by Sawtell & Bottomley regarding the limitations to community consultation during the preliminary stages of the project. Economic concerns were also prominent, and are addressed particularly in the Auditor-General’s Report (1993), and to some extent by Barr & Cary; I do not address these, except to say that I consider accusations of unjustifiable expense largely invalidated by the pilot nature of the project, but very relevant to any future proposals for evaporation basins.

With regard to community consultation, Sawtell & Bottomley stated that initial decisions were made ‘at an inter-departmental level, without participation by those likely to be effected [sic] by the pilot project’; they added that ‘public meetings were not held until after the government departments had agreed on their preferred option’. Based on these criticisms, Sawtell & Bottomley recommended that future projects should:

(a) separate the planning stage from the decision-making stage so that the planning body is not advocating an option at the same time as it is making decisions about the preferred option, and

(b) establish an independent review panel to hear objections.

Without disregarding these criticisms, I would argue that the level of community consultation offered throughout the project was exceptional for its time. Many local participants perceived the efforts made to encourage community involvement as extraordinary: one stated that ‘because of the community concerns, they really went to the extreme to make sure that the thing wasn’t a problem to neighbours, or anyone else’. SPPAC, who had acted as mediator between the RWC and the objectors, reacted forcefully to suggestions that consultation had been inadequate, expressing themselves ‘amazed at the consultant’s comment’, and quoting one of the landholders adjacent to the

249 Ibid., 1-2.
250 Ibid., 8. The Auditor-General’s report essentially repeats these comments unchanged (Auditor-General of Victoria, Salinity, 108-9).
251 Sawtell and Bottomley, The Social Impact of Salinity, 8.
252 Interview, Anonymous 1, 14 December 2005.
Basin: “The degree of consultation was greater for this project than for any project I have seen or heard of. Every landholder was fully aware of the project and had input into the final design.”253 Even those opposing the basin’s construction acknowledged that ‘our concerns were listened to well’.254 It is true that even extensive consultation has its limitations; one participant described consultation for the Girgarre project as ‘reactive’, adding that

The proposal was being developed, then there was reaction, and there was consultation, which was very much about saying, look, we think your concerns are not valid, we’re doing all that needs to be done to make this thing work effectively. I don’t think there was any consultation around the concept of, well, we’ll hear your concerns and we won’t do it, that sort of thing … as long as the government was satisfied that it was technically ok, and that all the things that were being talked about were not going to be problems, then the government wasn’t going to be persuaded.255

Nevertheless, in comparison to the Lake Tyrell and MRB schemes, consultation for the Girgarre project was more thorough and community participation more positive.

There is also the issue of community opposition to the basin. I would not wish to downplay the community rifts caused by the construction of the Girgarre basin; one local landowner, although a supporter of its construction, commented that the issue ‘really quite bitterly divided the community for about a decade’.256 Nevertheless, Sawtell & Bottomley identified only a relatively small core group of opponents, ‘around five people’, though they did suggest that ‘there may have been others who would have preferred the project not [to] go ahead’.257 It should be noted at this point that community divisions relating to the basin’s construction were probably exacerbated by issues other than salinity (eg. the Milk War),258 and that some of those who opposed the basin’s construction based their opposition on reservations that later proved unfounded.

255 Interview, Anonymous 2, 8 August 2006.
256 Interview, Anonymous 1, 14 December 2005.
258 See footnote 239 for details of the Milk War.
One supporter suggested a generational distinction between the opposing and supporting factions:

I guess there was that element that wanted to bury their head in the sand, we thought, anyway, and there were others, and I guess we were younger, basically, who could see the opportunity to make a positive out of a negative, and supported the thing. 259

Whatever the factors dividing the two camps, the community housed at least as many supporters as opponents. Some were vehement in their support; one farmer ‘lobbied heavily … and threatened renewed dairy industry unrest if the project did not proceed’. 260 The Girgarre Salinity Study Group (GSSG), formed by some of the most salt-affected farmers in early 1986, also supported the basin’s construction, recording their group’s ‘unanimous and continuing support’ for Minister for Water Resources Andrew McCutcheon’s decision to proceed with the Girgarre Salinity Control Program in their Minutes of 23rd October 1986. 261 Though the basin’s opponents had their say, in the end it was the supporters who had the majority voice:

the others used to come along and voice their opinion, but we always had the numbers … I guess it would have been difficult to go in and construct the thing if that hadn’t been the case. 262

It is also significant that the Girgarre project was supported by a number of influential community groups. These included GIRDAC, the Victorian Irrigation Research and Promotion Organisation (VIRPO), the Victorian Farmers Federation (VFF), and the United Dairyfarmers of Victoria (UDV). The VFF in particular had been heavily involved in opposition to the Mineral Reserve Basins scheme, and its support of the Girgarre project therefore represented ‘a complete flip around’. 263 Moreover, the State’s Labor government had made farmer support (represented by VFF support) a precondition for the basin’s construction, as John Dainton recalled:

259 Interview, Anonymous 1, 14 December 2005.
260 Sawtell and Bottomley, The Social Impact of Salinity, 11.
261 Ibid., 12.
262 Interview, Anonymous 1, 14 December 2005.
263 Interview, John Dainton, 8 August 2006.
I was on the VFF Salinity Committee at that time, and I was agitating to get the evaporation basin at Girgarre built … I was asked to make sure that, if I could get farmers’ support for it, the Labor Party at the time would okay it … so [we] had to get VFF support.

This is in clear contrast to the attitude of the SRWSC, who pushed ahead with construction of the MRB scheme in blatant disregard of unanimous and vocal community opposition.

The ultimate success of the Girgarre basin has several explanations. Firstly, the salinity issue in Girgarre was raised, and government support sought, by local landowners; in this sense, the Girgarre basin was initiated by the community itself. By contrast, the Lake Tyrrell and MRB schemes were presented to communities most likely to be negatively affected by them as a fait accompli, for which their input had at no point been solicited. That some members of the Girgarre community were opposed to this initial awareness-raising should not be seen to detract from the local origins of Girgarre’s salinity management. In addition to this, the Girgarre community was involved during most stages of the planning process, and had considerable opportunities for input. Though the reports produced by Sawtell & Bottomley (1989) and the Auditor-General of Victoria (1993) legitimately criticise the limitations of this involvement, I would argue that the community consultation processes offered during the development of the Girgarre basin were extraordinary for a project of its kind, and in the context of earlier approaches to community consultation around these issues. Sawtell & Bottomley themselves acknowledge the considerable efforts made by Department of Agriculture and Rural Affairs (DARA) and RWC representatives to explain options for salinity management, to encourage debate within the community during the planning stages, and to offer objectors opportunities to discuss their concerns.

The involvement of community-based groups was vital, both to the project’s eventual success, and in differentiating it from earlier schemes. During the Lake Tyrrell and MRB schemes, community groups were involved in spearheading campaigns of opposition, in
contrast, the Girgarre project was supported in its entirety by several prominent community groups, including some who had prominently opposed the earlier schemes. The very great significance of this support, representing as it did a range of farmer interests and the influence of leading community members, has been partly obscured in subsequent reports by a focus – I would argue an over-emphasis – on local opposition to the basin, which in fact involved a relatively small number of individuals, and was more than equalled by local support. Consultation must not be confused with consensus. What is important is that community members are informed about projects which affect them, encouraged to initiate their own suggestions, and given maximum opportunities for comment and criticism; and on all of these points the Girgarre project far surpassed the Lake Tyrrell and MRB schemes.

The scale of the Girgarre project was an important factor in its success. Unlike the Lake Tyrrell and MRB schemes, which proposed to transfer saline drainage tens or even hundreds of kilometres across country, the benefits and negatives of the Girgarre project were confined to the affected area. Many of the concerns most prominent in opposition to the Lake Tyrrell and MRB schemes were thereby obviated; even those landowners who feared saline seepage could not legitimately claim that they would receive no benefit from the basin, or that it would privilege farmers from another region at their expense. In comparison to the modest target of the Girgarre basin, which successfully protected 17 farms (571 ha), the Lake Tyrrell and MRB schemes offered to deliver far more; the extra pump installations which MRB alone was to have enabled would potentially have protected ‘6600 ha of orchard … [representing] more than 450 individually owned properties’.

However, they would also have risked more, not only socially but economically and environmentally, and for communities who saw no benefit for themselves in the schemes, these risks were simply too great. The repercussions of community opposition to the Lake Tyrrell and MRB schemes have affected more areas than Girgarre; Christen et al. have suggested that concerns relating to regional basins, including increasing pressure to ‘depart from the … “export the problem” mentality’,

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264 SRWSC, ‘Submission to the Parliamentary Public Works Committee’s Inquiry’, 6.
have contributed to a current preference for on-farm or community basins throughout the Murray-Darling Basin.265

**The future of evaporative disposal**

There is currently some debate over the potential for future evaporative disposal. As already mentioned, regional basins have become increasingly unpopular, for both social and environmental reasons, and though some of the existing schemes remain in use it is highly unlikely that any new schemes on the scale of Lake Tyrrell or MRB would receive serious consideration. Community basins, like that at Girgarre, are more realistic in scale, and avoid the “export the problem” mentality, but (as the above discussion has demonstrated) are not without their own problems; social concerns aside, distribution of costs is often complex, and the issue of siting can lead to legal disputes. On-farm basins, which occupy individual properties, have the advantage over community basins with regard to distribution of costs, but are more difficult to supervise, and require some form of monitoring to ensure that ‘impacts on non-beneficiaries and the environment are within acceptable limits’.266 The construction of both community and on-farm basins is expensive, and must take into account long-term maintenance and decommissioning costs. Moreover, basins of any size necessarily occupy land which might otherwise be productive. There are some suggestions for economic uses of basins (for example, commercial seaweed production or fish farming), and amenity, wildlife and production protection values, though often difficult to quantify, should also be taken into account. Generally speaking, however, evaporation basins will only be viable as a salinity management option in a limited number of cases. Recent improvements in irrigation technology have meant that it is often possible for farmers to adopt a “prevention rather than cure” approach to salinity, particularly where controlled-delivery irrigation systems can be used to minimise water wastage. In addition, below-average rainfall over the past ten years has led to an overall drop in watertable levels in the Goulburn Valley and other regions, which in turn has provided a temporary respite for many farmers in areas normally prone to waterlogging and salting.

The Girgarre project, however, has at least demonstrated that evaporative disposal on a small scale is a viable option in some circumstances, ‘another weapon’ in the armoury for salinity management.267 Though the vagaries of climate,268 combined with an increasing range of alternative management options, have thus far rendered further basins unnecessary in the Goulburn Valley, the Girgarre basin remains something you can hang your hat on. If we get back into a wet cycle, and you have to do these things, well, you can go out there and show people … seeing is believing.269

The Girgarre basin has also had a positive effect on public perceptions:

There was quite a number of groups of people who came over from Kerang, who had considered evap basins but always regarded them as [a] complete no no no, and after looking at Girgarre they went away and said, well, if we need an evap basin, we’ll take one … I think that is quite a strong message there … but the reality in terms of whose land, and where it sits, and how that relates to here … those sort of things are all going to be factors when you come back to making a decision.270

Though the Girgarre salinity control project represented a significant step forward in the development of salinity management which was sensitive to the needs and concerns of local communities, subsequent alterations to government policy moved towards a far more active role in salinity management for local communities, in both planning and implementation. These developments, and their impacts on the Goulburn Valley’s approach to salinity management today, are addressed in the next chapter.

267 Interview, John Dainton, 8 August 2006.
268 Ten years of below-average rainfall in the Goulburn Valley has caused watertables to drop naturally, reducing salinity problems in some areas, and has contributed to watertable control indirectly by encouraging landholders to adopt more water-efficient irrigation methods (interviews, John Dainton, 8 August 2006; Kevin Chapman, 9 August 2006).
269 Interview, John Dainton, 8 August 2006.
270 Interview, Anonymous 2, 8 August 2006.
Chapter Three: Towards grassroots management

The farmers were having an input as to what should happen … [it’s like] that old education theory that says that if you have some sort of input, then you’ll be responsible, going forward, which was the whole idea.271

From a Government department point of view, there’s a vital role for groups … rather than working on a one-to-one basis, when [sic] the departments have been seen to be the source of all wisdom and the promoter of everything, we’re really acknowledging that the groups are setting their own pace, they’re defining where they want to go and how they want to go about it, and I think in the end we achieve far more, because the group provides pressure on each other, provides that back-up support, and really, really develops the enthusiasm that you need for anything to happen.272

Introduction

This chapter demonstrates the next stage in salinity management in the Goulburn Valley, from the election of the Victorian ALP (Cain) Government in 1982 to the present day. Since 1982 the meaning of community-based salinity management has changed, and continues to change, in response to changing understandings of community and government roles. The development of policies encouraging increasingly active community participation in salinity management during this period has thus reflected the Victorian Government’s increasing appreciation of the effectiveness of community-based approaches. Within the Goulburn Valley, policy approaches to salinity management following the 1982 election progressed in a series of stages; the inflexible, ‘top-down’ approach characteristic of the SRWSC’s salinity management was superseded by progressively more community-driven policies. Largely as a result of pressure from grassroots community groups, Government salinity policy moved away from the imposition of pre-determined technological ‘solutions’, at first towards community education and consultation (exemplified by the report of the Salinity Committee), then to representation by select figures and active solicitation of community input (the

271 Interview, Kerry Wilson, 12 December 2006.
Ministerial Task Force on Salinity and the Salinity Pilot Program), and finally to frameworks allowing communities to develop autonomous management strategies (the Landcare movement). It is arguable that the Victorian Government’s journey towards community-centred salinity management has produced substantially positive results, and that the Landcare movement, though not without its own problems, is the most successful framework for natural resource management operating within Australia to date. Perhaps unusually for the frequently pessimistic environmental historian, this chapter is therefore in many respects a chronicle of progress.

The Cain Government and the Parliamentary Select Committee on Salinity
Let us begin by stepping back to April 1982, when the Victorian ALP, under Premier John Cain, won office, becoming Victoria’s first Labor government in almost thirty years. Russ’s interpretation of this event presents the 1982 election as a turning-point in government attitudes to community involvement in salinity management. He asserts that community involvement, in relation to issues in the environment, education, and health sectors, had been fundamental to the ALP’s political philosophy even before the 1982 election, though he concedes that ‘in government, the ALP [needed] some time … to develop meaningful governmental processes in community participation’. This assessment requires some qualification. During its first few years in power, the Cain Government’s attitude to community-based salinity management was somewhat ambiguous; though, in theory, it advocated a larger role for rural communities, in practice it was slow to abandon completely the time-honoured approach of top-down management. Rather than being an intrinsic element of the Cain Government’s policy, the development of processes allowing genuine community participation in salinity management may be more accurately understood as the result of a serendipitous convergence of vocal rural communities and sympathetic political individuals.

It is true that the Cain Government began its career in salinity management with gratifying promptness. The ALP had pledged pre-election to establish an all-party salinity committee and to double funding for salinity control works throughout Victoria;

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Russ and Youl link these promises directly to the party’s connections with rural lobby groups such as “Halt the Salt”\textsuperscript{274} and SALT (Salt Action Liaison Team)\textsuperscript{275} Three months after the election, the all-party Parliamentary Select Committee on Salinity was duly established. Community participation in this Committee was relatively substantial; farmers and community groups were included as members of the Committee’s Consultative Group and Research Advisory Group, and the development of its report involved sixteen public hearings in regional centres throughout Victoria. However, this report, when released to Parliament in October 1984, was less than consistent in its conclusions. The Committee argued that salinity control should ‘involve all segments of the community’; it advocated more community-based initiatives and a larger role for local government and local community groups.\textsuperscript{276} However, its report also claimed that ‘community consultation in salinity control [had] been adequate to date’,\textsuperscript{277} a conclusion by no means supported by Chapters One and Two of this thesis. Their claim suggests that the Salinity Committee, despite a theoretical dedication to community-driven management, had not yet broken free of the top-down implementation processes which had characterised the development of the Lake Tyrrell and MRB schemes.

The ambivalent nature of the newly-elected Government’s commitment to community-driven management is best demonstrated by its handling of the controversial Mineral Reserve Basins scheme. In November 1983, the Minister for Water Resources agreed to a request from the Salinity Committee that work on the scheme be ‘postponed pending a broader examination of the scheme in the context of the overall management of salinity in Northern Victoria’. In March 1984, however, before the Committee had completed its report, it ‘was informed that the Government had decided to resume work’.\textsuperscript{278} Though Russ argues, in the Government’s defence, that it made this decision only after an alternative scheme to reduce irrigation discharges into the Barr Creek catchment had been

\textsuperscript{274} Russ, \textit{The Salt Traders}, 168-70, 172.
\textsuperscript{277} \textit{Ibid.}, xxxvii.
\textsuperscript{278} \textit{Ibid.}, xv.
rejected by Barr Creek communities,\textsuperscript{279} it is difficult to see how any government serious about community concerns could have continued to countenance a scheme as divisive as MRB had already proved to be. Nevertheless, work on the scheme continued, with government support, until late 1986.

In June 1986, a memo was sent by three Swan Hill councillors to the Premier and the members of the Ministerial Task Force on Salinity. It clearly expressed the Swan Hill community’s frustration and disappointment with the Government’s continued support of the scheme:

\begin{quote}
… since the formation of the Task Force … we welcomed that initiative, and expected a new era in the salinity fight. It is therefore disappointing to find that despite the continued – and informed, opposition by our communities … we are no closer to a resolution to problems which our communities have borne for so long … When business people, their staff members, schools, churches, banks, farmers and the people at home join in support with such a united spirit, it is expected that Government will listen. … WE WON’T ACCEPT BEING MADE THE SACRIFICE AREA to allow the R.W.C. to pursue its out-moded policies.\textsuperscript{280}
\end{quote}

Finally, in December 1986, the Government announced that the scheme would be ‘indefinitely deferred’.\textsuperscript{281} This decision was influenced by advice from members of the Ministerial Task Force on Salinity, who in turn had been influenced by community opposition to the scheme. The Task Force, which had been set up by the Government in 1985 to address the findings and recommendations of the Salinity Committee, consisted of six high-profile cabinet ministers; its chair, Minister for Agriculture and Rural Affairs Evan Walker, had strong views on the importance of community involvement. As Shadow Minister for Conservation and Planning, Walker had attended a 1981 meeting at the Kerang Town Hall, part of the PPWC inquiry into the Mineral Reserve Basins, and had witnessed five hundred angry farmers shouting down SRWSC Commissioner David

\textsuperscript{279} Ibid., xv.
\textsuperscript{280} Memo to the Premier, Mr. John Cain, and Members of the Ministerial Task Force on Salinity, from Pat Fraser (Member Swan Hill Branch, A.L.P.), Barry Steggall, M.L.A. Swan Hill and Alan Wood, former M.L.A. Swan Hill. Reprinted in Green, \textit{A Country Legal Practice}, 81-5.
\textsuperscript{281} Auditor-General of Victoria, \textit{Salinity}, 71.
Constable’s sales pitch for the scheme. Walker recalled that ‘under local pressure that day the whole [Public Works] committee changed its view. I thought to myself, ‘This is not the way to make long-term policy’.’ He added later that

Constable … was highly credible; and there is nothing to say that the Commission wasn’t necessarily correct … it’s one thing to be right in the narrow sense, but it’s not necessarily true to say that you are right in the bigger or broader sense … the community is the most powerful part of what you’re doing. You can’t do anything if you don’t carry the community with you, and that community of farmers opposed Mineral Reserve because they didn’t believe in it.

John Dainton, who as Chairman of the Goulburn-Broken Salinity Pilot Program Advisory Council (SPPAC, of which more later) worked closely with both Walker and Minister for Conservation, Forests and Lands Joan Kirner, also a Task Force member, added with reference to the MRB scheme that

Joan Kirner and Evan Walker, to their credit … [recognised] that if you didn’t have the community on side, you can actually demand things to happen politically, but civil disobedience and all that sort of thing is not very good, it’s not the way anyone wants to go.

Salt Action: Joint Action: The Ministerial Task Force on Salinity

Headed by Walker and Kirner, the Task Force turned its energies towards developing strategies for more active community participation in salinity management, and towards re-establishing trust between government agencies and salt-affected communities. Salt Action: Joint Action, a state strategy for land and water salinity management released in draft form by the Task Force (by then re-named the Natural Resources and Environment

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284 Evan Walker, quoted in Russ, The Salt Traders, 164.
285 Russ credits Kirner personally with the Task Force’s decision not to proceed with the MRB scheme (Russ, The Salt Traders, 203).
286 Interview, John Dainton, 8 August 2006.
Committee of Cabinet) in February 1987, emphasised more strongly than any previous government publication the importance of community initiative and participation. *Salt Action* stated that ‘[t]he success of the [salinity control] program … [would] depend as much on community participation as on government resources: salt-affected communities must be responsible for managing the problem and resolving issues at the regional level’.287 Such comments, following hard on the heels of the Government’s abandonment of the MRB scheme, suggest a decisive rejection of technologically feasible but socially unacceptable schemes in favour of a new emphasis on community-directed management.

To underline this new focus, community feedback on the draft strategy was solicited through a series of regional public meetings and a two-day state community conference, and readers were invited to send submissions on the draft to the Chairman of the Committee of Cabinet.288

The roles of Government and of regional communities, as defined in *Salt Action*, represent a significant development of earlier understandings. A movement away from regulatory management had already been evident in the Salinity Committee’s suggestion that ‘[t]he most effective and enduring changes in land management by private landholders will result from voluntary action in response to the provision of information and to encouragement by other landholders’.289 Building on this, *Salt Action* emphasised a facilitatory role for Government, stating that Government action, through education/extension activities, research, and assistance and incentive programs, would ‘focus upon helping local and regional communities to help themselves’.290 Regional participation was to be led by ‘task forces of community representatives and departmental officers from each region’, who would prepare preliminary regional salinity strategies for their region, and within sub-regions by joint working groups of Government and non-government representatives from the sub-region.291 Though this structure allocated the

288 Ibid., n.p.
289 Salinity Committee, *Salt of the Earth*, xxxviii.
291 Ibid., 25. A *salinity control sub-region* was defined by the strategy as ‘an area in which salinity problems have a common cause, effect or down-basin consequence; and within which planned salinity control practices are likely to be effective’.
majority of planning work to representative individuals rather than to the whole community. Salt Action also emphasised that individuals and organizations likely to be affected by the salinity management plans prepared by these working groups would be ‘encouraged to take part in the preparation and review of the plans’ – a clear move beyond the ‘consultation-only’ model to a more active form of community participation.

The Salinity Pilot Program in the Goulburn-Broken Catchment

The Goulburn Valley, which (as beneficiary) had been the focal point of the SRWSC’s post-1970 plans for statewide engineering solutions such as the Lake Tyrrell and MRB schemes, retained a central position in the Task Force’s reinvention of salinity management. This centrality was emphasised by the selection, in 1985, of the Goulburn-Broken Catchment as the site for a regional pilot program for salinity control. The pilot program was the Task Force’s first attempt to apply the strategies defined in Salt Action; it was intended to reach conclusions of statewide relevance, and to produce findings which would ‘help determine and demonstrate the most effective procedures by which a fully integrated salinity control program can be established within a region’. The Task Force explicitly stated that it was ‘interested in learning … how best to … involve the regional community in the preparation of salinity control plans’. The Goulburn-Broken catchment was selected as the site for this pilot program, partly because of its size, and the existence of ‘a wide range of major salinity problems in both the irrigated and non-irrigated areas’, but also because of ‘the obvious willingness of the regional community to participate in the trial program’.

From its inception, the pilot program was strongly community-focused. As an initial step the Task Force created a Pilot Program Establishment Team, consisting of senior

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292 I do not argue that representative systems of community involvement are problematic per se; in fact, they can often be more manageable (and hence more realistic) than whole-community systems, particularly for management on the broad scale. However, some authors have argued that representative systems may privilege some sectors of the community at the expense of others (see, for example, Sarah Ewing, ‘Catchment Management Arrangements’, in Managing Australia’s Environment, ed. Stephen Dovers and Su Wild River (Sydney: The Federation Press, 2003), 403-4.

293 Government of Victoria, Salt Action, 25.

scientists and extension officers from the Goulburn-Broken region and from Melbourne. Most of the members were regional people with a sound understanding of the region. The Establishment Team then recommended formation of a Salinity Pilot Program Advisory Council (SPPAC), comprising up to 15 people from within the region: landholders from both dryland and irrigation areas, councillors from rural and urban local government, a person experienced in community education, and others ‘appointed from nominees of special interest groups’. SPPAC was to be ‘the major form of community involvement in the pilot program’, and though appointments would include technical representatives of Government departments, it was agreed in accordance with SPPAC’s community focus that such representatives should be non-voting participants only.

In 1986, SPPAC was formally constituted under the chairmanship of John Dainton, a dairy farmer, dairy company director and former GIRDAC chairman. The political astuteness and experience of Dainton and many of SPPAC’s other members (described by Wilkinson and Barr as ‘agri-politicians’) undoubtedly represented one of the Council’s greatest strengths. Members were nominated by the community, short-listed by the Establishment Team and selected by the Task Force; public election of members, though theoretically the more democratic option, was considered difficult due to the relatively low community awareness of and interest in salinity at the time, and it was felt that ‘the need to ensure the right people were on SPPAC overrode the need for the selection process to appear to the community to be totally democratic’. Wilkinson and Barr’s analysis, though it raised the question of who should decide ‘which people are ‘right’ for the task of representing the community’, emphasised that ‘[i]n retrospect there have been few complaints about the membership … [i]n view of the tough stand the members of

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296 Ibid. The nature of the relationship between government agencies and SPPAC was emphasised by Minister for Agriculture and Rural Affairs Barry Rowe, whose foreword to SPPAC’s community education publication Salinity: The Underground Flood stated: ‘The Government has asked the Salinity Pilot Program Advisory Council to prepare the Land Water and Salinity Management Plan on behalf of the region’s community. Technical support is being provided by relevant Government Agencies [sic] so that SPPAC has the most up to date advice at its disposal’ (Goulburn/Broken Salinity Pilot Program, Salinity. The Underground Flood. Can it be controlled in the Shepparton Region? n.p., 1989).

297 Wilkinson and Barr, Community Involvement in Catchment Management, 74.
SPPAC have taken in their dealings with the government, they can hardly be accused of being ‘rubber stamps’.

SPPAC was constituted with three main objectives: to ‘identify the salinity problems in the Goulburn Broken Catchment; alert the catchment community to the identified problems; and develop acceptable management plans to address these problems.’ The physical causes of salinity were reasonably well understood by this stage, but raising community awareness proved to be a greater challenge. Wilkinson and Barr commented that ‘[b]efore the Pilot Program commenced, few people in the Goulburn Valley were aware of salinity, and many of those who were … kept quiet for fear of creating a stigma and possibly reducing property values’. Dainton recalled:

they asked me to chair this salinity pilot program … and I didn’t know there was a salinity problem, and I was so intrigued by this that I said yes … [so] the immediate challenge we had was … if you believe this, that salinity’s a problem, how are you going to get this across to the community? … if I hadn’t heard of it, you could rest assured that 99% hadn’t.

Though not all Goulburn Valley farmers were unaware of salinity, most did not associate the problem with their own farms. Dainton reflected that ‘[i]f you just talked to me about salinity … I’d have said, oh yeah, if you look at Kerang, or some of those places, sure! … but not in Shep, no way’. SPPAC responded to this challenge with a publicity campaign, a key feature of which was the production and distribution of two coloured brochures showing watertable depths on maps of the Shepparton district. Titled *Salinity: The Underground Flood*, these maps showed shallow watertables in red, clearly depicting the extent of the areas affected (Figs 6-7). As dramatic and visual representations of an otherwise relatively invisible problem, the maps ‘probably did more than other

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298 Ibid.
300 Wilkinson and Barr, *Community Involvement in Catchment Management*, 83.
301 Interview, John Dainton, 8 August 2006.
community awareness materials’ to raise awareness and concern in the district. Other strategies included ‘extensive print and electronic media coverage’ of the salinity program, particularly by the Shepparton News; public meetings; distribution of ‘SPPAC CHAT’ issues papers inviting feedback on policy proposals; special meetings with industry groups; and information days and evenings held by SPPAC for local businesses, local government, service groups and school teachers.

SPPAC’s second task was to compile salinity management plans for the region. The plan for the Goulburn Valley’s irrigated districts, known in full as the Shepparton Irrigation Region Land and Water Salinity Management Plan (hereafter SIRLWSMP, or ‘the Plan’), was a significant venture, since the final document would not only direct subsequent salinity management in the entire Shepparton region, but was intended also to serve as a guide to the development of regional salinity management plans elsewhere in the State. A similar plan, the Goulburn Dryland Salinity Management Plan (GDSMP), was developed at the same time for the non-irrigated areas of the Goulburn-Broken catchment. I do not propose to discuss the GDSMP in any detail; development of the two plans was very similar, and the management strategies proposed for irrigation areas were more complex (and therefore more interesting for purposes of analysis) than those adopted for the dryland plan, which focused primarily on revegetation. However, some commentators have suggested that planning and implementation for the irrigation regions was better organised and better integrated than for the dryland, partly because of the ‘diffuse nature’ of salinity problems in dryland areas, partly because of differences in

303 Wilkinson and Barr, Community Involvement in Catchment Management, 83.  
304 SPPAC, SIRLWSMP, 4-5; Wilkinson and Barr, Community Involvement in Catchment Management, 83-4.  
305 The Goulburn Dryland Salinity Management Plan had as its primary objective ‘To reduce rainfall accessions to the groundwater system by planting areas of high or moderate infiltration (recharge areas) with high water using trees, pastures and crops’; a secondary objective was ‘To establish vegetative cover on denuded salt land and to control erosion from these areas’. These objectives were addressed via environmental studies (satellite data, stream sampling), a community education program, provision of farm advisory services, an on-farm works program, and research into technical management options, with technical and financial support provided by relevant Government agencies (Goulburn/Broken Salinity Program, Goulburn Broken Salinity Program Advisory Council Annual Report 1990-1991 (Salt Action Victoria, 1991), 6-7).
approach between Government departments, and partly because members of the irrigation sub-committee tended to be more vocal.306

In developing the Plan, SPPAC had to walk a careful line between community concerns and government constraints. Their first draft was ambitious, proposing protection of all local farmers against high watertables through extensive capital investment in management infrastructure: extensive networks of community drains, over 400 new public groundwater pumps, and fifty new evaporation basins, at an estimated capital cost of $83 million.307 SPPAC had believed that this level of expenditure was necessary to ensure that the cost of salinity control was spread ‘as widely as possible across the community’; however, in response to a State Government request, the plan was subsequently amended to identify ‘the most economically attractive areas for salinity control’.308 Although they were obliged to work within government constraints to some extent, SPPAC members maintained that they had continued to ‘raise our differing opinion to government … [w]e had to present to government something that the community would adopt, rather than what the government wanted to hear’.309 The proposals of the re-drafted plan, a compromise between SPPAC’s equitable vision and the State Government’s economic caution, were evaluated for community support through a consultation program involving circulation of issues papers, public meetings, and discussions with various landholder and government groups.

During the two years spent preparing the Plan, SPPAC consistently emphasised its community focus. Dainton’s preface to the draft Plan stated that SPPAC had ‘liaised extensively with all sectors of the catchment community, utilised the expertise of

306 Wilkinson and Barr, Community Involvement in Catchment Management, 77. Comment about integration from interview with John Dainton, 8 August 2006: ‘One of the things that I thought that we did in the irrigation area that was real smart … was that there’s no point in looking at salinity in isolation. You had to look at the whole lot of land and water issues … it suited departments to have each component of natural resources in a little silo, but in actual fact, out on the farm it didn’t work like that, it always interrelated somehow or other … we were able to convince the [Rural Water Commission] that that was the way to go, and they went along with that … in the dryland, which was run by the conservation department [CFL] … they would not have a bar of it … salinity was the only issue.’
307 Wilkinson and Barr, Community Involvement in Catchment Management, 84.
308 Ibid.
309 Anonymous, quoted in ibid.
Government Departments and engaged consultants’ to produce Management Plans which were ‘environmentally sound, socially just, economically responsible and affordable’. Like *Salt Action*, the draft Plan invited ‘written comment … from individuals and organisations’, stating that ‘SPPAC needs written responses so that it can negotiate with government, after receiving evidence of regional community support, to implement the plan (or a revised version of it)’. External commentators generally agreed with SPPAC’s perception of its community focus, and reacted favourably to it. One interviewee described the Plan as the real turning point in community consultation in the Goulburn Valley:

> The management plan was different … because options were being put in front of people … there was a community group set up to overview the development of the plan, and part of their role was to make sure that everything that was being put forward was taken out to people, so people knew what was there, and that a number of options were being considered at that time, and those options were put on the table, and if people came back with variations or something different, that was going to be listened to … there was a very concerted consultation program.

Others considered the pilot program a first for more than the Goulburn Valley; SPPAC member John Pettigrew commented that

> as a pilot program we proved what could be done across the state, and it’s been implemented now right across Australia, virtually. Catchment management, as we know it, that was, grass roots really started here.

Local media were also supportive, with the *Shepparton News*, for example, welcoming SPPAC’s re-appointment in 1987 as ‘a major boost [for] the input of farmers into decision making on salinity control’.

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310 SPPAC, *SIRLWSMP*, iii.
311 *Ibid*.
312 Interview, Anonymous 2, 8 August 2006.
313 Interview, John Pettigrew, 9 August 2006.
As with any version of community consultation, there were limitations. Critics suggested that SPPAC had concentrated its consultation effort on ‘elected representatives of, and key people involved in, peak interest groups’, rather than on individual farmers. In their defence, SPPAC members argued that the region was too large and resources too limiting to consult every landholder, and that since salinity was still an emerging issue within the Shepparton region and community concern was consequently low, individual consultation would not have been appropriate. Personal experience suggested that even the most exhaustive consultation process was unlikely to satisfy everyone:

I’d say that there would be a fairly large number of people who would say they weren’t consulted [in relation to the Plan], but … I think the opportunity was there. I mean, I haven’t been involved in a consultation process where everybody comes back and says, yes, we were consulted. Because in a lot of cases … information went to people and they ignored it and sort of suddenly found it was affecting them, [and then] “they weren’t consulted”.

Nevertheless, SPPAC did maintain links with other representative community organizations, particularly GIRDAC, and held discussions with RWC District Water Users Advisory Committees, landholder salinity and drainage groups, VFF branches, and regional shire councillors. They also sponsored a series of public meetings throughout the region. According to Wilkinson and Barr, ‘SPPAC recognised that by consulting with the community it gained credibility with both the community and government … plans had to be acceptable to the community … before they could be presented to government’.

The SIRLWSMP involved significant community participation in both the planning and review stages. Implementing the management strategies identified, however, was less straightforward; some were more amenable to community implementation than others. Strategies such as whole farm planning, improved water management, farm drainage,

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315 Wilkinson and Barr, Community Involvement in Catchment Management, 85.
316 Ibid.
317 Interview, Anonymous 2, 8 August 2006.
318 Wilkinson and Barr, Community Involvement in Catchment Management, 86.
private groundwater pump installation, tree planting, and drainage reuse fell into the
category of ‘farm works’ (defined as ‘those activities … carried out by individual
landowners on their land’);319 although SPPAC stated that the Plan’s farm works program
had been specifically selected in consideration of ‘the likelihood of the program being
implemented by farmers’, 320 these works depended for their adoption largely on
individual inclination. Surface and sub-surface drainage schemes requiring ‘considerable
investigation, design and consultation with the involved community’ and ‘joint
management between Government and the community’ were designated as Priority
Project Area Activities and their administration assigned to a relevant Government
agency (predominantly RWC, but also DARA and DCFL),321 while schemes of lesser
urgency were to be ‘planned, constructed, operated and maintained by … local
communities’, with Government agencies providing extension support. SPPAC
envisioned the formation of ‘[c]ommunity groups of up to about 20 landowners … to
manage these schemes’, recommending that such groups be given legal standing to
prevent disruption ‘when properties change hands or when local conflict occurs’. SPPAC
also recommended the establishment of Salinity Program Implementation Groups
(SPIGs) within the Region, partly to conduct ‘detailed planning’, but also to function as a
form of authority in case of community disagreement; the Plan stressed that ‘[k]ey
decision making will be by people living within the Region’, and that ‘[w]orks are to be
implemented where there is a majority decision to proceed by the affected community’,
but added that

Where it is clear that individuals or groups are not prepared to undertake works which are
consistent with the Plan and result in wider community benefit, the SPIG will have
authority to refer the issue to SPAC for a decision to proceed.322

In SIRLWSMP, then, SPPAC had produced a comprehensive strategy for salinity
management in the Shepparton region. Apart from the Priority Project Area Activities,
however, the Plan’s management activities were largely reliant on individual and

319 SPPAC, SIRLWSMP, 57.
320 Ibid., 73.
321 Ibid., 123-5.
322 Ibid., 128-30.
community support for their implementation. Though SPPAC’s community education campaigns had undoubtedly improved landholders’ awareness of the Goulburn Valley’s salinity problem, it was not clear how successful the Plan’s rather nebulous vision of SPIGs and community groups would be in motivating and supporting Goulburn Valley farmers to progress from awareness to action.

**Landcare in the Goulburn Valley**

Into the breach stepped Landcare, an initiative of the Land Protection Service (LPS) division of the Department of Conservation, Forests and Lands (CFL). The Landcare movement was formally launched by Minister for Conservation Joan Kirner and VFF President Heather Mitchell in 1986; the movement was given further impetus by the establishment, in 1989, of a federally funded National Landcare Programme, and by Prime Minister Bob Hawke’s announcement in the same year that the 1990s would be the ‘decade of Landcare’. Originally, the concept of Landcare was the result of efforts to integrate and extend CFL’s existing land protection activities on public land, and simultaneously to demonstrate Departmental support for similar activities on private (mainly farm) land. Though the initial LPS working document conceptualised Landcare as primarily a government program, subsequent reworkings greatly strengthened its community focus. The final submission on Landcare to the Conservation Focus Committee of CFL included the following statement:

[Landcare] will be group driven, that is, its management will be by local groups who will cooperate towards a defined objective. … The purpose of groups is to focus, and give practical, local expression to local needs, enthusiasms, [and] initiatives and to integrate local and Government strategies, plans and resources to that end.

The group projects will not be stereotypes. Projects will fit in with and take on the character of local and regional needs and will enable the expression of local needs and enthusiasms … group areas will be based on the co-ordination of farm locality and area plans.  

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324 Submission on Land Care to the Conservation Focus Committee, 15 July 1986, quoted in *ibid.*, 114.
Pragmatically speaking, the Landcare movement today consists of ‘several thousand individual Landcare groups comprised of about 30-50 farmers headed by an elected group leader … farmers join Landcare on a voluntary basis, and groups are usually defined on the basis of a river catchment (not administrative boundaries) or on peer groups with a common interest’. 325 Such general descriptions, however, cannot encapsulate the diversity in membership, methods, and objectives characteristic of Landcare groups across Australia, nor the intangible but significant changes in thinking brought about by Landcare’s community-driven model of land management.

Though the Landcare model of management was, and still is, unique in many respects, it did not emerge from a vacuum. Commentators have suggested antecedents ranging from the Forests Commission of Victoria’s native plant nurseries to the catchment-based management approaches of the old Soil Conservation Authority.326 Others have pointed out that the emergence of Landcare, a broad-based environmental and social movement, was symptomatic of a period in Victoria’s political history during which ‘community was “in”’, at a time when ‘community had a voice and was [being] welcomed into arenas not previously accessible’,327 and when ‘future-looking’ individuals such as Kirner, Walker, and Mitchell contributed to produce a ‘whole climate [which] was good for the beginning of the Landcare movement’.328 Landcare has also been understood as part of an incremental process of Victorian Government departments developing ‘a more integrated approach to natural resource management’, symbolised by (though not limited to) the 1983 amalgamation of Victoria’s environmental and public land departments into the Department of Conservation, Forests and Lands.329 It is important to add, however, that the Landcare movement was in fact predated by a number of self-help land management groups formed by innovative farmers, including, in the Goulburn Valley, the

328 Interview, Kerry Wilson, 12 December 2005.
Warrenbayne-Boho Land Protection Group (one of the earliest in the state, formed in the late 1970s) and the Sheep Pen Creek Land Protection Group. The existence of these and similar groups indicates the awareness of land degradation problems, and the determination to tackle these problems, which were present in many of Victoria’s rural and regional communities well before the Landcare era. Although groups such as KIRSAC and GIRDAC could also be considered antecedents to the extent that they were community-based and concerned with land management issues, they differed in focusing predominantly on lobbying for government action rather than seeking support for self-executed works. Landcare’s commitment to a personal, ‘hands-on’ approach to rural land management set it apart from earlier developments in community-based management; the same commitment remains one of the movement’s defining characteristics.

Conceptualisations of the Landcare movement take a bewildering variety of forms. Nevertheless, it is possible to identify certain common elements. Descriptions of Landcare as ‘a community-driven movement supported with government assistance’ or as ‘landholders working in their own local social group to solve their own local land conservation problems in their own way’ highlight the movement’s community focus, local specificity and inter-group variability and flexibility as key ingredients of its success. These features have attracted the attention and commendation of numerous critics within Australia and internationally. According to Wilson, the Australian Landcare movement has become ‘one of the most often cited … recent ‘community-based’ agricultural movements and multi-stakeholder partnership[s] in advanced economies’. The movement has also ‘attracted international attention and substantial interest from intellectuals … as a working example of participatory sustainable

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development’, and has been ‘hailed by many as one of the clearest (if not the clearest) expression[s] of recent change and potential empowerment of local rural stakeholders in a global context’.

The Landcare groups of the Goulburn Valley offer an excellent cross-section of the diverse and remarkable achievements of the Victorian Landcare movement in relation to regional salinity management. These groups have tackled a wide range of projects, depending on the interests and skills of the participants and the particular land management problems of the local area. The Warrenbayne-Boho Land Protection Group, for example, a pre-existing organization which became one of the state’s first Landcare groups, focused heavily on community education; Kerry Wilson, formerly Rural-Urban Officer for the group, remembered group members agreeing that they ‘should really be trying to engage urban people in this whole story about the importance of … putting funds around salinity amelioration’. To this end, the group conducted field days and bus tours, and ran school camps; they also established a group project site on a property belonging to one of the members, which allowed them ‘to critically appraise salinity control options’ for the area. In addition, several group members took advantage of their combined political experience and contacts with Philanthropic Trusts to participate actively in SPPAC and in the State and National Landcare Programmes.

The Dhurringile Landcare Group, formed in 1996, addressed itself initially to mapping watertable levels within their local region, an irrigated area south-west of Shepparton. The group was formed specifically in response to salinity problems, as President John Laing recalled:

We had reasonable salinity issues in the area at the time … it was after those quite a few wet years that we’d had, so we had high saline watertables within 300 mm of the surface.

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336 Interview, Kerry Wilson, 12 December 2005.
337 Angus Howell, quoted in Diana Mundy, ‘Quiet achievers of salinity control get their reward’, *Shepparton News*, 31 March 1987, 7.
338 Interview, Kerry Wilson, 12 December 2005; Russ, *The Salt Traders*, 188.
… back in those early days there was a few Landcare groups forming around the region, and probably salinity was the biggest issue that could galvanise communities.339

With the aim of ‘trying to … work out what was wrong, how bad our salinity levels might be’, Dhurringile Landcare decided to install one hundred test wells, one per square mile, in their region:

that way … we’d have a good coverage, so we could monitor those … four or five of us … formed a sub-committee to say, we’ll go out and target each individual area, and doorknock landowners to see if we could get them on board to put a test well on their property.

Laing described the success of this venture as ‘very good’, citing only two knock-backs. A subsequent drive to encourage tree-planting along the North Murchison-Toolamba community service drain met with similar success; Laing’s doorknocking achieved an approximate 95% success rate, in stark comparison to CFL, whose ‘success rate, at the time, was less than 5% at being able to get landowners to actually plant trees on their property’. The contrast ‘[highlighted] another thing that Landcare can do … we’re volunteer, community-based things, we’re a member of the local community, we’re not this person from the Government or the Department coming in, knocking on your door’.340

Laing’s experience underlines an important point. The fact that the activities of Landcare groups within the Goulburn Valley were both planned and carried out by local community members was crucial to these groups’ success in managing local salinity problems. This was partly a matter of familiarity and trust; Nan Oates has commented of the Warrenbayne-Boho group’s founding members that ‘they were normal district people … not shrill, or greenies, but … all involved in about ten other varied district groups. This helped them to keep their contacts open and maintained their credibility in the

339 Interview, John Laing, 10 August 2006.
340 Ibid.
district.” Kerry Wilson added that the group’s enthusiasm and dedication encouraged others to participate:

That little group got everyone else enthusiastic; if you weren’t planting trees, you were a bit of a pariah, what’s the word, felt you were letting the side down.

The same kind of intra-community ‘peer pressure’ was equally valuable in helping John Laing to convince Dhurringile landholders to install test wells:

… when I was first going around and knocking on the door, I quickly worked out that peer pressure is a wonderful tool … I’d have this big map, half the size of this table, and I’d pull [it] out on the bonnet, and I’d introduce myself, and say, you know, we’re doing this, and here’s the map, and, “Oh, Niccoli has got one over there! Oh, Jones has got one over there! I’d better have one of them.” And because I could show them that … we were all involved in it … most landowners would say, oh, okay, they could see that it was worthwhile.

Laing found that the ‘ten or twenty people in the Landcare group’ functioned as a critical mass, encouraging others to participate: ‘their names were already on the map, [so] … you could fill in the blanks a lot easier’. Other Landcare participants enjoyed the closer contact with other community members as a benefit in itself; Pam Robinson, of Warrenbayne-Boho Landcare, remembered that ‘[i]t was refreshing to be more closely linked again in our community through this very satisfying program of tree planting, pasture improvement, water monitoring, better stock management, new fencing and cheerful meetings … [w]e saw incremental changes to the landscape that were pleasing.

Despite these and other benefits, however, Landcare too had (and still has) its limitations. Critics have queried whether the movement may legitimately be conceptualised as ‘grassroots’, suggesting that its political genesis makes it more a government programme.

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342 Interview, Kerry Wilson, 12 December 2005.
343 Interview, John Laing, 10 August 2006.
344 Robinson, ‘The Landcare experience is everywhere’, 141.
than a community-led movement. Some have gone so far as to declare that because Landcare groups ‘have not developed spontaneously and autonomously … [they] are therefore not ‘grass roots’ organizations in terms of the theory of authentic community participation’. Some critics have expressed concerns about ‘departmental ‘ownership’ of Landcare, especially in relation to departmental funding to resource the movement’, though others have argued that government support ‘has been critical to Landcare success’, and others again have cautioned that ‘Landcare is in danger of becoming a honeypot’, and that further legal and political controls are necessary to ensure that Landcare funds are distributed with sufficient accountability. Moreover, while Stone’s suggestion that Landcare ‘typically preached to the converted’ (ie. those who were ‘already motivated and had the confidence and the time to participate’) is perhaps unnecessarily severe, it must be acknowledged that the movement cannot realistically be described as comprehensive, since Landcare’s participants, though enthusiastic and motivated, represent only twenty to thirty per cent of all Australian landholders.

The tension between the desire to maximise local ownership of projects and the need for external financial support is one with which Goulburn Valley Landcare groups continue to struggle. For Kerry Wilson, government and philanthropic funding were crucial to the Warrenbayne-Boho group’s early successes:

the useful thing for the Warrenbayne-Boho group was that they had … the first paid co-ordinator in the state, which meant that cash-strapped, time-poor farmers, who are also labour-poor … you know, you might be able to do something on your own place, but coordinating a group effort, which is really where you’re going to get the best outcomes, is just beyond a [volunteer] farmer.

347 Oates, ‘Landcare – it’s not just about the land’, 133.
352 Interview, Kerry Wilson, 12 December 2005.
John Wilson added that Warrenbayne-Boho’s contacts with CFL functioned as ‘an absolutely excellent model for the department office having contact with farmers … a lot of the old Department of Ag, they’d be in their office, and we’d be out here, and never the two would meet, sort of thing … [whereas] this was a real co-operative effort between the farming groups and the department officers’.  

The Sheep Pen Creek Landcare Group, on the other hand, have found it necessary to restrict departmental input in order to maintain local ownership of the group’s projects, and to keep them relevant to participating landholders. According to President Jacci Campbell, the group want[s] to have a bit more control over priorities, and what we see as a district as important, and not somebody in Melbourne or Benalla or whatever … at least to have our say and to be able to present it in such a way that it makes some sense. Because also then we can go to landholders, or they can come and look at what’s there, and see what’s been done, and where it’s been done, and whether it’s been having an effect.

John Laing observed that different Landcare groups approached the issue of funding in different ways: the Landcare groups that are politically astute … because they know how the system works, they know the words you’ve got to use to get the dollars and all these other things, whereas a lot of other groups, you’re really at the mercy of the systems. … And I know Landcare groups that thumb their nose at all the authorities, and say, we’ll go on our own, we’ll get our own money. From wherever they can. If they’ve got to raise it through fundraisers, or selling a few trees, or whatever, they’d rather do it that way than jump through someone’s hoops.

Laing suggested that both approaches had some merit, and that while ‘if you’re going to spend public dollars, you need to have some sort of accountability in place for them …

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353 Interview, John Wilson, 12 December 2005.
354 Interview, Jacci Campbell, 13 December 2005.
355 Interview, John Laing, 10 August 2006.
there is a need to make sure that you’re spending the dollars wisely’, many groups found that ‘the more sophisticated the resource management gets, the harder it is for volunteers to do that’.356

Ongoing group management issues, including leadership succession planning, priority setting, and member recruitment and retention, are of immediate concern to many groups.357 A 1999 survey found that Landcare groups in the Goulburn-Broken catchment were spending an average of 17.2 hours per week on administrative activity alone; not surprisingly, these groups rated lack of time to carry out Landcare work as a major constraint to their activities.358 Curtis and Cook’s most recent report on the state of Landcare in Victoria has found ‘clear evidence of the ‘declining health’ of Landcare’, including fewer landholders, fewer groups, and very high attrition rates; the authors suggest that significant government investment, particularly in funding group co-ordinators, will be necessary to maintain the long-term effectiveness of Victoria’s Landcare groups.359

Within the Goulburn Valley, members of many Landcare groups have observed a decrease in activity in recent years, particularly in relation to salinity management. The regional drop in watertable levels following a decade of drier-than-average conditions has reduced the urgency of salinity concerns. John Laing explained:

… the watertables keep going down and down and down … if it’s out of mind it’s out of sight, sort of thing, and for a lot of farmers, because it’s gone off the radar, because it’s gone down so low, it’s not as big an issue. And that’s even reflected in the Catchment Management Authority, a lot of all this information that we cobbled together like this, we tried to get that out to the Landcare groups a few years ago and asked the CMA for some

356 Ibid.
359 Allan Curtis and Penny Cook, Landcare Groups in Victoria: after twenty years (Charles Sturt University Institute for Land, Water and Society, April 2006), iv-vi.
financial assistance to do that, we got knocked back because it had gone off the priority radar. 360

John Pettigrew, Goulburn-Broken CMA Board member and long-time Landcare member in northern Shepparton, commented that since the onset of dry conditions it had become ‘harder to implement our drainage strategy … people are not thinking of drainage’, though he added that ‘[considering the] dry years, it’s amazing how much [surface drainage] has continued to go in … most of the plan is … still progressing’. 361 With reference to his local Landcare group, Pettigrew continued:

… you wouldn’t say it’s a fairly active group. It’s changed over the years. Everyone starts off full of steam, planting trees everywhere … there’s still an enormous amount of trees being planted by private landholders, [but] … we haven’t got the numbers turning up at meetings [we] used to have, they’ve dropped back, you’ve only got a hard core of maybe ten or a dozen people who really are the life of Landcare still. And there’s nowhere near the activities we would have had in the past.

Although Pettigrew conceded that enthusiasm for Landcare activities had dropped away ‘in some areas’, he described it as ‘more a directional change’, adding that the Shepparton group had taken on larger roles in community education and Local Area Plan facilitation.

Critics of the Landcare movement are divided on these issues. Some argue that ‘Landcare groups need not go on forever to be deemed successful … [groups which] appear to have fallen by the wayside … may well have achieved what they set out to do’, and that skills developed through involvement in Landcare (including ‘effective lobbying and publicity, applying for government grants, and better cooperation and communication with each other’) will continue to ‘contribute to local communities’ even after the Landcare groups themselves become inactive. 362 Others, though, are concerned that ‘systems like Landcare [which] rely heavily on the energy and skill of relatively small

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360 Interview, John Laing, 10 August 2006.
361 Interview, John Pettigrew, 9 August 2006.
numbers of people’ may struggle to provide the sort of ‘comprehensive, rigorous, ongoing system which will ensure indefinite sustainable use’. Volunteer burnout and high attrition rates are ongoing challenges; nevertheless, Landcare groups in the Goulburn Valley currently contribute to a broad range of land management and community education projects, including regional electromagnetic salinity surveys (the Heartlands Project), Drainwatch and Waterwatch programs, community education events (Matter of Salt, National Tree Day, other community plantings) and implementation of Local Area Plans.

The current situation
Salinity management in the Goulburn Valley currently utilises a ‘best of both worlds’ approach, combining the Landcare model of community-driven, localised management with more formal regional structures. The Shepparton Irrigation Region Implementation Committee (SIR IC) of the Goulburn-Broken and North Central Catchment Management Authorities, which took over the role of SPPAC and its successor (post-‘pilot’ phase) SPAC following the inception of Catchment and Land Protection Boards in 1995, continues to oversee the implementation of a modified version of SIRLWSMP as part of the region’s Catchment Strategy. Like SPPAC, SIR IC includes both community and Government (DPI, Goulburn-Murray Water) representatives. SIR IC also has formal links with the Goulburn Murray Landcare Network, and considers Landcare groups within the Goulburn Broken Catchment ‘an important part of Plan implementation’. Landcare remains strong in the region; 126 Landcare and Land Management Groups and seven Landcare Networks currently operate within the catchment, involving, at a recent estimate, over 30% of land managers (approximately 2,700 people). The Shepparton

365 Department of Sustainability and Environment and Department of Primary Industries, ‘Balancing the salt budget for the Shepparton Irrigation Region’ (Tatura, Vic.: Catchment and Agriculture Services, DPI, 2005), 5.
367 Ibid.
Irrigation Region Catchment Strategy is now considered one of Australia’s most successful natural resource management programs, and has received over 16 awards since 1991 in recognition of its achievements in natural resource management.368

I suspect that salinity management is most successful when it combines both community-driven and government-operated forms of management. Ideally, the synergy between the financial, technical and directional support provided by government structures and the local knowledge, enthusiasm and commitment of community-driven groups should produce management results which neither group would be able to achieve alone. In practice, of course, achieving such a synergy is far from simple; maintaining it, through Local Government amalgamations, privatisation of rural water authorities, and changes to funding processes, regulatory frameworks, government policy and government agencies, is more challenging still. Nevertheless, the substantial effort and sustained commitment now applied to salinity management in the Goulburn Valley are a far cry indeed from the disregard and delay which characterised government-led salinity management prior to the 1970s. Today’s salinity managers are determined to ‘ensure that the catchment community … remains actively involved in implementation and future evolution of the Catchment Strategy’, and take pride in the ‘full participation’ of community groups in the Catchment Strategy ‘from its idea to its research and investigation, through to the delivery of its solutions’.369 Their attitudes contrast significantly with the diffidence of the 1984 Salinity Committee, and the inconsistency of a government which simultaneously expressed support for community participation and continued to construct the Mineral Reserve Basins. James H. McColl, speaking as Minister for Water Supply before the Victorian Historical Society in 1914, was perhaps more prescient than he guessed when he stated that ‘the ideal system lies between [purely local management and Government management] … the people do not know all, neither do the Commissioners’;370 but the realisation of his seemingly simple vision has been almost a century in the making.

368 Ibid., 11.
369 Ibid., 1, 11.
Conclusion

I think it’s been a great success … I thought it was a piece of ground we’d lost forever.371

In the Goulburn Valley, as elsewhere in Victoria, times are tough for primary producers. Dairy farmers, pastoralists, and horticulturists alike are struggling against unpredictable weather conditions, including unseasonable frosts and hailstorms, and increasingly severe water shortages. The latest predictions of climate change impacts in Australia suggest that in future these difficulties are likely to intensify. Sharman Stone’s description of farming life in the mid-1990s as characterised by ‘low returns, rising input costs, growing farm indebtedness, high interest rates and declining land values … [and] insecure export markets’ could equally be applied to many of Victoria’s farming communities today, with the added complication of future climate uncertainties.372

In what often appears to be a litany of unrelieved rural doom and gloom, the story of salinity management in the Goulburn Valley stands out as one of success. Dire predictions of salinity-caused environmental and economic collapse in the region have not been borne out; in fact, the implementation of a range of on-farm and regional salinity management strategies, combined with the effects of a decade of lower-than-average rainfall conditions, successfully reduced the area of high watertables in the Shepparton Region from an estimated 188,000 ha (more than one-third of the Region) in 1988 to around 130,000 ha by 2001 (Fig. 8), a trend which continues to the present day.373

Salinity management in the Goulburn Valley remains active, with the Goulburn-Broken Catchment Management Authority (CMA) reporting recently that eight of their eleven key management actions had been achieved to levels matching or exceeding set targets.374 Positive changes to farming practices and the development and adoption of innovative irrigation technologies, spurred on by recent water shortages, are increasingly

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371 Interview, Brian Williams, 11 August 2006.
373 SPPAC, SIRLWSMP, 10-11; ‘Shepparton Region Watertable Contours August 2001’, map produced for the Shepparton Irrigation Region Implementation Committee of the Goulburn Broken and North Central Catchment Management Authorities by the staff at the Tatura office of Sinclair Knight Merz.
being adopted by Goulburn Valley landholders, and promise continuing improvements in water use efficiency throughout the region.\textsuperscript{375} As significant as they are, however, these tangible and measurable successes represent only half the story. With the help of a series of concerted public education campaigns since the 1980s, community awareness of salinity has grown dramatically.\textsuperscript{376} More importantly still, community participation in salinity management has become both increasingly active and increasingly numerous. The Australian Landcare movement, internationally recognised as ‘a working example of participatory sustainable development … a unique national programme that currently has no counterpart anywhere else’,\textsuperscript{377} has produced from 1986 onwards a series of community-driven, locally-focused land management projects which may legitimately be understood as the culmination of a series of steps towards genuine and effective community-based salinity management. Without overlooking the limitations of the Landcare model, it is fair to say that the approach to salinity management exemplified by the Landcare groups of the Goulburn Valley is a far cry indeed from that which characterised the preceding century of irrigated settlement – an ugly and damaging combination of bureaucratic self-assurance and community inexperience which resulted in immeasurable environmental and social damage.

Nevertheless, given the sobering realities of management limitations and external uncertainties, there is little room for complacency in the Goulburn Valley’s salinity management. Although the integrated catchment management (ICM) model, from which Victoria’s current system of Catchment Management Authorities and Catchment Strategies is derived, is built on a philosophy of ‘[fostering] an organisational culture in


\textsuperscript{376} Wilkinson and Barr reported from a series of unpublished University of Melbourne surveys that following SPPAC’s publicity campaign ‘[t]he proportion [of Shepparton Region irrigators] admitting that their farm could be affected by salinity in the future increased from 37 percent in 1987 … to 61 percent in 1989’ (Wilkinson and Barr, \textit{Community Involvement in Catchment Management}, 83).

\textsuperscript{377} Wilson, ‘The Australian Landcare movement’, 463.
which cooperation and collaboration … between Government and community … are
central’, the reality is not so simple. ICM bodies must walk a fine line between
coordination and control. Physically defined catchment boundaries do not always
 correspond to social ones, and there is also the question of scale. Too small, and the body
loses the ability to ‘deal strategically with catchment issues’ and is unable to effect
integrated management; too large, and it ‘runs the risk of being ‘irrelevant’ and of
disenfranchising voluntary support (such as Landcare groups)’. 378 Despite their best
endeavours to achieve genuine community participation, catchment management bodies
are also ‘vulnerable to charges of elitism’, because ‘certain groups and individuals have a
greater capacity to participate in participatory politics and planning’. 379 Recent criticism
of Victoria’s CMAs for resource-wasting, mismanagement and dissociation from their
communities (though critics notably exempted the Goulburn Broken CMA from these
charges) 380 suggest that the price of successful ICM is not only eternal (or, at least,
continual) vigilance but constant hard work.

Planning for effective salinity management is complicated by uncertainties. The potential
effects of climate change are particularly significant in this regard. I have mentioned
previously that the series of below-average rainfall years since 1996 has led to a
noticeable drop in watertable levels, in the Goulburn Valley and elsewhere in Victoria;
salinity problems in these areas have correspondingly declined in severity. (A further
indirect but related cause is that the recent dry conditions have triggered increasingly
efficient use of water amongst many Goulburn Valley irrigators.) Since current models
of climate change predict mass relocation of existing weather systems and a long-term

Dovers and Wild River, 403.
379 Ibid., 404.
380 ‘CMAs under attack for wasting funds’, Weekly Times, 23 August 2006, 1, 4; ‘A scandalous waste of
money’, Weekly Times, 23 August 2006, 17. The Weekly Times reported that ‘Prominent figures in natural
resource management have also accused the CMAs of achieving little in the way of catchment
improvements. One source said the CMAs had “failed to make any discernible physical difference in the
catchments” and that only the Goulburn Broken CMA could demonstrate otherwise’ (‘CMAs under attack
for wasting funds’, 4). The author of the Curtis report has suggested that ‘There are still some issues
around the CMAs for some [Landcare] groups as some feel the CMAs are ignoring them’ (Allan Curtis,
quoted in Margrit Beemster, ‘Curtis report calls for more co-ordinators’, Victorian Landcare and
Catchment Management 37, Winter 2006, 17).
reduction in rainfall in many of Australia’s agricultural areas, including the Murray-Darling Basin, it is possible that an overall decrease in salinity may turn out to be one of the few silver linings of the climate change cloud. However, optimism is no substitute for ongoing monitoring and research. There is already a danger that individual and community interest in, and awareness of, salinity will wane as a result of the respite bought by ten years of drought conditions; several of the landowners I interviewed suggested that salinity had become passé, replaced by more immediate concerns such as drought and weed control. Climate effects also make accurate assessment of current management strategies more difficult.381

The potential effects of other land degradation processes on salinity trends also remain unclear. Soil acidification, a natural process accelerated by agricultural practices, reduces plant productivity and leads to lower water use; for these reasons it is thought likely to contribute substantially to dryland salinity in future. Although scientific evidence to support this link is limited at present, further investigation appears imperative considering the likely future extent and severity of soil acidification in Australia.382

How can these challenges be addressed to ensure that salinity in the Goulburn Valley is successfully and sustainably managed in future? Obviously, sufficient, well-directed, well-managed funding is essential to keep existing management structures functioning at high levels. Ongoing research into both farming techniques and management theory will continue to improve natural resource management, and develop new ways to both ameliorate existing salinity damage and to prevent further problems from developing. In addition, some theorists are now suggesting that simply maximising the efficiency of individual components in social-ecological systems may not be enough to ensure long-term sustainability. Walker and Salt argue that because human activity in the Goulburn-Broken catchment has actually transformed its ecological regime and limited its

381 Kevin Chapman suggested that ‘what we need to get now is a couple of wet years, and see whether the drop in the watertable has really been the result of all the work we’ve done, or is it just because there hasn’t been as much rain as we’ve had [in the past], and the watertable hasn’t risen? We won’t know that until we get a couple of wet years’ (interview, Kevin Chapman, 9 August 2006).
producers to ‘a narrow range of commodities’, the region remains vulnerable, ‘locked in to a losing battle with rising groundwater and rising salinity’; future crisis cannot be averted by a ‘business as usual’ approach, but will require the entire region to ‘transform the manner in which it functions’.  

Although these predictions are frightening, the authors suggest that ‘there is reason to hope’ and that the catchment community’s awareness of its salinity problems and ‘significant capacity to work together … might be the critical factor in this social-ecological system’s resilience as it faces the future’.  

It is important, however, that Government authorities remain realistic about the extent and nature of community participation that they can reasonably expect from Landcare and other groups. Governments have already exposed themselves to the charge of using Landcare to ‘[shift] responsibility for action from Government to local communities’, particularly since it is evident that extension support and similar programs have simultaneously been cut in many rural areas. The 2006 Curtis report states that increased Government investment in the fabric of Landcare will be essential if Landcare’s capacity to contribute to more sustainable natural resource management is to be maintained. In the light of Ewing’s statement that catchment communities are ‘fractured and differently empowered’, it is also important that CMAs remain aware of those in the community whose ability to participate is limited – in the Goulburn Valley this includes particularly farmers from non-English speaking backgrounds and that

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383 Brian Walker and David Salt, ‘Between a (Salt) Rock and a Hard Place: The Goulburn-Broken Catchment, Australia’, in Walker and Salt, Resilience Thinking: Sustaining Ecosystems and People in a Changing World (Washington: Island Press, 2006), 49-52. There is a noticeable correlation here with Scott’s plea for ‘the indispensable role of practical knowledge, informal processes, and improvisation in the face of unpredictability’ (Scott, Seeing Like a State, 6).

384 Ibid., 52.


388 Megan Stoyles, ‘Cultural Barriers to Extension. Results of a survey of Non-English speaking background farmers in East Shepparton. With special reference to salinity and high watertables’ (Megan Stoyles ethnic communications pty. ltd. / National Soil Conservation Program, December 2002). John Laing commented that ‘with ethnic farming communities and all the associated low education levels, it’s easier to stand over someone, or they don’t understand the correspondence’ (Interview, John Laing, 10 August 2006).
they ‘work to facilitate meaningful participation across the diverse range of participants’.389

Above all, community priorities must remain central to salinity management. The single most important conclusion of this thesis is that successful management of Victoria’s natural resources must involve the active participation of rural and regional communities; management which works against or excludes local communities can only be damaging, both socially and environmentally. It is worrying, therefore, to discover a perception amongst members of Goulburn Valley communities that recent developments in water management are in fact moving away from this focus. Suggestions of ‘superficial consultation’ and of communities being ‘nervous and offside’390 should serve to emphasise that any advances made in the area of community participation to date have not been the result of an inevitable journey of human progress, but of numerous battles between governments and communities whose slow and hesitant transformation from mutual suspicion to mutual acceptance was only accomplished at the cost of many misunderstandings, considerable expense, and a painful process of sustained hard work. The trust, co-operation and understanding on which the Goulburn Valley’s salinity managers currently pride themselves have been constructed slowly and painfully; a careless hand could all too easily tear them down.

The best hope of the Goulburn Valley and other vulnerable farming communities today is found in the genuine and heartfelt commitment of its landholders to good stewardship of their land. This has been demonstrated statistically numerous times, most recently by an Australian Bureau of Statistics report which found that ‘most Australian farmers make a conscious effort to look after their natural resources’, with nine out of ten farmers currently engaged in natural resource management (including weed and pest control, native vegetation protection, and land, soil and water management) on their properties.391

390 Interviews, John Dainton, 8 August 2006; John Laing, 10 August 2006.
I would like to complement these figures with a personal example. Brian Williams, a long-time dairy farmer in Tatura, found patches of salinity appearing on his farm following the wet years of the 1950s: ‘the grass just disappeared … and it was bare ground’. Though only a small percentage of the farm was affected, Brian and his brother were concerned that the problem might spread. The pair ‘kept [their] eyes open … reading papers and journals, and listening to Country Hour and radio advice’, and over the following decades they successfully brought the salt under control with a combination of pumping, tree planting, and deep-rooted lucerne crops. Today there is little sign that the problem ever existed; the lucerne is green, the red gums are thriving, and one patch that previously had ‘nothing on it, not a blade of grass, just that horrible glazed, bare, salty look’ has become a small and beautiful bushland reserve, home to native birds and the occasional kangaroo. To Brian it had been ‘terrible’ to see his land salt-affected: ‘it looks as if you’re neglecting the farm or something, you know, to have it like that’. But he concluded: ‘I’m really thrilled … we’ve virtually wiped the salt problem out here.’

If the communities of the Goulburn Valley are able to make the same claim, it is fundamentally because their efforts and those of successive governments have at last established that the salt of the Valley can only be managed successfully with the input and assistance of the ‘salt of the earth’.

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392 Interview, Brian Williams, 11 August 2006.
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