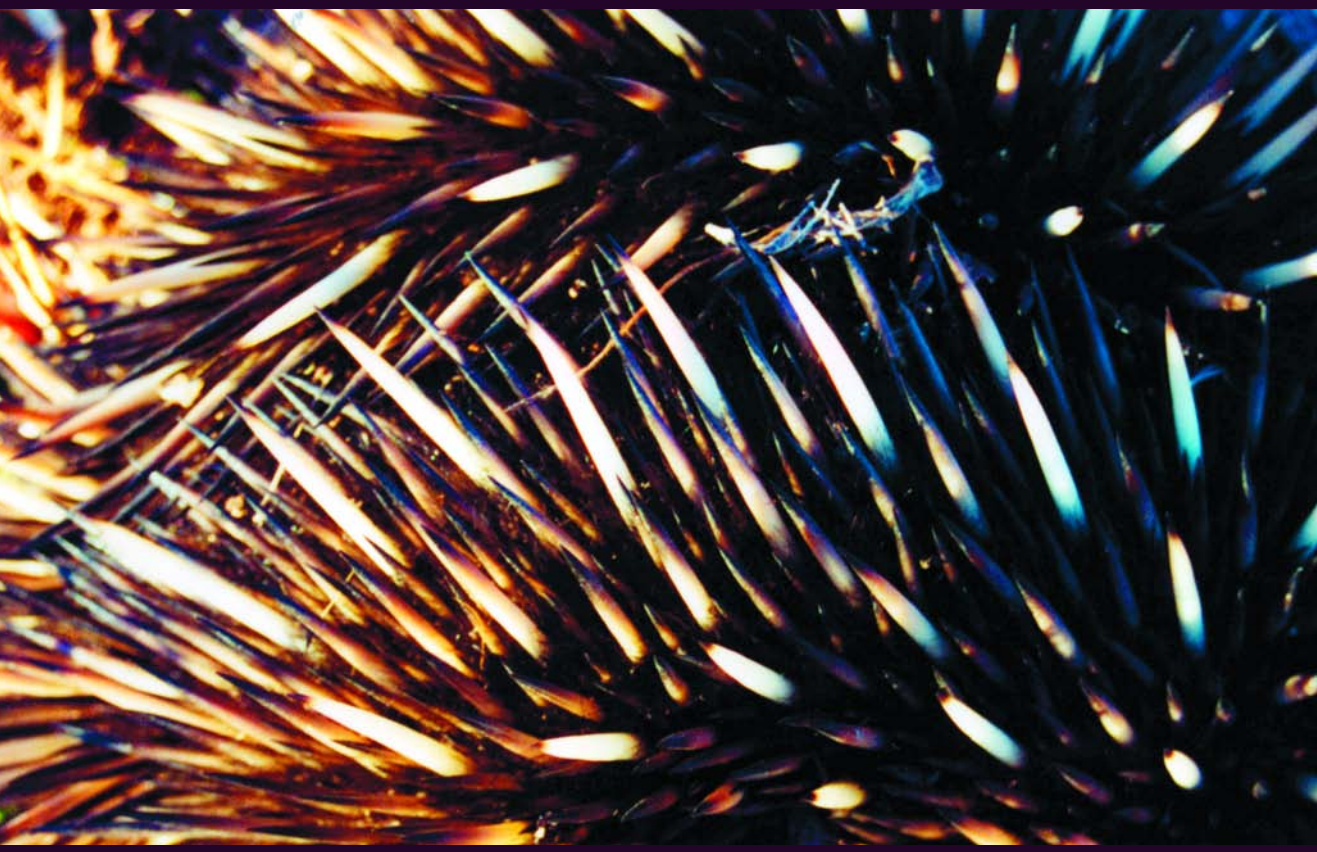
Living Land
Living Culture

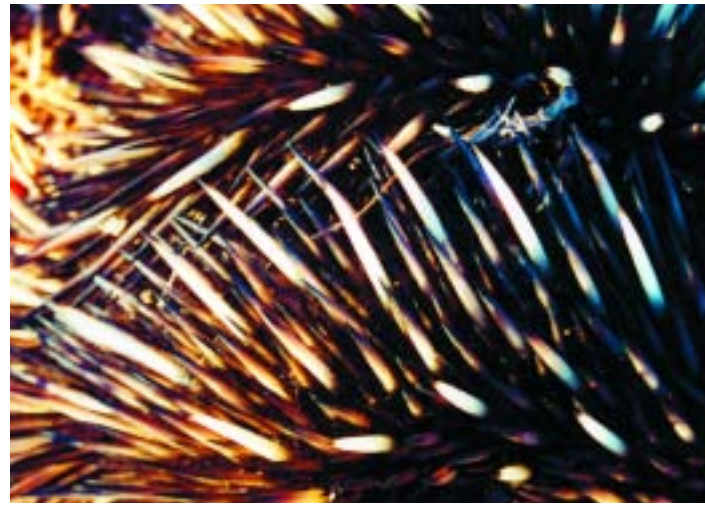
Aboriginal Heritage & Salinity



Anthony English & Louise Gay

Living Land
Living Culture

Aboriginal Heritage & Salinity



Anthony English & Louise Gay

New South Wales Government

Published by the Department of Environment and Conservation (NSW),
June 2005 ©

National Library
Cataloguing-in-Publication data
English, Anthony (Anthony James).
Living land living culture: Aboriginal heritage & salinity.

Bibliography.
Includes index.
ISBN 1 74137 104 X
DEC 2005/03

1. Aboriginal Australians - New South Wales - Social life
and customs. 2. Aboriginal Australians - Material culture -
New South Wales. 3. Salinity - Environmental aspects -
New South Wales. 4. Environmental degradation - New South
Wales - Prevention. 5. Cultural property - Protection -
New South Wales. I. Gay, Louise. II. New South Wales.
Dept. of Environment and Conservation. III. Title.

305.89915

Book production: Sabine Partl and Louise Gay
Book Design: Jelly Design, Sydney
Printed by: Penrith Art Printing Works

Photos:
1 Echidna (Louise Gay)
2 Quandong Fruit (DEC Photo Library)
3 Crow Track (Louise Gay)
4 Scarred Tree (Louise Gay)

Department of Environment and Conservation
PO Box 1967 Hurstville NSW 2220
Phone 1300 361 967 or 02 9585 6444 Fax 02 9585 6555
www.environment.nsw.gov.au

Contents

Premier of New South Wales
Australia

Foreword by Premier Bob Carr

Aboriginal culture in NSW is uniquely tied to the land and it should therefore come as no surprise to find that salinity, in degrading the land, is a source of anxiety to Aboriginal people. Living Land, Living Culture is, however, the first study to lay before us in detail the impact that salinity is having on Aboriginal heritage in NSW and to offer options for remediating this impact.

It is sobering to read the personal testimonies of Aboriginal people in the Wellington area, for example, who speak of their sadness at what salinity is doing to the land they grew up in, the rivers they have fished in, the native plants they have relied on. And yet we learn that the affects of salinity reach beyond the culture of the living; the remains of old Aboriginal camp sites that have survived for thousands of years are now in many cases being eaten away by salt scalds.

The research presented in this book was an initiative of the NSW Salinity Strategy announced in 2000, the plan crafted in response to the Salinity Summit in Dubbo held that same year. In keeping with the Strategy's approach, the present book combines scientific knowledge with practical measures for managing the effects of salinity; measures that place an emphasis on community partnerships.

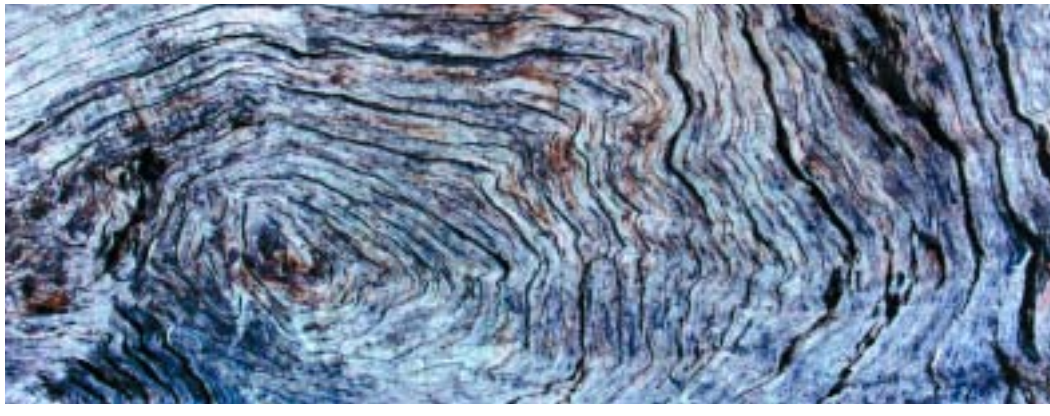
I commend the authors of Living Land, Living Culture and the Aboriginal community members and others who contribute to this publication by providing insights into the problem and offering ideas for its solution.

While the problem of salinity is great, this fine study records the many positive and innovative steps being taken to ameliorate the impact of salinity on this State's precious Indigenous heritage.

I warmly endorse this book and the valuable work it documents.

Bob Carr
Premier

Acknowledgments



Many people have contributed to this research by providing time, expertise and personal views about salinity and its implications for Aboriginal heritage in New South Wales. In particular we would like to thank the Wiradjuri people living in the Wellington area who agreed to take part in oral history interviews, field trips and meetings. All were generous with their memories and knowledge and invited us into their homes and country. They were Evelyn Powell, Joyce Williams, Rose Chown, John Amatto, Vivienne Griffin, Paul West, Joan Willie, Violet Carr, Bill Carr and Robert Stewart. Each person has given us permission to use quotes from their interviews in this publication.

Part of Evelyn Powell's contribution was to draw pictures, which express her feelings about the effects of salinity on country. These are reproduced here with her permission.

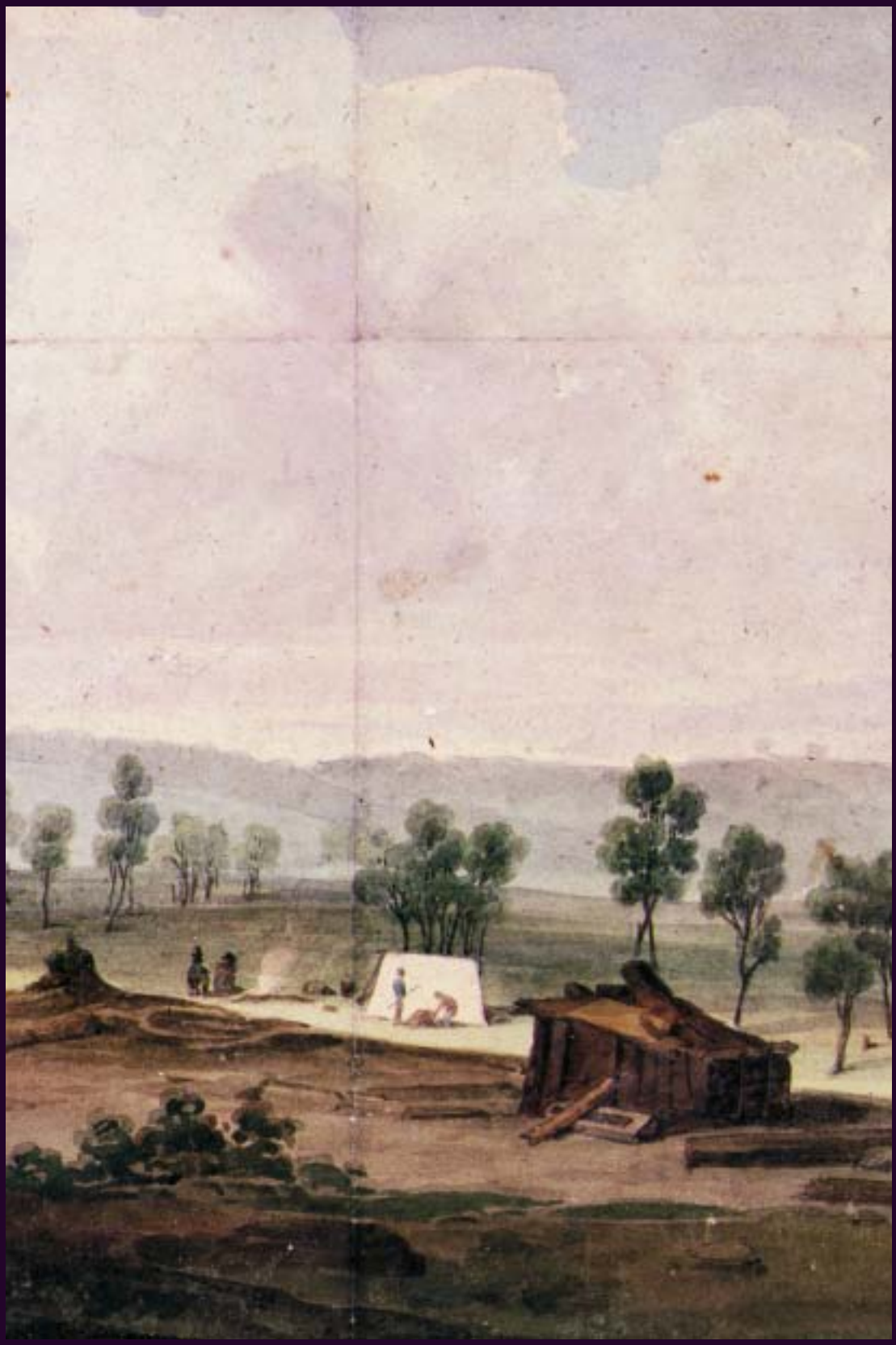
Juliet Corish and Alan Nicholson from the Central West Salt Team at DLWC (now the NSW Department of Planning, Infrastructure and Natural Resources) gave us valuable insight to salinity issues in the region. Alan took us to numerous salt scalds in the area, and discussed the processes used in salt scald remediation and the implications for archaeological sites. Juliet played a pivotal role in securing access to digital salinity outbreak data used during our analysis. Charmaine Beckett, acting director, NSW Salinity Strategy, and Michelle Gardner, senior Aboriginal policy officer, DIPNR, attended project planning meetings and commented on progress reports.

Syd Craythorn, senior planner with Wellington Council, provided information about its views on salinity and the management of cultural heritage.

Lachlan Campbell of "Easterfield" and Scott Tourle of "The Springs" allowed us to do archaeological research on their properties. Their support and interest in the work is greatly appreciated.

Bill Allen, Aboriginal sites officer at Bathurst, attended early community meetings in Wellington and helped us make contact with key Wiradjuri people in the area. Ailing Hsu, GIS officer with the NPWS, drove the ArcView Geographic Information System analysis of archaeological sensitivity in the study area.

James Drown and Denis Byrne helped fine-tune the text of this book. We greatly appreciate the improvements brought by their editing. Moreover, thanks to Sabine Partl who assisted with production. Importantly, credit goes to Jelly Design for the polished layout. Your design breathes life into our work. In addition, your help to implement changes to the text was invaluable. Finally thanks to the Harrington family (Vanessa, Warren, Nathan and Lachlan) of the Upper Minnamurra Rivercare Group. Keep up the great work – you inspire us.



1 Introduction

This book is about the relationship between land management and the protection of Aboriginal heritage in NSW. Such a broad topic requires a focus, and we can use Augustus Earle's 1826 depiction of the "Moolong Valley near Wellington" in Central Western New South Wales to illustrate some of the key themes considered here.

Left page and above: Augustus Earle, *Moolong Valley near Wellington, New South Wales,* 1826. Watercolour on paper. Reproduction courtesy of the Mitchell Library, State Library of New South Wales.

Earle's picture raises questions about the effects of European agriculture on the landscape, the continued presence of Aboriginal people on country after settlement, and the powerful dichotomy drawn in Western thinking between "nature" and "culture". These themes have played a major role in shaping the management of land and heritage in NSW. Obviously, in recognising this, we look at Earle's work through a lens that is very different from his own. Ours is coloured by awareness of the social and environmental history that has filled the years between his paint drying and the present day.

The picture is typical of many colonial paintings of the early 19th century, in that it speaks of the "progress" being made by settlers in a "new" land. Earle produced an array of images of New South Wales and Tasmania which emphasised this element of colonial Australian identity.[1] In the present case, he does so by showing evidence of settler attempts to clear the bush and establish agricultural production. Today, when we view this scene, we are aware that the tree stumps in the fore and middle ground are prophetic, both of the scale of future economic change and the onset of

environmental degradation which we now live with on a daily basis.

While many of Earle's other paintings include images of Aboriginal people, it is unclear whether they are shown here.[2] It is possible that the two figures seated at the fire near the settler's tent are Wiradjuri. Even so, it is as if Aboriginal people have been removed from the scene in much the same way as the trees. Where Earle does include them in other paintings, they are generally shown as spectators to the coming change brought by Europeans. Their role is a passive one, and his artistic device is to hint at disconnection and discontinuity. This idea of passivity was mirrored by settler inability to understand that Aboriginal people and their social systems had shaped the very structure of the landscape they moved into. The aspect of the Moolong Plains presumably valued most by settlers, the open land suited to grazing or crops, probably resulted from Wiradjuri use of fire.

Clearing the bush is seen as progress in a new land. In the background of the picture a line of dense trees can be seen peeking over the rim of the ridgeline which fringes the plain. Its recession to a point almost over the horizon instructs the viewer about the over-whelming power of settler capacity to tame the bush and make the land productive. At the same time, Earle is possibly reminding us of the scale of this effort and indicating that much more is required before the land can be seen as having been "civilised".

In this study, we seek to confront the messages Earle's picture projects. Our aim is to explore the effects of land degradation on Aboriginal heritage in NSW. In particular, we have focused our attention on salinity, a form of degradation that has its source in the first clearing by settlers exemplified in Earle's painting.[3] Our brief has been to assess how salinity affects Aboriginal places and values, and to develop approaches to managing this problem. Doing so has involved collaborative research with Wiradjuri people in the Wellington region.

By tracing the impacts of salinity on Aboriginal heritage, it becomes clear that effective management requires questioning many assumptions about the nature of this heritage, and the intersections between social values and landscape change. Contrary to Earle's depiction of absence or passivity, Aboriginal people have continued to adapt and develop their cultural identity in the face of such change. The altered landscapes wrought by Europeans have continued to embody a range of complex cultural and historical associations. Far from fading into some form of distant past, Aboriginal people have never ceased being a central part of the picture. We need to consider the diversity of values, places and attitudes recognised by Aboriginal people today when we attempt to implement sustainable land-use and to assess the scope of the environmental problems we face.

The idea of progress suggested by the tree stumps in Earle's painting is also now widely accepted as being problematic. Most people would understand that such change comes at a social and environmental cost. This requires rapid and strategic action to redress. To do so, we must question the gulf between nature and culture suggested by the bush in Earle's background, and its contrast to the "civilised" landscape. Today we understand that biodiversity and the environment provide a range of social and economic benefits. These benefits are tied to a complex set of values that reflect how we perceive the land. We cannot manage the land if we fail to recognise these links between ecological and social systems. They span tenure boundaries and jump the fence between farmland and forest. For this reason, local knowledge of landscapes must play a role in their management.

Understanding the social values of landscape and generating land-use change requires engaging with people, not simply with economics or biophysical systems. Such awareness has guided our approach to this study.

While this book focuses on the problem of salinity, it has been impossible to divorce our discussion from these wider themes. In the same way that we cannot manage land in isolation from rivers, or trees separate from fauna, we cannot tackle the issue of salinity without working in a broader landscape scope. It would be inappropriate to isolate salinity and its effects from the complex processes of environmental degradation occurring

in the NSW landscape. Salinity intersects with problems like soil erosion, loss of biodiversity and declining water quality in complex ways. It can be both a cause and a by-product of these problems. For this reason, this book presents ideas and commentary on the issue of how natural resource management and planning more generally can better intersect with, and recognise, cultural heritage.

Salinity is one of the most significant environmental problems in Australia today, and has the capacity to generate serious long-term social, environmental and economic impacts. It challenges commonly accepted approaches to land-use and may ultimately force widespread change in how we manage the environment and cultural heritage.

So far, the bulk of salinity research, planning and mitigation has addressed economic and biophysical impacts. For example, significant effort has been spent on trying to address effects on farming systems, infrastructure and regional economies. Some more limited research has been conducted on the impacts on biodiversity.[4] Far less consideration has been given to the effect of salinity on social and cultural values, be they tangible or intangible. The Aboriginal Heritage and Salinity Project is an effort to redress this imbalance.

Because salinity is a landscape-scale issue, it has potentially significant ramifications for cultural heritage values in many regions of NSW. Salinity is a form of environmental degradation that now threatens the long-term viability of large areas of agricultural and urban land, rivers and biodiversity. Its social implications are potentially vast and are not restricted to farmers' loss of livelihood and lifestyle. It can affect those living in regional towns and suburbs, and is today damaging water quality, remnant vegetation, playing fields, homes, infrastructure, historic buildings, parks, and people's cultural landscapes.

Our approach to land management needs to be shaped not just by economics or science, but by an awareness of the complex social values which shape people's attachment to place, and their approach to land-use.

In general terms, salinity refers to the mobilisation of natural salts within our soils and water bodies which has been accelerated by land-use practices such as clearing, irrigating and cropping. It can manifest itself in a variety of ways, including soil erosion, the death of vegetation and decline in water quality.

Specific potential impacts on Aboriginal heritage are varied. They include damage to a range of pre- and post-contact sites, and the degradation of culturally valued landscape features. Salinity can reduce people's capacity to find and utilise wild foods and medicines, and increase the threats to totemic species. It can jeopardise the economic viability of Aboriginal-owned lands and enterprises. It can damage services used by Aboriginal people such as roads, pipelines and buildings. All of these problems can affect people's health and well-being.

The project has involved two key components. The first is an overview of the potential effects of salinity on Aboriginal heritage places and values in NSW. This sets a context for the second component, a detailed case-study conducted with Wiradjuri people in the Wellington area of Central West NSW. The Central West has been identified as one of the regions in NSW which has a significant salinity problem. Others include the Hunter Valley, Western Sydney, and the irrigation areas of the south-west.

The case-study involved multi-faceted collaborative research, and documents both the local impacts of environmental problems on cultural heritage and potential strategies for dealing with them. Key results from the case-study include a compilation of important community knowledge and perspectives about environmental change, local Aboriginal history and aspirations for cultural renewal. They also include a detailed assessment of the effects of salinity on pre-contact open artefact scatters.

Perhaps one of the strongest messages to come out of this study is that landscapes, and the social groups occupying them, are constantly changing. Underlying such change is evidence of continuity in people's sense of attachment to place and the ways in which they seek to maintain a sense of community and individual identity.

Both the overview and the case-study consider the bigger issue of how catchment management might account for cultural values. Such analysis was essential, as any management of Aboriginal heritage needs to combine both local and catchment level strategies.

Importantly, looking at the bigger picture of land degradation and strategic planning agrees with the way in which many people perceive environmental problems and their associated social impacts. It suited the perspective of the Wiradjuri people with whom we worked during the case-study. Their view of environmental problems and management is holistic, rather than reductionist, and is centred on concerns for a wider cultural landscape, rather than just isolated sites.

In keeping with this approach, the project has avoided focusing solely on archaeological sites; it also considers a range of other issues or values that can be considered as falling within the realm of "heritage". They include people's sense of connection to place, their identity, lifestyle and feelings about the future.

A core element of this approach has been to look in detail at the potential effect of salinity on people's use of rivers and land. For example, some Wiradjuri people in the Central West have maintained activities like hunting and gathering, and there is a general desire that they may continue to have access to these and more valued resources. Land degradation in general has been one factor in reducing people's ability to find and utilise wild resources. Problems like salinity may threaten such activity further.

The overview and case-study are the starting point for a detailed discussion of how salinity and environmental management might account for, and respect, cultural and social values. Overall, our approach to integrating cultural heritage into this framework has been both broad-scale and pragmatic.

Underlying this approach is a belief that complete eradication of salinity and other related environmental problems is not achievable in any of the affected catchments in NSW. Instead, salinity management should focus on a series of priority areas and landscapes.[5]

This focus is widened to a broader context by looking at how catchment-scale planning can achieve effective cultural heritage outcomes.

Four key steps should be taken:

1. We should expand our land-use planning to consciously aim for social and cultural benefits. For example, the link between environmental health and people's lifestyle and culture means that some objectives, like maintaining a river's health, can achieve cultural benefits. As another example, the strategic protection of native vegetation in areas of high archaeological potential will contribute a dual natural and cultural heritage outcome. Such links should be sought out and seen as management aims.
2. We should make sure we have enough information about cultural heritage values by increasing our participatory planning and social science research.
3. We should set specific cultural heritage management targets for catchment and sub-catchments. For example, in areas like the Central West, certain levels of archaeological research and site recording will be needed to offset ongoing effects from salinity on the archaeological record.
4. We should also use cultural heritage indicators at catchment or sub-catchment levels so we can measure the cultural heritage outcomes of land-use decision-making and conservation planning over time. These could apply on a town-by-town basis and might include targets which include people's ability to access and use a range of wild resources, pass on cultural knowledge, and play a role in land management.

Adequate data about cultural heritage is required to inform integrated planning. By collecting appropriate data we can measure the effectiveness of land management decision-making and track social impacts and benefits.

This book pays special attention to discussing how appropriate cultural heritage data can be collected to support integrated planning.[6] This element focuses on collecting information about pre-contact archaeological sites, people's concerns about country, the use of wild foods and medicines, and the management of post-contact and historic sites.

By collecting appropriate information about cultural heritage, we may be in a better position to actually measure whether our approach to land and heritage management will generate real cultural and social benefits.

The book also explores how cultural heritage management can mesh with catchment management. It shows where and how land managers and the Aboriginal community may achieve this. A key message throughout the book is that making effective land management decisions that take account of cultural heritage values requires understanding how natural and cultural systems intersect. How do people value the landscape around them? What sorts of social impact does land degradation generate? What social benefits does effective environmental planning create?

The Aboriginal Heritage and Salinity Project has provided an opportunity to engage critically and closely with many complex questions about how we manage a diverse set of cultural values and places in the NSW landscape. The issue of salinity requires this, as its effects are broad-ranging and have significant implications for our ability to live sustainably in a landscape that has suffered tremendous change since European settlement.

2 The Aboriginal Heritage & Salinity Project

Taking a holistic approach

Imagine standing on one of the tall dunes at the Coorong on the coast of South Australia. Below, you can see the Murray River as it flows through wetlands and lakes before entering the heavy surf of the Southern Ocean. Picture yourself standing at this point looking down at the broad waters and realising that this is where your life's experiences come together; where you are able to recall at once many of the places and memories you hold dear.

Left: Macquarie River near Wellington, NSW, 1944. Photograph reproduced courtesy of Mitchell Library, State Library of New South Wales.

Above: Wiradjuri elder, Evelyn Powell, on the verandah of her home in Nanima.

Evelyn Powell described being in such a position when she visited the Coorong. Evelyn is an Aboriginal woman who lives at Wellington, NSW. Born in 1933 at Brewarrina on the Barwon River, she spent much of her early life tracing a web of watercourses throughout Central West NSW. With her parents she travelled between towns, Aboriginal reserves and pastoral stations as they looked for work or visited family. Setting up camp next to a creek, cray fishing at billabongs, washing in a river hole or catching yellow-belly for a meal were everyday experiences. Later, Evelyn settled at Bulgandramine and Peak Hill on the Bogan River, where she met and married her husband, Fred Powell. It was here that they raised five children. Today she lives alongside the Macquarie River at Nanima Village, the location of one of the oldest Aboriginal reserves in NSW.

The rivers of Central West NSW are entwined with many of the significant stages of Evelyn's life, both the hard and good times. As is the case for many

Above: Landscape by Evelyn Powell, 2002. Drawing reproduced with permission of the artist.

Aboriginal people in NSW, rivers are associated with the survival of cultural identity in the face of assimilation policies of the pre- and post-war era. They connect people and country across broad areas.[7] For Evelyn, the mouth of the Murray is a symbolic place in this web. From this point she can see all of the rivers of her people merged as one, and can look back and appreciate the many and varied experiences of her life.

Evelyn's experience of the Coorong mirrors the approach we have taken with this project. Her words speak of the link between watercourses, land and people. From this perspective we can appreciate the need to take a holistic approach towards environmental management that recognises the connection between cultural heritage and the condition or health of the landscape. This holistic view, which spans the nature-culture divide, is now potentially supported by aspects of Western environmental management theory such as the focus on "systems approaches". Terms like "ecosystem management" and "integrated environmental management" are commonly used to refer to this approach. They manage ecosystems as complex entities that cannot be broken down into artificial components like vegetation, water or even individual species.[8] Rather, they acknowledge the linkages or interdependence between these elements and the role of humans in shaping them.

Such a perspective is especially relevant to the issue of salinity. Today, ecologists argue that major environmental problems like salinity cannot be managed in isolation. Their inter-relationships and complex cumulative effects on the functioning of ecosystems need to be understood:

> *Ecologists who have documented the decline and loss of biodiversity and the change in ecosystem processes are concerned that salinity and loss of biodiversity are often treated as completely separate issues. They are not, as salinity is an extremely visual manifestation of the loss of major elements of biodiversity and change in ecosystem processes.*[9]

The social and cultural impacts of problems like salinity are also multi-faceted and as complex as impacts on ecosystems. Evelyn's words emphasise

this. Her description of the Coorong triggered a longer story in which she expressed dismay at the disappearance of wildlife, the dieback of trees and the declining health of the rivers. Her journey home to Wellington from the Coorong via the Riverina and Murray-Darling Basin took her through some of the most stressed landscapes of NSW. Her words express the effect that this country had upon her:

> *One of the disturbing things is that I've never ever seen the country like that. Where you just see the masses of white. Like it was a cancer eating away into everything as it went along. The gum trees were dying, and all the grass, and everything, like a lot of white salt or something … It's really upsetting for me just to see that salt. That white dirt eating away at the land. It's just like a cancer, gobbling everything up in its path. I'd never seen anything like it before. It makes me feel no good inside, because when you relate to the land, in the spiritual, Aboriginal way, and seeing these things, it makes me feel no good.*

Evelyn's words paint a vivid picture of the destructive potential of salinity. Her description of it being "like a cancer" illustrates how people see environmental degradation as a disease or sickness, linking it to the human body. Her words reflect the view of many Aboriginal people who see the declining health of their country and the destruction of their cultural heritage as having an effect on their individual and their community's health and well-being.[10]

Today, escalating problems like salinity are forcing us to reconsider the ways in which we use and manage the land. A growing sense of urgency and concern can be detected amongst scientists, primary producers, conservationists and other community members about the sustainability of our land-use practices.[11] In this context, there are many potential points of agreement between their views and those of Aboriginal people. All are aware of the fact that we must change our attitudes in order to sustain our sense of community and to ensure a healthy environment for future generations.

The scope of such thinking is well illustrated by the recent report produced by a collection of "concerned scientists" who have named themselves the Wentworth Group. Their document, *Blueprint for a Living Continent*, is a wake-up call for government and all Australians. The report emphasises that while we have grown wealthy from over 200 years of using and modifying the Australian environment, the time has come for change. They, like others, see a future only if we radically alter our land-use practices and have the courage to overcome short-term perspectives by seeing the long-term ramifications of inaction:

> *By giving power back to our communities, valuing the ecosystem services provided by native vegetation, recognising the importance of environmental flows in our rivers, and rewarding people for environmental stewardship, our generation can leave a legacy of living rivers and healthy landscapes, not drains and dustbowls.*[12]

Clearly, problems like salinity need to be viewed as having a multi-faceted impact on our landscape and society. Facing them will require crossing disciplinary boundaries and making new links between government, researchers and the community. While tools like economics and science will play a major role in tackling these impacts, they can really only be understood and confronted by also engaging with people and their value systems.

The urgent need for change is highlighted by taking even a quick look over our shoulder at how land managers 40 or 50 years ago were responding to land degradation problems.The same calls for action can be found back then and their similarity to the words used in the Wentworth Report is striking. Writers in a 1945 edition of the *Journal of the Soil Conservation Service of NSW* were clearly aghast at the level of environmental problems they found themselves facing. The NSW Premier wrote:

> *We have in Australia a rich and beautiful land, but over the past 150 years we have in general taken tragically poor care of it. The prodigality and indifference of man has resulted in many thousands of acres of grazing and arable land being over-cleared of trees, over-grazed and over-cultivated … We now know what is happening; we have evidences everywhere before our eyes.*[13]

Since that time of course issues like salinity have escalated many times over and now threaten large parts of the country. It would seem that much more is needed than an awareness of the problem.

What then are the potential effects of salinity, and environmental degradation more generally, on Aboriginal people and their cultural heritage in NSW? Because salinity is an issue of landscape

scale, it has potentially significant ramifications for the social and cultural values held by affected communities. Such values may be associated with people's way of life, their connection to place, and the construction of their own identity. All people, Aboriginal or otherwise, identify with and value a local landscape for a range of reasons. Tangible and intangible values are expressed through people's concern for their livelihood, and the "look" and condition of the landscape. Land degradation has an obvious impact on these values.

A cursory search of the Internet reveals that there is a large and growing body of research into the effects of salinity on biodiversity, rivers, infrastructure and farming systems. Such attention to biophysical issues has not been matched by consideration of social or cultural impacts. In part, this is because social impacts have largely been defined in economic terms and reflected in research frameworks that consider salinity's potential effects on farm income and regional economies. To a large extent, this situation mirrors the fact that research into environmental problems more generally in NSW has tended to shy away from exploring social impacts.

The lack of attention to broader social issues reflects a long-standing challenge to manage our environment with an awareness of local people's knowledge and the link between land, cultural values and the well-being of all those who rely on it. How do we foster action that not only recognises the role of local communities in engendering change, but which also spans the current gap between the natural and social sciences in applied research? Such a challenge is indicative of the fact that historically, even holistic environmental management theories such as ecosystem management,[14] which received significant attention in the 1990s, have not been understood and applied in ways that bridge the gap between natural and social systems.

There is now a very active debate going on in countries such as Australia, Canada, New Zealand and the United States about how natural resource management can engage with, and consider, social values and impacts. Land management is now confronted by the need to recognise the influence of participatory society where various interest groups challenge management decisions and frameworks. These groups are often very vocal in their criticism of government land management practices. Government in turn has recognised that effective land management can only be achieved with the support and involvement of local people. As a result, many agencies are now promoting concepts like collaborative management and community involvement.[15]

This brings with it a whole spectrum of challenges and opportunities that have begun to reshape some of the key elements of agency practice. Such change however has not been a consistent process and is typified more by sporadic attention. Some commentators have argued that many barriers stand in the way of a framework for effective social assessment. These barriers reflect the power of long-standing sectoral approaches to environmental management and a lack of social science capacity within government agencies.[16]

The magnitude of the salinity problem in Australia provides the best impetus imaginable to begin tackling this problem, and the Aboriginal Heritage and Salinity Project provides one opportunity to confront this challenge. Its scope has required us to actively consider strategies that acknowledge the link between natural and cultural values.

Importantly, the project occurred at a time when the NSW government, landowners and communities were negotiating catchment management. Initially this resulted in the development of various forms of natural resource management planning, such as catchment blueprints. Later restructuring of government departments has led to a reassessment of such documents and the administrative frameworks they proposed. Nevertheless, catchment planning remains a potentially significant element of land management in NSW. This book attempts to explore how Aboriginal heritage places and values can be recognised in catchment planning. The ideas and principles set out here transcend the still-evolving detail of land-use planning and regulation in NSW.

At the same time, there is growing evidence of a gradual broadening in the scope of salinity-related research. The focus on the biophysical and economic implications of salinity is occasionally being expanded by research programs that explore the social dimensions of land-use and salinity management. For example, projects are emerging which have investigated landowner perceptions of salinity. Specifically, the capacity of landowners to recognise the problem and the

Above: Areas affected by salinity near Lake Wyangan in the Murrumbidgee Irrigation Area, NSW, 1991. CSIRO Land and Water.

effects their views about land management might have on encouraging land-use change.[19] These programs are important as they begin to blend elements of natural and social science research, and acknowledge the strong influence of human value systems on environmental health and land-use practices.

Equally, some specific analysis of cultural heritage has also looked at the effects of urban salinity. These studies have been focused on issues associated with built heritage, gardens and street trees. They have also acknowledged the potential impact of salinity upon intangible values linked to people's sense of place. However, like other social research in this area, these programs have not specifically addressed values associated with Aboriginal heritage.[20]

The main purpose of the Aboriginal Heritage and Salinity Project has been to fill this gap. The following questions form the basis of the project: How do we define and identify the effects of salinity upon Aboriginal heritage? Can we quantify these effects? Is it possible to protect all Aboriginal sites and places from the effects of salinity? If not, how can we reduce or counter its impact? Do we need to devise new strategies and actions, or do existing planning mechanisms provide enough direction? Finally, how can we include cultural heritage management in our environmental management practices at both catchment and property scales?

Underlying our approach has been the need to emphasise the link between cultural heritage and the broader landscape. Recognising this link has two important outcomes. First, it allows us to explore and assess the relationship between land-use planning and heritage so that it encompasses cultural landscapes. Second, it emphasises a role for Aboriginal people in land management which has the potential to achieve results that are valued by the community and tied to people's way of life. By doing so, we may begin to acknowledge the strongly held feelings and beliefs of people like Evelyn Powell.

Project aims

One of the key aims of this project is to examine how Aboriginal heritage values and places can be factored into salinity management and related land-use planning.

As noted above, the project has been designed primarily to assess elements of salinity's social and cultural effects. Given the scale and nature of the problem, the effects on Aboriginal heritage may be very broad. Ultimately, this research project aims to develop strategies for recognising, reducing and preventing these effects.

The project has three key aims:

1. to assess in broad terms the effect of salinity and its management on Aboriginal heritage values and places in NSW
2. to assess how Aboriginal heritage values and places can be considered during salinity management and related land-use planning; and
3. to provide landowners, Aboriginal people and government with information about how salinity affects Aboriginal heritage and how these impacts can be planned for and mitigated.

The project has been funded by the NSW Salinity Strategy and fits within the broad aims of this strategy which are to ensure that the state generally has healthy ecosystems, sustainable land and water use and "secure, sustainable and prosperous communities".[21] These words indicate a willingness to provide for the link between human value systems, lifestyles and the environment. On this reading, the Salinity Strategy will support research and action which recognises that purely scientific or technical considerations need to be balanced by attention to social and cultural values.

Who can use this book?

This book is directed at everyone interested in addressing the relationship between environmental degradation and Aboriginal heritage values. It aims to meet a balance between summarising key issues and providing enough data and discussion to ensure it can serve as a source for further research and action.

The book is for Aboriginal people, staff in government agencies and key groups, such as Catchment Management Authorities. In writing this book we have aimed to meet a balance between summarising key issues and providing enough data and discussion to ensure it can serve as a source for further research and action. The book is directed to those who are seeking to address the relationship between environmental degradation and heritage values. At the same time, it is hoped that it will help those people who spend most of their time assessing biophysical or economic issues by providing a clear discussion of how their work can affect, and be influenced by, cultural values.

Such an audience is vital, since promoting inter-disciplinary and holistic approaches to salinity management will play a key role in strengthening our capacity to tackle its many implications for social, environmental and economic systems. To further this aim, the book explicitly assesses how cultural heritage can become an integral component of existing planning and regulatory mechanisms which focus on natural resource management issues.

Steps forward

The structure of this project has been guided by its broad definition of Aboriginal heritage, which extends well beyond the management of archaeological sites to include dynamic relationships between people, place and landscape. To account for this perspective, the project has combined different research tools, including oral history, archaeological investigation, cross-agency liaison and aspects of participatory planning.

In our first year (2001-2002) we focused on understanding the general relationship between salinity and Aboriginal heritage. This was necessary as initial investigation revealed that there has not been any previous attempt in NSW at similar research. Accordingly, the present chapter provides general information about salinity and its expected effects on classes of archaeological sites, historic and traditional places, landscape values and elements of Aboriginal people's social and economic well-being.

Chapter 3 presents a case-study from the Central West region of NSW carried out during 2002 and 2003. This region is one of the most salinity-affected areas of NSW, and has also been the scene of significant management effort by the Department of Infrastructure, Planning and Natural Resources (formerly the Department of Land and Water Conservation – DLWC).[23] The case-study was designed to look in more detail at both Aboriginal community perceptions of environmental problems and their impact on lifestyle and cultural values. The study was based in the Wellington local government area. It focused on:

1. investigating community attachments to the landscape, flora and fauna in the area by undertaking oral history interviews, field trips and historical research
2. liaising with the local Salt Action Team to learn about the scope of salinity and discuss options for integrating cultural heritage into salinity management
3. liaising with the manager of Planning Services, Wellington Shire Council, to establish council's approach to salinity management and options for using council processes to manage salinity and cultural heritage; and
4. targeting archaeological research and site recording to clarify the nature and distribution of Aboriginal sites in the study area and the impacts of salinity on their future.

It is expected that the outcomes of the case-study will be relevant to other salinity-affected parts of NSW, or at least illustrate the issues involved. It also serves as a potential model for cultural heritage research in other areas, potentially using funds that may become available from government.

The future intention is to expand on these results by making them available to a wide range of groups

Above: Salt scald near Wellington, NSW. Alan Nicholson and Juliet Corish (DLWC) with Syd Crayhorn (Wellington Shire Council).

associated with salinity management. For example, effort will be placed on disseminating the information gained during the project to staff in government departments, local councils and Aboriginal organisations. This book plays a key role in this process.

Major challenges

This project shares many challenges with other research programs designed to assess the nature, causes, impacts and management of salinity. Chief amongst these is the sheer scale of the salinity problem, and the many difficulties involved in determining its current and predicted extent. This is complicated by the fact that our understanding of the causes of salinity and how it spreads is still developing.

Coupled with this is the overriding challenge that the long-term management of salinity is going to require rethinking the way we use the land and value our environment. Addressing salinity therefore requires cutting to the heart of many intensely political and emotive debates about the role of government, landowners and wider society in funding and implementing sustainable land management. There appears to be general acceptance that current farming systems, even when using best practice, will not be able to control the onset and worsening of salinity.[24] Many barriers to achieving effective change in land-use practices have been identified. They include community attitudes, lack of economic incentive, limited understanding about sustainable land-use practices, and the paucity of reliable data about salinity.[25]

Attempting to raise concerns about cultural heritage management in this context is far from easy. It is crucial that we be sensitive to the fact that landowners may perceive such a move as another unwanted constraint on production or a potential financial impact. Such a challenge forces us to manage cultural heritage in a new way and to look for opportunities to use emerging land-use systems to achieve cultural benefits.

One of the arguments made here is that approaches to Aboriginal heritage management, that have focused on the assessment of individual archaeological sites, are not strategic and will not fit easily with future landscape- or catchment-scale planning. A much more creative and comprehensive approach is required.

Many of the other challenges that have confronted the Aboriginal Heritage and Salinity project derive from the fact that it has involved cross-cultural research. They have included:

- a lack of social impact assessment research in NSW that can be used to guide the investigation
- a lack of up-to-date salinity mapping for both the case-study region and NSW generally
- finding landowners who were willing to let us record Aboriginal sites and assess the impact of salinity on them
- addressing concerns by Aboriginal people about making the location of Aboriginal sites known, in case they are purposely destroyed
- addressing concerns by Aboriginal people about sharing environmental knowledge.

For example, Wiradjuri people taking part in the project expressed concern about how information about bush medicines will be used and controlled; and

– developing workable management strategies that link natural and cultural resource management within a regulatory system characterised by a complex mix of statutes and land-use policies.[26]

Definition of cultural heritage

"Cultural heritage consists of places and objects which are valued by the community. As well as buildings and landscapes, it includes objects representing traditional ways of life and symbols of events which have touched communities."[27]

To appreciate the scope of the project, it is necessary to understand how we define the term "cultural heritage". This has shaped both the research methodology and the breadth of issues considered by the project. We support a broad definition, such as that given in the quote above. Such a definition obviously extends heritage well beyond a limited focus on pre-contact archaeological sites.

The Cultural Heritage Division of the Department of Environment and Conservation has argued for a broad definition of cultural heritage values in NSW. Its research shows there is a complex set of values tied to broader landscapes. In particular, this research has explored the nature of Aboriginal people's post-contact heritage and the cultural values that Aboriginal people associate with the environment and biodiversity.[28] Elements of this research have responded to the agency's stated recognition that Aboriginal heritage is indivisible from the "natural" environment.[29] The Aboriginal Heritage and Salinity Project continues in the same mould.

As well as having broad scope, we see Aboriginal heritage as encompassing a living culture that is continually adapting and developing over time. The label of "heritage" is not restricted to places or events associated with the period before European settlement. It also includes historic and contemporary places and values, as well as people's aspirations for the future. Under this definition, heritage encompasses everything from historic structures to contemporary interaction with the land and sea, and even elements of community health. Revealing this heritage requires tapping into community-based knowledge through oral history, archaeological and historical research, and participative planning.

Once a broad view of Aboriginal heritage is accepted, it is clear that the range of places and values tied to NSW landscapes can only be managed by linking the consideration of natural and cultural heritage. The management of water, soils, vegetation and land-use directly affects cultural heritage, and in ways which extend well beyond issues tied to archaeological sites. If the health of our ecosystems decline, the social and cultural impacts felt will be diverse and far-reaching. This reality creates an impetus for exploring how cultural values can be considered during catchment and park planning, regional vegetation management, and Environmental Impact Assessment (EIA).

What is salinity?

Salinity is destroying a significant part of our Australian landscapes. It is a serious threat to biodiversity as it damages our native species, ecological communities and functioning ecosystems. It is predicted that salinity will affect 17 million hectares in Australia by 2050, including 2 million hectares of remnant vegetation.[30]

It is important at the outset to discuss what salinity is and where it is thought to occur in NSW. There is some debate about what causes salinity. In general, it can be defined as the accumulation of free salts in a landscape to the point where it damages vegetation, water quality and soil structure.[31] As well as affecting the environment, it also directly damages crops, roads, pipes, structures and open spaces like parks and playing fields.

Australia's geological history means that vast stores of salt exist in our soils and watertable, and indeed, salinity can be a natural part of our environment. It has become the problem it is today due to human land-use practices. The ways in which we have developed our industries and towns have literally brought salt to the surface.

It appears that salinity was first recognised in NSW in the late 19th century when railway engineers found that the reservoirs built to service steam trains were becoming increasingly saline. As early

as 1897, the link between clearing and salinity was identified in south-eastern Australia.[32] In subsequent decades, farmers and soil conservationists raised the alarm. For example, in the 1950s, areas of the southern tablelands of NSW were the subject of management action.[33] Despite such early awareness, for many years response to the problem involved only sporadic action. It did not gather pace until the late 1980s and early 1990s, when agencies like the NSW Soil Conservation Service and later DLWC started specific salinity-based projects. By this stage, salinity was well established across many parts of NSW.[34]

As our understanding of the scale of the problem has grown, it has become more common to see regular stories about salinity in newspapers or on television.[35] Many of us are familiar with pictures of moon-like landscapes formed by salt scalds and the death of native vegetation. Equally, public awareness of the health of our inland rivers has grown over the last decade in the face of crises like drought and outbreaks of blue-green algae. Salinity has been a central element of government and community discussion and debate about water quality.[36]

Our understanding of the spread and potential threat of salinity in NSW is limited, but it is estimated that between 120,000 and 174,000 hectares are already affected. Key salinity-affected regions include Western Sydney, the Hunter Valley, and the Central West and South West. Over one million hectares will be affected in NSW alone by 2050.[37] The recent Australian Bureau of Statistics (ABS) survey Salinity on Australian Farms indicates that across the country, 20,000 farms and two million hectares of agricultural land are showing signs of salinity. Of these, 3108 farms lie in NSW and the ACT.[38] Observers commonly state that due to the scale of the problem, salinity cannot be eradicated. Instead we will need to live with salt and focus on remediation by directing our effort toward the management of priority areas within catchments.[39]

The severity of salinity is influenced by a variety of interrelated factors including land-use, soil type, geology, topography, ground-water reserves and climate.[40]

Five types of salinity have been defined; dryland, irrigation, urban, river and industrial. Dryland and irrigation salinity are primarily the result of clearing and cropping. The removal of deep-rooted native vegetation and its replacement with shallow-rooted

Above: Salt scald under regeneration near Wellington, NSW.

crops has allowed greater amounts of water to leak into the ground-water system. This leads to a rise in ground-water that brings natural salts to the surface in the form of saline seepages. Waterlogging of large areas can result, as well as the death of remnant native vegetation. Factors influencing the appearance of seepages are the presence of soils with poor internal drainage or impervious subsoil horizons, or interruptions in subsoil flow such as roads, embankments and tracks. Salinity outbreaks usually occur in low-lying areas, in drainage depressions or along changes in slope.

Salinity can also appear as large areas of erosion and scalding. Scalds generally occur on fine-textured soils in areas of flat terrain. The flow-on effects of these can include increased soil erosion and, in turn, further decline in ecosystem health.[41]

In addition, salty ground-water can flow directly into streams, thereby affecting the health of drainage systems. This is referred to as river salinity and is a major concern in many areas of the Murray-Darling Basin. Research on river salinity is exploring the current and potential impact of increased salt loads on aquatic biodiversity, and human use of water in the home and in urban and rural industries. It is estimated that a number of rivers in the Murray-Darling Basin including the Macquarie, Namoi, Bogan, Lachlan and Castlereagh, will exceed the international salt threshold for drinking water quality within the next 50 years.[42]

Finally, salinity not only affects agricultural lands and environmental features. Urban salinity is also now familiar to many people in the form of damaged roads, houses and services across many parts of NSW.[43] The damage caused to the infra-structure of towns and suburbs is very costly for councils and ratepayers. A survey of local councils

$1.4b salinity action plan misses a third of land affected

FARMS IN CRISIS
The Age,
12 December 2002
By Melissa Fyfe,
Environment Reporter

The Federal Government's $1.4 billion national action plan for salinity does not cover a third of the nation's salinity-affected land, a survey has revealed.

The Bureau of Statistics report, Salinity on Australian Farms, has found that 700,000 hectares of saline land are outside the regions identified under the National Action Plan for Salinity and Water Quality. ``That did come as a bit of a surprise," said survey director Bob Harrison.

The report is from the 2002 Land Management and Salinity Survey. Almost 20,000 farmers took part in the study, the largest of its type undertaken in Australia. The survey relied on farmers to report their salinity-affected land.

The report confirmed Victoria's status as one of the worst salinity-affected states, with 60,000 hectares already rendered unusable. Almost 14 per cent of the state's farms - 4834 properties – are showing some signs of salinity.

With half its farms affected, Western Australia has the nation's biggest salinity problem. But Victoria equals WA in terms of the percentage – 1.1 per cent – of land that is salinity-affected.

One of Victoria's worst saline areas is the Avoca-Loddon-Campaspe regions, where almost 40 per cent of the area's irrigated farms and 19 per cent of its non-irrigated farms are showing signs of salinity.

There was some good news. The survey showed that 29,669 of the nation's farmers – out of 140,000 - were changing their land practices. ``These farmers have already done an enormous amount of work to manage and alleviate the impact of salinity," Mr Harrison said.

Keeping farms sustainable was the key reason farmers nominated for changing their land practices.

The farmers surveyed identified lack of money and time as the most limiting barriers to changing their land practices.

While 94 per cent of Victoria's salinity-affected land was inside the National Action Plan regions, half of South Australia's saline land was outside the plan's reach, Mr Harrison said.

FARMS AND SALINITY

- 20,000 farms or two million hectares of agricultural land show signs of salinity.
- 800,000 hectares is unusable for agricultural production.
- Western Australia is most affected by salinity, with 7000 farms and 1.2 million hectares showing saline signs.
- Non-irrigated farms make up 1.8 million hectares, or 93 per cent, of the land showing signs of salinity.
- 82 per cent of the farms showing signs of salinity were used for beef cattle, sheep and grain growing.

in 1993 revealed that $8.2 million was spent on tackling salinity-induced damage to roads, bridges and other public assets.[44] In Wagga Wagga, it is estimated that up to 500 houses are affected and it is possible now to even undertake a "salinity tour" of the town where both the impacts and attempts to address the problem can be viewed first-hand.[45]

Salinity therefore is not simply a problem faced by farmers. It can affect whole communities and ecosystems and will certainly become more familiar to Australians as the problem worsens.

Available data on the location of salinity in NSW

An independent consultancy firm, Ecological Australia Pty Ltd, was commissioned during this project to assess the scope and quality of spatial and supporting data available on the distribution of salinity-affected lands in NSW.[46] This was seen as a crucial part of the project, as without such information it is difficult to gauge the current or potential affects of salinity on Aboriginal heritage.

A more detailed and comprehensive audit of salinity data was completed as part of the NPWS Salinity and Biodiversity Study being undertaken in the Central West. This audit explored the range and reliability of dryland salinity data in four inland catchments: the Central West, Lachlan, Murrumbidgee and Murray.[47]

Both investigations indicated that, with some exceptions, only broad-scale spatial data is available and that this has been collected using methods that are not necessarily compatible.The more detailed audit concluded that the approach to salinity mapping in the four catchments it studied was "piecemeal and disconnected" and had not achieved results suited to comprehensive natural resource management.[48] Some of this data has been used in the NSW Salinity Strategy to produce broad-scale maps indicating the possible location of salinity-affected areas in 2000, 2020 and 2050. However, the scale of this mapping makes it impossible to use as a detailed planning tool.

Localised salinity mapping on a smaller scale has been done in various catchments, either as part of

Left: Article by Melissa Fyfe, environment reporter; published in *The Age*, 12 December 2002.

Above: Trees killed by salinity in the Barmah State Forest in the Riverina, South West NSW.

Landcare projects or by the Department of Information, Planning and Natural Resources – DIPNR. Personnel from Orange and Wellington were able to provide the Aboriginal Heritage and Salinity Study with salinity-outbreak mapping for much of the Wellington case-study area. This data has been collected through a combination of aerial photo interpretation, on-farm inspections and road-based surveys. The data has been mapped at a scale of 1:50,000 but is of varying age and consistency.[49] The information is organised against a set of fields which categorise different stages, or visual signs of salinity, including waterlogging, scalding and vegetation change. It appears that the data set collated by DIPNR in the Central West is one of the most advanced at a local level.

By using this information, we have been able to make preliminary statements about the relationship between salinity, known pre-contact archaeological sites, and a tentative predictive archaeological model in the Wellington area. It would seem however that our ability to extend this type of analysis to other parts of NSW would be limited by a complete

absence of salinity mapping or the presence of only patchy, coarse-scale data-sets.

Salinity mapping continues to occur in other contexts and there appears to be significant debate about how best to develop reliable data. Such work must confront complex issues such as the mapping of ground-water systems and the need for further information about the influence of different soil types, landforms, land-use and vegetation types on the occurrence of salinity.

The salinity management agenda

The management of salinity is a complex process which needs to reflect variation in local environments and land-use characteristics. Current research and planning on salinity is widespread but lacks co-ordination. Discussing cultural heritage in this context receives little attention.

It is important to understand the views of government and scientists about how best to manage salinity. This provides a context for understanding both the scale of current management actions, and their potential benefits for heritage values.

Today, salinity is recognised by both the federal and state governments as a major issue. In NSW, government attention is best encapsulated by the NSW Salinity Strategy, which aims to develop a coordinated approach to managing the problem.[50] This strategy grew out of a Salinity Summit held in Dubbo in 1999 that brought together landowners, government, Aboriginal people and conservation bodies. It argues that a range of actions is required to slow down the spread of salinity.[51] It states that:

- native vegetation must be protected and managed
- land-use practices should reduce the use of water
- water itself should be used more efficiently
- engineering solutions will be required in some areas
- land affected by salt should be used more effectively; and
- effort should be focused on higher priority salinity hazard landscapes.

The Salinity Strategy identifies eight key tools that can achieve these objectives. One involves setting end-of-valley salinity targets to indicate the level of salinity that communities and government feel they can live with. Catchment Management Boards (now Catchment Management Authorities) were given the role of reviewing and setting targets, and recommending the actions required to achieve them.

Other key tools include using market-based solutions and developing business opportunities such as the development of salt-tolerant crops and saline agroforestry. Built into the promotion of such actions is acceptance that the clearing and management of vegetation has a direct link to salinity. Salinity impact assessment may become a factor in gaining approval for future clearing.

At a planning level, the Salinity Strategy identifies the need to link salinity management to other regulatory mechanisms such as water licensing and Local Environmental Plans. Other documents, such as Catchment Action Plans can build on the work already done by Regional Water and Vegetation Committees.

Within this complex mix of strategies and actions, there is an opportunity to integrate cultural heritage and social issues into salinity and catchment planning. As we will argue later, such an approach is essential if real cultural heritage outcomes are to be achieved, especially in salinity-affected regions.

At a more localised level, it appears that the management of salinity on the ground has four primary components:

1. the alteration of cropping and irrigation practices
2. revegetation
3. engineering works; and
4. alternative land-use/management.

Current thinking is that a combination of these activities will be required in all affected regions. Importantly, the lag time between such actions and a reduction in salinity impacts may be significant. This will depend on an array of factors including the nature of local soils, vegetation, land-use history and ground-water systems. Research programs are supporting all four localised strategies. More efficient ways of using water are being developed and applied. In dryland areas, efficient water-use will need to involve the management of remnant vegetation, revegetation and different farming practices.[52]

The appropriate use of vegetation to manage salinity is subject to debate. Questions about where, what and how many trees should be planted in the landscape are still being explored.[53] The ABS survey Salinity on Farms shows that 91,000 hectares in NSW and the ACT have been revegetated in recent

years as a direct response to salinity problems. It is expected that some of this would have involved agroforestry. This compares with the figure of 776,000 hectares nationally.

Engineering solutions are also being employed in some areas and may involve either large or small-scale actions. At one extreme, they can involve extensive salt interception schemes such as that in the Wakool area in south-western NSW. At another level they may involve the small-scale use of pumps, ditches, drains and dams. The ABS survey indicates that 208,000 kilometres of earthworks, such as levees, banks and drains, have been constructed across the country to deal with salinity. Of this, 43,000 kilometres were built in NSW and the ACT. Currently, such actions are seen as being potentially costly and unable to provide long-term solutions. Large-scale works have primarily been restricted to irrigation areas or regions where water resources are threatened. In some cases they have been successful in allowing the extraction of ground water or salt for later use.[54]

Finally, as awareness of the scale and implications of the salinity issue grows, there seems to be increasing emphasis on the idea of major land-use change as a primary management option. This can include taking land out of production for conservation or tourism purposes. It has been noted that "the conservation effort of private landholders is essential in complementing what can be achieved through national parks and other conservation areas".[55] To further this aim, government is also exploring the idea of salinity and biodiversity credits, whereby landowners obtain financial incentives for retaining areas for landscape protection. However, it has been argued, those economic incentives on their own "will not enable biodiversity conservation and salinity mitigation targets to be achieved". Instead, they "need to be integrated with other instruments such as revolving funds, regulations and continued education programs" if they are to be effective.[56]

Clearly, managing salinity is a very complex process and will need to reflect variation in local environments and land-use characteristics.

Potential effects of salinity on Aboriginal heritage

Salinity is part of a complex web of landscape change that first manifests itself in areas that have been modified by human land-use over a long time. In many cases salinity can represent an impact to cultural heritage values that have already been severely affected by decades of land-use. In other cases, salinity can destroy a place or value, which may otherwise have been retained in the landscape.

Salinity in context

The sections below explore the potential impact of salinity on a range of Aboriginal heritage places and values. At the outset it is important to make clear that our discussion is set within an overall assessment of the relationship between Aboriginal heritage and environmental degradation. It is possible to isolate some of the direct effects of salinity on Aboriginal heritage. Nevertheless, salinity is part of a complex web of landscape change and generally manifests itself first in areas that have been modified by human land-use over a relatively long time. This modification may have taken a variety of forms such as the loss of vegetation and biodiversity, and a decline in water quality and soil structure. These effects may eventually culminate in, or contribute to, a salinity problem.

For this reason it would be false to imply that all of the damage to Aboriginal heritage values we discuss in this section are solely the result of salinity. Rather, salinity can represent an impact on heritage values that have already been severely affected by decades of land-use. A classic example would be where salinity-induced waterlogging kills a scarred tree which had been slowly dying because of surrounding ploughing. In this situation salinity will accelerate the loss of a heritage place.

In other situations salinity will cause the loss of a place or value which may otherwise have been

Above: Erosion in the Central West, 1940s. The disturbance here would have affected Aboriginal heritage and is an example of the fact that damage to heritage places and landscape values have been felt for decades. Mitchell Library, State Library of New South Wales.

retained in the landscape. For example, it may prompt the death of a stand of healthy native vegetation that has been protected from clearing and which acts as a source of bush food for a local Aboriginal community. Without the onset of salinity this vegetation may have survived. In the same way, salinity may generate soil erosion and the associated loss of sub-surface archaeological deposits that had not previously been affected by farming.

Salinity and its effect on the landscape cannot be isolated from the overall condition of an ecosystem or the forces changing ecosystem health. Viewing salinity in this wider context not only makes sense when we consider the processes that cause salinity. It also matches the response of the Wiradjuri interviewees during the Wellington case-study who talked not only about specific environmental problems, but also about how these problems overlap to create a general decline in catchment health. Equally, many of the management actions that are being put forward to tackle or mitigate salinity are also designed to have an array of positive environmental results that extend beyond salinity issues. As an example, in some cases the management of remnant vegetation to help control the rise of the watertable may also promote biodiversity conservation and help limit localised soil erosion.

Scope of effects

Having established that salinity is part of a system of landscape change, we can look in some detail at how the actual manifestation of salinity might directly affect Aboriginal heritage values. What, for example, are the effects of salinity-induced waterlogging, vegetation loss and soil erosion? While the overview given here highlights the range of impacts that need to be considered, it must be remembered that it cannot account for variation in local conditions.

Understanding the potential impact of salinity is made easier if it is appreciated that a broad range of Aboriginal places and values will exist, even in landscapes with a long history of European land-use. Heritage places and landscapes do not simply occur in protected areas like National Parks.

Indeed, most people are aware that pre-contact archaeological sites can survive in farmed landscapes and can even be found in the suburbs of Sydney. Equally important is the fact that Aboriginal people have continued to interact with these landscapes since European settlement through work, family life, recreation and the continuation of cultural practices. The remnant stand of food plants in a roadside reserve, the shearing shed where Aboriginal people worked for generations or the fishing hole which people continue to use today are signposts to the presence of a dynamic and continually evolving Aboriginal identity. Because of its landscape-scale impact, salinity, like other forms of environmental degradation, can therefore represent a significant threat to a range of heritage places and to people's contemporary lifestyle.

The sections below consider impacts to pre- and post-contact places, people's connection to country and the well-being of local communities. It is important to realise that while the discussion is broken down in this way, many places can combine an array of values or features and need to be considered holistically. As an example, an historic campsite can combine wild foods and structural remains together with evidence of pre-contact occupation in the form of stone artefacts and burials.

Archaeological sites

Aboriginal archaeological sites form a central element of the cultural heritage of this country. Stone artefact scatters, rock art, burials and items such as scarred trees can be highly valued by both Aboriginal people and the wider Australian community. For Aboriginal people, they provide a tangible link with the past and in some cases continue to be places that are visited, used and actively cared for.

These types of place are often highly fragile and susceptible to natural processes and human actions. They are embedded in the fabric of our landscape, in soil profiles, the bark of trees and the surface of rock shelters. This makes them especially vulnerable to problems like soil erosion, fire and salinity. Countless sites have already been destroyed in NSW by rural and urban development, but thousands survive in varying conditions.

As discussed, many sites that are now threatened by salinity are likely to have already been affected by other forces. Artefact scatters may have been disturbed by earthworks, ploughing and soil erosion. Scarred trees may have been killed by fire. Rock art sites may have been damaged by animals or by wind erosion.

Above: A dead scarred tree in a landscape showing the effects of salinity. The oval scar indicates where bark may have been removed to make a shield or coolamon.

Having said this, the potential impact of salinity on archaeological sites should not be underestimated. As an example, the accelerated soil erosion and vegetation loss that salinity can cause across large areas can affect surface and sub-surface archaeological deposits, burials, and other sites over significant portions of the landscape. In combination with intensified or unsustainable land-use practices, salinity may prove to be one of the most insidious impacts on archaeological sites in the NSW landscape.

A summary of the effects of salinity on different types of archaeological sites is given in the table at the end of Chapter 3.

Actions associated with the revegetation or stabilisation of salinity outbreaks and scalds may sometimes cause disturbance to archaeological material. However, the overall outcome of this remediation may enable us to protect relatively intact sites in areas not yet affected by land degradation. Managing the impact of salinity on archaeological

sites will therefore need to involve a careful balance between strategic landscape management and the protection or assessment of individual sites. The Wellington case-study (Chapter 3) and the chapter on salinity management (Chapter 4) address this issue in detail.

Historic sites

> *Heritage practitioners have tended to think of the pre-1788 period as 'belonging' to Aboriginal heritage and the post-1788 as 'belonging' to settler heritage. This has led to the peculiar situation in which the term 'historic heritage' has come to stand for non-indigenous heritage only. The NPWS is now moving to 'expand' Aboriginal heritage out of the pre-contact and into the historic (post-1788) period.*[57]

Today, agencies such as the Department of Environment and Conservation (NSW) are increasingly emphasising the recognition of Aboriginal people's post-contact experience. This reflects awareness of the need to understand Aboriginal people's heritage as being alive and dynamic. The DEC is now carrying out research to identify and record places associated with the post-contact period. These can include missions, an area associated with people's working lives, and sites associated with protest, discrimination, education and cultural practices such as hunting and gathering. At a larger scale, the very form of a landscape can represent an element of people's sense of heritage. The fence lines, shearing sheds and properties that characterise our rural areas often have an Aboriginal history.

All of these places and landscapes can potentially face damage from salinity. For example, research has already shown that salinity can corrode historic structures, kill street trees and damage urban parks. All of these features may form an important element of local Aboriginal heritage and history. This might include houses where families have grown up, the local cinema, shop, or Land Council office. As an example, in the Wellington case-study discussed later in this book, a number of structures in the town are associated with Aboriginal people's history and contemporary activities. They include Knuckey's Store, where rations were distributed until the 1960s, the Aboriginal Medical Centre, and CDEP office.

As noted earlier, urban salinity has become evident in many rural towns such as Wagga Wagga and in the suburbs of western Sydney.[59] It is estimated that 954 hectares of built-up areas in the Murray-Darling Basin are currently affected by shallow watertables. This is predicted to rise to 3600 hectares by 2050.[60] Poor water use and leakage from water, sewer and storm-water systems can cause rising watertables in urban areas. As a result, structures can experience periodic wetting and drying which can cause clay base materials in particular to swell and shrink. Eventually, salt crystals can form within a building's fabric and cause cracking, spalling and fretting. Heritage structures made of older-style bricks are especially vulnerable to this.[61]

Clearly, Aboriginal values associated with our towns and cities need to be assessed if we are to understand the current or potential impact of urban salinity on this dimension of Aboriginal heritage. Research is urgently required in areas where urban salinity is either a threat or already a significant problem.

Story places

Aboriginal stories and beliefs about the creation of the land can refer to specific landscape features like a river, lake or mountain. These places form highly significant elements of people's sense of connection with "country". A decline in the health of a story place would be of great concern to Aboriginal communities. The paucity of detailed salinity data in NSW means that it is very difficult to determine whether salinity is damaging any registered story places. At this stage, collaborative fieldwork is necessary to determine the nature and extent of possible impacts to story places in salinity-affected catchments.

Wild resource use

> *The cultural values that Aboriginal people ascribe to the environment are many and complex. The active utilisation of wild foods and medicines is but one value, but it is linked to many aspects of contemporary culture and identity. Fishing, plant food collecting and hunting continue to play an important role in many people's lives. Such activities may be viewed as embodying a continuation of cultural practice, and as a primary means of passing on ecological knowledge, looking after and observing country, and maintaining links with valued places.* [62]

The use of land and sea for cultural and economic purposes is important to many Aboriginal people in NSW. Wild resource use remains a part of family and community life.[63] The wealth of publications about bush foods is testament to this dynamic aspect of indigenous cultural heritage. Recently, some environmental management bodies have formally recognised these values in public documents.[64]

Various factors have influenced how far wild resource use has been maintained in individual communities throughout the state. Changes in access to land, the appearance of social welfare, the development of environmental laws, and the different experiences or aspirations of subsequent generations have all played a role. It is important to realise that we should not generalise about this issue. It appears that levels of activity vary within communities and even single families.

People's capacity to continue wild resource use is also heavily influenced by the health or condition of catchments, rivers, soils and vegetation. Because salinity affects native vegetation, rivers and landscapes, it may also affect the cultural values that Aboriginal people ascribe to biodiversity and environmental health. Such an impact may be direct and indirect, as is the case for archaeological sites. For example, salinity may represent only one factor in the decline of locally valued landscapes and resources. Impacts may also be directly caused by land clearing, water pollution or even the approaches used to manage pest species and fire. As an example, research has shown that people's ability to collect plant foods and medicines in NSW is being affected in some areas by the timing of fire hazard reduction and the application of pesticides and poisons to weeds like bitou bush.[65]

Access is of course also an important factor. It is clear that in many areas, Aboriginal people find it difficult to secure access to land to obtain wild foods and medicines. For this reason, public lands such as Crown reserves, stock routes and riverbanks have played, and continue to play, a major role in people's lives. In these areas, access is often possible and direct scrutiny from landowners limited. This highlights the need for the general management of these lands to acknowledge and provide for cultural values. For example, simple acts like road widening or overgrazing of stock routes can eliminate, or severely affect, valued plant foods or medicines. Any impacts to wild resources in these areas, such as those generated by salinity, will potentially have a significant cultural impact.

At a more specific level, salinity problems may occur at, or threaten, actual places where wild resources are obtained. For example, a stand of medicine plants may be directly threatened by a salinity outbreak. To date, though, there is no research into the susceptibility of valued species of food and medicine plants to salinity. Some may be significantly affected by problems like waterlogging, while others may be more tolerant. Equally, the effects of salinity on terrestrial and aquatic fauna are poorly understood and at present are largely restricted to general analyses of threat.[66] It is unclear whether salinity is a direct threat to species' survival. Other problems like altered fire regimes, clearing and pest species are probably more significant in some areas. Despite this, the implications of salinity should not be played down.

Totemic values

> *… in many parts of Australia the term 'Dreaming' is used interchangeably with 'Totem', and is distinctively Aboriginal Australian. Both terms have a huge range of meanings: both refer to creation and to activity in daily life. And both are expressive of a worldview in which humanity is part of the natural world, has responsibilities to the world, and is born from, lives for, and dies to return to, the living world known as country.* [67]

A recent study commissioned by DEC revealed that Aboriginal kinship with plants and animals in NSW remains strong.[68] Totemic or kinship values encompass the concept that a species is absorbed wholly into people's sense of personal identity and family structure. In some cases this may create an obligation to care for or protect a species and to interact with it in particular ways.[69] The local or general extinction of plants and animals valued as totems has a direct cultural impact.

Some totemic species may be especially vulnerable to salinity and even locally threatened. As noted above, we possess very little information about the direct affects of salinity on biodiversity. For example, the Murray cod is valued in some areas of NSW as a totem, but our understanding of the effects of salinity on native fish and aquatic environments is poor. Research is being conducted on this topic under the National Dryland Salinity Program but appears to be in its early stages.[70]

There is a need to ensure that any data stemming from such projects is made available to Aboriginal people and that decisions about managing species are made with an awareness of their cultural value.

In this case, collaborative programs that allow Aboriginal people to play a role in managing rivers and native fish populations need to be encouraged, as this may activate people's senses of custodial responsibility, expressed through concepts like totems. Such collaboration should also be extended to the management of terrestrial species and wider landscapes.

"Country"

> *Country is a living entity with a yesterday, today and tomorrow, with a consciousness, and a will toward life. Because of this richness, country is home, and peace; nourishment for body, mind, and spirit … Country is multi-dimensional – it consists of people, animals, plants, Dreamings; underground, earth, soils, minerals and waters, surface water, and air.*[71]

Aboriginal people may perceive and value the landscape as their "country", a term referring in most cases to the idea of traditional connection to an area derived from descent and habitation. In this way a landscape in its entirety is viewed as having a cultural meaning. Impact to the health of the environment that gives the landscape its integrity and structure will therefore affect people's sense of identity, place and connection with country. Such an impact became evident during the Wellington case-study where some of the informants talked about the personal sadness they feel at the loss of vegetation and decline in the health of rivers. Linked with this distress may be concern for future generations of Aboriginal people and their ability to maintain cultural practices and identity in degraded landscapes.

Concern for the land in this way has been expressed in all parts of Australia and the sense of custodianship associated with this connection is well encapsulated by the term "caring for country".

Economic interests

As with the wider community, land degradation has the potential to affect an array of economic interests held by Aboriginal people. For example, it has the capacity to render Aboriginal-owned lands and enterprises unproductive, and to directly affect ventures such as cultural tourism which rely for their success on the health of local ecosystems.

Salinity may well affect or threaten lands that have been claimed under the Aboriginal Land Rights Act 1983 (NSW) or properties purchased for communities by the Indigenous Land Corporation (ILC). The ILC has already noted that land degradation is present on many properties returned to Aboriginal people across Australia.[72] Despite this, it does not appear that the relationship between salinity and Aboriginal lands has ever been audited. This should be considered within the context of an overall assessment of the environmental condition and capability of these lands. It would, however, be hindered by the paucity of available salinity data in NSW, and to be effective, should probably involve property-scale investigations rather than regional overviews. Property Vegetation Plans, under the Native Vegetation Act 2003, are potentially an excellent mechanism for advancing this approach.

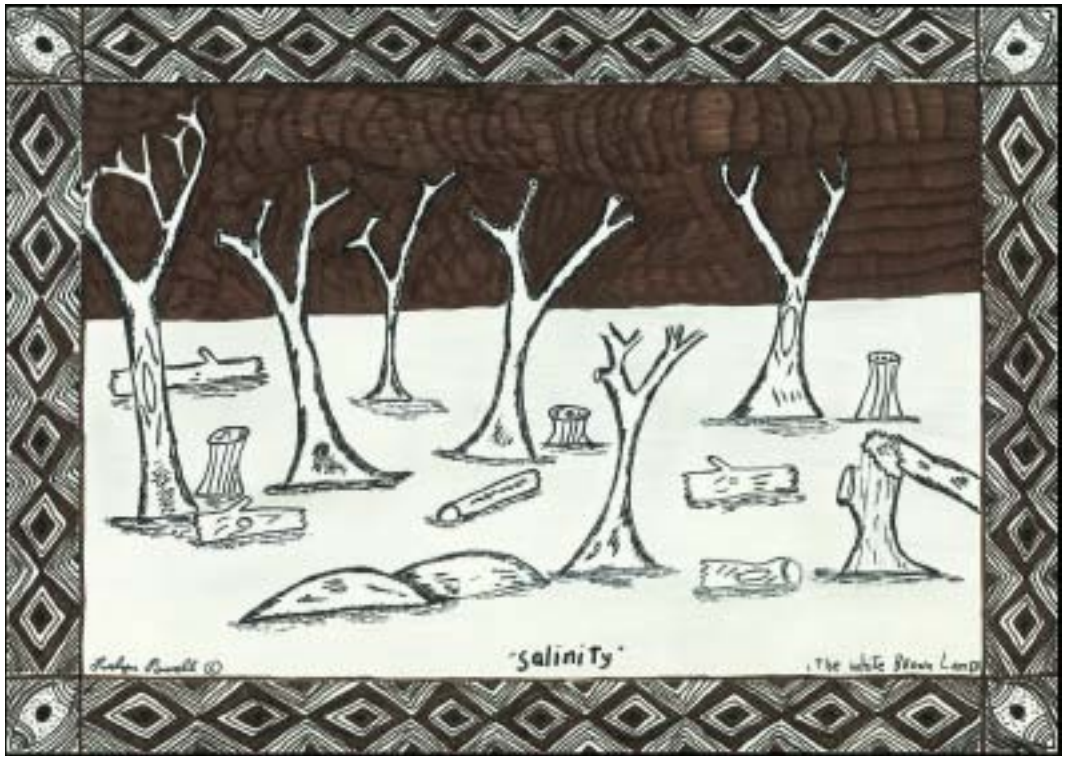
Health, well-being and quality of life

> *Aboriginal people readily recognise the links between health, employment, land and culture.*[73]
>
> *Health is not just the physical well-being of an individual, but the social, emotional, and cultural wellbeing of the whole community in which each individual is able to achieve their full potential as a human being thereby bringing about the total well-being of their community.*[74]

All of the impacts of salinity and environmental degradation that have been described in the previous sections can cause deterioration in Aboriginal people's well-being.[75] This can occur at a number of levels. Firstly, it is now generally accepted that people's sense of identity and connection to place is an integral component of their quality of life. The ability to identify with, care for, and interact with a community and place fosters self-esteem and a feeling of security. When activities valued as an important part of people's lifestyle are threatened or stopped, such connection can be undermined. Decline in the environment can obviously be a major instigator of such change.

Aboriginal people are concerned about such loss. People see the ongoing impact of European colonisation and the difficulties confronting attempts to maintain cultural life as factors contributing to ill-health and decline in self-esteem.[76] The inability to find and share bush foods, fish, or visit a special place can all generate a sense of worry, loss and sadness.

Associated long-term effects can include a decline in cross-generation contact and understanding. The feeling that "culture is being lost", or that



Above: *White Brown Land* by Evelyn Powell, 2002.

young people are not being given the opportunity to learn, is expressed by many Aboriginal people in NSW. This can be seen as being intimately linked to other problems like youth suicide, drugs, ill-health and family dysfunction. In this way, concepts like culture and heritage are embedded in broader issues like health, community well-being and structure.

In the same way, discussions about environmental health can be linked to concerns about poor diet and diabetes. The high prevalence of junk food in people's diet, in Western and Central Western NSW especially, has been highlighted as a major problem. One study has found that at least 90% of food-related advertising in towns like Wellington focuses on unhealthy food options such as alcohol, cigarettes, soft drinks, ice cream and take-away meals. The study found that most owners of takeaway food shops were disinterested in introducing healthier foods.[77] It could be argued that while wild foods are unlikely to become staples, increased use of wild meat and plant products might contribute in some way to tackling this problem. Such an option is hampered by environmental degradation.

Equally, by enhancing people's role in looking after country or by making them feel valued as a source of knowledge, we might contribute to improvements in self-esteem and by extension, social and physical health. This is not a simple process. Complex social problems need to be resolved using a variety of methods. Ownership of land is not a panacea for the problems facing many Aboriginal communities.

At another level, salinity can have detrimental effects on well-being by damaging the infrastructure that people rely on for their way of life. The impact of salinity on rural and urban roads, houses, parks and services will concern Aboriginal people. The potential for salinity to significantly help lower water quality in NSW may become increasingly important. It has been noted that many centres in affected regions may have unpotable water within the next 20-40 years unless salinity is brought under control. If these impacts progress, they will seriously affect the daily life of all people living in these areas. The

generally low-income status of Aboriginal communities may mean that they feel these effects more keenly than the wider population.

Management options

Preventing the spread of salinity across large areas of the landscape will help protect cultural heritage.

> *Aboriginal people do not separate ecology and culture… Biodiversity and cultural diversity, together, are the links for healthy communities.*[78]

One of the prime purposes of this project is to look at the relationship between salinity, land management and cultural heritage. The first explores how catchment-level planning and action can achieve cultural and social goals. The second looks at how appropriate cultural heritage information can be collected to support both catchment-scale planning and more localised management actions. This structure is dictated by the fact that salinity, and indeed all environmental issues, needs to be managed in a landscape context. Greater connections between natural and cultural heritage are also required if the broad set of cultural values identified in this book are to be included in land-use planning processes. Furthermore, we acknowledge the need to balance the big picture with effective local action such as that geared to the protection of individual heritage sites and the lifestyle of local communities.

It is important to state again that the prevention or mitigation of salinity across large areas will potentially achieve significant cultural heritage goals. For example, by preventing soil erosion and the loss of vegetation associated with salinity, archaeological sites may be saved from damage or destruction, subject of course to local land-uses. Equally, associated improvements or stabilisation in river health and the condition of the environment where people live may assist them to continue practising activities that rely on the presence of clean water and biodiversity. The involvement of Aboriginal people in the repair of the environment is a logical extension of these connections:

> *Aboriginal people are becoming increasingly concerned about the quality of the environments in which they live and have sought to become more involved in land management issues in an effort to marry their needs with the need to maintain biodiversity.* [79]

Indigenous people throughout Australia are worried about the health of their local environment. Land and river degradation presents an ongoing threat to Aboriginal cultural heritage. As a consequence, Indigenous people want to be involved in rehabilitation and conservation. Such work may take the form of general revegetation programs or more focused activities aimed at controlling the erosion of specific cultural sites. Involvement in revegetation may lead to both direct and indirect cultural benefits. On the one hand, people may see a tangible improvement in the health of their country. On the other hand, it has been shown to be a way "for community members to pass on the knowledge of traditional use of plants and animals".[80] The oral histories in the following case-study provide a local perspective on this issue.

Good cultural benefits can be achieved from revegetation projects where a wide variety of bush foods and medicines are re-established. It has been noted elsewhere that current Landcare projects are mainly "conducted for the purpose of regeneration of pasture, while Aboriginal people would prefer to see the regeneration of diverse and more complex ecosystems".[81]

This is a pertinent issue, especially in the context where agroforestry is promoted as a salinity management option. The cultural benefits stemming from the mass planting of a small number of native species are limited. The employment of Aboriginal people in agroforestry might be one positive outcome, but this only goes part of the way to recognising the cultural values of native vegetation. Such development could be balanced or offset by revegetation using a variety of culturally valued plant species or conservation of existing remnant bushland and cultural sites.

Protection of landscape values goes some way toward addressing Aboriginal community concerns about land management and its intersection with the notion of "country". Cultural heritage management can support or dovetail with salinity management, rather than impede its progress. At the same time, actions to manage or prevent salinity actions should reflect an explicit commitment to addressing cultural heritage values and places. Without this, opportunities to achieve cultural outcomes via the many elements of land manage-

Above: Echidna from the wall mural at Dubbo City Library.

ment may be missed, and in some cases, heritage values may actually be damaged.[82]

Underlying our discussion is the fact that we support the position that complete eradication of salinity and other related environmental problems is not achievable. Instead, salinity management should focus on a series of priority areas and landscapes.[83] This reality means we need to be strategic in our approach to assessing and managing cultural heritage. We cannot afford to rely on piecemeal outcomes obtained through Environmental Impact Assessment, or continue to focus our attention primarily on archaeological sites. In the case of the latter, it is unrealistic to expect the complete prevention of salinity-related disturbance to all Aboriginal sites in either the Wellington case-study area or other affected parts of NSW.

The integration of cultural heritage into salinity management should avoid becoming focused purely on recording archaeological sites or on arguing that each site that may be identified requires the same level of attention. This would limit our capacity to manage the suite of other cultural values being affected by land degradation. It would also marginalise Aboriginal people's involvement in land management and obscure the dynamic nature of Aboriginal culture and the link between heritage, landscape and community.

Ideally, this project argues for a balance between environmental remediation, land-use change and targeted heritage conservation. Underlying any management approach must be an awareness of the broad nature of Aboriginal heritage values in NSW and the opportunities available to manage these values through the establishment of sustainable use of our land and rivers.

Achieving this would require a combination of management actions. The scale of these actions would vary between catchments according to community values, the degree of degradation and plans for long-term land-use. They could include programs such as:

– education of government, non-government organisations and landowners about the

scope of heritage assessment required to link cultural heritage management with land-use planning processes in NSW
- commitment to research and planning which focuses on achieving measurable, strategic and integrated heritage management results
- participative planning techniques designed to engage Aboriginal communities in land management and to recognise community knowledge and aspirations
- landscape restoration programs such as revegetation which have a cultural dimension via the use of culturally significant plants
- negotiation of new cultural heritage conservation areas; and
- improvement in the scope of heritage assessment within EIA to include social impact assessment and consideration of the link between environmental health and community well-being

A strong argument has already been made that informed social impact assessment and a multi-disciplinary approach to EIA is urgently required in NSW and could potentially be supported under existing legislation.[84] When combined with the management actions presented in Chapter 4, this would significantly improve our approach to managing Aboriginal heritage.

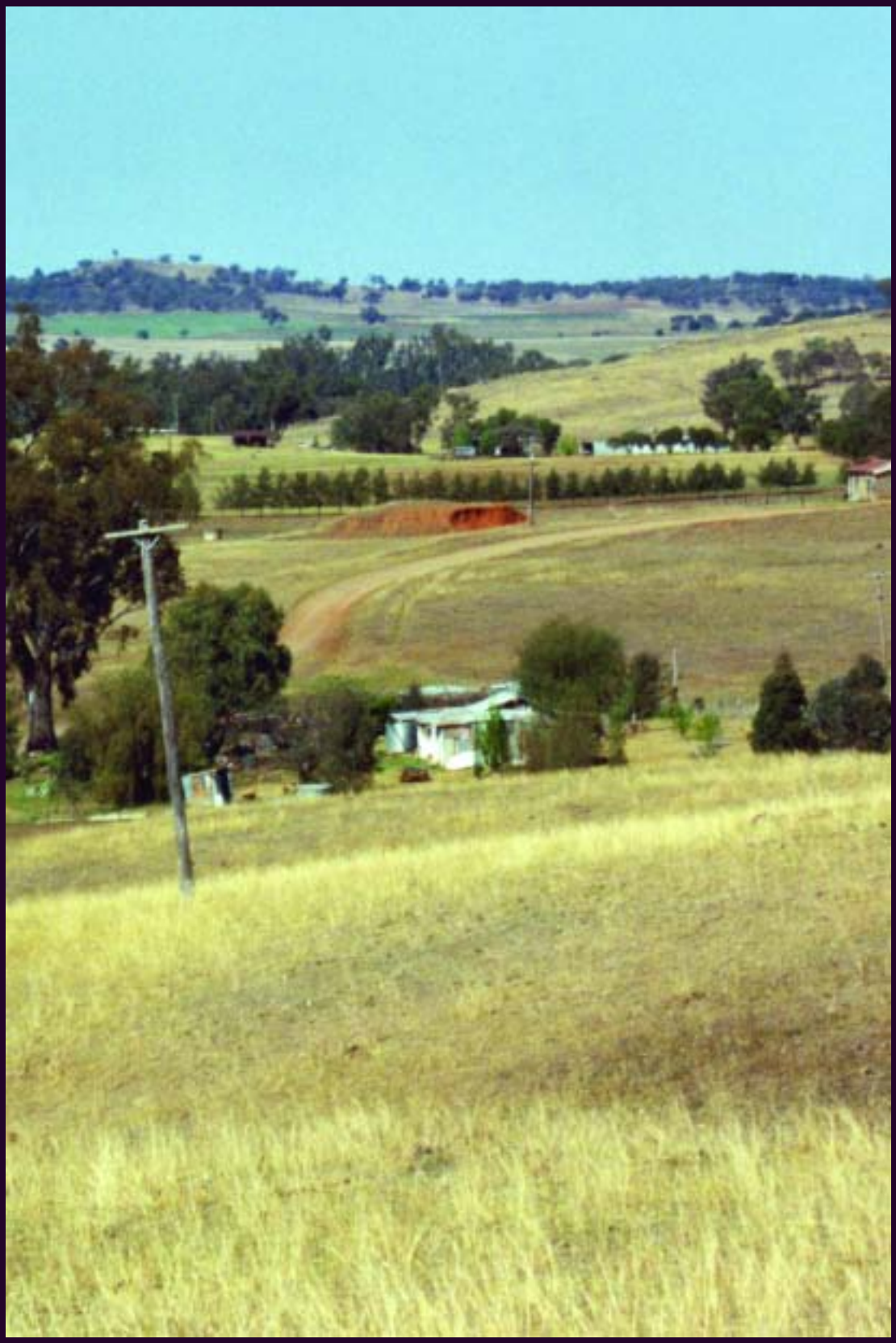
All of these actions are relevant to addressing the relationship between Aboriginal heritage and the general issue of environmental degradation. In other words, they are relevant not just to salinity management, but to the full array of environmental problems present in the NSW landscape.

At the same time, this project has considered specific heritage management actions or issues related to current salinity management strategies. These are also discussed in Chapter 4 and include:

- setting targets for site recording and archaeological assessment in priority salinity landscapes
- ensuring that salinity remediation actions such as revegetation and engineering solutions help to protect cultural places; and
- analysing the effects of salinity on local Aboriginal communities and actively assessing the potential cultural outcomes of standard salinity management actions.

By doing this we have attempted to highlight the importance of integrating the management of cultural and natural heritage to achieve the best results from available funding and strategic frameworks.

The value of the Aboriginal Heritage and Salinity Project has been its ability to take a broad and strategic look at the correlations between Aboriginal heritage management and natural resource management. The project has allowed an assessment of natural resource management plans, distilling the most promising cultural heritage management actions present in these documents. In addition, it has gone a step further by setting these actions within an over-arching theoretical and practical context. The Wellington case-study, presented in the next chapter, has been a central part of this process.



3 The Wellington case-study

Driving across the western edge of the Cumberland Plain, you pass over undulating land, once forested, then farmed and now rapidly going under housing. Brick and tile suburbs sit squarely against the orange and blue lift of the mountains. The effects of salinity can be seen at times on this landscape. Die back. Waterlogging. Efflorescence – an evocative word for an insidious stain.

Crossing the Blue Mountains, a physical and psychological boundary that represents the urban-rural divide, and into a landscape of rolling hills marked by paddock trees. Squiggles of vegetation hug the edge of watercourses. Wire-strung fences stretch left and right. On through Bathurst, Orange and Molong until after six hours the Catombal Range, defining the valley into Wellington, comes into view.

A classic country scene welcomes the visitor. Afternoon light turns the trunks of red gums golden. Cockatoos wheel over a bend in the Macquarie. Verandahs on Victorian buildings are fringed with metal lace. You hear only quiet when you stand on the edge of a dirt road, and smell the eucalypts releasing their odour in the heat.

Once the scale of salinity has been lodged in the mind, though, it is impossible not to look for it in this landscape. Is that gully erosion a source of salt? Is that clump of trees slowly dying? The occasional belts of trees planted to tackle a rising watertable seem such a small mark on a landscape under such a significant threat. How will the land look in twenty, thirty, forty years? How will life here change for people if the environment continues to degrade as all the reports and strategy documents suggest it could if action is not taken?

Above: Wellington local government area, NSW.

This is a landscape where clearing is still going on. It has always been changing. The ringbarking by settlers and the planting and harvesting of crops have all shaped and reshaped the physical structure of the land. Salinity is part of a cycle of change; perhaps an inevitable consequence of the colonial vision.

Left: The southern end of Wellington Town Common with Rose Chown's home visible in the middle distance.

Why Wellington?

Understanding the relationship between salinity and Aboriginal heritage is dependent upon carrying out multi-faceted research in salinity-affected landscapes. Wellington is just one of a number of inland regions of NSW facing a significant salinity problem. This particular region was chosen as the location for the case-study for a combination of factors.

Firstly, unlike other regions, Wellington local government area has been the subject of considerable salinity management and research by agencies such as DIPNR, and before it DLWC. This has included some mapping of salinity outbreaks. The case-study could therefore draw on such research and also explore how cultural values might be factored into existing programs.

Secondly, the area's Aboriginal heritage has not been the subject of intensive research and survey. The issue of dealing with salinity in this region provides an important spur for undertaking comprehensive and much-needed heritage assessment. Prior to the case-study, there was little information available to help the community and government understand and manage the relationship between land degradation and cultural heritage. Some research has been conducted on Aboriginal history associated with the Wellington Common, missions established in the area, and people's experiences of the post-war period. This provided a good starting point for the case-study. In contrast, the extent of archaeological information about the region is limited. Similarly, no attempt had been made previously to document local Aboriginal people's views about wild resource use and environmental management.

Finally, because agricultural lands dominate the study area, any research in this region allows us to explore many of the key challenges that face any attempt to address salinity problems in NSW. The need for landowner involvement is a central theme in salinity-based research and planning. The Wellington area has a long history of agricultural activity, some of which shows signs of intensifying. Any Aboriginal cultural heritage research conducted in the area therefore needs to engage with private landowners and the nature and regulation of private land-use.

Aims of the case-study

The general aims of the Aboriginal Heritage and Salinity Project are listed in Chapter 2. The main aims of the Wellington case-study are more specific.

These are:

1. to document Wiradjuri cultural places and values in the study area
2. to investigate what cultural or social impacts environmental degradation and salinity generate
3. to assess community views about environmental degradation and options for addressing this; and
4. to discuss salinity management options with Aboriginal people and land managers.

Case-study methodology: looking at the big picture

The case-study has involved using a combination of research tools. Such an approach is required to achieve a holistic assessment of heritage values and issues. Archaeological and historical research has been combined with elements of participatory land-use planning to develop a comprehensive overview of key Aboriginal heritage issues in the study area.

Importantly, the case-study has not been restricted by the need to examine isolated landforms where salinity outbreaks are currently evident. Doing so would have limited our capacity to understand and document Aboriginal cultural values associated with the broader landscape within the local government area. Equally, the impacts of salinity are not necessarily localised and can be distributed widely across catchments. Decline in water quality and the transfer of salts in ground water systems are good examples of the fact that salinity is spatially diffuse and complex. It can only be managed and understood by looking at the bigger picture of land-use in a region, ecosystem function and the complex variables that generate degradation in the Australian environment.

At the same time, our discussions with Wiradjuri people about the land have not concentrated purely on the problem of salinity. Interviewees had variable knowledge about the problem but all had important concerns about associated environmental issues such as water quality, the clearing of native vegetation,

the decline in the availability of bush foods and medicines, and the management of cultural sites. In this respect, salinity has been treated as one component of a much larger set of issues and problems in the study area.

Initial consultation

An important phase of the case-study involved initial consultation with Wiradjuri people in the Wellington area. Numerous trips were made to the region to canvass people's views about the project, determine whether people were interested in becoming involved, and to develop a list of potential interviewees.

The Wellington Local Aboriginal Land Council was not active during the study, and contact was made instead with individuals rather than Aboriginal organisations. The NSW National Parks and Wildlife Service Aboriginal site officer for the region, Bill Allen, attended early meetings with people on the Wellington Common and provided additional contacts for the Project Team. Meetings were also subsequently held at the Aboriginal Youth Centre and in some cases at people's homes or workplaces.

At these meetings the aims of the project were discussed and people were asked whether they would support the research. Other important issues such as the interview process and the storage and return of transcripts were discussed. People were also asked to nominate places that they valued in the local area.

Field trips

A number of field trips were made with interviewees to some of the valued places including:

- the historic camp at Bushrangers Creek on the outskirts of the town
- the flats of the Bell River where people used to live and work in market gardens
- the location of other historic camps at Curra Creek; and
- lands associated with the missions in the area, on the Macquarie River.

In some cases oral history interviews were recorded at these locations.

Oral history interviews

Presence is expressed in the stories of people, which make places live, which bring people and place into relationship.[85]

Above: Rose Chown overlooking the Macquarie River.

Oral history interviews have formed a very important part of this case-study. They have allowed local Wiradjuri people to express their concerns about the environment and to reveal aspects of their own life history. The interviews were structured around a list of questions designed to explore people's interaction with the landscape and their views about environmental degradation. Such access to local knowledge is essential to achieving the aim of understanding people's connections to landscape and place.

Interviews were conducted with ten people in Wellington, at Nanima Village and on the Wellington Common. The main aims of this component were:

1. to gather information about people's personal interaction with the local environment during their lifetimes
2. to record people's views about the condition and management of the local environment; and
3. to understand how different individuals perceive and value their cultural heritage.

During the interviews we asked about work, food, water, housing and environmental change, and focused on the rivers as a landscape feature. This approach allowed the Wiradjuri participants to express their views about the link between environmental health and cultural identity, and to discuss how the community should be involved in land management programs such as revegetation.

The oral history interviews have allowed us to include local Aboriginal voices in this book. Forty quotes have been used in the following sections to support our discussion of local Wiradjuri people's connection to country, wild resource use, experience of environmental change, and the desire to share knowledge with young people. A short profile of each individual quoted in this report is presented on the next page.

Some Wiradjuri participants

Paul West

Paul was born in 1962 and lived at Nanima with his parents until the early 1980s. Paul currently works as the Aboriginal liaison officer for the Police Force in Wellington. He feels strongly about ensuring that local koori teenagers get the chance to experience cultural practices like getting and eating bush foods. Today, Paul runs a program through the holiday period called 'Breaking the Cycle'. He takes 19 to 22 year olds through the bush tracking down goannas and echidnas.

John Amatto

John was born in the late 1930s. His parents brought him to Wellington when he was a baby. From the 1940s to late 60s John lived with his relatives and immediate family on the Wellington Town Common, the market gardens on the Bell River flats and at Bushrangers Creek.

Bill Carr

Bill was born in 1919 at Bulgandramine (near Peak Hill). His parents brought him to Wellington when he was a young child. Bill went to school at Nanima. After leaving school he worked on the gold dredge on the Macquarie River and as a shearer alongside his father, Kingy Carr, at 'The Springs'. Bill has lived in Nanima and Wellington all his life.

Violet Carr

Violet is Bill Carr's younger sister. Born in 1933, Violet spent her childhood years living on the Wellington Town Common and Nanima, before moving into Wellington in the late 1940s. Violet has lived in Wellington for the last 50 years.

Rose Chown

Rose was born in 1950 and grew up on the Wellington Town Common. Rose's family was one of the last to leave the Common, being forced off by authorities in the late 1960s. Rose moved back to Wellington in the early 1990s and has been active in ensuring recognition of the local Aboriginal significance of the Common.

Vivienne Griffin

Vivienne was born in 1948 in Sydney. Her father, John (Jack) Bell, was born at the 'Old Mission', north of Nanima. Vivienne moved to Wellington in the 1960s to live with her father and grandmother on the Town Common. She stayed on the Common, raising two young daughters until the early 1980s.

Evelyn Powell

Evelyn Powell was born on the Barwon River in 1933 and grew up at Bulgandramine and Dubbo. Evelyn married Fred Powell and raised her children at Peak Hill. She remembers travelling to Wellington to visit relatives of her mother when she was a small girl. This photo was taken of Evelyn with family in the garden of her home at Nanima Village, where she has lived for ten years.

Joan Willie

Joan Willie is Evelyn Powell's eldest daughter. Joan was born in 1953 at Peak Hill. Joan moved to Nanima Village in the 1990s to be near her mother. Joan currently works as an Aboriginal Education assistant at Wellington High School and feels strongly about local koori teenagers having the opportunity to learn and experience their culture.

Robert Stewart

Robert was born in Wellington in 1941. He grew up in town before moving to live with his wife on the Common in the 1960s. Robert remembers getting echidna and rabbits while living on the Common. He has lived at Nanima Village for 35 years.

Joyce Williams

Joyce was born at Nanima in 1926, living there with her parents and grandparents before moving into town in the 1940s. Joyce has lived in Wellington nearly all of her life and has helped establish the local Aboriginal Health Service and is involved in heritage projects. Joyce is shown here with Linda Burney at the March for Reconciliation at Wellington in May 2002.

Above: Louise Gay interviewing Vivienne Griffin on the Common (with Nan resting).

Background research

A search was carried out for existing histories of Wiradjuri people and the archaeology of the Wellington region. This information let us construct a brief narrative history of Aboriginal people's experience in the Wellington area. Background research also helped us understand salinity management, catchment management, revegetation, Aboriginal land management, and bushfood collection and propagation.

The research focused on secondary sources such as books, monographs, reports, seminar papers and journal articles held at a number of institutions. These include: the Australian Institute of Aboriginal and Torres Strait Islander Studies Collection; Mitchell and State Libraries, Wellington Local Library, Sydney University (Fisher Library and Orange Agricultural Campus Library), the Department of Environment and Conservation Library, and the Aboriginal Heritage and Information Management System (AHIMS). Searching the Internet under key words such as "salinity", and "bush foods" also retrieved information.

All of the items collected during this research have been entered into the bibliographic database PROCITE. The database currently holds 165 references and can be searched on keywords such as the author, title, publisher or subject.

Collation of salinity data

The DIPNR was able to provide salinity outbreak data for much of the study area. This information was supplied in digital format and derives from aerial photo interpretation and field inspections done over many years by regional staff. The scale and age of the data was not indicated, although it was noted that some was up to ten years old. Given this limitation, the data cannot be treated as comprehensive. This has affected our capacity to provide detailed analysis of the relationship between salinity, known archaeological sites, areas of archaeological sensitivity and other cultural values and places. However, the data supplied gives a good indication of the scale of the problem, and still appears to be one of the better data sets available in NSW.

Archaeological mapping

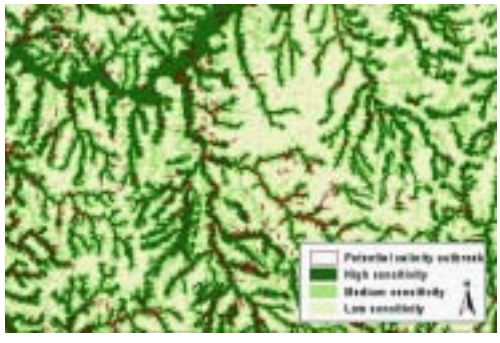
The ArcView Geographic Information System (GIS) was used for basic mapping of archaeological sensitivity across the study area. This involved using a number of key data sets including soil types, ruggedness, terrain, known open sites and elevation. The resulting map breaks the landscape down into three categories of high, moderate and low archaeological potential. The mapping was restricted to considering open sites or artefact scatters, as this was the only class of site present in large enough numbers in the Department of Environment and Conservation's AHIMS database to support statistical analysis. Other site types such as scarred trees are present in the database, but only in small numbers.

The map on page 39 illustrates a number of important points about the spatial relationship between salinity and the archaeological record. This has been achieved by overlaying the map of archaeological sensitivity on the salinity outbreak data.

Archaeological field work

Some fieldwork was done to assess important archaeological issues in the area. One of the first steps taken was to talk with DIPNR staff about their knowledge of sites in the region. They were asked whether they commonly found sites in the salinity-affected areas where they worked. Alan Nicholson indicated that the majority of salt scalds that he was aware of had stone artefacts on their surfaces. The early identification of this issue proved vital in directing the scale of later archaeological investigation.

Alan Nicholson was able to take the project team to a number of scalds where artefacts were present. In all cases, salinity management actions had been carried out at these scalds, or were in the process of being implemented. These visits proved an invaluable way to discuss the realities of integrating archaeological site management into the current approach to addressing salinity.



Above: Detail of the map generated by the GIS as part of the predictive modelling exercise. Areas of high archaeological sensitivity generally coincide with land adjacent to watercourses.

Above: ERM archaeologist Josh Symons (right), with CDEP Aboriginal representatives Grahame Bell (centre) and Aaron Daley (left). Photo by Neville Baker.

Two of the scalds were subsequently chosen for detailed archaeological recording and assessment. This involved mapping the distribution of artefacts across both scalds, and analysing artefact attributes and site structure.

The primary aims of this work were to:

1 allow us to understand the types of archaeological information that can be obtained through analysis of artefact scatters on typical salt scalds in the region; and
2 provide a foundation for understanding the effects of salinity, erosion and existing land-use on the archaeological sites.

The first scald is on the property "Easterfield" at Mumbil, approximately 19 km south-west of Wellington and on the Burrendong 1:50,000 topographic map sheet. It has been used for many years as a salt demonstration site. The area is currently managed using rotational grazing, which aims to limit the degree of stock damage to the scald and allow the regeneration of grass cover. The establishment of a large native tree planting demonstration site has also assisted management of the scalded area. These trees have prompted a significant lowering of the local watertable and the scald is now considered to be stable.

The second scald is on a property known as "The Springs", approximately 17 km north of the township of Obley and on the Wellington 1:50,000 topographic map sheet. It differs from the scald at "Easterfield" as it combines areas of varied slope, sections of intact soil islands, trees, small gullies and rills. The scald is managed by being left ungrazed and will eventually be fenced off by the landowner to further assist stabilisation.

The archaeological assessment of both scalds was tendered as a contract and undertaken by ERM Australia.[86] The Department of Environment and Conservation coordinated the involvement of local Wiradjuri people in the fieldwork through the Orana Commonwealth Development and Employment Program (CDEP).

A second phase of archaeological assessment was done on the "Easterfield" scald after heavy rains in the area, six months after the original investigation. This involved re-recording the distribution of artefacts in the original sample areas to see whether we could detect evidence of artefact movement.

Consultation with natural resource agencies

Consultation occurred with staff employed by the DIPNR in the Central West and in Sydney. Achieving cultural heritage outcomes from salinity management in the Central West is dependent upon the joint involvement of staff from both the DIPNR and the DEC. Natural resources staff know a lot about about land-use, salinity and ways of working with land-owners. Consultation has occurred with a range of DIPNR staff, including local Salt Action Team members, Aboriginal natural resource officers, GIS officers, the senior Aboriginal policy officer and the acting director of the NSW Salinity Strategy.

Environment of the study region

The landscape in the study area has been subject to significant modification since European occupation early in the 19th century. Augustus Earle's picture of the Moolong Plains in the 1820s provides an insight to both the nature and scale of such change.

The Wellington local government area falls within the Central West Catchment region of NSW. Dry-land salinity outbreaks are widespread in this part of the catchment and manifest as scalds, vegetation changes, dieback and saline seeps. The town of Wellington lies at the junction of the Bell and Macquarie Rivers. The Macquarie has been identified as having a significant salinity problem, which is expected to worsen over the next 20 years.[87]

The Wellington area is dominated by valley floors and undulating hills associated with the Macquarie and Bell Rivers. Rugged and more heavily dissected terrain occurs on the eastern edge of the study area around the valley of the Macquarie and Cudgegong Rivers which has been flooded to create the Burrendong Dam. North-south trending ridges occur in this area, with hills and saddles. The central and western sections of the landscape are marked by numerous drainage lines, many of which feed into one of the Bell, Macquarie and Little Rivers.

The other primary landscape feature present is the Catombal Range, which runs north-south through the centre of the study area. The range forms the western backdrop to the Wellington township.

Very little remnant vegetation survives in the study area due to a long history of agricultural land-use. Like much of the Central West, the Wellington landscape is characterised by cleared paddocks containing small stands of box trees and other native vegetation. In many cases, paddock trees stand in isolation and show little evidence of being associated with regeneration. The largest areas of remnant vegetation tend to be restricted to more elevated and rocky landforms such as ridges, crests and some hills. The heavily vegetated Catombal Range is a good example of the contrast between this type of terrain and the areas subject to grazing and crop production. Narrow strips of riparian vegetation are also found along many sections of river and creek.

Above: Looking across the cropped lands of the Bell River flats with the Catombal Range in the distance.

Above: Fence line demarcating the boundary between a cleared paddock and the vegetated road reserve.

Unfortunately little high quality vegetation mapping is available for the area. The best data available derives from a biodiversity assessment that has been progressing in the Little River Catchment in the western half of the study area. This catchment covers 260,000 ha between the Hervey Ranges in the west and the Catombal Ranges in the east. The study forms part of a larger investigation being coordinated by DIPNR called the TARGET Project, investigating how dryland salinity can be addressed by encouraging land-use change.

The flora and fauna survey work concluded that only 17% of the Little River catchment is covered with woody vegetation and that 85% of this is located in elevated terrain. Vegetation communities associated with rivers, valleys and flats had been heavily cleared. Remnants were found to cover small areas and were often isolated within the landscape. Woodland remnants generally have degraded understoreys, little tree regeneration and declining tree health.[88] The results of this work can be read as being an indicator of the general condition of vegetation in the wider Wellington region.

Conservation options are limited by the fact that there are no National Parks within the study area. The nearest protected area is Goobang National

Park, near Peak Hill, close to the western edge of the study area. This park covers sections of the Hervey Ranges and is dominated by rugged and elevated terrain. In the absence of protected areas, Crown and public lands tend to have a high conservation value as in many cases they have retained some of their vegetation cover. Many road reserves and travelling stock routes in the region are also important for this reason.[89]

The majority of native fauna in the district is restricted to islands and corridors of remnant vegetation on farms, travelling stock routes and road reserves. These areas "provide the only sources of shelter and security in an increasingly fragmented and hostile landscape".[90] For example, it has been noted that snakes and goannas are commonly found in remnant vegetation along rivers and creeks, as their food is often located here in abundance. The same is the case for many of the other reptiles, amphibians, birds and mammals that survive today.

Since the mid-nineteenth century the main land-use in the Wellington district has been grazing or mixed farming (a combination of winter cereals and sheep-cattle grazing). The majority of arable lands in the district has undergone ploughing, excepting moderate to steep slopes, as part of pasture improvement and crop rotation. On the more fertile river flats, crops of vegetables, irrigated fodder, maize, peas and lucerne hay are grown. Burrendong Dam was built on the Macquarie River in the 1960s and covers an area of 8900 ha. The water from the dam supports irrigation crops such as cotton and citrus fruit.

Photos taken around Wellington between the 1940s and the 1960s show areas of severe soil erosion and indicate that land degradation has been occurring in the district for a long time. The Soil Conservation Service (SCS) took these photos at a time when scientists were beginning to examine land degradation problems in the area.[91] The SCS commenced a farm planning service in the Wellington area in 1958 and worked with landowners to try and redress erosion problems and unsustainable farming practices. The SCS noted that environmental damage was worst on smaller properties where farmers tended to utilise lands which could not support cultivation.The scale of the problem is amply expressed by one of the soil conservationists based in Wellington in 1962:

There is abundant evidence of unsound practices, such as over-cultivation and over-grazing, provided by the many sheeted and gullied areas to be found almost wherever we look. [92]

Above: Grain silos at Wellington indicate the importance of grain production in the area.

Although some changes to land-use have been adopted since that time, environmental degradation has increased in many parts of the region. Today, scientists acknowledge that "the loss of native vegetation cover, coupled with intense land-use, is a significant barrier to the maintenance of diverse, sustainable, and productive natural and agricultural systems".[93] For some, the cost of implementing solutions to soil structural decline, erosion, die back and salinity are too great, especially in the light of the financial crisis affecting rural communities.

In recent years the catchcry in response to calls for revegetation and conservation is "who should pay". Many landholders feel that they "should not bear the total economic impact of changing on-farm property rights for the long-term benefit of the environment".[94]

It can be appreciated that this is a difficult context in which to talk about Aboriginal heritage issues. Some people may see this as complicating the already overwhelming challenge of tackling environmental degradation. We therefore looked closely at a number of strategies to encourage farmers, government and Aboriginal communities to work together.

One of our goals is to highlight how local Aboriginal people share concerns with other sections of the community about the health of the land and rivers. We have attempted to demonstrate why community members would like to be involved in revegetation projects and how salinity management practices can have positive cultural outcomes such as the protection of remnant archaeological deposits and improvement in the health of "country". (These management issues are discussed further in Chapter 4.)

Local Aboriginal people's connection to the Wellington area

This section presents a brief overview of Aboriginal occupation of the Wellington region to provide a context for the identification of Aboriginal sites and places that may be affected by salinity.

The community today

Aboriginal people living in the Wellington region have a combination of traditional and historical connections to the surrounding land. At the time of the 2001 census, 8,228 Aboriginal people were living in the Wellington local government area.[95] Many live at Nanima Village, the site of one of the oldest reserves in NSW. Nanima lies approximately four kilometres to the east of Wellington, close to the banks of the Macquarie River. Other people live in Wellington itself.

Wiradjuri people at Wellington are engaged in proactive attempts to acquire land and resources as a basis for furthering social, economic and cultural objectives. A number of Aboriginal organisations exist in the area such as the Aboriginal Health Service, the Orana Development Corporation (CDEP), Wellington Local Aboriginal Land Council and the Wellington Town Common Committee. The Indigenous Land Corporation has purchased property in the area for the community, and an Indigenous Land Use Agreement has been negotiated for lands within the Wellington Town Common. The Aboriginal Heritage and Salinity Project has sought to engage with a cross-section of the community to reflect people's connection to the local landscape and their views about environmental management.

Historical context

Wiradjuri people have been living in the Wellington area for many thousands of years. When the explorer John Oxley travelled through the Central West in 1817, he entered country that was known intimately by Aboriginal people, and invested with a deep sense of cultural meaning. Wiradjuri culture embodied a complex relationship between people and the land, and a highly structured social system. The many and varied archaeological remains in the region attest to both the length of Wiradjuri occupation, and aspects of their ceremonial and everyday life. Attachment to the land, the revival of language, and the complex web of family history has continued to shape Wiradjuri identity, and represents the continuation of a distinct Aboriginal presence in the area.

European settlement in the Wellington Valley followed closely on the heels of Oxley. In the early 1820s, a government settlement consisting of an agricultural farm accommodating 80 convicts was established near the junction of the Bell and Macquarie Rivers, just south of the area later set aside for Wellington Township. For the next three decades this settlement represented the most western outpost of government authority and enterprise in colonial NSW.[96] Relationships between the Wiradjuri and the settlers west of the mountains deteriorated during the 1820s and culminated in 1824 in the declaration of martial law. The loss of access to land and resources generated Aboriginal resistance and ensuing military action. In 1828, the commandant of the government settlement reported that soldiers had killed a number of Wiradjuri people.[97]

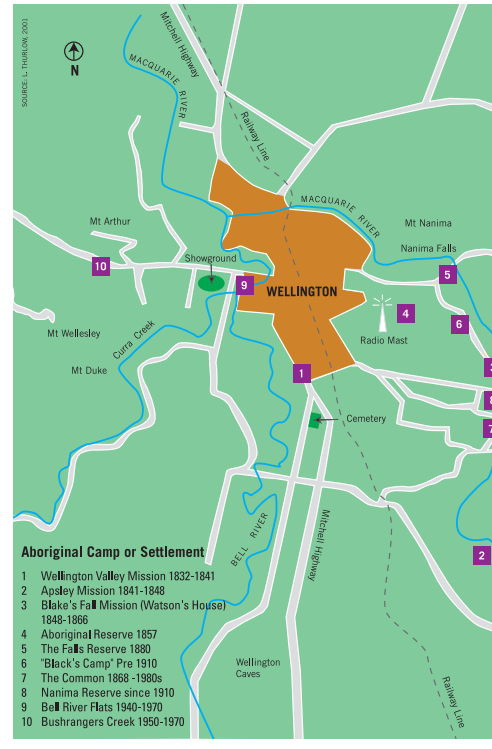
Land between Bathurst and the Wellington Valley was officially opened up for settlement in 1827. Throughout the mid-nineteenth century, the local Wiradjuri saw dramatic changes to their country as a result of clearing, grazing, fencing and cropping by the white population. Over time it became increasingly difficult for the traditional owners to move freely within their territory. As was the case elsewhere in NSW, concerted efforts were made to congregate the local Wiradjuri people within missions and later a reserve at Wellington.

Above: Joyce Williams and Bill Carr at the march for Reconciliation at Wellington in May 2002.

In 1825, the first attempt to establish an Aboriginal mission at Wellington occurred. This mission was privately supported but was abandoned within a year.[98] From 1832 to 1843 Reverend James Gunther and Reverend JCS Handt of the Anglican Church Missionary Society ran a government-supported mission on the site of the government settlement. Reverend Handt left the mission in 1836, and was replaced by Reverend William Watson. Gunther kept the mission at the former government settlement running until 1843. It eventually closed due to animosity between the missionaries and their failure to attract large enough numbers of Wiradjuri people to live at the settlement on a permanent basis. It also failed due to lack of financial support from the government and pressure being exerted by local white settlers who wanted control of the mission lands for farming, river frontage and for the establishment of Wellington township. The historian, Peter Kabaila, writes that the mission "laid the foundation for a succession of Aboriginal camps and housing areas in the vicinity of Wellington Township". These include Nanima Falls, Blakes Fall Mission, Blacks Camp, Nanima Aboriginal Reserve and the Wellington Town Common, which continue to be important to local Wiradjuri people as evidence of their determination to stay on or near their own country.[99]

While it was not until 1910 that Nanima was established as an official Aboriginal reserve, throughout the mid-nineteenth century to late 1960s many Wiradjuri people chose to live in other locations such as the Wellington Town Common and on different sections of Crown land, such as Bushrangers Creek. Aboriginal people in the area value these sites today. They play an important role in demonstrating the strength of Aboriginal families in the face of dispossession and low socio-economic status. As far as we know, the camps range in date from the late nineteenth century to the present.

Kabaila has mapped the location of these camps.[100] Other historians have also researched the Wellington Common.[101] During the case-study, we collected additional oral history information about some of these camps and visited them with the interviewees. We wanted to understand how people had interacted with the land and rivers when living at these locations. We also wanted to assess whether the camps and immediate landscape were facing impacts from salinity.



Above: Wellington township and the Town Common (7).

One of the living places discussed in available literature is an unofficial mission known as Apsley Mission (Portion 110). Reverend William Watson established this after he left the former government settlement mission in 1838. At least 60 Wiradjuri people lived at Apsley Mission.[102] Watson moved again in 1848 to Blakes Fall (Portion 97), on the Macquarie River (immediately north of current Nanima Village).[103] Some of Watson's activities are recorded in Gunther's diary. From these records, it appears that Watson was engaged in the removal of Aboriginal children from their parents. Gunther describes that Watson became well known by Wiradjuri parents living on camps and stations in the area in the 1840s who feared their children would be taken to live at his unofficial mission.[104]

The Blakes Fall Mission ran for 18 years until Watson's death in 1866, when the land was sold to white settlers for dairy farming. While Watson was alive, the Blakes Fall Mission provided some of the local Wiradjuri with "a place to put a hut and a means of supporting themselves". This was especially important, as during these years Aboriginal people's access to their lands was being steadily reduced.

Above: The main street of Wellington in the late 1940s, a scene familiar to many of the Wiradjuri people who participated in this study. At this time the Aboriginal community was still experiencing levels of government control over their lives. Mitchell Library, State Library of New South Wales.

The search for gold was bringing large numbers of people into the region and increasing the pace of European settlement.[105]

From the mid-nineteenth century to the early twentieth century, Aboriginal families also lived on land along the Macquarie River between Nanima Falls and the northern boundary of the Blakes Fall Mission. This area is known today by the names "the old mission" or "Blacks Camp" and takes in the property currently owned by the University of New South Wales. It is estimated that in 1908 there were at least 90 people living on Blacks Camp.[106] Most of our project interviewees have grandparents, parents or other relatives who were born at this place. For instance, Vivienne Griffin told us that her father, Jack Bell, was born under a eucalypt on "the old mission" signifying his "belonging" to this place.

The historian Heather Goodall notes that in the 1880s, Aboriginal self-sufficiency was still high throughout NSW, "with 81 per cent of the Aboriginal population economically independent from a mixture of wage or ration labour, farming, and more traditional subsistence foraging".[107] At Wellington, Wiradjuri people were employed on surrounding pastoral stations as domestics, shearers, drovers and general farm hands.

By 1910 a decision was made by Aborigines Protection Board (APB) to establish a formal Aboriginal Reserve on the Wellington Town Common. A 100-acre corner of the Town Common, lying adjacent to the southern boundary of Offner's farm, was set aside. The reserve was named "Nanima". A school was established at the reserve to encourage Aboriginal families to live there. Goodall notes that "most of the Aboriginal reserves created in NSW at this time (1890s-1910) were farmed and managed by Aboriginal people themselves".[108] Wiradjuri elder, Joyce Williams, recalls that in the 1930s: "There was no manager at Nanima. Everyone looked up to my grandfather and so he was almost like the manager there. He was English and he married my Aboriginal grandmother."[109]

People who lived at these reserves talk about a strong sense of community that developed despite the fact that bodies like the APB could exercise

a great deal of control over many aspects of their lives. These reserves "meant many things to Aboriginal farmers and residents" who saw them "as a recognition, however partial and inadequate, of prior and continuing rights to land".[110] In contrast, rural townspeople saw the reserves as "places in which Aboriginal people should be confined, preferably under supervision".[111] This was reflected in the broad power assigned to the APB in relation to employment, marriage, removal of children, health, consumption of alcohol, possession of firearms, and control of property.

In the first 60 years of the twentieth century the Wellington Wiradjuri, like Aboriginal people throughout NSW, faced severe racial prejudice. Although many Aboriginal people worked as vegetable pickers, domestics, drovers, labourers and shearers, they were not entitled to become Australian citizens, were denied an equal wage, were not allowed to vote or to purchase land, and were excluded from the old age pension or maternity bonus.[112] In rural towns throughout NSW Aboriginal people "were seen to have no automatic right to a domestic dormitory area within the town boundaries nor any rights of access to the hotel, the stores, the school or the very streets".[113] Also, under the NSW Aborigines Protection Act (1909) the police had authority to remove Aboriginal camps near towns and transfer people to and from reserves.

Other Aboriginal Reserves located closest to Nanima at this time were: Bulgandramine near Peak Hill, Talbragar and Barrington River at Dubbo, Dandaloo near Narromine, Eugowra near Forbes, and Ilford near Mudgee.[114] From the early to mid-twentieth century, the APB revoked many of the reserves listed above so the land could be sold to white settlers.[115] As this occurred, some Wiradjuri families moved to unofficial camps located on Crown land in the region, while others moved to reserves located further afield. Nanima was one of the reserves which remained open.

Above: The shearing shed at The Springs where Wiradjuri men worked.

Above: Rose Chown's home on the Town Common. This is typical of the homes that people built on the Common.

The Wellington Town Common is an example of the type of non-regulated land tenure where, over the years, both local and displaced Wiradjuri people have been able to establish a home. Aboriginal people used this area of land while the Wellington Valley Missions were operating from the 1830s to 1860s. Prior to this, the area would have formed a part of the wider landscape, relied upon by Wiradjuri people for camping, hunting and gathering. Kabaila sees the formal gazettal of the "Temporary Common", in 1868, as an official attempt to contain Aboriginal camps to an area segregated from Wellington township.[116] LeMaistre notes that the land was not intended for sole Aboriginal use.[117] Joyce Williams remembers white people living on the Common for short periods. The white community has also used the land for grazing stock.

Aboriginal families to the present day have occupied the Common. Nearly all of the Wiradjuri people we interviewed for this project have lived there at some stage in their life. Some families built their homes on the Common in an attempt to avoid restrictions imposed by the APB at Nanima. Others lived there while they waited for a home to be built for them on the reserve. The men and women continued to find work in the district.

Farmers and graziers around Wellington, and elsewhere in the state, were reliant on an itinerant labour force. Many Aboriginal families preferred to travel in search of seasonal work, as it allowed them to keep one step ahead of the authorities trying to control their lives.[118] In the 1940s, progressive welfare legislation was introduced and was applicable to everyone including Aboriginal people who met the

Above: Joyce Williams and Jamie Carr at Curra Creek near the Bell River Flats.

eligibility criteria. The welfare was introduced under the Child Endowment Act (1941) and the Invalid and Old Age Pensioners Act (1942). The welfare payments were not available to Aboriginal people living on reserves and missions. Due to this, some people left the reserves to receive the payments.[119] They established camps on the fringes of town or at places such as the Town Common. At the end of the 1950s, there were approximately 27 families living on the Common.[120] Violet Carr remembers the house built by her father:

> *We lived right on the riverbank. My father, William [Kingy] Carr, built a house out of kerosene tins. It was a big place. We had boys and girls bedrooms. It was painted white and the ceiling was of hessian. My dad was a shearer. He used to leave home on a Monday morning at 4 o'clock am to be ready on the shearing boards at properties like "The Springs" at 7 am.*

In addition to the Town Common, local Aboriginal families also built homes at Bushrangers Creek on the other side of Wellington. This area was occupied from at least the 1920s to the late 1960s. It is isolated from the town of Wellington and set within bush in the folds of the lower slopes of Mount Arthur. The camp lies on Crown land and is another example of how Aboriginal people used this tenure to secure a living place. Like the Common, people lived in tin houses and obtained their water from a hole in the creek. They grew vegetables to supplement their diet and found yabbies nearby. Rose Chown recalls visiting the camp in the late 1950s as a child, to spend time with her grandfather who lived there.

> *He had a tin hut and his garden was made amongst the trees … He grew one or two vegies like your tomatoes and your cucumber and your pumpkin because that was our staple. I don't know if he would have grown potatoes because you could get potatoes easy enough at the market garden, but I can always remember the beautiful flowers he grew ... There were about four or five huts on the other side of the road. I'd say a lot of families had been living here for quite some time until they were eventually forced out in the late 1960s. Because in Wellington, back in the early European times, there was a big Aboriginal population, I suppose just like us, other families remained in the area until they were forced off various places. Curra Creek was another spot where they used to live as well.*

John Amatto lived at Bushrangers Creek as a boy with his uncle, and has fond memories of the camp. Those living at the camp worked on pastoral stations, at the market gardens on the Bell River Flats and building the road to Mt Arthur. Today, the remains of a number of huts, bottle dumps and other items such as bed frames and tin cans mark the camp. John showed us the tree he played in as a child, a rock he used as a seat, and the burial site of the horse used to pull the cart owned by the family he lived with.

Curra Creek was another area where Aboriginal people camped and lived for extended periods. It too is on the outskirts of Wellington. Aboriginal people also lived on the Bell River Flats. In some cases, they lived in huts within the Chinese market gardens operating there. Joyce Williams remembers the Aboriginal families living along the Bell River Flats in the 1930s:

> *They used to camp right along the riverbanks there. They used to camp there because they used to come in picking beans and picking onions … It was the Chinese who owned it all, but the Aboriginal people all camped there because that's where they used to work.*
> *A lot of them used to call it Lucky's Garden … There used to be a lot of ducks on the Bell River. We used to get them and this old Chinese lady, Granny Lusik, she used to say, "you get the duck, you give me the duck, I'll cook all the duck". The people that camped along the River used to say, "oh, Granny Lusik's cooking, you could smell it all down the River, it was so good."*

Nearly all the people we interviewed have worked at the market gardens at some stage in their life. The gardens were an important source of employment for Aboriginal people in Wellington from the

Living & learning

Above: John Amatto.

Identity is one of the things you should have. Every time I see my kids, I say to remember three things: who you are, what you are, and where you came from.

John Amatto was born in the late 1930s and spoke about his experience of living at Bushrangers Creek and on the Wellington Town Common in the 1940s and 50s.

> ***Life was good as a kid, it was good.*** *We made our own fun. We done everything. We hunted, rabbits, fish, you know, …You shared everything. It worked good. Terrific. When we were rabbiting as young fellas, if you didn't have anything, any rabbits, or if you had a couple of nets, if you didn't have fish, we'd give you fish and someone else would give you a couple of rabbits and it would be all shared around.*

We were living in old tin shacks. *And believe me, whatever tin it was it was valuable to you, even if you got a piece of tin even half the size of this table. We knew when the old Western Stores was chucking away their 4-gallon kerosene drums. We used to go into the tip and get them. We filed down old shears and cut them down and just opened them out and made a sheet or long bit of tin. And we'd have plenty of them for water. You had to carry your water from the river with yokes on your back.*

All the old people *who were out at Nanima and the Common, me grandfather and the older fellas, would give you school and that. I learnt a lot from me old grandfather and the old men. I learnt a lot. Because when I was one or two my mother and father died and I was living with me grandfather then for most of my growing up life. They were always moving around. It was only around the town here and around the Common and back across the gardens. I was always with them backwards and forwards. It was with the old fellas that I got to hear all their stories because you sat there listening to what they were talking about. It teached you right from wrong. You respected your elders.*

Above: A bed frame and sheets of corrugated iron form part of the remains of an historic camp at Bushrangers Creek.

Depression period until the 1970s. Interviewees explained that people walked to the gardens from Nanima or the Common, or were picked up in a truck sent by the Chinese owners. People from Curra Creek, Bushrangers Creek and the town itself, also worked there. The labour force also included non-Aboriginal people. The interviewees recall those relations between the workers and the owners at the gardens were good.

> ***Violet Carr:*** *You could work seven days a week in the gardens. Say you'd do two days over in one garden, then you'd just walk across the river and do another two or three days in another garden. It was good pay, but we used to make good money because you never used to draw your money until the weekend. We know we got paid the same as the white fellas because we used to watch – we used to make sure we all watched our bags being weighed up with the beans.*

Employment at the market gardens declined during the late 1960s and 1970s when the older managers and workers retired. None of the houses that were occupied by the workers have survived. These were destroyed during floods or salvaged for scrap. Unlike their parents and grandparents, the younger generation of today has not had much experience in the gardens. Many young people have moved elsewhere to seek employment, while the introduction of unemployment benefits also eased pressure to take up this type of work.

The Aborigines Welfare Board (AWB) replaced the Aborigines Protection Board in 1940. From the late 1940s to 1960s the AWB adopted an assimilation policy. The aim was to shift Aboriginal residents from the camps to Aboriginal Reserves and then into houses in country towns.[121] Violet Carr remembers that during this period her family moved off the Wellington Town Common and was given a house at Nanima. Other residents on the Common were made to move elsewhere. For example, Rose Chown recalls her parents being forced off the Common by the Welfare authorities in the late 1960s:

> *Mum and Dad were forced to leave the Common in 1969. They were given the ultimatum of either losing my niece, Billy-Anne, or moving. We moved to Mumbil where my uncles worked on the Dam.*

Rose's grandmother and a few others held on at the Common into the 1970s, but eventually most people moved to Nanima or Wellington.
The authorities demolished the homes on the Common after people moved away, except for the church and the two houses currently occupied by Rose Chown. Today, Nanima and the Town Common are still occupied by local Wiradjuri people. Some of these people were born in Wellington while others have come from further afield, such as Peak Hill and Dubbo. Rose Chown returned to the Common in the early 1990s and with others, lodged a native title claim for the area. This was subsequently granted as an Indigenous Land Use Agreement under the Native Title Act 1993 (Cth). This outcome officially recognises the fight by Wellington Wiradjuri to retain connection with their lands.

Places such as the Wellington Town Common, Nanima Reserve, Bushrangers Creek, Blacks Camp, the former missions and camps on pastoral stations in the district are all held dear. Despite their association with past injustices, they have been the homes, birthplaces and workplaces of many local Wiradjuri and their ancestors. They are also significant as the places where families could live together, gain strength from one another and pass on cultural knowledge. Today, the recognition of the Aboriginal historical significance of the reserves and camps, and their subsequent protection and reclamation can contribute to the contemporary processes of cultural revival and reconciliation.

Wild resource use around Wellington

Using the land and rivers has been an important part of many Wiradjuri people's experience and cultural identity.

Wild resource use is at the heart of many non-Aboriginal people's perception of Aboriginal culture. Eating kangaroo, emu and goanna is generally accepted as fitting squarely within the realm of traditional Aboriginal life. What is less well understood is how Aboriginal people have continued to use wild foods and medicines throughout the period since European settlement and into the present day.

In Australia, there have been many debates, some of them in the courts, about whether current wild resource use can be defined as cultural. The use of modern technology or the fact that these resources may no longer serve as staples has been seen by some as negating any cultural basis for such activity. Recent court decisions have opposed such interpretation and argued that "culture" is not static, and cannot be constrained in this way.[122]

At the same time activities like hunting and gathering have been criticised by some conservationists as being unsustainable.[123] There can be no doubt that the impacts of Aboriginal people's activities need to be considered against the overall decline in the health of Australian ecosystems, and the fact that modern tools or equipment increase the possibility of over-harvesting than was the case in the pre-contact period. Green groups, as part of their opposition to the handback of NSW National Parks to traditional owners, raised the spectre of unsustainable use.[124]

In reality though, we lack any data about the levels of take, or the frequency of hunting and gathering in any part of NSW. What has been established is that such activity is highly valued by Aboriginal people for a wide range of reasons. It allows people to continue applying ecological knowledge, assists cross-generational sharing of this knowledge, allows people to interact with valued places and also brings health, and in some cases, economic benefits.[125]

It became clear during the oral history component of this case-study that using the land and rivers has been an important part of many Wiradjuri people's experience and cultural identity. Rose Chown expressed this importance when describing people's connection to Wellington Town Common.

> *The land is the importance of your existence. If it was used properly the way it used to be used you had everything you needed from it. It's the place where you belong and where you come from ... If you need help from the land in the way of your medicines you'll still come across them. If you need your tucker you can still go down to the river here, persevere for a couple of hours, and you'll find some fish. There are plenty of birds about or go up the back to get a kangaroo.*

This connection represents the continuation of practices that extend back to the period before European settlement and which were noted by the first Europeans in the area. The 1832-35 journal of the missionary, JCS Handt, slows that Wiradjuri people frequently left the mission on the former government settlement to collect wild foods. Handt was unable to stop people from doing this. The following quotes from Handt's journals describe some of the hunting and gathering at this time.[126]

- ***20 January 1834:*** *It seems impossible to make them [the Wiradjuri] give up the bush.*
- ***25 Oct 1833:*** *The man Nerang Jacky, had found honey in the bush, and caught some opossums besides, so that all of them had plenty to eat.*
- ***19 Sept 1834:*** *Most of the Aboriginal people left here this morning to go hunting in the mountains after some Wallabins, which, one of them said, was a small sort of Cangeroo kind.*
- ***26 April 1835:*** *I saw the Aborigines in the camp roasting an Oppossum; thus they had been amusing themselves in hunting.*
- ***25 August 1835:*** *Two of the Aboriginal women had been fishing today and returned with a large supply, and seemed very proud of their success.*

These records illustrate how the use of wild resources played a role in helping people maintain connection with country in the early years of European settlement. But wild food collection continues to resonate with local Wiradjuri people in this way today.

Above: Quandong fruit. Photograph by G Robertson; NSW National Parks and Wildlife Service Photo Library.

The role of wild food – 1930s to 1960s

Getting and eating bush tucker was remembered fondly by many of the elders we interviewed. As children, they had access to bushfoods when their parents were working on pastoral properties, such as "The Springs", or when travelling the road reserves.

> ***Violet Carr:*** *We had a good diet because Dad used to work and we used to get our proper meals, but when my dad was working at Arthurville he used to like getting the bush tucker for us and we used to enjoy that too …They would drive the horses up towards the Springs and that's where they'd get the big goannas. It wouldn't take long to drive out there and back in a horse and sulky.*
>
> ***Bill Carr:*** *When we were hunting we'd get rabbits, porcupine, possums and goannas. There were plenty of goannas at the Springs. You see the goannas out on the limbs in the early morning. You could shoot them but they are very quick. As soon as they see you coming they go down the hole. You'd have to go hunting with a couple of mates. When I was young I've seen them out there at the Springs and you'd have a big fire there and all different sizes of goannas cooking in the ashes. You'd get a big thick lump of steak. The fat was good for your hair and skin.*
>
> ***Evelyn Powell:*** *My mother used to show us things, when we were travelling along. My mum and dad used to travel – we only had horse and sulky, no cars, nothing. But we used to travel as a family group. And we'd take it in turns, us kids, to get in the sulky and ride along, have a spell, then we'd walk some of the way. As we used to walk along Mum used to show us these possum berries. I loved possum berries. And these old quandongs, heaps used to grow along the Peak Hill road, quandongs, yuliman, and the gum of the wattle tree. Mum used to put it in a jar, put a little water and sugar in it and it tastes like a jellybean.*
>
> ***Bill Carr:*** *We used to cry out to my mother and father when we were travelling in the horse and cart years ago. When we were going from Bulgandramine to Peak Hill to Parkes, Dad used to say "sing out when you've got some quandongs and we'll pull up and give the horse a break in the shade". Oh yes, them days were good days. I'll never forget them. I'll remember them till the day I die.*

The stories present happy memories of bush food collection, but it was an activity that also served a utilitarian purpose. The Wiradjuri participants explained that using wild resources was a part of getting through hard times and dealing with the problems of low income, unemployment and oppression. Without yellow-belly, rabbit or goanna, many Aboriginal people in the Wellington area would have gone without meat on many occasions.

For the current elders, activities like camping by a river and relying on wild food for sustenance were central elements of their lifestyle. This reflected

both their economic circumstances and their possession of local knowledge, which allowed them to find and use a wide range of resources. Evelyn Powell, John Amatto and Robert Stewart explained that fish and wild meat were combined with store-bought supplies or vegetables from the market gardens on the Bell River Flats. Several people explained that, during the 1950s and 1960s, they placed a heavy reliance on rabbits.

> ***Joan Willie:*** *If there wasn't any working or any shearing to do for farmers then that was the time we had to survive on our bush food. Rabbits were always a good meal. Dad used to go around the sides of the hill setting traps. We never ate kangaroo. Mum always used to say it was our totem food so we never ate it. I never saw many growing up. It was mainly the goanna, possum and echidna.*

> ***Robert Stewart:*** *We had hard times. A couple times I had to go in there and bite the Salvos or the St Vincent de Paul. Before the St Vincent de Paul came here we used to go in to the Police station and get what you'd call the rations ... In them days there was plenty of rabbits across the river. And the blokes that used to own it, used to allow us over there to get them, because in one respect we kept them eradicated … my wife cooked the rabbit. She's the cook. We'd have them baked, stewed, curried, and boiled with vegetables.*

> ***Joyce Williams:*** *When we were kids and we used to live on Nanima part of our survival was how we lived and what we ate and, you know – we struggled. One time, I can remember my mother going in to ask the Police for rations and the sergeant he said: "oh Bony's out shearing, what do you want rations for?" Bony was my grand-father, and when they go away shearing they're away for a month – four or five weeks you know? But the sergeant never realised that. I remember my poor mother stood there with tears in her eyes saying to Granny May that he wouldn't give us anything.*

> ***John Amatto:*** *The market gardens were good because when there wasn't any work they had cabbages or cauliflower still in the garden and we could have whatever they had in the garden. Get some vegetables and all we had to do was buy some meat … We relied on rations through the winter when all the market gardens stopped … and you had to go and hunt winter and summer to get something to eat. The only thing that slackened off in the winter was the fish, see.*

> ***Violet Carr:*** *We caught yabbies sometimes if we had a bit of rabbit on. We'd go to Peak Hill by horse and sulky and there's a place just this side of Peak Hill – they call it "the ten mile hole". And my brother, he'd be on a bicycle and he'd catch a rabbit, cut us all a bit. We'd take a load of crayfish with us, take us no time to get a couple of buckets full. We'd take them into Peak Hill.*

Vivienne Griffin talked about life on the Common in the late 1960s. She said that people could not have survived without the river and its resources. Her father, Jack Bell, was skilled at making wooden fish traps, hunting ducks and also finding turtles and their eggs, while John Amatto remembered how the old men used to get fish when they were running.

> ***Vivienne Griffin:*** *The bush tucker was an important part of our diet – fish and rabbit and the occasional goanna and porcupine and duck when you could get it. He used to keep ducks. If he wanted a duck he wouldn't have to shoot it. Dad also showed me how to catch a lot of ducks with a trap. A square trap with a funnel coming out. He would place the funnel towards the water close to the river and he would have seeds all the way in so the ducks would come up to the funnel but they didn't know how to get out.*

> ***John Amatto:*** *The old fellas they'd get a lot of fish at different times when they were running. Old Bill Stanley, old Tommy Barnes, old Billy Cook, old Kingy Carr, old Ben Harris, they were always sitting on the river bank with their lines in.*

The role of wild food in recent times

Younger people have also used wild resources, and some of those we talked to continue to look for and use goanna, echidna and a range of plant foods and medicines. Paul West is active in getting wild foods and medicines for older people in the area who are either unable to travel because of their age, or don't have a car. He learned about these resources from his grandfather and father while growing up at Nanima in the 1960s and 1970s. Paul discussed the importance of stock-routes and road reserves as areas where access was possible and hunting and plant collecting could occur without arousing the resentment of landowners. Unlike the older

Above: This section of road reserve is on the route between Peak Hill and Wellington and still contains several food and medicine plants and sites such as scarred trees.

generation, Paul sees wild food collection not as a matter of survival, but rather an expression of cultural identity.

> ***Paul West:*** *It wasn't a survival thing. It was just something you wanted to do. Like being hunters and gatherers it was in our blood. We'd just go. Some of the boys, we'd swim across the river, we'd get a rabbit, we'd walk up to our favourite fishing spot, we'd throw a line in up there, cook a rabbit over the coals and if we were lucky enough to catch a fish we'd chuck him straight in the coals and have a feed and then come home again. That was our day's activity. Today, it just depends if some of the elders say they are suffering or having trouble with their blood or whatever then I'll go out and get one [goanna]. And I'll only go and get one or two. I remember me old man, my pop, and some of the older lads, they'd go out and come back with ten or so and feed the whole village at a time. That's the way it used to be then. Today you could go out drive for 100 or 200 kilometres and you might see one or two.*

> ***Joan Willie:*** *Dad was always a hunter. We ate mostly goannas and rabbits when we were kids growing up. As well as plenty of fish and yabbies … If say for instance he had a car or one of our family had a car then we would go for a drive with him but he did most of the hunting. I have one brother. He used to go with Dad a lot and he still goes today to get goanna. There's a certain time of the year when my brother and my mum say that they get this "taste" and that's when they feel like having some. There's a time when the season's finished for hibernation when they like to go and hunt for them.*

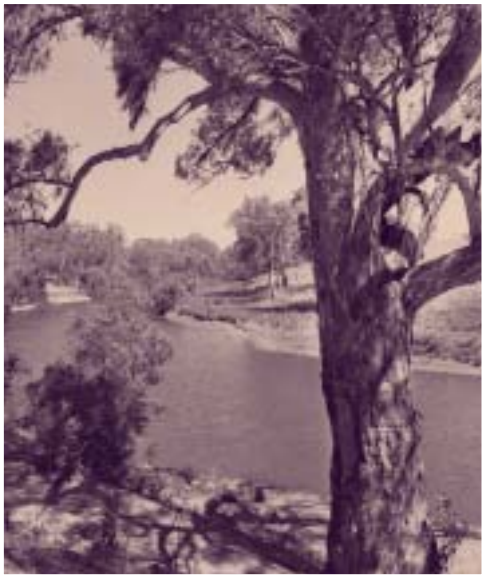
As in other parts of NSW, the level of wild resource use has been shaped over time by changing social conditions, the effects of environmental problems, and the loss of access to land.[127] In the Wellington area, such change has been exemplified by the decline in rural employment since the 1960s. Previous to this, working in shearing sheds, the market gardens or elsewhere on farms allowed people access to wild resources on private properties. Today, such opportunity has largely not been available to people under the age of 50.

Equally, the experiences and expectations of more recent generations have differed markedly from those that preceded them. This has been typified by greater reliance on store-bought foods and a declining need to rely on home-grown vegetables or wild resources. Paul West talked about this change in relation to the decline in community members relying on work at the market gardens: "It's changed so quickly. It seems like yesterday we were in the gardens and today we're in town."

Having said this, it is still the case that both younger and older informants continue to use wild resources. Fishing in the local rivers would appear to be the main type of activity that people carry out today. Fishing can be done without the need to gain permission from landowners, or to have access to a vehicle. Instead, people can walk from their homes in Wellington and Nanima to the riverbank and use favoured fishing holes.

A decline in the health of the river would affect people's capacity to fish. The focus topic about changing country, on the opposite page, contains people's views on this topic. The Wiradjuri participants described how river health has declined markedly since the 1960s. People pointed to the construction of Burrendong Dam, the clearing of riparian vegetation and the introduction of carp as key factors in changing the integrity of local river systems. It is here that salinity would appear to intersect most closely with people's interests in their heritage and landscape. As salinity progressively affects water quality, it will contribute significantly to the accelerated decline in river health.

Changing country



Above: Macquarie River, Wellington, NSW, 1944.
Mitchell Library, State Library of New South Wales.

During the interviews we asked people about changes to country, focusing on the rivers as a landscape feature. The following quotes reflect the strong response we received on this topic.

Evelyn Powell

I went down there to Dubbo and even the rivers down there are not the same like they used to be. Out towards Narromine and the Macquarie river. There was just a great big island in the middle of the river and just a little bit of water trickling around.

I've never seen the rivers like that before … I'd been so used to seeing it full, you know, chockablock full, filled up, flowing with fresh water and you see there were plenty of things in the river then, plenty of fish, plenty of ducks and the old black shags.

The rivers were full of fish, chockablock full. The turtles, long-necked and short-necked turtles, we'd cook them up and eat them. You don't see them no more. They're gone – turtles, mussels. And big mussels, the bigger ones. 'Cause when I was kid, we used to dive for them. You know they lived right down in the river. We used to dive right down in the middle of the river to get the great big mussels …

The rivers are terrible now. It is nothing like when we used to live on the banks of the rivers in Dubbo, the Macquarie. My mother-in-law and myself would have got fish for breakfast. You'd go down there, fish with a line, be down there for about fifteen minutes, up you'd come with a couple of big yellow-bellies, cod or catfish. It was so simple.

Vivienne Griffin

When Dad was alive we was right. We were pretty self-sufficient. We had a milking cow. We had fowls and that and Dad had a few pigs. But we lived a lot off the river because you had a variety of fish then. We had the yellow-belly, catfish and cod then, and they're very big fishes and would last a long time. But after dad died it was around about that time that they introduced carp and it wiped out a lot.

John Amatto

We had all different parts along the river we'd go fishing, just like anybody else. If it wasn't biting there then we'd go up a bit further. But, we used to make fish traps and everything. When they put Burrendong Dam in the river banks would get real dry and the water would come down and cut the banks away. When the river started drying and the fish started going it was a big change. A lot of the people changed their diets because the fish wasn't around.

Above: Soil erosion, Wellington, NSW, 1944.
Mitchell Library, State Library of New South Wales.

Wild resources mentioned in the interviews

(Species given in brackets after common names)

Food or medicine	Notes
Berries	Joyce Williams, Violet Carr, Joan Willie and Evelyn Powell mentioned several different types of berries which they ate when they were children. These included bungiens (possibly *Persoonia* sp), wild cherry (*Exocarpos cupressiformis* and *E aphyllus*), possum berries (*Myoporum debile*), native cranberry (*Astroloma humifusum*), and nightshade (*Solanum nigrum*).
Black swan	Joyce Williams remembers her grandfather getting black swans on the Macquarie River below Nanima in the 1930s.
Bush tomato	John Amatto said that he'd like to see the bush tomato (*Solanum* sp.) come back.
Duck	Joyce Williams and Vivienne Griffin remember ducks being caught on the Macquarie and Bell Rivers.
Echidna	Everybody mentioned the echidna as an especially delicious meat "tastes like pork". Echidna's were caught in 'the Pines' above Nanima and across the River.
Eucalypts	Evelyn Powell explained how all parts of eucalypts were used, including bark and wood for huts and leaves in cooking or to make tea or mattresses. John Amatto pointed out an old yellowbox on Curra Creek from which people cut bark to use as a medicine for diahorrea.
Fish	Everybody mentioned that native fish species, such as yellow-belly, catfish and cod are still caught today, albeit in lower numbers than used to occur.
Goanna	Goanna is known by the Wiradjuri name "goo gah" and is another meat that is still relished. Today, Paul West gets goannas (the tree goanna) for the elders in Nanima and Wellington.
Mistletoe	John Amatto has used mistletoe to treat scabies on his daughter. Bill Carr remembers that the berries were eaten when walking cross country between properties when working or hunting.
Milk weed	Everybody mentioned milk weed (*Euphorbia drummondii*) as a treatment for minor cuts or sores.
Mussels	Evelyn Powell remembers diving for mussels in the rivers when she was a girl.
Nut grass	John Amatto said that nut grass (*Hypoxis* sp or *Cyperus* sp) grew along the rivers. As a young man, John used to roast the tubers when he was low on other supplies.
Old man weed	Evelyn Powell mentioned that old man weed (*Centipeda cunninghamii*) was used by people when she was growing up as a medicine for treating skin complaints.
Possum	Bill Carr said that he used to catch possums for tucker when he was working on properties in the south west of the state.
Quandong	Everybody mentioned quandong (*Santulum acuminatum*). Very few trees grow around Wellington. They tend to grow in the west of the region near Peak Hill. John Amatto remembers one tree on a property on the other side of Mt Arthur which has since been removed. Evelyn Powell and Bill Carr have fond memories of getting the fruit around Peak Hill. Joan Willie remembers using the seeds to play a game, Bully One and Bully Two, when she was a girl.
Rabbit	Rabbits were commonly caught during the Depression years and War for their pelts. Rabbits were eaten as a staple up until Myxomatosis reduced their numbers in the 1960s.
Turtle	Evelyn Powell remembers that turtle was caught on the rivers for tucker when she was a girl.
Yathanda	The leaves of yathanda (*Eremophila longifolia*) were mentioned by a number of the interviewees as a highly valued medicine for treating skin complaints and is still collected by people today.
Yams	Evelyn Powell remembers getting yams: chocolate daisy (*Dichopogon fimbriatus* and *strictus*); and wild turnip (*Brassica tourneforti* or *Rapistrum rugosum*) when she was living on the Macquarie River as a child.
Yabbies and crayfish	Violet Carr remembers getting yabbies near Peak Hill. John Amatto and Rose Chown both remember getting yabbies from Bushrangers Creek. Vivienne Griffin remembers that people living on the Town Common often caught yabbies in the nearby creeks, dams and river.
Yarran	Evelyn Powell remembers that yarran wood (*Acacia homalophylla*) was favoured by her husband, Fred Powell, to make boomerangs. Her mother used the gum from acacia to make a sweet drink.

Medicines in the bush

Above: *Eremophila longifolia* is valued as a medicine plant.

BILL CARR: There were not many of our people around in them years that went to the doctors. They'd find their own medicine in the bushes.

Most people's recollections of bush medicines were qualified by their current concerns about lack of access to these resources.

Vivienne Griffin

It's important knowledge and there's a lot of it out there. It's important for our people to know all their medicines and at some point to get together. On the road to Dubbo there is an emu bush. People from all over, Aborigines, you know, come to that one spot because that's the only spot where they know to get this emu bush. Its good for a lot of things. One Aboriginal gentleman was experimenting with that for his blood sugar. It got to one point where he was grounding it down to make tablets out of it.

Paul West

There are only a couple of medicine plants that are left around here. Like the yathanda bush. You've got to travel half way to Dubbo to find one little bush on the side of the road. There is a lot of elderly people who know where it is and the best time to get it is when the new shoots are coming off and so you think you are getting there first but all the new shoots are cut off … There used to be more of this stuff in the road reserves. I remember my dad taking us over to Peak Hill and coming back with a boot-load of leaves. I was just a young fella at the time.

Joan Willie

Goanna oil was used quite a lot, especially for arthritis. I can remember smelling goanna oil quite a lot on my grandmother. Sometimes they used to just get the goanna fat and they used to buy the goanna oil as well.

Evelyn Powell

There's that certain time of the year that I get a real taste for goo gaa and that's round about spring time, when I know they're coming down off the trees. It's then that I often say to my son, "Son you'd better get me a couple of goo gaas, I'm real hungry". But, you can't go and shoot them now like you used to. They're protected. Somebody should start a goo gaa farm.

John Amatto

You can eat the berries off those mistletoe. And you can use the leaves. I used that on my daughters. That was back in the 1950s for scabies. It was bad then. They sent her home from the hospital just like a little mummy, wrapped in bandages, and they said we had to rub this cream over her and give her these antibiotics. But I went and got the mistletoe, boiled it up and washed her all over with it and just lay her there. Didn't wrap her up or anything and within a week she was better.

… There used to be a lot of medicine plants out there at Mount Arthur, but a big bushfire's been through and burnt everything out.

Concerns about access to foods & medicines

The Wiradjuri participants explained that it was difficult to find plant foods and medicines close to Wellington. The focus page about bush medicine contains people's views on this topic. Many people believe that clearing has severely restricted their ability to find valued plants. Paul West stated that it is now even difficult to find these plants in roadside reserves or on travelling stock-routes. A number of the interviewees talked about an emu bush on the road between Wellington and Dubbo and stated that it is the only one of a few that people can find and access in the area. There would seem to be a real link between loss of access to plants and declining use of these resources today, especially by those who have not had a childhood exposure to them.

Above: Community members at the March for Reconciliation, Wellington, 2002.

> ***Paul West:*** *There are few medicine plants around today that I know of. Stock have got to them and a lot of farmers don't realise what they are and have poisoned them. Ploughed them into the ground and burnt them or whatever. A couple of months ago I took a school group up to Mount Arthur for a bush medicine course and we only found three things that were any good. Too many feral goats and pigs running through there.*

Importantly, the opportunity to continue using wild resources was highlighted as a major concern. People wish to continue fishing, hunting and collecting plant foods or medicines. Such activity has been described as both an expression of cultural identity, and as simply a part of life. Paul West and Rose Chown emphasised the role that these activities can play in giving young people a sense of their own cultural identity. Paul is actively involved in taking school children on bush trips where they are shown how to find plant foods or track a goanna. He also takes this type of knowledge into the classroom by giving talks and cooking wild foods. The focus page, opposite, contains Paul West's views on his experience.

The Wellington Town Common is also seen as potentially playing a major role in allowing local Wiradjuri people to access and use plant foods and medicines. Rose Chown has indicated that there are plans to revegetate sections of the Common with valued plants. This is seen as an opportunity to combine environmental restoration with the promotion of cultural practices.

> ***Vivienne Griffin & Rose Chown:*** *I do think our traditional medicine is important. I've come across a lot of young people who have asked me what would you use to treat this and that. They have often tried other medicines that don't work. They ask me specifically whether an Aboriginal medicine be of use and are inquisitive enough to want to know and try it. It's important, I think, to pass this on to the young ones. One of the main aims here is to reintroduce bush medicines back to the Common, after we've controlled the stock, because I believe there was a time when everything we needed was here.*

At Nanima and the local high school, Joan Willie indicated that she would like to see the establishment of bush tucker gardens that would allow children and teenagers to have the experience of identifying and using plant foods.[128]

> ***Joan Willie:*** *When I was a child we had absolutely nothing, but what we did have was the time to be able to walk around, to play, or to go and look for fruit and berries and I would really dearly love to see that restored. Especially here in Nanima where a lot of the kids don't have much of a playground. As a start, you would have to get the gardeners to do it. The gardeners who have a love for wanting to see things be productive and beneficial for the kids. There's always land here set aside for that sort of thing. But it really would need the right people to look after it and turn it over and you would need to fence it off. You would also need to discipline the kids if you were going to put a project like that up … I'm also interested in putting a bush tucker garden in the high school. We have to grow these plants to get regular access to these foods because other areas like Mount Arthur are off limits or protected.*

Keeping it going

Above: Children outside Nanima School, 1965.
Mitchell Library, State Library of New South Wales.

Paul West is the Aboriginal liaison officer for the Police Force in the Wellington area. Paul was born in 1962 and lived at Nanima for 20 years. He feels strongly about passing on cultural knowledge to young people.

Me old man and me grandfather taught me a fair bit about bush tucker out at Nanima. I'd say that was one of our daily things we did out there. Just going and fishing a little bit. … Grandfather Fred West he'd take us out and taught us how to clean goannas and porcupines and the best way to cook them … If one person had a car then they'd all throw in for fuel and they'd all go out hunting. On the odd occasion they'd have a spare seat and throw me or me brother in or one of the younger kids from Nanima. They'd mainly go on roadways. Mainly on dirt tracks, farmers tracks or on stock-routes. Back in those days no one harassed us or nothing, but it must have been about 20 years ago, me brothers and that got a couple of goannas, and a cocky rang up and when we came into Wellington, the coppers got us on the corner. We had five goannas and we were charged with taking fauna. The court case went for five years but it was eventually thrown out. Our case was that it was our native tucker. They didn't want us getting them as long as we got them the traditional way, but I said, hang on a minute, you lot educated us. Its just the way it is today.

Today, I run a program through the holiday period called Breaking the Cycle. I take the 19–22 year old kids through the bush tracking down animals. Goannas and porcupines. They don't know about their culture and if I don't pass what knowledge I have on to them they'll never know. Because the culture is slowly dying and I'm trying to keep it going.

Everything I know I'm passing on to my family, my kids. I'm just trying to pass it on to the younger kids … I take them out down the bush tracks where I remember my dad and my pop and the old people taking me out there. So it's like an imprint.

When we're tracking it down and they're walking and scratching their heads and thinking "na there's nothing out here, they're having a go at us", and when we do find what we are looking for, the expression on their faces makes it all worth it. When I do the cultural trips with the kids I get the PCYC involved with their bus. Sometimes it's a 16-seater and its chocabloc full of these kids coming out. Some are just there for a look and to see what happens. Others just want to get away from the town for the day, but if I get one or two in the group who want to carry on with it then I think the trip's been successful.

Above: Goanna. Photograph by P Green.

Archaeological sites

Learning how Aboriginal sites are distributed in the study area was an important step in assessing the implications of salinity for the local archaeological record. The map produced during the case-study showed that there is a very strong correlation between salinity outbreaks and areas with a high potential for open sites and archaeological deposits.

What can archaeology tell us?

Consideration of the nature and distribution of pre-contact archaeological sites in the study area formed another element of the project. Pre-contact Aboriginal sites such as scarred trees, artefact scatters, burials and axe grinding grooves represent a major element of this country's cultural heritage and are highly valued by Aboriginal people. In some cases they represent locations to which people return to make contact with their heritage and to pass knowledge on to younger generations.

These places can show us how Aboriginal people lived, managed the land and interacted with one another over many thousands of years. They constitute a physical reminder of Aboriginal people's long occupation of this continent, and are woven into people's contemporary identity and perception of the cultural meaning of land.

By analysing the location and distribution of archaeological sites across a landscape, we can develop theories or models about Aboriginal people's land-use strategies and aspects of ceremonial life. Often, such analysis will be combined with interpretation of ethnographic and historic accounts of Aboriginal life, as well as oral history.

The discovery and recording of Aboriginal sites, in Central West NSW, has generally occurred during environmental impact assessment. Today, many sites remain undiscovered in the region. A number of larger academic or management studies have occurred. These include a Phd thesis by Pearson, an investigation of the Wyangala Dam area, and a survey of Goobang National Park.[129] The latter studies did not aim to investigate archaeological material across all of the different environments present in the Central West.

Pearson's study is the most comprehensive and demonstrates the nature and distribution of archaeological sites in the Wellington area, and elsewhere in the upper Macquarie River valley. He used ethnographic and historic accounts of Aboriginal people in the region and an analysis of primary environmental variables to construct a settlement pattern which he argued would produce a particular archaeological signature. He points out that such analysis is hampered by the fact that European observers failed to look at settlement and land-use strategies in detail, even in the earliest years of occupation when Aboriginal people were still able to use much of their country.

Pearson proposed that the Wiradjuri would have sited their camps within short distance of both water and a range of ecosystems. Today, we can expect to find traces of ancient campsites in areas adjacent to major watercourses and along associated stream networks. Some parts of the landscape would have been favoured, such as the junctions of major creeks with rivers, where access to water, woodland, grassland and riparian vegetation were within easy reach. Ceremonial sites, such as stone arrangements, generally occur in areas away from main living sites. Early settlers at Wellington reported the presence of a bora ground "near the rich green banks of the Macquarie River". This indicates that in some cases, ceremonial sites were not hidden in rougher, less accessible terrain.

Pearson sought to test his hypotheses with site survey work. In the Wellington Valley he found that most open campsites tended to occur in flat areas adjacent to watercourses. A smaller number were found in hilly or undulating terrain, often overlooking or adjacent to valley floors. He interpreted the latter as representing the need to camp above the cold river flats in winter, to gain shelter from prevailing winds, and obtain views of the surrounding country.[132]

Apart from Pearson's investigation, only isolated environmental impact projects and a small number of individual site recordings provide archaeological data on the Wellington area. To date, Pearson's simple model of site distribution lies unchallenged. In reality, the Wiradjuri would have engaged in a complex pattern of land-use shaped by seasonal variability and social rules and relations. How such

patterns would manifest in the archaeological record of Wellington requires further research and investigation.

The analysis of assemblages, by means of surface recording, excavation and site comparison, allows the interpretation of the content and meaning of open sites. It is difficult to assess the significance of archaeological sites in regions where such research is absent. Accordingly, it is hard to make management decisions about individual sites. How does a land manager know if a site is locally or regionally significant? Does remediation of a salinity outbreak require special attention to archaeological issues?

During this project two steps were used to give land managers, the community and government a basis for understanding the pre-contact archaeology of the Wellington area and the development of appropriate management strategies. The first was to develop a basic map of archaeological sensitivity for the local region. The second involved detailed assessment of two sites exposed on salt scalds and an ensuing analysis of the value of such investigation on a wider scale. Both are discussed in detail below.

Mapping archaeological sensitivity

Constructing a map of archaeological potential was an important step to assess the implications of salinity for the local archaeological record. Ailing Hsu, Geographic Information System officer, undertook the mapping in collaboration with the study team.

The map takes in 13,000 km^2 that spans most of the Wellington local government area and a section of the Dubbo's local government area. A total of 241 known open site locations and 1000 randomly selected "pseudo sites" were used as the basis for statistical analysis following a logistic multiple regression technique. The analysis aimed to determine what environmental factors influence site location. It compared the location of the known and "pseudo sites", taking into account environmental variables such as slope, aspect, landform (terrain position), soil type, stream order and distance to water. The slope and aspect data were derived from a digital elevation model and all analysis was done over a 25-metre grid cell.

The results confirm that the known sites have different characteristics compared to the "pseudo sites". Moreover, they suggest that a set of environmental factors is common to most known sites. The four variables exhibiting this difference were ruggedness, distance to water, soil type and landform. The mean values for other variables, such as slope and aspect, did not differ between the known sites and the "pseudo sites".

The study concluded that open campsites are located significantly closer to water and on flatter terrain than the "pseudo sites". The analysis generated a map that divides the study area into zones of high, medium and low potential to contain surface and sub-surface open campsites or artefact scatters.

The map was then compared with the salinity outbreak data for the study area. This revealed that there is a very strong correlation between salinity outbreaks and areas with a high potential for open sites and sub-surface deposits. Overall, 77% of known mapped salinity outbreaks correspond with areas of high potential archaeological sensitivity.

It is important to note that the map does not consider other site types such as burials, scarred trees, axe grinding grooves and rock art. Too few of these site types were present in the study area to allow statistical analysis. Equally, it does not model potential variation in open site assemblages that may reveal specific land-use strategies.

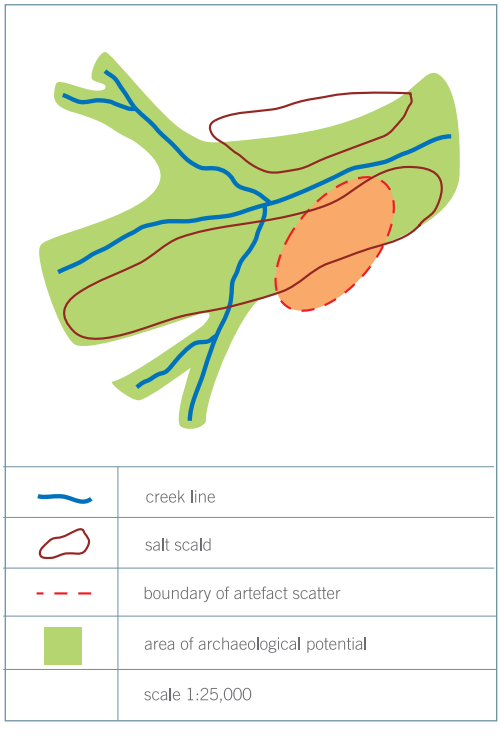
Despite this, the map is a useful planning tool, especially when used as a layer in a Geographic Information System. For example, it can help determine whether new salinity outbreaks have a high potential to affect open sites and deposits. It is also a basis for designing catchment or sub-catchment archaeological recording programs. This issue is discussed in Chapter 4.

Analysis of salinity-affected sites

Two separate artefact scatters (open sites) exposed on salt scalds were recorded in detail. This study had two aims. The first was to determine the effects of salinity on open sites. The second was to determine if archaeologists can obtain useful information from such sites. This component of the project has helped develop the management options presented in Chapter 4.

Importantly, the purpose of this study was not to provide region-wide data on open sites. It had a specific salinity focus, while, at the same time capturing detailed information to build a framework for open site research in the area.

The archaeological work is detailed in two separate reports commissioned by the DEC.[133] The fieldwork involved sampling areas of artefact concentration



Above: Diagram based on mapping of "Easterfield" showing the correlation between the boudaries of the visible stone artefact scatter, predicted areas of archaeological potential, and dry-land salinity outbreaks.

on both scalds, and mapping their location onto surveyors' plans. The resulting maps allowed analysis of the spatial patterning of artefacts. A second stage was commissioned after heavy rain had fallen in the region. It was decided that this provided an opportunity to use the baseline recording work done at one scald on "Easterfield" to assess whether later artefact movement could be detected.

The study had a number of important conclusions about the affects of salinity:

- The death of vegetation and erosion of soil has a cumulative impact on archaeological deposits (A Horizon soils). This causes a break-down of archaeological deposits and the exposure of artefacts on hard B Horizon surfaces. Artefact displacement is greatest where the eroded surface is sloping and where there are land-uses like grazing.
- The research potential of these sites reduces as this process advances.
- The research value is higher in areas with remnant archaeological deposits (A Horizon soils) where the impact of salinity-induced soil erosion is not as advanced.
- Artefacts lying on the exposed scalds have moved a minimum of 2–5 metres due to erosion, stock trampling and ploughing. In general, the distribution of artefacts reflects little about original site structure. Any subsequent movement by remediation activities, such as minor ripping or replanting, is unlikely to cause greater movement of artefacts than has already occurred.
- The second-stage analysis at the "Easterfield" scald confirms that the distribution of artefacts is constantly changing. What is present at any one point in time is likely to reflect taphonomic processes rather than original site structure.

The archaeological assessment reveals that it is possible to obtain a limited amount of data through surface recording at open sites affected by salinity. The research value of such sites relates to the level of disturbance caused by erosion and other factors. The analysis of the assemblages allows us to make only general conclusions:

- Broad variation in the artefact assemblages at the sites might reflect diverse occupation events or types.
- Different stone materials dominated at each site, suggesting their proximity to dissimilar stone sources.
- Overall, assemblage content is affected by 150 years of artefact souveniring.
- Aboriginal people used creek networks extensively. This may have involved the extended occupation by large groups.

The results suggest that artefact scatters, especially on long-established scalds subject to grazing pressure, have a limited capacity to provide information about site structure and stone working techniques. Plotting the exact distribution of artefacts is not worthwhile. Instead, archaeologists should strive to record samples of artefact types in defined areas of the scald. Such analysis would allow us to develop a general understanding of assemblage characteristics, but this may be the extent of useful data retrievable from such locations. The recovery of more complex archaeological data is possible by excavation of relatively intact deposits. Such deposits occur in unscalded areas or even within remnant soil islands associated with scalds.

This study did not involve excavation. Accordingly, we did not assess the archaeological value of ploughed soils located off-scald, or within soil islands associated with the scalds. Existing research

into the effects of ploughing on archaeological deposits suggests that artefact displacement through this activity is not always significant, or can at least be surmised and hence factored into archaeological analysis during excavations.[134] While there is ongoing debate about the effects of tillage on deposits, this would suggest that even in ploughed landscapes, the onset of salinity and/or soil erosion would have a greater impact on the archaeological record than ploughing. Hence, the prevention of salinity extending into ploughed areas could represent a good cultural heritage outcome. Of course, this would be higher if the areas being saved from salinity had never been ploughed, as they would have an even greater likelihood of containing interpretable archaeological remains.

In Chapter 4 we put forward ideas for ensuring a realistic and structured approach to managing archaeological sites in salinity-affected regions. This approach requires commitment to a certain level of archaeological assessment in priority landscapes, as well as support for salinity management which would help ensure the retention of as yet unaffected areas of the archaeological record.

Salinity in the Wellington district

Analysis of land management options has been progressing in the study area for a number of years. When combined with actions targeted at cultural sites and values, there is a good possibility of repairing or preventing the effects of environmental decline on Aboriginal heritage values.

Salinity has been identified as one the greatest environmental threats facing Central Western NSW. A salinity audit conducted by the Murray-Darling Basin Commission Ministerial Council predicts that the Macquarie, Bogan and Castlereagh catchments will eventually have some of the highest salt-load levels in the basin. This means that salt levels in many parts of these catchments will exceed World Health Organisation standards for drinking water and also cause serious ecological damage.[135]

Salinity was first identified in the Central West in the 1920s. The management of salinity in the region gained a level of government and community attention after the establishment of Salt Action funding and the Decade of Landcare that commenced in 1990. It appears that salinity was one of the major issues identified by Landcare groups that formed in the region at this time. A number of planning studies has been conducted in the region which aim to address the problem. These include a salinity risk assessment of the Macquarie, Bogan and Castlereagh catchments.[136]

Above: Stone artefacts and the remains of hearths (foreground) erode out of the upper 30 to 40 centimeters of the soil profile and lie exposed on the hard surface of scalds.

The Wellington case-study is located in the mid-catchment area. Salinity outbreaks are widespread in this part of the catchment and manifest as scalds, vegetation changes and saline seeps. Increased salt loads in streams have also been detected. The case-study takes in sections of five sub-catchments; Goolma Creek, Little River, Bell River, Maryvale-Geurie and the Burrendong Dam Storage Tributaries. Of these, four have a high or very high salinity hazard rating and one has a medium rating.[137]

Dryland and river salinity is dominant in the Central West, with increasing evidence of urban salinity also being noted in many towns. Salt damage to roads and structures in and around Wellington can be clearly seen. A recent survey of farmers in the Macquarie-Castlereagh region indicates that at least 497 farms in the area are salinity-affected.[138]

A range of issues complicates the management of salinity in this part of the catchment. The Salinity Risk Assessment report highlights the challenges for natural resource managers. Financial pressures on landowners are a significant impediment to change. Most landowners can commit only a small amount of their resources to on-farm salinity

mitigation. In some cases, salinity-affected land needs to be taken out of production. However, many landowners say that they cannot afford to do so.

Managing Aboriginal heritage in this context is just as complex as an attempt to manage natural systems. Salinity is only one factor affecting ecosystem health and sustainability of lands within the study area. Widespread loss of biodiversity, decline in stream health, and the effects of a long history of soil erosion are all threatening the region. This challenges landowners, government staff and conservationists to seek practical and balanced solutions to environmental degradation. The words of the Wentworth Group's report are especially relevant to areas of NSW, such as the Central West:

> *The development of new farming systems that do not harm the environment while generating income to support communities must be an urgent goal for rural Australia … We need to invest in landscape scale, regional recovery plans across the over cleared landscapes, by stitching back isolated patches of remnant bush, and by revegetating river corridors and recharge areas.*[139]

To conclude on a positive note, the investigation of land management options has been progressing in the Wellington region for a number of years. This work has included analysis of salinity impacts, revegetation trials, salinity remediation, the provision of advice and technical expertise to farmers, and the development of catchment management plans. The ensuing improvement to ecosystem health has the potential to achieve social and cultural outcomes for the catchment. This issue is discussed in detail in Chapter 4.

What are the effects of salinity on cultural values at Wellington?

Concerns about country and wild resources

Because salinity affects landscapes, it has the potential to affect Aboriginal people's notion of "country". Rivers, landforms and vegetation are integral parts of cultural landscapes, and in this sense they are associated with intangible values. This means that people may not simply be concerned about the loss of individual sites, wild foods or water quality. Rather, they may feel that a deeper aspect of their heritage is adversely affected.

Some of the Wiradjuri participants expressed this view. For example, Paul West and Evelyn Powell made strong statements about salinity. Evelyn's words, cited at the beginning of this book, encapsulate the depth of feeling on this issue. Such concern underlines the need to view Aboriginal heritage in a landscape context, and to base its management on a holistic approach that recognises both tangible and intangible aspects of people's sense of place. It also emphasises that efforts made to improve ecosystem health have the potential to generate social or cultural outcomes associated with intangible values linked to concepts like "country" and "well-being". Involving Aboriginal groups in environmental management recognises these values. Through such involvement, Aboriginal people can reclaim a custodial interest in the land and reinforce their cultural identity.

It is also necessary to consider the broad context when looking at the effects of salinity on wild resources. At present, this threat is perhaps strongest in the area of aquatic resources. Salinity is a significant issue in watercourses like the Macquarie River. However, there is little information about the effects on native fish species, such as Murray cod and yellow-belly. Some researchers have suggested that increased salinity may affect species distribution, breeding and long-term viability. The Wiradjuri participants provided anecdotal evidence of a decline in river health and the abundance of native fish over the last 30 or 40 years, citing the impacts of clearing and bank modification, gold dredging, flow regulation, and cooler water temperatures created by the release of cold water from Burrendong Dam. Salinity appears to be one of many threats to the sustainability of rivers like the Macquarie.

Our capacity to understand the current or potential impact of salinity on terrestrial resources like food and medicine plants, goanna, echidna and kangaroo is also limited. The oral history research in this study suggests that resources once favoured by Wiradjuri people, like quandongs, emu bush and goanna, have suffered local and regional decline due to the long-term effects of vegetation clearance and the general worsening of environmental health. Levels of current use have also been damaged by loss of access to land, changing lifestyle, variable knowledge about wild foods, overgrazing, intensification of agriculture, fire and feral pests.

Again, data on valued species is hard to find. The vegetation and fauna surveys undertaken in the Little River catchment in the western half of the

case-study area are perhaps a good indication of the scale of this decline. As noted earlier, this study found that most vegetation communities, in areas away from rocky or elevated terrain, have been cleared or left as patchy remnants in poor condition. There can be little doubt that wild resources associated with these communities, like goanna and echidna, have suffered significantly.

Salinity may be worsening the situation and further threatening the viability of valued species. It would certainly threaten remnant vegetation in valley floor and low-lying environments. Research has shown that past clearing has taken a heavy toll in these areas. Salinity is a potential source of stress for such vegetation communities and associated fauna. Equally, it has the potential to threaten vegetation on riverbanks and in road reserves and stock routes which, historically, have been areas accessed by Aboriginal people for an array of resources.

At a site-specific level, salinity does not appear to be threatening the medicine plant used by Wiradjuri people on the road between Wellington and Dubbo, but it may have already contributed to the loss of plants from other areas used by people in the past. However, people's capacity to keep using fishing spots, which have been used for generations, may also be impacted if river health continues to deteriorate due to the effects of problems like salinity. Associated riparian vegetation that provides shade for fishers and habitat for native fish may also be affected.

Underpinning all of this discussion is the reality that Wiradjuri people have steadily lost access to wild resource places since the 1960s, when work on farms in the region began to decline. Properties such as "The Springs" are areas where people could obtain goanna and other resources during their time working in the shearing sheds. It appears that the tradition of using these areas, and people's capacity to pass this practice on to young people, declined with the onset of restructuring in the rural workforce. It is also possible that the provision of social welfare benefits, from the 1960s onward, also reduced people's reliance on wild foods. From this perspective, specific aspects of wild resource use would have declined with, or without, the onset of salinity.

The loss of access to private land has increased the significance of access to Crown lands like road reserves and riverbanks. The fight by local Wiradjuri people to gain control of the Wellington Town Common exemplifies the importance of such lands. It is revealing that one of the key aims of those associated with the Town Common is to revegetate it with valued species and to allow access to foods and medicines.

Finally, a primary issue to consider at Wellington, is whether salinity affects Aboriginal people's desire to embark on projects of cultural renewal, such as replanting wild foods and medicines. Plantings need to be done with a full awareness of the salinity threat and how to combat it. This may require using salt-tolerant species, choosing locations very carefully, and blending food and medicine plants with other salt-tolerant plants. It may also be necessary to undertake mounding, ripping or other salinity management actions at the planting locations. Collaboration would be required between Aboriginal people and organisations like DIPNR and Greening Australia to meet this challenge. Moreover, research into the effects of salinity on terrestrial and aquatic ecosystems could provide important information for Aboriginal people seeking to employ sustainable and long-term wild resource use.

Effects on historic places and town infrastructure

It appears that the historic or post-contact places identified during the case-study are not affected by salinity. They include the post-contact camps at Bushrangers Creek, the Wellington Town Common, Blacks Camp, the convict stockade site and the market gardens. No visible salinity outbreaks were observed at these locations. Having said this, the Wellington Town Common and the Blacks Camp are characterised by heavily cleared landscapes, a lack of habitat for local species and limited capacity in their current condition to provide wild foods or medicines.

Nanima Village does not appear to be suffering directly from salinity although it is possible that watertables are high in this area and may threaten structures and services in the future.

In Wellington itself, Knuckey's Store has historical and social significance to the Aboriginal community due to its role in distributing rations during the first few decades of the twentieth century. It is likely that salinity affects this structure. A number of buildings are also directly associated with current Aboriginal

organisations and services. These include the Aboriginal Medical Centre, the Land Council building, Youth Centre and the Orana Aboriginal Development Corporation building. Salinity impacts to these structures may generate significant costs and might eventually threaten the capacity of these organisations to conduct their business.

Urban salinity and associated decline in drinking water quality, roads and open space may also have social impacts. The financial cost of remediating damage such as potholes in roads, weakened structures, dying street trees and park plantings may place a burden on local ratepayers and businesses.

Effects on archaeological sites

The modelling work undertaken for this project indicates that 77% of mapped salinity outbreaks coincide with areas defined as having a high archaeological potential. Seepages and scalds are commonly found on flats and banks adjacent to drainage lines, and in many areas it is possible to visit affected areas and discover archaeological material such as artefact scatters and, less commonly, hearths. The site assessment undertaken by ERM Australia confirmed that in scalded areas, archaeological deposits have been broken down and dispersed. The severity of this disturbance varies according to a number of factors. These include, slope, land-use history, and the severity of the salinity outbreak. The disturbance caused by ongoing erosion reduces the scientific significance of these sites.

For this reason, we need to try to balance the management of specific sites and the management of the surrounding landscape. Despite a long history of ploughing and grazing, large sections of private land contain areas of high archaeological potential. The erosion scalds act as windows and reveal that archaeological material exists as deposits at many points across the landscape, especially near water sources like major creeks. It is important to prevent the spread of salinity to currently unaffected areas of the landscape where archaeological material is relatively intact. Such deposits have a potentially higher scientific and cultural value than the assemblages of exposed artifacts. The fact that these deposits might never be subject to archaeological investigation does not diminish their value. The long-term survival of such deposits is dependent upon the control of erosion.

The vast majority of land in the study region is private freehold. This automatically means that achieving meaningful conservation of archaeological values across the study area would be largely dependent on the actions of private landowners. For that reason, it is important that cultural heritage managers work with landowners and natural resource managers to set practical targets for site recording and protection. In addition, it may be possible to take advantage of controls on vegetation clearance to protect areas of archaeological value on private lands.

On other tenures, different types of conservation options are available, especially in those areas where clearing and farming does not occur. A Geographic Information System analysis looked at the correlation between areas of archaeological sensitivity, land tenure and remnant native vegetation in the Wellington study area. The analysis showed that together, council-managed land and Crown lands make up less than 1% of the local government area. Importantly however, 70% to 80% of this land could contain open sites and buried archaeological deposits. The archaeological sites on these tenures are likely to be in better condition than in surrounding areas where more intensive land use has occurred. This demonstrates a need for local government to be aware that even though their land holdings are small, they nevertheless have responsibility for a landscape value that is facing many threats or impacts elsewhere within the region.

As part of the GIS analysis, we looked at the correlation between areas of remnant vegetation and archaeological sensitivity. The location of remnant native vegetation was determined using the Eastern Bushlands Database. This dataset shows that nearly 80% of lands with a high archaeological potential occur in areas mapped as non-forest or degraded vegetation systems such as farmlands. The biodiversity survey undertaken in the Little River Catchment indicated that the vegetation communities which occur adjacent to streams and rivers are reduced by 90% of their pre-settlement coverage. Today, most vegetation lies on elevated and rocky terrain. This terrain may contain site types such as stone quarries and stone arrangements, but has low potential to contain buried stone assemblages. All elements of the GIS analysis point to the fact that the conservation of a representative sample of open sites is largely dependent on the co-operation of private landowners.

Potential impacts of salinity on key pre-contact site types in Central Western NSW

Site type	Salinity impact	Considerations
Open artefact scatter/ camp site	– Erosion of soil profile and potential lagging of artefacts on B-horizon. – Mixing of archaeological material from different time periods and events. – Vertical and horizontal artefact displacement and damage to spatial integrity both within soil profile and on lag deposits. – Exposure and erosion/destruction of hearth material.	– Depending on scale of impact, some spatial integrity may be retained on lag surfaces: eg knapping floors may be identifiable. – Dateable hearth material may be retained. – Data may still be obtained from large sites that are regionally useful and indicative of settlement strategies and stone artefact industries. – Areas of archaeological potential may be retained in deposits on the edges of affected areas such as scalds. – High cultural value may be ascribed to some sites.
Scarred trees & carved trees	– Tree death may be caused/accelerated by waterlogging, scalding and associated erosion. – Tree stability may be undermined by soil erosion causing tree fall. – Negative effects on tree health may make them more susceptible to insect attack, stock damage and fire damage.	– Dead trees can still be recorded and increased data about distribution may provide insights to settlement strategies. – High cultural value may be ascribed to some scarred trees. – All carved trees have a high cultural and scientific value.
Rock engravings & axe grinding grooves	– Associated erosion may undermine stability of engravings on rock platforms and also increase the deposition of sediment on art surfaces, which promotes chemical weathering.	– Affected sites can still be recorded and managed and retain a high scientific and cultural value.
Rock art	– Salt absorbed into shelter surfaces or boulders can damage or destroy engraved, drawn and painted motifs.	– Affected sites can still be recorded and retain a high scientific and cultural value. – Strategies for combatting salt problems at art sites can be employed and lead to long-term protection.
Burials	– Erosion leading to exposure, bone fragmentation, loss of grave goods and site destruction. – High salt loads break down bone material in the soil as salt crystals form between the layers in bone structure. As the crystals form, they can expand and separate these layers.	– Ancestral remains have a high cultural value and need to be treated with respect. – Where exposed, burials should be managed either through stabilisation or reburial.
Story places & ceremonial sites	– Salinity can severely damage associated archaeological sites such as scarred and carved trees as described above. – Salinity can damage associated vegetation, landforms, water bodies or streams that can embody the physical fabric of these places. – Associated biodiversity, including bush foods, medicines and totems can be affected/killed.	– Story and ceremonial places have a high cultural value and need to be treated with respect and actively protected.

The retention of native vegetation and control of soil erosion would help the survival of surface assemblages, archaeological deposits and other forms of pre-contact sites. Salt scalds, gullies and other signs of degradation currently pockmark the areas where open sites and archaeological deposits are most likely to occur. The overlay of salinity outbreaks with areas of high archaeological

potential demonstrates this. In effect, we are looking at a landscape value that currently exists in patches, but would continue to degrade if salinity worsens.

To conclude, other Aboriginal sites, such as scarred and carved trees, burials, sub-surface archaeological deposits and art sites need to be factored into our understanding of the potential impacts of salinity on a landscape scale. The table on page 65 contains a summary of these site types and the potential impacts of salinity. Importantly, any management action must recognise that the remediation of salinity outbreaks, through revegetation and other actions, could help preserve large areas of archaeological value.

Chapter 4 looks in detail at how we can approach the effective management of salinity so that cultural values and places are considered. It seeks to take a pragmatic approach that weighs up the severity of current impacts with future impacts, and recommends that we adopt strategic management of salinity and cultural heritage on a landscape scale.

Conclusion

Our approach to land management should be guided not just by economics or science, but by an awareness of the complex social values which shape people's attachment to place, and their approach to land-use.

The Wellington case-study has formed an important part of the project. It has allowed us to pursue collaborative research to explore the nature and scale of a range of cultural heritage values in a landscape experiencing significant salinity impacts and threats.

Some of the key outcomes of this component include:

1 the collection of cultural heritage information relating to Aboriginal post-contact places, the lifestyle of Aboriginal people in the area in the post-war period, the use of wild resources and community attitudes about environmental change
2 an evaluation of archaeological issues associated with the formation and remediation of salt scalds; and
3 an appreciation of the relationship between environmental health and cultural values.

Perhaps one of the strongest messages to come out of the study is that landscapes, and the social groups occupying them, are constantly changing. Underlying such change is evidence of continuation in people's sense of attachment to place and the ways in which they seek to maintain a sense of community and individual identity.

We need to be aware that just as change has occurred in the past, it will continue. Local landscapes may degrade further or improve, people's needs and aspirations may evolve in new ways, and planning systems may undergo significant alteration. We cannot be sure of the needs of future generations but must try to ensure that the concept of inter-generational equity plays a role in shaping our thinking. Many of the Wiradjuri participants in the study emphasised this point. They talked about the need to ensure that young people today, and future generations of Aboriginal people, are able to nurture and enjoy a cultural dimension to their life. While much of their perspective about culture and the land is shaped by what they have experienced in the past, Aboriginal people, perhaps more than many, have a strong appreciation of the concept of change which stops them from being complacent. They have seen how the opportunity to interact with the land and rivers, or express cultural identity, has been restricted over time by government policy, social injustice, economic change and environmental degradation. Their argument for a long-term perspective on land management, which reflects future social needs, should not be ignored.

There is a parallel here with the words of many ecologists and environmental activists, perhaps best expressed in the call of the Wentworth Group's need for vision and a move away from short-term gain. Some ecologists acknowledge the need to explore strategies for changing dominant social attitudes and practices. One approach that is being explored is the idea of 'ecological citizenship'.[143] What this illustrates is the inherent link between social and environmental planning. Our approach to land management should be shaped not just by economics or science, but by an awareness of the complex social values which shape people's attachment to place, and their approach to land-use.

4 Looking ahead

Environmental problems like salinity can be managed to achieve a range of cultural heritage benefits. The purpose of this chapter is to explore this idea. While some of the discussion focuses on salinity and its impacts, this chapter looks more broadly at how to integrate Aboriginal cultural values into the framework of natural resource management in NSW.

Left: Corina and Crystal Cunningham helping to plant native trees at their local park.

Introduction: balancing site-specific & catchment-scale planning

The previous chapters provide us with an opportunity to carefully scrutinise aspects of current approaches to land and heritage management in NSW. We can use the issue of salinity as a foundation for considering how the management of natural and cultural heritage can be integrated at both local and catchment scales. In this chapter we consider two key issues:

1. How to correlate natural and cultural heritage management and measure outcomes against management goals; and
2. How to collect cultural heritage information in a systematic and comprehensive way so that decisions can be based on a certain level of understanding of heritage values and the types of social impacts stemming from environmental degradation.

As an example, we can assess the heritage implications of salinity remediation such as engineering solutions, alteration of cropping and irrigation practices and revegetation. We also need to look more broadly at how strategic planning on a catchment scale might recognise and consider Aboriginal values. Both levels of assessment are important.

The fundamental argument made here is that cultural heritage management generally should proceed with:

1. a commitment to recognising and achieving approaches to land management which reflect the link between heritage values, people and the environment;
2. a commitment to balancing local site-based issues with a catchment-scale view of conservation and planning priorities; and
3. an awareness of the data and information needs required to support the above. This implies a commitment to community involvement and an assessment of a broad range of heritage values.

Above: "New tree, can you help mend this salty land?"

If these principles are adopted then a myriad of environmental problems like salinity and the loss of biodiversity can be managed to achieve a range of cultural heritage outcomes.

There have been important developments in the framework of natural resource management in NSW that have implications for cultural heritage planning. In recent years, Catchment Blueprints, Regional Vegetation Management Plans and Water Management Plans were prepared for most parts of the state. These plans aimed to achieve sustainable land-use, greater economic certainty for producers and communities, and the protection of natural and cultural heritage. The quality and scope of these plans varied, as did their attention to cultural heritage values and principles. Nevertheless, they reflected a new awareness of the need for strategic planning on a catchment or regional scale. Subsequent restructuring of government agencies has lead to a revision of these plans with a continued commitment to broad-scale planning through the formation of Catchment Management Authorities.

The ideas presented in this chapter have direct relevance to the future work of these authorities.

This chapter includes strategies to help manage cultural heritage on a catchment scale, and identifies the cultural benefits that may come from natural resource management. Importantly, cultural heritage managers need to be involved in natural resource planning to ensure that actions to redress environmental problems like salinity consider cultural values.

A strategic approach to cultural heritage management would better balance site-based and catchment-scale issues. This is equivalent to balancing the management of individual species with that of the wider ecosystem on which those species rely. Using this argument at its most basic level, work done to restore or conserve an individual cultural site can be undone if attention is not also given to landscape-scale threats that may affect both the site itself, and its environmental and social context. It is important too, because landscapes in their entirety can be culturally meaningful. In the long-term this approach may benefit heritage well beyond those associated with localised actions like fencing an archaeological site. For example, the management of remnant vegetation and enforcement of clearing regulations may protect large and significant portions of the archaeological record, promote river health, help limit the spread of salinity, and help protect culturally valued species of flora and fauna. Aboriginal communities would value all of these outcomes. It also allows us to consider a holistic concept of heritage. As the Wellington case-study revealed, Aboriginal people's lifestyle, culture and well-being are tied not only to individual places and sites, but also to the health and management of landscape features like rivers and remnant vegetation.

These arguments can be illustrated by considering people's concerns in Wellington about their ability to fish at a favourite spot on the Macquarie River. At the level of individual fishing locations or sites, we may identify problems like bank erosion, lack of habitat for native fish, local paucity of native fish species, localised pollution sources or issues of access. It may be possible to address some of these problems at the site-based level.

At a landscape scale we may identify broader problems with the health of the river system which may affect people's ability to fish and actually undermine any work to improve individual fishing areas. Issues such as environmental flows, river regulation, salinity and turbidity may all be factors that need to be considered. By actively assessing

their effects on social and cultural values, we can identify potential social impacts that can then be factored into decision-making about river management. This prompts decision-makers to consider developing social indicators of river health, which have catchment-scale application. Such an approach acknowledges that cultural values associated with a landscape are as much affected by the dynamic processes of environmental degradation as those features that we class as being natural.

Linking cultural heritage management to catchment planning

Salinity is a process of environmental degradation that needs to be tackled at both local and landscape levels.

Problems like salinity represent a part of a complex system of landscape change. Clearing of vegetation can accelerate salinity problems that manifest at scales much larger than an individual property. Salt loads in rivers and streams can affect whole catchments. Such chains of cause and effect require us to understand the link between land-use, environmental degradation and conservation at a scale that matches landscape processes.

Over the last decade, the concept of "landscape" has become increasingly important within the field of natural resource management. Systems theory, which acknowledges the complex structure of environments and connections between natural and human systems, has received growing support. As noted in the first chapter, concepts like "ecosystem management" and "adaptive management" have come to the fore over this time and have influenced the commitment of the NSW Government to cross-tenure planning at scales that reflect ecosystem processes. Largely, these developments reflect the maturation of the concept of total catchment management that was enshrined in legislation by the Catchment Management Act 1989 (NSW). The development of Natural Resource Management Plans, such as Catchment Blueprints, and ongoing discussion about "integrated environmental management", represent attempts to give this practical effect.

One of the objectives of the Aboriginal Heritage and Salinity Project has been to examine how to manage cultural heritage on a catchment scale. Part of this involved looking at the Natural Resource Management Plans which attempted to link cultural heritage management to landscape planning.

Some of the plans simply recommended improving communication between natural resource managers and the Aboriginal community. They suggested the development of protocols to guide consultation and collaboration. A common recommendation was to establish regional Indigenous committees to help natural resource decision-making. Others took the next logical step and recommended direct community involvement in environmental programs. For example, some of the plans list Aboriginal community organisations as supporting bodies in natural resource management programs. These programs include:

- revegetation and rehabilitation of riverine corridors, wetlands, beaches, coalmines and saline areas
- management of outflows from dams
- management of regulators on rivers
- monitoring of storm water quality; and
- development of management plans for endangered species, fire and pests.

Importantly, many of the plans recognise that successful integration of cultural heritage management with natural resource management is dependent on two factors. Firstly, training and resourcing interested members of local Aboriginal communities. Secondly, raising awareness and understanding within the broader community about Aboriginal cultural heritage.

The remaining sections of this chapter build on some of the actions suggested in these Natural Resource Management Plans. We suggest a series of strategies which could be adapted to fit approaches to catchment management. In part, this has been necessary as the challenge to integrate natural and cultural heritage in this context is still in its infancy.

Land management scenarios

Above: A typical stand of trees that might be found on farms throughout the Central West of NSW.

Above: A small salt scald in a trial rehabilitation area near Wellington, NSW. The area is adjacent to eroded ground revealing stone artefacts which were recorded during this project.

Scenario 1: Retention of native vegetation

A vegetation plan may identify a significant stand of bushland on a private property. The retention of this vegetation is recommended as it contains threatened species and may help prevent further erosion of an adjacent watercourse. This bushland also contains a number of species, such as quandong, geebung and emu bush, which are valued by local Aboriginal elders as sources of fruit and medicine. The elders find it very difficult to collect a variety of plants, such as these, elsewhere in the local area.

→ The retention of this vegetation would have a direct cultural benefit if local Aboriginal people were allowed onto this area to collect wild fruit and materials. This might be achieved through the establishment of a land-use agreement between the property owner and some of the Aboriginal community members.

→ Retention of this vegetation would have an indirect cultural benefit for its contribution, at a general level, to preventing further decline in the health of "country".

Scenario 2: Management of a salinity outbreak

A private property owner identifies an area of soil erosion (scalds and gullies) associated with a salinity outbreak adjacent to a watercourse. Aboriginal stone artefacts are found on the surface of the scalds. Salinity control measures are recommended to manage the problem. These works involve replanting salt-tolerant pasture grasses and native trees within, and adjacent to, the erosion scalds.

→ Management of the salinity outbreak would have a direct cultural benefit as it prevents further erosion and helps retain the undisturbed sections of the Aboriginal site. This benefit could be enhanced further if local Aboriginal people could visit the area for educational purposes.

→ As with Scenario 1, the management of the salinity outbreak would have an indirect cultural benefit due to its contribution to the health of "country". Outcomes might include a reduction of salt levels in the adjacent watercourse, halting the dieback of eucalypts growing nearby, and an increase in habitat for native fauna.

Cultural heritage benefits from natural resource management

If we acknowledge that rivers, vegetation and fauna have cultural values, it follows that an improvement in their condition is a positive cultural outcome.

There can be both direct and indirect cultural benefits from the management of environmental problems. This approach recognises that while cultural values need specific attention, any improvements to the health of land and water may enhance cultural heritage. We present two scenarios to illustrate this idea (left page).

The scenarios illustrated on page 72 demonstrate that the conservation of native vegetation and rehabilitation of landscapes can result in the protection of cultural heritage values. For example, the archaeological mapping exercise conducted for the Wellington case-study shows that riparian zones have medium or high archaeological sensitivity. The protection of some of these areas when conserving native vegetation or managing salinity will both directly and indirectly benefit cultural heritage. If we do not acknowledge these associations then natural resource management may not generate any cultural benefits. For example, retained vegetation may not be located in areas accessible to Aboriginal people. Alternatively, conservation zones may not take in areas of high archaeological value.

The next section defines these benefits in terms of cultural heritage aims and links them to catchment targets (page 74). Following this is a discussion about how to gather information about cultural heritage to support an integrated approach to planning.

Setting cultural heritage indicators

We need to develop a framework for the types of local and catchment-scale cultural heritage benefits that might be achieved through land-use planning.

General environmental targets can be read as having direct relevance to cultural values. As already discussed, if a river is in good condition, then it might be assumed that this translates into various cultural outcomes such as the capacity for people to fish, collect riparian food and medicine plants and interact socially in important ways. It is clear that without a healthy river system, any of these social and cultural values would be jeopardised.

However, we should be careful that broad-scale figures and targets about catchment health are not used as de facto cultural heritage outcomes. Not only would this represent an over-simplification, but it would also potentially "assimilate" cultural heritage into a "natural" heritage planning process that fails to adequately acknowledge social issues and values. To overcome this, we need to develop a framework for the types of local and catchment-scale cultural heritage benefits that might be gained through land use planning. One way to do this is to set specific cultural heritage indicators. These might be to ensure that:

- Aboriginal people have access to valued plant species; and/or
- areas of archaeological importance are retained.

A number of cultural heritage indicators and corresponding catchment targets are listed in the next table. Following this is a discussion of the steps to achieve these indicators and targets.

Aboriginal values	Local cultural heritage indicators	Catchment targets
Fishing > 	– Fishing places kept viable by controlling bank erosion, providing shade trees, preventing localised pollution and controlling over-fishing. – Environmental impact assessment and development consent considers fishing as a value and the places where it occurs as part of a community's fabric and heritage.	– Riverine salinity targets achieved, river use is sustainable, pollution sources managed, and remnant native vegetation kept. – Native fish populations monitored and pest species controlled.
Hunting > 	– Hunting locations made accessible. – No take of threatened species. – Levels of take are sustainable.	– Habitat maintained or restored at levels which support continued or renewed ecosystem health.
Food or medicine plant use > 	– Valued native species not affected or threatened by factors such as salinity, road widening or hazard reduction. – Access to food or medicine plants is increased. – Levels of take are sustainable. – Revegetation and control of exotic species involves Aboriginal community members.	– Native vegetation managed to reduce salinity, increase biodiversity and ensure species survival. – New areas for access negotiated. – Revegetation programs blend culturally valued species into plantings.
Archaeological sites & traditional story places (pre- or post-contact) > 	– Significant sites and viable areas of archaeological potential retained through the retention of riparian vegetation and localised management of salinity. Ongoing impacts are controlled. Site-specific management actions like fencing, carried out.	– Remnant vegetation managed. – The spread of soil erosion and salinity addressed. – Strategic management of archaeologically sensitive areas.
Community health & well-being > 	– Valued elements of lifestyle and cultural identity and practice maintained (eg: hunting and gathering, caring for country, and access to valued sites). – Inter-generation and family interaction (eg: passing on knowledge) that is dependent on environmental health is supported by land management programs, strategic planning and EIA. – Economic impacts to Aboriginal-owned lands and enterprises generated by environmental problems are assessed and managed.	

Taking action

The sections below set out approaches that can be used to ensure that adequate information about cultural heritage is available to develop integrated landscape planning. By collecting appropriate data we can measure the effectiveness of land management decision-making and chart social impacts and benefits.

One of the stated objectives of the Aboriginal Heritage and Salinity Project was to give Aboriginal people and others an indication of how heritage assessments could be carried out to achieve integrated planning outcomes.[156] By doing so, the project fleshes out the potential direction of those studies identified as actions within Natural Resource Management Plans.

Archaeological, environmental and social issues are considered separately in the following sections. Each section also indicates how effective management strategies might be implemented to ensure that a range of values and heritage places is actively considered. Obviously the scope of this discussion suggests that heritage assessment must extend beyond consideration of archaeological issues or the management of traditional sites. It is geared toward recognition of dynamic communities, which see culture and heritage as spanning the past, present and future, as well as shaping their identity and social interactions.

Achieving this would require a commitment to multi-disciplinary research and high levels of community involvement.[157] A fundamental requirement would be that specialists from different backgrounds communicate and actively explore how their data or knowledge can inform a more comprehensive picture of the relationship between people, landscape and heritage values. Ideally this would span the natural and social sciences, and also involve recognition of community-based knowledge.

There are two key issues that need to be kept in mind:

1. Research and planning should be collaborative, and respond to community needs and aspirations.
2. The question of scale is important. The logistics, resourcing and effort that is required to complete research across a whole catchment is significant. Focused research, centred on regional towns or accepted cultural boundaries, may be more feasible. This is especially the case when we consider the degree of consultation and community involvement that is required to achieve the outcomes discussed below.

The Wellington case-study is an example of such an approach. The study was focused on a single town and two associated settlements (Nanima and Wellington Common). It should be noted, however, that the archaeological component spanned a whole local government area, as this scale is suited to developing realistic archaeological modelling. The other values are more easily focused on a definable community associated with specific towns. This also allows direct consideration of local issues and places, which might otherwise be lost within a much broader study. A range of tools like community forums or meetings with separate Aboriginal organisations in each town can be used to engender support and commence community involvement.

Archaeological values

Balancing the management of salinity and archaeological sites on a landscape scale is potentially complex. Archaeology for archaeology's sake should not become the norm, nor should archaeological value be ignored.

The distribution of salinity impacts in the Central West indicates that the problem covers some areas of the landscape that have the highest potential to contain pre-contact archaeological sites, especially open sites. The same situation appears to be occurring in other salinity-affected areas of the state such as the Hunter Valley and Western Sydney. The latter is demonstrated by the occasional reference in archaeological reports from these regions to the evidence of salinity-induced disturbance.[158] It is thought that the impact of salinity has probably been under-represented in reports from these areas as it

may well have been lumped within more generalised categories of disturbance such as soil erosion.

What this demonstrates however is that salinity has already played a major role in affecting archaeological sites in NSW. It will continue to do so unless it is actively managed and controlled. The distribution of archaeological effort in the face of such impact has not been even across salinity-affected regions. While areas such as the Central West have seen little intensive archaeological research, both the Hunter and Western Sydney have millions of dollars worth of archaeological investigation. While none of this has specifically targeted salinity management, it has nevertheless allowed the retrieval of significant amounts of data in these affected areas. This being the case, when we consider management options, we need to be aware of regional variation in our knowledge base, and how this should help frame our research and conservation priorities.

The archaeological assessment, carried out as part of the Wellington case-study, reveals that it is possible to obtain a limited amount of data through surface recording at open sites affected by salinity. The research value of such sites relates directly to the level of disturbance wrought by erosion and other factors. Put simply, the greater the disturbance to the site, the less the research value. Importantly, the results of the Wellington case-study indicate that remediation of eroded salt scalds is unlikely to cause further loss of archaeological value. Activities such as ripping, sowing and planting associated with the revegetation of salt scalds are not going to result in any greater movement of artefacts than caused previously by erosion, stock trampling and ploughing. Archaeological investigations elsewhere in the state support this argument. It is widely accepted that excavation of relatively undisturbed areas, adjacent to erosion scalds, will yield more useful information.

Achieving a balance between the management of salinity and pre-contact archaeological sites on a landscape scale is potentially complex. Theoretically, the requirements of the National Parks and Wildlife Act 1974, relating to the destruction or disturbance of Aboriginal objects requires land managers to ensure that their salinity management actions either do not damage archaeological values, or at least are sanctioned under the permit system. If unplanned, this could waste significant time and resources, and frustrate salinity management. This in turn may generate even greater archaeological impacts.

Importantly, the retention of Aboriginal cultural values on a catchment scale is not dependent on the complete protection of all sites. For example, the loss of one of many disturbed artefact scatters does not diminish the value of those that remain. Achieving such a balance requires the following steps:

1. a framework for assessing the significance and distribution of pre-contact archaeological sites across a region
2. a decision-making structure which is supported by an awareness of the conservation status of different components of the archaeological record
3. a commitment to certain cut-off points where salinity management actions will either trigger, or not require, an archaeological investigation
4. a commitment to ensuring no impact from salination remediation at some sites of high cultural value (eg: burials and ceremonial sites) irrespective of their rarity or representativeness in real terms; and
5. a commitment by land managers to flagging large-scale salinity management actions involving significant ground disturbance (eg: engineering solutions) with the DEC and the Aboriginal community for comment, within the context of an agreed framework.

Each of these steps are described below.

Mapping zones of archaeological sensitivity

A first step should be to develop maps of archaeological sensitivity for salinity-affected catchments. The map developed as part of the Wellington case-study provides a suitable example. Such a map allows land managers and the Aboriginal community to explore how areas which may contain open sites and deposits relate to tenure, salinity outbreaks and other variables. Importantly, such a map is limited to presenting an overview of potentially sensitive areas. In reality, open sites can extend to encompass whole landforms and do not necessarily have edges (even fuzzy ones) like a stand of remnant vegetation. However, such a map is necessary to promote a landscape or catchment approach to assessing management options, rather than a focus on individual sites.

Integrated planning outcomes

A second step involves looking at the potential of land management strategies to support the conservation of archaeological sites. Such analysis could indicate whether areas of remnant vegetation in a catchment or sub-catchment intersect with

areas of archaeological value, thereby encouraging the retention of this vegetation. An analysis of tenure could indicate that areas managed by government such as road reserves, Crown lands and parks incorporate areas of sensitivity at a scale that allows the management of a representative sample of valued landscapes. In this way, managers and the community can visualise the impact of salinity on the archaeological record and identify areas where active management may need to occur, such as on private lands.

Targets for archaeological recording

A third step would be for government and the Aboriginal community to develop a target system, as part of the catchment management process, to guide the recording and assessment of Aboriginal sites. Such a system would help government and land managers to decide whether archaeological investigation should precede an activity such as salinity remediation.

Practical site recording targets could be set for sub-catchments in salinity-affected regions. The targets should take into account the level of archaeological work previously undertaken in the sub-catchment. For example, in the Wellington district, where little or no recording has taken place, a minimum target should be to record at least one open site in each sub-catchment. The recording should be to a level of detail that would contribute to an understanding of the content and distribution of open sites across a region.

The target system would not preclude other site recording and excavation as part of environmental impact assessment and academic projects. Instead, it seeks to ensure that stakeholders collect a base level of information about open sites as part of salinity remediation.

Targets could also represent a commitment to conservation aims that stakeholders can reassess over time as new data is collected. As part of this process, stakeholders might agree that they would conserve as many rare or significant sites in a region as possible. An associated aim would be to protect a sample of sites from each of the environments in a catchment.

The targets should be set and pursued for each sub-catchment. If this is done, remediation of salinity outbreaks, through revegetation, reseeding, ripping and fencing, could proceed. Detailed archaeological assessment may not be required. The long-term benefit of limiting the spread of salinity represents a conservation outcome that outweighs any minor impacts to disturbed sites. This is predicated on the basis that remediation activities:

- occur in areas affected by erosion and avoid disturbing intact soil profiles, especially in areas rated as having a high potential to contain open sites and archaeological deposits
- are conducted with an awareness of issues that may trigger a complete halt, such as the evidence of ancestral remains; and
- are preceded by a search of the NPWS Aboriginal Heritage Information System.

Flagging large-scale salinity management actions

A level of assessment should be ensured prior to any engineering solutions such as contour banking or the construction of salt-interception infrastructure. These actions can involve significant ground disturbance and should be treated as a potential impact to significant sites like burials. This investigation may require a site survey and subsequent management recommendations.

Equally, any stabilisation or remediation work conducted on river or stream banks should be conducted with an awareness of the potential to encounter burials in alluvial soils. Any large-scale work in such environments requires training the staff conducting the work to recognise and a commitment to stop-work arrangements if remains are suspected to be present

Wild resource use values

Consideration should be given to how salinity remediation, and land-use planning more generally, can help preserve or revive the use of wild resources.

Actions that could help achieve this include:

- participatory planning with Aboriginal communities in towns in salinity-affected areas, to discuss their concerns about access to wild resources, the management of impacts to these resources, and the environmental restoration works that can promote these values.
- in collaboration with the Aboriginal community, attempt to use culturally valued

food and medicine plants in revegetation programs, especially in areas where access is possible (eg: Crown and public lands, travelling stock-routes, road reserves and Aboriginal-owned lands)
- promote and resource Aboriginal community involvement in landscape restoration, salinity remediation and research (eg: training local Aboriginal people in revegetation, fencing and water quality monitoring)
- establish a program to help Aboriginal fishers record information about the health of native fish populations and habitat (eg: at favoured fishing locations)
- work with Aboriginal people when they set up bush tucker gardens and other community assets to ensure that they are established and maintained with an awareness of salinity impacts and threats
- involve Aboriginal people in biodiversity survey and assessment programs, threatened species recovery planning and threat abatement planning; and
- involve Aboriginal people in local fire management planning on public lands.

Post-contact and historic places

The Wellington case-study and other similar projects in NSW have revealed the presence of a diverse set of post-contact and historic places that are associated with Aboriginal people. This type of research into Aboriginal heritage is relatively new. In the past, research has generally focused on pre-contact archaeological sites. This means that any catchment will usually have limited information available, initially, about the number, location and condition of such places. The actions below are intended to show the scope of Aboriginal post-contact heritage in a landscape. Any research program could be approached using a thematic structure and an associated archival research exercise.[159]

These suggested actions are seen as the core components of any research or mapping exercise focusing on broad-scale analysis of post-contact places in a catchment:

- participative planning with local Aboriginal communities in towns in salinity-affected landscapes to identify structures and places associated with Aboriginal history, which are valued by community members
- participative planning and historical research to identify non-structural post-contact values and places. This might include historic camps.
- assessment of whether any of these places are affected by salinity; and
- encouragement and resourcing of Aboriginal community involvement in salinity remediation and research (eg: in urban salinity audits and monitoring).

Well-being, lifestyle and economic interests

The final issue to be considered is whether environmental problems are affecting people's way of life, well-being and sense of community. Very little direct research has been conducted into this form of social impact in NSW and, hence, there are few comparative studies available. This is complicated by the fact that it involves dealing with intangible values which are difficult or impossible to quantify. Nevertheless, asking questions about this issue can draw out important community views about environmental problems, as well as solutions or actions, which could generate direct social benefits.

Equally, some impacts may be easily identified. For example, people may say that lack of access to land for teaching purposes, or gathering wild foods, prevents inter-generational contact and the passage of cultural knowledge. Seeking areas where access can be achieved or restoring areas of public lands for this purpose might be direct solutions to such concerns.

As with the other values discussed, the question of scale is an important one. What level of community consultation or participation is required to elicit information about these forms of social impact? How can the outcomes of any study be related to specific places on the ground, rather than producing a general assessment of broad environmental problems?

Again, as noted in the introduction to this section, one option may be to take the approach used at Wellington, where we focused on the Aboriginal people living in one town and two small associated settlements. Elsewhere in the Central West, a similar approach could be used for other towns like Dubbo, Peak Hill or Forbes using a realistic catchment area around each town to encompass a meaningful cultural landscape.

In conclusion, two key steps are necessary:

- participative planning with local Aboriginal communities in towns in salinity-affected regions to identity how environmental problems are affecting their quality of life (eg: through reduced access to wild resources, decline in water quality, economic damage to interests such as businesses)
- identification with the community of options or programs to redress these problems (eg: through property plans on Aboriginal-owned lands or help through training).

Above: Detail from a drawing entered in the schools display at the Reconciliation celebrations, Wellington, May 2002.

Final word: shared opportunities

Tackling the effects of salinity on Aboriginal cultural values and places must be approached in a holistic manner, both within the context of broader environmental degradation, and across a range of values that span the pre- and post-contact periods and contemporary life.

While the sections above have discussed how to assess and manage specific forms of cultural heritage value or place, it is important to note that any approach should look for intersections between these values. As an example, these intersections may be spatial. The areas defined as having high archaeological value in a catchment may also be found to have high biodiversity value, a history of wild resource use by local people, as well as the presence of historic sites and places. In this situation, the management of one area may allow us to achieve multiple and related heritage outcomes.

In conclusion, the sections above have attempted to outline steps that would allow government, local councils, and Aboriginal communities to develop comprehensive heritage assessments, and to link these to the process of catchment planning. Where possible, these studies should avoid focusing solely on one issue, such as the management of pre-contact archaeological sites. Rather, they should aim to span a range of values and include community views in their design and implementation.

At the same time, improvement in the design and conduct of other planning processes such as environmental impact assessment and park management would also be required to ensure that NSW landscapes are managed with appropriate attention to cultural heritage. For example, environmental impact assessments still separate nature and culture into discrete compartments, and treat Aboriginal cultural heritage management largely as an archaeological exercise. As noted, this issue has been discussed elsewhere and should also inform the design of strategic planning exercises like catchment planning. The cumulative benefit of improving heritage management across the planning spectrum would be potentially vast.

We conclude with a table setting out a recommended approach to assessing a range of cultural heritage values. This provides a context for designing and funding future heritage assessments in salinity affected regions in NSW.

Recording archaeological sites in salinity-affected catchments

Targeted open-site recording should address questions about Aboriginal people's pre-contact life. Research might focus on land-use strategies and the use of materials like stone. A standard research design and recording process would ensure that collected data is comparable across a catchment.

A targeted site-recording program could assess sites in a range of environmental contexts, and not simply those in areas affected by salinity. However, a focus on areas of high archaeological potential is a priority, as many of these areas are currently facing a salinity threat. A minimum target could be to record, in detail, at least one open site in each affected sub-catchment.

Open sites containing large numbers of stone artefacts have the best research potential. In some catchments, such as the Central West, there is little information about stone artefact assemblages. The analysis of open sites containing small numbers of artefacts would not advance this.

Finally, researchers could set a long-term aim to excavate deposits in salinity-threatened areas. Excavation could yield more data than surface recording, and could counter the loss of deposits caused by salinity.

Summary of management recommendations

Cultural heritage issue or value	Actions
Pre-contact archaeology	– Develop a map of archaeological sensitivity for landscape being managed. – Analyse broad conservation options and threats by assessing model against spatial data such as tenure, areas of conservation value, land-use disturbance and environmental degradation (eg: salinity mapping). – Undertake community planning to determine community priorities and concerns. – Commit to a target system for site recording and active conservation on a catchment or sub-catchment basis. – Seek to employ a range of strategic conservation planning options such as voluntary conservation agreements and active integration of natural and cultural heritage management (eg: vegetation management actively involves considering areas of high cultural value such as where sites are retained).
Post-contact and historic places	– Undertake archival research on Aboriginal history to establish historical context and to extract place based information. – Undertake oral history research and cultural mapping with local Aboriginal people. A thematic approach could be adopted and a range of mapping tools used as in English, 2002a, and Goulding 2001 and 2002. – Record a range of places and assess condition and threats. – Analyse relationship of places against spatial data such as tenure, development threats, areas of conservation value and environmental problems (eg: urban salinity) to assess broad conservation options and issues. – Seek to employ a range of strategic conservation planning options (as above).
Wild resource use	– Research the historic and contemporary nature, extent and location of wild resource use using a range of tools such as oral history and cultural mapping. – Identify community concerns and interests on this topic such as access, decline of key species, key environmental threats and management options. – Analyse all of the above against data such as tenure, environmental threats, areas of conservation value etc. – Undertake actions designed to ensure continuity of cultural practices such as replanting of bush foods, retention of vegetation of high cultural value, and active integration of cultural and natural heritage considerations during land-use planning.
Environmental Values linked to Country	– Assess the nature of people's perception of, and attachment to, country and how they express or activate this as individuals and groups (eg: identify key landscape features that are valued as story places, places which people actively care for, and areas which combine a high nature conservation and social value). – Develop conservation planning strategies to assess the relationship of valued areas or features to tenure. – Develop Aboriginal community involvement in natural resource management planning and action (eg: in restoration and monitoring works and in the assessment of biodiversity values). – Assist Aboriginal landowners to manage their lands in a sustainable manner and to repair environmental damage.

Notes

1 Bonyhady, T., 2000. *The Colonial Earth:* pg.216-217.
2 For examples of Earle's depictions of Aboriginal people, see the PICMAN catalogue online at the NSW State Library.
3 This project has been funded by the NSW Salinity Strategy, which aims to develop a co-ordinated approach to tackling salinity problems in the state.
4 For example see Zeppel, M.B. et al, 2003. The potential impact of dryland salinity on the threatened fauna and flora of New South Wales. *Ecological Management & Restoration* 4: pgs.53-59.
5 Central West Catchment Management Board, 2003; Central West Catchment Blueprint, pg.15.
6 In this report the term "integrated planning" is defined as an approach which considers natural and cultural heritage values equally and involves looking at how these values intersect and relate. For example, a "natural" heritage value like vegetation, can also have a cultural dimension. It may be a source of bush foods.
7 The cultural significance of rivers and waterways is a theme that historian, Heather Goodall, has also identified as being of great significance to the Yuwalaraay people of the black soil country in north-west NSW. See Goodall, H, 2002. The River Runs Backwards. In Bonyhady, T., and Griffiths, T., (eds) *Words for Country: landscape and language in Australia:* pgs.39-40.
8 Oates, N., 1995. *Putting Back the Bush: the role of trees in sustainable agriculture:* pg.11.
9 Stirzaker, R., et al. 2001. *A Revolution in Landuse: emerging land use systems for managing dryland salinity:* pg.4.
10 In this context we understand "well-being" to refer to the social cohesion and structure of communities and families, their sense of identity and connection to place, the opportunity to partake in society and to obtain a good standard of living. For examples of the use of this term in relation to Aboriginal people see Wiseman, V et al, 1999. Improving Aboriginal Health in Wellington, NSW: Ask local Koori people what can be done. *Aboriginal and Islander Health Worker Journal* 23(1): pgs.21-23, the National Aboriginal Community Controlled Health Organisation (NACCHO) Manifesto on Aboriginal Wellbeing at www.weftweb.net/nacho, and the Australian Indigenous HealthInfoNet website at www.healthinfonet.ecu.edu.au.
11 For an excellent discussion of the social, political and economic complexities of salinity management see Beresford, Q. et al, 2001. *The Salinity Crisis: landscapes, communities and politics.*
12 The Wentworth Group, 2002. *Blueprint for a Living Continent:* pg.4.
13 McKell, W.J., 1945. Soil Conservation. *Journal of the Soil Conservation Service of NSW* 1(1): pgs.5-7.
14 In its broadest sense, "ecosystem management" is meant to recognise the link between the management of the environment and human value systems. For a good starting point on this subject see Burnside, D, and Rasmussen, A, 1997. Ecosystem management: can it succeed? *Rangelands* 19: pgs.20-23.
15 An example is the document released as part of the Murray Darling Basin Initiative, titled, People as an Integral Part of the Initiative: a human dimension strategy, 1999.
16 Dale, A., Taylor, N., and Lane, M., (eds) 2001. *Social Assessment in Natural Resource Management Institutions.*
17 At the time of writing, large-scale restructuring of the public sector agencies associated with land use planning had been announced. It is unclear whether this will affect Natural Resource Management Plans.
18 These plans vary greatly in their treatment of cultural heritage issues and values, as is discussed later in this report.
19 Curtis, A. et al, 2002. Using spatial data to explore landowner awareness and concern about dryland salinity. *Australian Geographer* 33(2): pgs.159-171.
20 See for example Koen, K., 2000. The Impact of urban salinity on the historic heritage of Wagga Wagga, and Spennemann, D, 2001. The creeping disaster: dryland and urban salinity and its impact on heritage. *CRM* 8: pgs.22-25.
21 Department of Land and Water Conservation, 2000. Taking on the Challenge: The NSW Salinity Strategy: pg.5.
22 At the time of writing, the restructure of both of these agencies was being considered. The DLWC has been renamed the Department of Infrastructure, Planning and Natural Resources.
23 Central West Catchment Management Committee, 2000. Salinity Risk Assessment of the Central West Catchment, and pers. comm. Alan Nicholson, Salt Team Leader, DLWC (now the DIPNR).
24 Stirzaker, R., et al. 2001. *A Revolution in Landuse*: pg.4. and the Department of Land and Water Conservation, 2000. Taking on the Challenge: The NSW Salinity Strategy: pg.5.
25 Central West Catchment Management Committee, 2000. Salinity Risk Assessment of the Central West Catchment.
26 For an excellent discussion on the complexity of the regulatory and land use planning system in NSW see Farrier, D, 2002. Fragmented law in fragmented landscapes: the slow evolution of integrated natural resource management legislation in NSW. *Environmental and Planning Law Journal* 19(2): pgs.89-108.
27 This definition of "cultural heritage" is quoted in the Central West Catchment Blueprint. It derives from the Cultural Heritage Resource Centre, University of Canberra and dates to November 1997.
28 English, A.J., 2002a. *The Sea and the Rock Gives Us a Feed: mapping and managing Gumbaingirr wild resource use places.* Byrne, D, 2002. An archaeology of attachment: cultural heritage and the post-contact. In Harrison, R., and Williamson, C., (eds), pgs.135-145. Harrison, R., 2002. Shared histories and the archaeology of the pastoral industry in Australia. In Harrison, R., and Williamson, C. (eds): pgs.37-53.
29 NPWS, 1999. *Corporate Plan* 1999-2002.
30 Standing Committee on Conservation, 2001. *Implications of Salinity for Biodiversity and Conservation Management.*
31 Soil Conservation Service, 1986. *Glossary of Terms Used in Soil Conservation:* pg.106.

32 Stirzaker, R., et al. 2001. A Revolution in Landuse: pg.4. and Central West Catchment Management Committee, 2000. Salinity Risk Assessment of the Central West Catchment: pg.18.
33 Wagner, R., 1958. Salt damage on soils of the Southern Tablelands. *Journal of the Soil Conservation Service of NSW* 13: pgs.33-39.
34 Beresford, Q. et al. 2001. *The Salinity Crisis*: pg.4.
35 Television programs like Landline (ABC) often feature stories about salinity (eg: August 31st, 2002). At the end of 2002 a documentary series devoted to salinity was screened on the ABC called "Silent Flood".
36 The Prime Minister, John Howard, and some state governments, have identified salinity as the chief environmental management priority in Australia. See, *The Australian,* 3 Aug. 20: pg.5.
37 Australian Natural Resources Atlas website: www.audit.ea.gov.au.
38 Australian Bureau of Statistics, 2002. Salinity on Australian Farms Survey: www.abs.gov.au/Ausstats/abs@nsf.
39 The idea of identifying priority areas for salinity management is one of the "salinity guiding principles" in the Central West Catchment Blueprint, 2003: pg.15.
40 Central West Catchment Management Committee, 2000. Salinity Risk Assessment of the Central West Catchment: pg.iv.
41 Department of Conservation & Land Management, n.d. *Dryland Salinity:* pg.4.
42 Australian Natural Resources Atlas website: www.audit.ea.gov.au.
43 Department of Land and Water Conservation, 1995. *Urban Salinity: causes, effects, costs and symptoms.*
44 Powell, J., 1996. Managing dryland salinity in the Murray-Darling Basin. ATSE Focus 91.
45 Wagga Wagga City Council, 2001. Wagga Wagga Urban Salinity Tour (pamphlet).
46 Ecological Australia, 2002. Salinity Data Audit for the Aboriginal Heritage and Salinity Project.
47 Please, P. et al, 2002. Dryland Salinity Mapping in Central and South West NSW: collation and documentation of information.
48 Ibid. pg.4.
49 Pers. comm. Alan Nicholson, DLWC Wellington.
50 Department of Land and Water Conservation, 2000. Taking on the Challenge: The NSW Salinity Strategy: pg.18.
51 Ibid. pg.5.
52 Ibid. pg.18.
53 Stirzaker, R., Vertessy, R., and Sarre, R., (eds) 2002. *Trees Water and Salt: an Australian guide to using trees for healthy catchments and productive farms.*
54 Munday, B., 2002. Engineering options for dryland salinity management: where and when to dig or pump. *Australian Landcare,* March issue : pgs. 32-33.
55 Stephens, S. Landholders views on conservation covenants. *Australian Landcare*, June 2002: pgs. 6-7.
56 Lockwood, M. et al, 2002. Potential of Revegetation Incentives to meet Biodiversity and salinity objectives: a study from the Goulburn Broken Catchment. *Australian Journal of Environmental Management* 9: pgs. 79-88.
57 Byrne, D., et al, 2001. *Social Significance: a discussion paper:* pg.4
58 For example, see Goulding, M., 2001. Cultural Places, Contested Spaces. A study of Aboriginal people's historical attachments to landscape.
59 Spennemann, D, 2001. The creeping disaster dryland and urban salinity and its impact on heritage. *CRM* 8: pgs.22-25.
60 Littleboy, M. et al, 2001. Dryland Salinity Extent and Impacts: New South Wales: pg.3.
61 Urban salinity: a threat to cultural heritage places. Dryland salinity online information sheet: www.ndsp.gov.au/15_publications.
62 English, A.J., 2002a. *The Sea and the Rock Gives Us a Feed*: pg.ix.
63 English, A.J., and Brown, C., 2000. It's a Part of Us: Aboriginal people's perspectives on the cultural values of biodiversity in NSW. English, A.J., 2002a. *The Sea and the Rock Gives Us a Feed.*
64 NSW Fisheries, 2002. Indigenous Fisheries Strategy. NSW Native Vegetation Advisory Council, 2001. *Aboriginal Cultural Values of the Native Vegetation of NSW. Greening Australia, 1996. Managing Australia's Vegetation: a community perspective.*
65 English, A. J., 2002a. *The Sea and the Rock Gives Us a Feed.*
66 For example, see Zeppel, M.B. et al., 2003. The potential impact of dryland salinity on the threatened fauna and flora of New South Wales. *Ecological Management & Restoration* 4: pgs.53-59.
67 Rose, D. et al, 2003. *Indigenous Kinship with the Natural World in NSW:* pg.3.
68 Ibid.
69 Rose, D., 1996. *Nourishing Terrains: Australian Aboriginal views of landscape:* pg.28.
70 Anon, Measuring salinity impact on aquatic biodiversity. *Australian Landcare*, September 2001: pg.60.
71 Rose, D., 1996. *Nourishing Terrains*: pgs.7-8.
72 Indigenous Land Corporation, 1996. *Regional Indigenous Land Strategy 1996-2001.*
73 Wiseman, V., et al, 1999. Improving Aboriginal health in Wellington, NSW. *Aboriginal and Islander Health Journal* 23(1): pg.23.
74 Indigenous Health, 2002. The Australian Indigenous Health InfoNet website at www.healthinfonet.ecu.edu.au.
75 For a definition of "well-being", see note 10.
76 Humphery, K., 1999. Talking Diabetes. *Aboriginal and Islander Health Worker Journal* 23(1): pgs.2-4.
77 Rodgers, K. et al, 1998. Environmental factors influencing Aboriginal nutrition in Western NSW. *Health Promotion of Australia Journal* 8(1): pgs.18-23.
78 Callaghan, G., and Moseley, L., 2000. Healthy Waters Healthy People: a support package for Aboriginal representatives on water management committees.
79 Senate Rural and Regional Affairs and Transport Committee, 1997. Interim report on Commercialisation of Australian Wildlife.
80 Popp, T. et al, 1995. *Settlements of Green: A guide to tree planting on Aboriginal lands in NSW.*
81 Rose, B.D., 1993. Reflections on ecologies for the twenty-first century. In Williams, N., and Baines, G., (eds) *Traditional Ecological Knowledge: wisdom for sustainable development:* pgs.115-118.
82 For example, soil stabilization in riparian environments may damage ancestral remains (burials).
83 Salinity guiding principles in the Central West Catchment Blueprint, 2003: pg.15.
84 English, A.J., 2002b. More than archaeology: developing comprehensive approaches to Aboriginal heritage management in NSW. *Australian Journal of Environmental Management* 9(4): pgs.218-227.
85 Macdonald, G., 1998. Master narratives and the dispossession of the Wiradjuri. *Aboriginal History* 22: pg.164.
86 ERM Australia, 2002. Archaeological Assessment of Two Artefact Scatters, Central West NSW for the Aboriginal Heritage and Salinity Project.

87 Digital salinity outbreak data was provided by DIPNR to assist with this project.
88 Seddon, J. et al, 2002. Little River Catchment Biodiversity Assessment. A report for the TARGET project.
89 Ibid: pg.50, and Breckwoldt, R., 1990. *Living Corridors.*
90 Howling, G.M., 1997. *Remnant Vegetation in the Central West Catchment: issues and options for the future:* pg.115.
91 The photos can be viewed online at the NSW State Library web site (via the PICMAN photographic database). Photographs are also provided in Logan, J.M., 1951. The value of soil conservation measures at Wellington. Journal of the Soil Conservation Service of NSW 7: pgs.43-49. McKell, W.J., 1945. Soil Conservation. *Journal of the Soil Conservation Service of NSW* 1(1): pgs.5-7. Roberts, D.J., 1953. Farming techniques in the Wellington district. *Journal of the Soil Conservation Service of NSW* 9: pgs.142-146
92 Spence, W.S., 1962. Farm planning for soil conservation in the Wellington District. *Journal of the Soil Conservation Service of NSW* 18: pgs.113-117.
93 Howling, G. M., 1997. *Remnant Vegetation in the Central West Catchment:* pg.55.
94 An example of this argument is presented by Carl Binning, CEO Greening Australia, in Cash rewards for best practice environmental farmers. *The Greening Australian* 1(1): pg.4.
95 Australian Bureau of Statistics 2001 Census Data. Community Profile Series.
96 Roberts, D.A., 2000. Historical Background of the Wellington Valley Settlement with Notes on Construction and Habitation of Buildings.
97 Read, P., in Kabaila, P, 1995. *Wiradjuri Places:* pg.13.
98 Woolmington, J., Humble Artisans and Untutored Savages' referenced in Le Maistre, B, 1993. Aboriginal People at Wellington Holding onto Land and Heritage: pg.4.
99 Kabaila, P., 1995. *Wiradjuri Places.*
100 Ibid.
101 This research has been conducted as part of native title investigations and is not freely available.
102 Le Maistre, B., 1993. Aboriginal People at Wellington Holding onto Land and Heritage: pg.8.
103 Kabaila, P., 1995. *Wiradjuri Places*: pg.19.
104 Read, P., 1999. *A Rape of the Soul So Profound: the return of the Stolen Generations*: pgs.18-20.
105 Le Maistre, B., 1993. Aboriginal People at Wellington Holding onto Land and Heritage: pg.9.
106 Kabaila, P., 1995. *Wiradjuri Places*: pgs.19-20.
107 Goodall, H., 1996. *Invasion to Embassy: land in Aboriginal politics in New South Wales*: pg.86.
108 Ibid. pg.96.
109 Joyce Williams quoted in Kabaila, P., 1993. *Wiradjuri Places*: pg.31.
110 Goodall, H., 1996. *Invasion to Embassy*: pg.101.
111 Ibid. pg.92.
112 Markus, A., 1994: *Australian Race Relations* 1788-1993: pg.119.
113 Goodall, H., 1996. *Invasion to Embassy*: pg.92.
114 McGuigan, 1983. *Aboriginal Reserves in NSW: a Land Rights research aid.*
115 Goodall, H., 1996. *Invasion to Embassy*: pg.115-116.
116 Kabaila, P., 1995. *Wiradjuri Places*: pg.22.
117 Le Maistre, B., 1993. Aboriginal People at Wellington Holding onto Land and Heritage: pg.9.
118 Historian, Mark McKenna describes this for Aboriginal people on the South Coast of NSW in McKenna, M., 2002. *Looking for Blackfellows Point: an Australian history of place:* pg.166.
119 Hollinsworth, D., 1998. *Race and Racism in Australia:* pg.139.
120 Kabaila, P., 1995. *Wiradjuri Places.*
121 Goodall, H., 1996. *Invasion to Embassy*: pg.279.
122 See for example Mason v Tritton [1994] 34 NSWLR 572 and Yanner v Eaton [1999] HCA 53. Continued hunting and gathering does not necessarily mean that native title rights and interests have survived. For a discussion of this point see especially The Members of the Yorta Yorta Aboriginal Community v State of Victoria & Ors [1998] 1606 FCA.
123 English, A.J., 1997. Terrestrial hunting and gathering by Aboriginal people in NSW: an assessment of law and policy. *Environmental and Planning Law Journal* 14(6): pgs.437-455.
124 Ibid. pg.454.
125 English, A.J., 2002a. *The Sea and the Rock Gives Us a Feed.*
126 These quotes are taken from an online version of Handt's journals at http://www.newcastle.edu.au/department/hi/carey. The collection is cited as Carey, H., and Roberts, D., 1995. The Wellington Valley Project. Letters and Journals relating to the Church Missionary Society Mission to Wellington Valley, NSW, 1830-1845. A Critical Electronic Edition.
127 The same situation occurs on the north coast of NSW. However, it is important to realise that levels of wild resource use vary between individuals, many of whom regularly hunt, fish or collect plant resources.
128 As part of this project, funds have been provided to the Wellington High School to establish a bush food garden. The Agriculture teacher indicates that 40% of the school population is Aboriginal and the garden will provide a good opportunity to learn about and maintain valued species.
129 Pearson, M., 1981. Seen through different eyes: changing landuse and settlement patterns in the Upper Macquarie River valley, NSW from prehistoric times to 1860. English, A.J., and Gay, L., 1995. Archaeological Survey of Wyangala Dam, Central West NSW. English, A.J. et al, 1997. Cultural Heritage Assessment of Goobang National Park, Central West NSW.
130 Pearson, M., 1981: pg.75.
131 Ibid. pg.104.
132 Ibid. pgs.91-101.
133 ERM Australia, 2003. Archaeological Assessment of Two Artefact Scatters, Central West NSW, and Stage Two Assessment of an Artefact Scatter, "Easterfield" Property, Central West NSW.
134 See for example Odell, H. and Cowan, F., 1987. Estimating tillage effects on artifact distributions. *American Antiquity* 52(3): pgs.456-484. Dunnell, R.C., and Simek, I.F., 1995. Artefact size and plowzone processes. *Journal of Field Archaeology*, 22: pgs.305-319.
135 Central West Catchment Management Committee, 2000. Salinity Risk Assessment of the Central West Catchment: pg.1.
136 Ibid.
137 Ibid. pg.10.
138 Australian Bureau of Statistics, 2002. Salinity on Australian Farms Survey: www.abs.gov.au/Ausstats/abs@nsf
139 The Wentworth Group, 2002. *Blueprint for a Living Continent*: pgs. 10-12.
140 Knuckey's Store has also been recently threatened with demolition to make way for a car park for the Wellington Soldiers Club. For a discussion see, Town contemplates car park at 100-year-old corner. *Sydney Morning Herald* October 29th 2002: pg.9.
141 See the web page: Potential Environmental Consequences of Increasing Dryland Salinity on Streams and Wetlands in the Murray Darling Basin NSW, at: dlwc.nsw.gov.au/care/salinity.

142 Report on the Boomanulla Conference for Country, 5–6 March 2002.

143 Mulligan, M., and Hill, S., 2001. *Ecological Pioneers: a social history of Australian ecological thought and action.*

144 Associated legislation, such as the *Native Vegetation Conservation Act 1997* (NSW) and the *Water Management Act 2000* (NSW) have included direct attention to Aboriginal community and broader social values. Most recently, the Threatened Species Conservation Act 1995 (NSW) has been amended to require Aboriginal community involvement in the development of Threatened Species Recovery Plans. It can be argued that to a certain extent, these legislative developments have prompted renewed attention to social assessment issues in a way that EIA has failed to do over the last few decades. Having said this, government, landowners and communities have yet to develop the capacity to undertake, or communicate about, effective social assessment practices.

145 Farrier, D., 2002. Fragmented law in fragmented landscapes: the slow evolution of integrated natural resource management legislation in NSW. *Environmental and Planning Law Journal* 19(2): pgs.89-108, and Oates, N., 1995. *Putting Back the Bush: the role of trees in sustainable agriculture.*

146 Quote taken from the DLWC web page on Natural Resource Management Plans. www.dlwc.nsw.gov.au/care/nrmplans/index.html

147 At the time this report was being written, the Catchment Management Blueprints existed in draft form only. The final versions of these documents have since been prepared.

148 To date, 21 vegetation regions have been defined across 50% of NSW. See DLWC 2002 Regional Vegetation Management Planning in NSW: adding value to the natural assets of NSW. Available on the dlwc website.

149 For example, the Central West Catchment covers 92,000 km^2 and this takes in five vegetation regions, including the whole of two regions and parts of three others.

150 The Yallaroi and Walgett Plans each contain a list of approximately 50 plant species of cultural significance. Consent is required prior to their clearance, but note that none of these plants is rare or threatened and one is a woody weed.

151 Bartel, R.L., 2003. Compliance and complicity: an assessment of the success of land clearance legislation in New South Wales. *Environmental & Planning Law Journal*, 20(2): pgs.116-141.

152 This is discussed in the Moree RVMP, pg.22.

153 This definition is provided in the 2001 Gwydir Catchment Blueprint, Appendix 1.

154 NSW Department of Land and Water Conservation, 2001. *Offsets, Salinity and Native Vegetation Discussion Paper.*

155 Central West Catchment Blueprint, 2002: pg.14. Similar language is used in the Lachlan Catchment Blueprint, which states there should be "No loss of cultural heritage values across the catchment that relate to natural resource management."

156 See the definition of integrated planning given in note 6.

157 English, A. J., 2002a. *The Sea and Rock Gives Us a Feed*, and English, A. J., 2002b. More than archaeology: developing comprehensive approaches to Aboriginal heritage management in NSW. *Environmental and Planning Law Journal* 9(4): pgs.218-227.

158 J.MacDonald CHM, 2002. Archaeological reassessment of Indigenous cultural heritage values in Second Ponds Creek (Project Area 12586). AMBS, 2002. Salt Pan Creek ('The Salt Pan'), Mt Thorley Mine Archaeological Salvage Excavations. These are held in the NPWS Aboriginal Heritage Information System collection.

159 For an example, see the NPWS Coffs Harbour Aboriginal Heritage study in Goulding, M., 2001. *Cultural Places, Contested Spaces: a study of Aboriginal people's historical attachments to landscape.*

Bibliography

Anon, 2001. Measuring salinity impact on aquatic biodiversity. *Australian Landcare* September: pg.60.

Beresford, Q., Bekle, H., Phillips, H., and Mulock, J., 2001. *The Salinity Crisis: landscapes, communities and politics.* University of Western Australia Press.

Binning, C., n.d. Cash rewards for best practice environmental farmers. *The Greening Australian* 1 (1): pg.4.

Bonyhady, T., 2000. *The Colonial Earth*. Melbourne University Press.

Breckwoldt, R., 1990. *Living Corridors*. Greening Australia.

Burnside, D., and Rasmussen, A., 1997. Ecosystem management: can it succeed? *Rangelands* 19: pgs.20-23.

Byrne, D. 2002 An archaeology of attachment: cultural heritage and the post-contact. In Harrison, R., and Williamson, C., (eds). *After Captain Cook: the archaeology of the recent Indigenous past in Australia*. University of Sydney.

Byrne, D., Brayshaw, H., and Ireland, T., 2001. *Social Significance: A Discussion Paper.* Published by the NSW NPWS, Sydney.

Callaghan, G., and Moseley, L., 2000. Healthy Waters Healthy People: A support package for Aboriginal representatives on water management committees. Lower North Coast Water Management Committee.

Central West Catchment Management Board, 2003. Central West Catchment Blueprint. Published by the Department of Land and Water Conservation, Sydney.

Central West Catchment Management Committee, 2000. *Salinity Risk Assessment of the Central West Catchment.* Central West CMC.

Curtis, A., Mackay, J., and McDonald, S., 2002. Using spatial data to explore landowner awareness and concern about dryland salinity. *Australian Geographer:* 33(2): pgs.59-171.

Dale, A., Taylor, N., and Lane, M., (eds) 2001. *Social Assessment in Natural Resource Management Institutions.* CSIRO Publishing, Canberra.

Department of Conservation & Land Management, n.d. *Dryland Salinity.* CaLM, Sydney.

Department of Land and Water Conservation, 1995. *Urban Salinity: causes, effects, costs and symptoms.* Published by NSW Department of Land and Water Conservation, Sydney.

Department of Land and Water Conservation, 2000. *Taking on the Challenge: the NSW Salinity Strategy.* Published by NSW Department of Land and Water Conservation, Sydney.

Department of Land and Water Conservation, 2001. *Offsets, Salinity and Native Vegetation Discussion Paper.* Published by NSW Department of Land and Water Conservation, Sydney.

Dunnell, R. C., and Simek, I. F., 1995. Artefact size and plowzone processes. *Journal of Field Archaeology* 22: pgs.305-319.

Ecological Australia, 2002. Salinity Data Audit for the Aboriginal Heritage and Salinity Project. Unpublished report to the NSW National Parks and Wildlife Service, Sydney.

English, A.J., 2002a. *The Sea and the Rock Gives Us a Feed: mapping and managing Gumbaingirr wild resource use places.* NSW National Parks and Wildlife Service, Sydney.

English, A. J., 2002b. More than archaeology: developing comprehensive approaches to Aboriginal heritage management in NSW. *Environmental & Planning Law Journal* 9(4): pgs.218-227.

English, A.J., and Brown, C., 2000. It's a Part of Us: Aboriginal people's perspectives on the cultural values of biodiversity in NSW. Unpublished report to the NSW National Parks and Wildlife Service and the Yarrawarra Aboriginal Corporation.

English, A.J., and Gay, L., 1995. Archaeological Survey of Wyangala Dam, Central West NSW. Unpublished report to the NSW Department of Land and Water Conservation and the NSW National Parks and Wildlife Service.

English, A.J., Veale, S., and Erskine J., 1997. Cultural Heritage Assessment of Goobang National Park, Central West NSW. Unpublished NPWS report to the Peak Hill, Dubbo and Wellington Local Aboriginal Land Councils.

ERM Australia, 2003. Archaeological Assessment of Two Artefact Scatters, Central West NSW for the Aboriginal Heritage and Salinity Project. Unpublished report the NSW National Parks and Wildlife Service.

ERM Australia, 2003. Stage Two Assessment of an Open Site on Bonanda Creek, "Easterfields", Central West NSW. Unpublished report the NSW National Parks and Wildlife Service.

Farrier, D., 2002. Fragmented law in fragmented landscapes: the slow evolution of integrated natural resource management legislation in NSW. *Environmental and Planning Law Journal* 19(2): pgs.89-108.

Goodall, H., 1996. *Invasion to Embassy: land in Aboriginal politics in New South Wales*. Allen & Unwin/Black Books.

Goodall, H., 2002. The River Runs Backwards in Bonyhady, T., and Griffiths, T., (eds), *Words for Country. Landscape and Language in Australia.* University of New South Wales Press.

Goulding, M. 2001. Cultural Places, Contested Spaces: a study of Aboriginal people's historical attachments to landscape. Unpublished report to the NSW National Parks and Wildlife Service as part of the Coffs Harbour Aboriginal Heritage Study.

Harrison, R., 2002. Shared histories and the archaeology of the pastoral industry in Australia, In Harrison, R., and Williamson, C., (eds). *After Captain Cook: the archaeology of the recent Indigenous past in Australia.* University of Sydney.

Harrison, R., and Williamson, C., (eds), 2002. *After Captain Cook: the archaeology of the recent Indigenous past in Australia.* University of Sydney.

Hollinsworth, D., 1998. *Race and Racism in Australia*. Social Science Press.

Howling, G.M., 1997. *Remnant Vegetation in the Central West Catchment: issues and options for the future.* Published by the Central West Catchment Management Committee.

Humphery, K., 1999. Talking Diabetes. *Aboriginal and Islander Health Worker Journal.* 23: pgs. 2-4.

Indigenous Land Corporation, 1996. *Regional Indigenous Land Strategy 1996 – 2001.*

Kabaila, P., 1995. *Wiradjuri Places.* Jamison Centre, ACT, Black Mountain Projects.

Koen, K., 2000. The impact of urban salinity on the historic heritage of Wagga Wagga. *Cultural Resource Management* 8.

Le Maistre, B., 1993. Aboriginal people at Wellington holding onto land and heritage. Report to the NSW National Parks and Wildlife Service.

Littleboy, M. et al, 2001. Dryland Salinity Extent and Impacts: New South Wales. Unpublished Technical Report for the National Land and Water Resources Audit.

Lockwood, M., Hawke, M., and Curtis, A. 2002. Potential of revegetation incentives to meet biodiversity and salinity objectives: a study from the Goulburn Broken Catchment. *Australian Journal of Environmental Management*. 9: pgs.79-88.

Logan, J.M., 1951. The value of soil conservation measures at Wellington. Journal of the Soil Conservation Service of NSW 7: pgs.43-49.

Macdonald, G., 1998. Master narratives and the dispossession of the Wiradjuri. *Aboriginal History* 22: pg.164.

Markus, A., 1994. *Australian Race Relations* 1788-1993. Allen & Unwin, St Leonards, NSW.

McGuigan, A., 1983. Aboriginal Reserves in NSW: a land rights research aid. NSW Ministry of Aboriginal Affairs Occasional Paper (No. 4).

McKell, W.J., 1945. Soil Conservation. *Journal of the Soil Conservation Service of NSW* 1(1): pgs.5-7.

McKenna, M., 2002. *Looking for Blackfellows Point: an Australian history of place*. UNSW Press.

Mulligan, M. and Hill, S., 2001. *Ecological Pioneers: a social history of Australian ecological thought and action.* Cambridge University Press.

Munday, B., 2002. Engineering options for dryland salinity management: where and when to dig or pump. *Australian Landcare*, March 2002: pgs.32-33. Agricultural Publishing Pty Ltd, Moonee Ponds, Victoria.

Murray Darling Basin Initiative Operating Environment Strategy, 1999. People as an Integral Part of the Initiative: a human dimension strategy.

Native Vegetation Advisory Council, 2001. *Aboriginal Cultural Values of the Native Vegetation of New South Wales*. DLWC, Sydney.

NPWS, 1999. *Corporate Plan 1999-2002*, NPWS, Sydney.

Oates, N., (ed) 1995. *Putting Back the Bush: The role of trees in sustainable agriculture.* Jointly published by Greening Australia Ltd, the Rural Research & Development Corporation and the Land & Water Resources Research & Development Corporation.

Odell, H, and Cowan, F., 1987. Estimating tillage effects on artefact distributions. *American Antiquity* 52(3), pgs.456-484.

Pearson, M., 1981. Seen through different eyes: changing landuse and settlement patterns in the Upper Macquarie River valley, NSW from prehistoric times to 1860. Unpublished Phd thesis, Australian National University, Canberra.

Please, P., Evans, R., and Watson, B., 2002. Dryland Salinity Mapping in Central and South West NSW: Collation and Documentation of Information. Unpublished report to the NPWS, Canberra.

Popp, T., Adams, M., McKenzie, N., Kemp, R., McNee, A., and Neal, P., 1995. *Settlements of Green: A guide to tree planting on Aboriginal lands in NSW.* NSW Aboriginal Land Council, Aboriginal Torres Strait Islander Commission, Bureau of Resource Science and Greening Australia.

Powell, J.,1996. Managing dryland salinity in the Murray-Darling Basin. ATSE Focus Number 91.

Read, P., 1999. *A Rape of the Soul So Profound: The return of the stolen generations*, Allen & Unwin.

Roberts, D.A., 2000. Historical background of the Wellington Valley Settlement with notes on construction and habitation of buildings. Report prepared for Anne Bickford Heritage Consultants.

Roberts, D.J., 1953. Farming techniques in the Wellington District. *Journal of the Soil Conservation Service of NSW* 9: pgs.142-146.

Rodgers, K., et al, 1998. Environmental factors influencing Aboriginal nutrition in Western NSW. *Health Promotion of Australia Journal* 8(1): pgs.18-23.

Rose, D., 1993. Reflections on ecologies for the twenty-first century. In Williams, N, and Baines, G, (eds) *Traditional Ecological Knowledge: wisdom for sustainable development.* Centre for Resource and Environmental Studies, Australian National University, Canberra.

Rose, D., 1996. *Nourishing Terrains: Australian Aboriginal views of landscape*. Australian Heritage Commission, Canberra.

Rose, D. et al, 2003. *Indigenous Kinship with the Natural World in NSW.* NPWS, Sydney.

Seddon, J., Briggs, S., and Doyle, S. 2002. Little River Catchment Biodiversity Assessment. A report for the TARGET project. Unpublished report by the NSW National Parks and Wildlife Service, Canberra.

Senate Rural and Regional Affairs and Transport Committee, 1997. Interim report on Commercialisation of Australian Wildlife. Commonwealth of Australia.

Soil Conservation Service, 1986 Glossary of Terms Used in Soil Conservation. NSW Soil Conservation Service.

Spence, W.S., 1962. Farm planning for soil conservation in the Wellington District. *Journal of the Soil Conservation Service of NSW* 18: pgs.113-117.

Spennemann, D., 2001. The creeping disaster: dryland and urban salinity and its impact on heritage. *Cultural Resource Management* 8: pgs.22-25.

Standing Committee on Conservation, 2001. Implications of Salinity for Biodiversity and Conservation Management. Prepared for ANZECC.

Stephens, S., 2002. Landholders views on conservation covenants. *Australian Landcare*, June 2002: pgs.6-7. Agricultural Publishing Pty Ltd, Moonee Ponds, Victoria.

Stirzaker, R., Lefroy, T., Keating, B., and Williams, J., 2001. *A Revolution in Landuse: Emerging Land Use Systems for Managing Dryland Salinity*, CSIRO, Canberra.

Wagga Wagga City Council, 2001. Wagga Wagga Urban Salinity Tour. Pamphlet published by Active Printing, Wagga Wagga.

Wagner, R., 1958. Salt damage on soils of the Southern Tablelands. *Journal of the Soil Conservation Service of NSW* 13: pgs.33-39.

Wentworth Group, 2002. *Blueprint for a Living Continent.* World Wildlife Fund, Australia.

Williams, N., and Baines, G., (eds), 1993. *Traditional Ecological Knowledge: wisdom for sustainable development.* Centre for Resource and Environmental Studies, Australian National University, Canberra.

Wiseman, V., Daley, L.A., Mooney, G., Williams, S., and Williams, V., 1999. Improving Aboriginal health in Wellington, NSW: ask local Koori people what can be done. *Aboriginal and Islander Health Worker Journal* 23(1): pgs.21-23.

Zeppel, M.B., Murray, B.R., and Eamus, D., 2003. The potential impact of dryland salinity on the threatened fauna and flora of New South Wales. *Ecological Management & Restoration* 4: pgs.53-59.

Index

Living Land
Living Culture

"It's really upsetting for me to see that salt. That white dirt eating away at the land. It's just like a cancer, gobbling everything up in its path. It makes me feel no good inside because when you relate to the land in a spiritual Aboriginal way, and seeing these things, it makes me feel no good."

Evelyn Powell, Wiradjuri Elder living at Nanima Village near Wellington in Central West NSW.

The term "salinity" refers to the presence of salt in our waterways and soils at unnatural levels. Caused by the loss of native vegetation and the subsequent raising of water-tables, salinity is one of the most significant environmental problems facing Australia today. It has already generated widespread damage to agricultural lands, biodiversity, urban settlements and regional economies. Researchers have estimated that Australia loses a piece of land the size of a football field to salinity every day.

This book looks at the effects of salinity, and environmental problems more generally, on Aboriginal cultural heritage in New South Wales. It explores how environmental degradation can affect cultural places such as historic sites, people's "country", their bush foods and medicines, their well-being and their sense of community identity.

The book sets out ideas and strategies for dealing with these problems. Its core message is that we need to link the management of natural and cultural heritage and understand the relationship between people's sense of place and the condition of the environment around them.



www.environment.nsw.gov.au

New South Wales Government

ISBN 1-74137-104-X