

Applying a Statutory Duty of Care to Improve Biodiversity Outcomes at a Regional Scale

submitted by
Gillian Elizabeth Earl
BSc (Monash); BSc Hons (JCU)

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School of Environmental Sciences
Faculty of Science and Agriculture



Albury, NSW, 2640
Australia

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Certificate of Authorship

I, Gillian Earl

Hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person nor material which to a substantial extent has been accepted for the award of any other degree or diploma of a university or other institution of higher learning, except where due acknowledgement is made in the thesis. Any contribution made to the research by colleagues with whom I have worked at Charles Sturt University or elsewhere during my candidature is fully acknowledged.

I agree that the thesis be accessible for the purpose of study and research in accordance with the normal conditions established by the University Librarian for care, loan and reproduction of the thesis.*

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Date:

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Signature

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Publications and Presentations from this Research

Refereed papers

- Earl, G., Curtis, A., & Allan, C. (2010). Towards a duty of care for biodiversity. *Environmental Management*, 45(4), 682 - 696. doi: 10.1007/s00267-010-9444-z
- Earl, G., Curtis, A., Allan, C., & McDonald, S. (2010). Social acceptability of a duty of care for biodiversity. *Australasian Journal of Environmental Management*, 17, 8-17.

Conference and workshop presentations

- Earl, G., Curtis, A., & Allan, C. (2006). Who should be responsible for biodiversity management in rural landscapes? Why we need to articulate a duty of care for biodiversity. *Greening Australia Veg Futures Conference*, Albury-Wodonga, March 2006.
- Earl, G., Curtis, A., Allan, C. & Turner, V. (2007). Duty of care and stewardship in biodiversity conservation: towards a shared understanding. *Thirteenth International Symposium on Society and Resource Management*, Park City, Utah, June 2007.
- Earl, G. (2008) Duty of care for biodiversity: A policy instrument for improving biodiversity outcomes in regional catchments of Australia. *Presentation to the Department of Sustainability & Environment White Paper Scientific Committee*, Melbourne, August 2007.
- Earl, G., Curtis, A., Allan, C. & Turner, V. (2008). Duty of care for biodiversity: A framework to guide policy implementation in regional catchments of Australia. *Duty of care workshop organised by RM Consulting Group on behalf of the Department of Sustainability & Environment*. Melbourne, September 2008.

Abstract

The decline in biodiversity is a worldwide phenomenon and current rates of extinction are more dramatic than those recorded previously. In Australia, despite substantial government investment in biodiversity conservation, there is a conspicuous mismatch between policy dependability and the scale of the problem. Catchment management organisations charged with delivering effective biodiversity conservation in regional landscapes, face a challenging task in deciding how to allocate limited resources fairly.

In this thesis I explore the potential for a statutory duty of care for biodiversity to complement the existing suite of policy instruments employed to conserve biodiversity. A literature review reflects on natural resource management in Australia since European settlement, and examines natural resource management governance and policy approaches currently employed to address biodiversity conservation. It also provides an overview of duty of care as a legal concept, focusing on its application to biodiversity, and identifying impediments to the introduction of a statutory duty of care for biodiversity.

To address linguistic ambiguity between duty of care and stewardship in natural resource management discourse, a set of distinguishing characteristics was compiled, and validated through document review and key informant interviews. The characteristics provide an effective way of distinguishing duty of care from stewardship. They will enable discussions about a duty of care and stewardship in natural resource management to proceed in a clear and unambiguous way.

The main product from this research is a framework designed to guide the implementation of a statutory duty of care for biodiversity in regional catchments of Australia. I describe in detail how the framework evolved – informed and influenced by literature from multiple disciplines, as well as by feedback from key informants, workshop participants, and discussions with my supervisors. Key elements of the framework are the desired outcomes for biodiversity, supporting practices, and an adaptive management cycle – together they form a biodiversity standard that embeds a duty of care. The framework provides a mechanism for community reference committees, comprising representatives of local and non-local interested stakeholders,

to determine biodiversity standards that are suited to their local areas. The novelty of the framework lies in the way it places biodiversity as the central focus of the duty of care, and links the biodiversity standard to other policy mechanisms in an integrated system of regulatory pluralism.

Social acceptability of the framework was tested in quantitative mail surveys, and then in a qualitative case study employing semi-structured interviews with key stakeholders. The results uncovered complex and nuanced responses about the social acceptability of the framework. Many concerns expressed about the framework were related to governance issues. A desk-top evaluation confirmed that governance principles of legitimacy, accountability and transparency are currently not addressed well in the framework. Testing through pilot studies in a range of bio-physical and socio-economic sub-catchment settings is recommended if further enhancements to the framework are desired. Modification to enhance conformation to governance principles is suggested as a useful way to improve social acceptability of the framework.

While support for a normative biodiversity standard was moderately strong, the idea of a legislated duty of care was only weakly acceptable. In the future we may be able to apply a statutory duty of care to improve biodiversity outcomes at a regional scale, but not yet. Further research to understand the relationship between social norms and legal norms is recommended.

CHAPTER 1

Introduction

Context

Despite substantial policy and investment effort designed to arrest the decline of biodiversity, indications are that this objective is yet to be realised in Australia. Although a diverse range of policy approaches has been employed, and some significant gains have been achieved in biodiversity conservation, there remains a conspicuous mismatch between policy dependability and the scale of the problem, particularly in agricultural landscapes. In these landscapes, effective biodiversity conservation relies heavily on willing, active, and cooperative private landholders but, for a variety of reasons, action by private landholders at the scale required has not been achieved.

This research focuses on the potential of a statutory duty of care for biodiversity to improve the outcomes for biodiversity in agricultural landscapes of Australia. In this chapter I identify the problems with existing policies and justify the potential value of a statutory duty of care for biodiversity, provide specific aims of the research and define its scope, outline the methods used in this research, and provide an outline of the subsequent chapters.

Why biodiversity?

Biodiversity is the variety of all life forms on earth – the different plants, animals and micro-organisms and the ecosystems of which they are a part... (Australian Government, 2010)

This research concentrates on biodiversity, and not on the broader suite of natural resources. Much environmental policy research has focused on natural resources collectively. These resources include soil, water, and air, as well as biodiversity. An integrated approach to natural resource management appears sensible, and fosters an holistic perspective towards the environment, but in some cases biodiversity may miss out on the benefits of environmental policies that assist, for example, soil or water (Bates, 2001). Similarly, with sustainable development policy there has been an assumption that if humans achieve environmental sustainability, biodiversity will also

be protected (Bates, 2006). Policies that benefit other natural resources may not necessarily work in favour of biodiversity. However, policies that benefit biodiversity often work in favour of other natural resources also.

Biodiversity provides life-support for the earth, and is responsible for making and keeping the earth a suitable place where humans can live (Daily, 1997; Millennium Ecosystem Assessment, 2005). Ecosystems are an important component of biodiversity. Species and ecosystems are supported by flows of energy that are called *ecological* or *ecosystem processes*. Throughout the thesis I will use the term ecological processes. These include climate processes, hydrological processes, primary productivity, processes that lead to the formation of biophysical habitats, interactions between species, movements of organisms, and natural disturbance regimes (Bennett, et al., 2009; Wallace, 2007). Some of the products of ecological processes benefit humans, and these are called *ecosystem services* (Daily, 1997; Luck, et al., 2009). Ecological processes may also perform a variety of other functions and services that affect non-humans, but these are excluded from the definition of ecosystem services (Luck, et al., 2009) even though they may be vitally important for overall stability and resilience of biodiversity and/or the earth.

Characteristics of biodiversity

Drawing on Bates (2001), Gunningham and Grabosky (1998), and Young, Shi and Crosthwaite (2003), the following characteristics of biodiversity are noted as being important in policy research:

1. Biodiversity exhibits a range of characteristics not shared by other natural resources that warrant its special consideration in policy research. Perhaps the most critical characteristic is that biodiversity is prone to extinction, and recovery from extinction is not possible.
2. Many organisms, particularly microbes, viruses, and invertebrates are yet to be discovered, and so their ecological functions or their potential benefits to humans are also unknown.
3. Ecosystems are subject to threshold effects which may arise under conditions of severe stress. Once a threshold has been crossed, ecosystems may collapse if they are unable to return to more stable states.

4. Knowledge of the responses of organisms and ecosystems is limited. For instance, the consequences of crossing ecological thresholds are poorly understood.
5. The solutions to many biodiversity problems require ongoing effort rather than short-term prescriptive behaviours.
6. Many components of biodiversity have no or little immediate economic value, and until recently markets were not well developed, giving rise to tensions between public and private interests.
7. Biodiversity losses are frequently caused by multiple, cumulative impacts from non-point sources that emanate from many sectors and types of economic activity

State of biodiversity

The most up-to-date summaries about biodiversity in Australia suggest that sustainability of biodiversity is yet to be achieved. The State of the Environment report in 2006 found that previously reported declines in biodiversity were continuing, with particular pressures recognised in native temperate grassland and woodland regions, as well as in oceanic, riparian, and wetland environments (Beeton, et al., 2006). In grassland and woodland landscapes, where agricultural development is concentrated, the extent of native ecosystems is now less than 1% of the pre-European area in many parts of Australia, including the Murray-Darling Basin (Carter, Murphy, & Cheal, 2003).

The decline in biodiversity is a worldwide phenomenon, and current rates of species extinction are more dramatic than any previously recorded (Novacek & Cleland, 2001). Ominously, some commentators (e.g. Myers, Mittermeier, Mittermeier, da Fonseca, & Kent, 2000; Thomas, et al., 2004) call this the “sixth mass extinction”, but in contrast to earlier extinction events, the impetus this time comes primarily from human activities (Fischer, et al., 2007).

Recognised threats to biodiversity include clearing and fragmentation of habitat associated with agricultural, urban, and coastal development; alteration of hydrological flows; inappropriate fire regimes; pest plants and animals; and climate change. Historically, loss of habitat associated with agricultural development has been the principal driver (Burgman, Keith, Hopper, Widyatmoko, & Drill, 2007; de la Crétaz & Barten, 2007; Rackham, 2003).

Agriculture, including cropping, and intensive and extensive livestock grazing, constitutes a dominant land use and globally occupies 30% of the earth's landscape (Groom, Meffe, & Carroll, 2006). In the United Kingdom it accounts for approximately 70% of land use (Department for Environment Food and Rural Affairs [DEFRA], 2006), in Australia more than 60% (Bureau of Rural Sciences, 2006), and in the USA approximately 52% (Lubowski, Vesterby, Bucholtz, Baez, & Roberts, 2006). The urgency of addressing biodiversity loss in agricultural landscapes is common in all of these countries (Cork, Sattler, & Alexandra, 2006; Defenders of Wildlife, 2000; Donald, Green, & Heath, 2001), as is the reality that much farm land is privately owned or managed and thus requires positive cooperation and active management by landholders to achieve effective conservation (Bowers, 1999b; Gunningham & Grabosky, 1998).

Rationale (The research problem)

A broad range of policy instruments has been employed to address natural resource management problems, including loss of biodiversity. In Australia policy development has been largely driven by governments at both state and federal levels. Policy instruments used to promote biodiversity protection can be broadly grouped into five categories: direct action, regulatory approaches including statutory regulation and self-regulation, voluntary approaches, education and awareness, and economic approaches focusing recently on market-based instruments. While individual instruments have strengths and weaknesses, none on its own is sufficient. For this reason a portfolio of instruments is highly desirable (Doremus, 2003). For instance the focus of threatened species legislation on prohibiting actions, unless they can be proven to not cause harm, has the effect of stifling innovative efforts. In addition, the scope of threatened species legislation to operate on private land is limited. Many other instruments, such as voluntary and economic approaches, have a clear emphasis on increasing habitat quality. A missing component in the suite of instruments currently used for biodiversity conservation is a mechanism for compelling ongoing responsible management activities that avoid or minimise harm to biodiversity (Stoneham, et al., 2000). Instruments that do encourage harm avoidance or minimisation are voluntary, and to date have had only limited application. Despite that, they have achieved some positive outcomes (Paton, Curtis, McDonald, & Woods, 2004).

A statutory duty of care has been suggested as another policy approach to augment the existing portfolio of options for addressing environmental and natural resource

management problems (e.g. Bradsen, 1988; Industry Commission, 1998; Young, et al., 2003). Although a statutory duty of care to the environment has been discussed regularly in the legal and policy literature during the past two decades, and some examples exist in state legislation, there has been little effort directed at addressing how a duty of care might operate in practice at a regional catchment scale. Inspection of existing environmental duty of care statutes suggests there are shortcomings in the way they treat biodiversity. This is because many actions that may produce beneficial outcomes for other environmental elements may, in fact, be detrimental to biodiversity. For instance, spraying of herbicides to address weed problems may result in collateral damage to a range of non-target biodiversity. However, a duty of care for biodiversity would cater to the needs of many environmental elements.

The dictionary definition of *duty of care* is “A duty to use due care toward others in order to protect them from unnecessary risk of harm” (Merriam-Webster's Dictionary of Law, 1996) or “The legal obligation to take reasonable care to avoid causing damage” (Martin & Law, 2006). In its common law sense, duty of care is a central element in liability, it is associated most commonly with the tort of negligence (Luntz & Hambly, 1995), and it has been widely used in the resolution of conflicts occurring between individuals (Shepherd & Martin, 2009). In a legal sense, when a person owes a duty of care to another person, the former is required to take *reasonable steps* to avoid *foreseeable harm*, terms that are central to the tort of negligence (Bates, 2001; Mendelsen, 2007). Common law has not generally considered biodiversity or the environment as meriting attention, since it has historically focused on protecting the rights and property of individuals. Where common law has afforded protection for environmental assets, it usually relates to instances where harm to the environment affects individuals rather than because of harm to the environment *per se* (Bates, 2001, 2006). Although common law is seen as adaptable, and potentially able to accommodate an environmental duty of care (Gardner, 1998; Preston, 2007), changes to it are usually incremental (Glenn, 2000). Therefore it is unlikely that a common law duty of care to biodiversity, or the environment, will be developed in the foreseeable future.

Codification of the common law duty of care into modern statutes has occurred in a wide range of industry sectors including occupational health and safety, business, education, health, and transport. Extensive reforms were implemented in Australian jurisdictions between 2002 and 2006, initially provoked by an insurance liability crisis

that arose after some major events including the collapse of the HIH insurance companies and terrorist attacks in 2001 (Mendelsen, 2007).

In contrast to the common law duty of care, which seeks to compensate retrospectively for harm that has occurred previously, a statutory duty of care articulates prescriptive standards designed to prevent harm from occurring (Bates 2003), or to cap liability limits (Mendelsen, 2007).

After Bradsen (1988) first made the suggestion, a number of statutes containing an environmental duty of care were introduced in state jurisdictions of Australia, and later the Industry Commission recommended a unifying statutory duty of care to the environment (Industry Commission, 1998). Significant discussion about the merits of a statutory duty of care to the environment has followed in both the legal and policy literature (e.g. Bates, 2001, 2003a, 2003b, 2006; Binning & Young, 1997; Crosthwaite, 2001; Gardner, 1998; Martin, Bartel, Sinden, Gunningham, & Hannam, 2007; Young, et al., 2003), and in a number of federal government inquiry reports (e.g. House of Representatives Standing Committee on Environment and Heritage [HRSCEH], 2000, 2001; Productivity Commission, 2004). In addition, Bates (2001) reviewed the potential value of a statutory duty of care specifically for biodiversity.

Despite the substantial interest in a statutory duty of care to the environment, and the existence of general statements of environmental duties in legislation, there has been little effort directed at addressing how a duty of care might operate in practice at a regional catchment scale. From the literature it can be concluded that research and practice into the practical application of a statutory duty of care in a natural resource management context is at a very early and formative stage.

In this thesis, I consider why progress in this direction has been limited, and endeavour to address some of the more significant impediments. A major element of this thesis involves the development of a framework that outlines how a statutory duty of care for biodiversity could operate in a regional catchment setting in a way that would be both effective and socially acceptable to a range of interested stakeholders including farmers, natural resource management agencies, and external interest groups. This thesis is informed substantially by published literature as well as by grey literature in the form of reports from governments, and by material from other bodies such as the Organization for Economic Co-operation and Development (OECD), and the European Commission.

The choice of a regional catchment setting for this study reflects the importance of the regional scale in Australian natural resource management governance (e.g. Wallington, Lawrence, & Loechel, 2008). The establishment of catchment management organisations as the primary delivery organisations for incentives to promote natural resource management has intensified the need for effective policy instruments to help guide their activities.

My story

My interest in “the bush” grew from camping and bushwalking trips I made as a student. Frustrated by my inability to identify native plants, I changed course and studied botany as my major subject, hoping that would overcome my lack of botanical understanding. After completing a BSc, my first job involved undertaking vegetation survey work. For most of the next twenty years I worked for the Victorian Government, carrying out vegetation surveys, and threatened species management in various parts of the state including East Gippsland, the Central Highlands, the Otways, the Grampians, the North-east, the Mallee, and the Murray Valley regions.

After settling in the South West Slopes region of NSW in 1997, I was struck by the ecological, institutional, and social differences between that area, and the areas I had previously worked in. In Victoria my skills and expertise had mainly been deployed on public land, often in state forests or national parks. Agriculture is a dominant land use in the South West Slopes bioregion. Here there were precious few public land reserves in existence, and the most intact native vegetation occurred in small remnants, often on road and rail reserves, in cemeteries or travelling stock reserves, and on privately owned land. Where Victoria had a clear institutional focus on threatened species conservation (I was an inaugural Flora and Fauna Guarantee Officer), in NSW at the time, the main focus was on salinity, soil, and water, and less so on biodiversity issues. In NSW the landscape was predominantly a productive agricultural one, and under private management. Native biodiversity was, and still is, largely embedded within that extensive agricultural landscape. Although threatened plant populations exist, it is the landscape as a whole that must be focused on if biodiversity is to be managed sustainably in agricultural areas. In this context, policy instruments that worked effectively for biodiversity conservation on public land were ill-suited to application in agricultural landscapes. In those landscapes, effective conservation does not only derive from sound scientific knowledge; it is heavily dependent on people, especially the

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people who own the land where biodiversity occurs. It was this realisation that inspired me to search for a better approach, one that would improve biodiversity outcomes in agricultural areas of south-eastern Australia, but do so in ways that fostered and encouraged positive, cooperative management by private landholders.

Duty of care offered a potential way of expanding the focus of biodiversity conservation beyond the current emphasis on high quality and high threat assets, to a more inclusive scale encompassing the full spectrum of biodiversity, and applicable to all land managers, not just the ones who participate voluntarily. I have my supervisors to thank for helping me to shape this idea into the research project that has evolved.

Aim and scope of the study

In this study my broad aim is to explore the potential for a statutory duty of care for biodiversity to improve outcomes at a regional scale.

As a corollary to this broad aim, I also aim, more specifically, to:

- Address some of the major impediments preventing the development of a duty of care, including the confusion surrounding the linguistic application of duty of care and stewardship.
- Develop a conceptual framework that will assist:
 - Policy makers who might wish to prepare duty of care legislation.
 - Program managers who might have to both undertake their tasks in accordance with a duty of care, and explain to landholders how a duty of care might work.
 - Landholders to understand what their responsibilities under a duty of care might be.
- Stimulate discussion about a statutory duty of care for biodiversity in particular, and the environment more generally.

Research questions

The overarching inquiry addressed in this thesis is:

Can we apply a statutory duty of care to improve biodiversity outcomes at a regional scale?

The inquiry is answered through the following research questions:

1. Why do we need to articulate a duty of care for biodiversity?
2. What is the cultural basis for the duty of care concept?
3. What could a framework supporting a duty of care for biodiversity look like?
4. How socially acceptable would this framework be?

Scope

Biodiversity occurs across all land tenures and all landscapes, so it is valid to question why this study is focused on private landholders in agricultural landscapes. In order to define a manageable project for a thesis considering the potential value of a statutory duty of care for biodiversity, I found it necessary to focus attention on an illustrative segment of the landscape. The landscape that I have chosen to focus on is a predominantly agricultural one. It is similar to the one I live in, the one where I first appreciated the limitations of existing policy approaches, where the greatest challenges for biodiversity conservation exist, and where the greatest potential gains stand to be made (Beeton, et al., 2006).

The research question reflects the exploratory nature of the study: lessons learnt from it may be applicable across a broader range of tenures, natural resource management issues, and land managers.

Methods - an overview

The main aim of this thesis was to explore the potential for a statutory duty of care for biodiversity to improve biodiversity outcomes at a regional catchment scale. One of the key tasks associated with this aim was to develop a conceptual framework to guide the implementation of a statutory duty of care for biodiversity at a regional catchment scale. In developing this conceptual framework (see Figure 15, p.141, and back cover insert for an enlarged reproduction) I drew on literature from a range of disciplines, as well as a range of methods and data gathering events. The form of the framework changed as the research progressed. This developmental process sought to bring a range of policy instruments together and meld them into a coherent set of relationships.

After developing the duty of care framework I tested it for social acceptability. I did not aim to generate statistically generalisable findings from the data, but rather I sought to highlight a range of positive and negative social responses to the duty of care framework. The field components of the research took place in capital and regional cities, and in rural Victorian settings, where agriculture is a dominant land use. Mail surveys in two regional catchments yielded preliminary, quantitative data on the social acceptability of the framework. A case study yielded more detailed, qualitative data.

The conceptual framework for a duty of care for biodiversity provided the focus for interviews and workshop data gathering.

Key elements of the framework include:

- A standard of biodiversity management derived from desired outcomes (minimised foreseeable harm) tailored to suit catchment or sub-catchment settings, coupled with supporting practices (reasonable steps) designed to achieve those outcomes.
- A committee of reasonable people charged with responsibilities for determining standards relevant to a sub-catchment area.
- An adaptive management cycle to facilitate monitoring, learning and adaptation between desired outcomes and supporting practices.
- Pathways to connect the biodiversity standard with positive rewards for above-standard performance, and educational, transitional, or punitive responses to below-standard performance.

Method	Research question	Chapter & methods
● Literature review	1 Why do we need to articulate a duty of care for biodiversity?	4 ● ● ●
● Document review 1	2 What is the cultural basis for the duty of care concept?	5 ● ● ●
● Document review 2	3 What could a framework supporting a duty of care for biodiversity look like?	6 ● ● ●
● Key informant interviews	4 How socially acceptable would this framework be?	7 ● ● ● ● ●
● Workshop		
● Mail surveys		
● Case study interviews		
● Evaluation		

Figure 1 Relationship between research questions, methods, and thesis chapters

Methods were selected according to the questions to be addressed. In this sense the research approach may be considered pragmatic, or derived from an objectivist/realist starting point (Patton, 2002). Literature review has been used extensively. Document reviews (Seale, 2003) and interviews have been undertaken to provide external validation (Barbour, 2001; Kvale, 1996; Yin, 2009). Mail surveys and a case study were appropriate methods for testing the merits of a framework in real world situations (Yin, 2009; Patton, 2002). Throughout this research multiple methods have been employed to address individual research questions. The relationship between methods, key research questions, and thesis chapters is illustrated in Figure 1.

Outline of thesis

The thesis is presented in a series of chapters, as follows:

Chapter 2: Review of literature. This includes a history of land and natural resource management in Australia since European settlement, emphasising the common discourses and governance settings that have influenced biodiversity conservation. This leads into a review of current policy instruments and an overview of the duty of care concept, and how the law in Australia has addressed biodiversity.

Chapter 3: Research design and methods. Justification of the paradigm and methodology used is addressed in this chapter. The individual methods used in the thesis, and their relationship to key research questions, are described in detail.

Chapter 4: Addressing linguistic ambiguity associated with duty of care. This chapter addresses research question 1 in part. Linguistic ambiguity is identified in the literature review as an impediment to the clear articulation a duty of care for biodiversity. I compile a set of characteristics to assist overcoming linguistic ambiguity, drawing on information from the literature review as well as a detailed document review and key informant interviews.

Chapter 5: Exploring the cultural basis for the concept of caring for others. In this chapter I address research question 2, and explore the occurrence of duty of care concepts in a range of disciplines including, law, economics, philosophy, anthropology, and religion. Key informant interviews with Australian experts in the respective fields were undertaken to validate a model derived from the literature.

Chapter 6: Development of an operational framework for a duty of care for biodiversity. In this chapter I address research question 3, and describe how the duty of care framework was developed. Starting with ideas from relevant literature, the framework evolved iteratively through discussions, workshops, mail surveys, submissions, and interviews, into the form discussed in the following chapter. The layout of this thesis implies a linear progression, corresponding to the order of the chapters. This belies the evolution of this work, and the framework in particular, which involved repeated iterations and reformations, subsequently leading to the final design.

Chapter 7: Testing the framework for social acceptability. This chapter addresses research question 4. I employ different methods to test the framework for social acceptability. Testing includes mail surveys, and a case study exploring social acceptability of the duty of care framework from the perspective of stakeholders in the West Gippsland region of Victoria, This chapter also describes a desk-top evaluation of the framework against governance and regulatory policy principles.

Chapter 8: Discussion. In this chapter I discuss contributions to knowledge that have arisen from the research.

Chapter 9: Conclusion. In this chapter I summarise the research objectives and findings, discuss the implications for natural resource management policy and practice, and identify opportunities for further research.

Assumptions

Two assumptions underpin this research:

- The wider Australian community values biodiversity, and has an abiding interest in its conservation. This assumption is based on the multitude of biodiversity institutions, laws, agreements, and treaties to which democratically elected governments of Australia, and individual states and territories are signatory.
- The development of novel policy approaches is an integral part of the challenge to achieve sustainable biodiversity management.

CHAPTER 2

Review of literature

Introduction

This literature review is divided into two parts. In the first part I review the literature on policy approaches to biodiversity and natural resource management in Australia. As part of this review I highlight key historical stages of natural resource management in pre-European and colonial Australia. I then review contemporary (post-1950) policy and management of biodiversity and natural resources, substantiating a need for further policy development. In the second part I review the literature on duty of care, identifying problems with the concept, and concluding with suggestions about the potential benefits of a statutory duty of care for biodiversity.

Literature review forms a major component of this thesis, not only providing the context in which the research was conducted, but also providing substantial data that have contributed to answering of the research questions. Sources of information include literature from a range of disciplines including natural history, social history and anthropology; religion and philosophy; social, biological, economic and political sciences; and policy science. Written work has been sourced from published journals and books, grey literature, including government reports and policy documents, as well as web sites.

Part A – Approaches to biodiversity and natural resource management in Australia

The main focus of this section is on contemporary approaches to biodiversity and natural resource management in Australia, and the main types of policy instruments employed. However, some mention of the far lengthier history of natural resource management by the Indigenous Aboriginal inhabitants is warranted, to enable the reader to understand the dramatic contrast in management and cultural understanding of natural resources that occurred after European settlement.

Pre-European natural resource management

Indigenous peoples have been in Australia for at least 40,000 years (Allen & O'Connell,

2003; O'Connell & Allen, 2004), and perhaps more than 50,000 years (Hudjashov, et al., 2007). Throughout this period they have governed the land, water, biodiversity, and the environment according to a holistic and all-encompassing worldview underpinning laws (Kwaymullina & Kwaymullina, 2010), and which is consistent with a chthonic legal tradition found in many indigenous societies around the world (Glenn, 2000).

Societies governed by chthonic law characteristically live in, or close to, harmony with the natural world (Glenn, 2000). The Australian Aboriginal view of the world is one of systems within systems, and networks that establish relationships between all things, human and non-human (Kwaymullina & Kwaymullina, 2010). In this worldview everything is alive, and the laws are timeless and came from the land when the ancestors were born (Watson, 2002). A complex kinship system determines the nature of relationships between people, animals, plants and other things (Kwaymullina & Kwaymullina, 2010). It is the relationship that determines what rules apply, and in this sense Aboriginal law is localised and specific (Australian Law Reform Commission [ALRC], 1986), with “country” being the focus for individual law systems (Rose, 2005).

Similar beliefs about the Dreaming creation, and similar ceremonies and celebrations are shared by all Aboriginal people (Bennett, 1986). All living entities are considered moral agents (Rose, 1988), and are bound by deeply held, mutual and reciprocal, duties and responsibilities to care for all members of country (Horton, 2000; Rose, 1999, 2005). Between countries different laws may apply, but mechanisms for maintaining law and order, and for resolving disputes are common to all Aboriginal laws (ALRC, 1986).

Totemic relationships linking people with ancestors, animals, plants and places gave rise to important laws in Aboriginal culture (Callicott, 1994). Typically a person's totem may not be hunted or eaten, at certain times or in certain places (Bennett, 1986), and the performance of particular rites and ceremonies is an important duty that must be undertaken in accordance with laws (Callicott, 1994). Restricted areas for hunting and eating often coincide with important breeding or habitat areas, and have a beneficial ecological function (Gilmore, 1986). The use of periodic fire governed by traditional Aboriginal laws fulfilled an important ecological function in maintaining habitats for a range of small mammals and plants (Gott, 2005; Murphy & Bowman, 2007; Yibarbuk, et al., 2001).

The idea that Aboriginal people lived in equilibrium with nature (Glenn, 2000), implies a sense of balance or sustainability about their management of natural resources (Keating & Harle, 2004). Early European settlers failed to recognise the signs of an Indigenous farming culture (Barr & Cary, 1992; Frawley, 1994), inferring instead a pristine landscape “as nature has left it” (Howitt 1855 as cited in Barr & Cary, 1992, p. 6; Bonyhady, 2000b). In current language it could be argued that the “environmental footprint” of indigenous Australians was so subtle that the first settlers missed it altogether, noting only an absence of the typical European signs of civilisation – buildings, fences, cultivation, agriculture (Barr & Cary, 1992; Frawley, 1994). What they did not recognise were the sophisticated methods of transitory cultivation and seasonal harvesting of a wide range of plant species (Jones, 1969; 1980 as cited in Bowman 1998), and hunting of animals, nor the impact of fire-stick farming on the landscape (Bird, Bird, Codding, Parker, & Jones, 2008; Jones, 1969; Pyne, 1990).

Modern anthropological research has demonstrated the complex relationships that exist between indigenous Australians and their environment, relationships where humans and other living organisms are all considered to be moral beings, each acting responsibly towards each other (Bennett, 1986; Horton, 2000; Rose, 1988, 2005). Strict laws, customs and taboos govern the use of plants, animals, and water in a way that ensures an ongoing supply of natural resources is sustained (Hallam, 1975, 1989), suggesting an obligation to care that extends well beyond human beings. Dreaming associations between humans, plants, animals, sun, moon and stars have given rise to behaviour that approximates closely with the modern notion of stewardship and an environmental ethic (Barr & Cary, 1992; Callicott, 1994; Gammage, 1994; Gilmore, 1986; Rose, 1996; Willmot, 1994).

The existence of an environmental ethic among Aborigines is a hotly debated topic. Those who prefer to deny the existence of an ethic draw on mega-faunal extinctions, fire impacts, introduction of the dingo and the limitations of available technology as evidence to support their case, (for example Barr & Cary, 1992; Flannery, 1998). Rose (1996) points out that the concept of ‘conservation’ is a modern construct that Aboriginal people had not until recently, needed to consider, because catastrophic loss of species had not occurred, and was not imminent.

Debate about whether an ethic preceded a practice, or vice versa, would seem to be circular and unhelpful; it could be argued that many ethics are based on practical

experience or need. What is clear, however, is that the first Europeans viewed indigenous Australians as primitive, inferior beings (Barr & Cary, 1992; Horton, 2000; Tench, 1791) in need of civilising, and people from whom they could learn little (Gammage, 1994; Heathcote, 1972; Main, 2005).

Natural resource management, 1788 - 1950s

The arrival of Europeans signalled a rapid, dramatic, and irrevocable change in the way biodiversity and natural resources in Australia were managed (Powell, 1976; Proudfoot, 1979). After the First Fleet and other convict ships, the first free settlers arrived in Australia from England in 1793. The new arrivals came with great expectations, and their established attitudes and beliefs about the role of humans and nature, and land and its appropriate uses. For the first few decades survival was their most important objective.

Prevailing discourses at settlement

A number of important social discourses were prevalent at the time of settlement. These included:

- A Judaeo-Christian interpretation of the Bible promoting human dominion over Nature (Blackstone, 1765; Callicott, 1994; White, 1967), without consideration of the rights of other creatures, or any responsibilities towards them (Frawley, 1994).
- The Lockean utilitarian philosophies which viewed that land:

...left wholly to nature, that hath no improvement of Pasturage, Tillage, or Planting, is called, as indeed it is, waste... (Locke, 1690).

Productive use equated, without question, to the traditional farming practices that had been carried out in Britain and Europe for many centuries (Rolls, 2000). Scarcity of food was a predominant concern at that time, in contrast to biodiversity, which had little importance beyond its utilitarian value. The perceived absence of productive use of the land by the Aborigines was not only seen as irresponsible (Barr & Cary, 1992), but it also gave support to the belief that land in Australia was not legitimately owned, and provided justification for claiming it (Banner, 2005; Frawley, 1994). The concept of *terra nullius*, land without law, was the founding principle upon which the European occupation of

Australia proceeded (Banner, 2005; Bradsen, 2000; Frawley, 1994; Reynolds, 2003).

- The Lockean labour theory of property, that property rights arise from mixing one's labour with the land, was also popular at the time (Bromley, 1996; West, 2001), laying the foundation for the absolutist property rights view that persists today (Reeve, 2002);
- The new enlightenment philosophies of René Descartes and Francis Bacon, also popular at time of settlement, added a further dimension to the values and attitudes of the new settlers. These philosophies promoted the idea that humans, by virtue of their power to think rationally, were separate and superior to all other creatures. Such views gave clear expression to the anthropocentrism that has underpinned much of western society, and reinforced the idea that humans could exploit nature freely (Callicott, 1994; Frawley, 1994; Mathews, 1994; Proudfoot, 1979; Webber, 1994). Alternative philosophies, such as those of Jacob Bauthumley (Jaekle 2011) and William Blake who opposed the dualism implicit in the works of Locke, Descartes and Bacon, acknowledged the divine within all living creatures (Hutchings 2002; Thomas 1996). Although widely known in England, there is no evidence that these philosophies were influential in the earliest years of settlement.

Agricultural development

In the earliest years of European settlement government was substantially driven from Great Britain. Colonial governments were primarily concerned with establishing law and order in the penal colony. For the colonial administration, the prospective benefits to be gained from the fledgling colony improved as exploration revealed an abundance of natural resources. Forests of Red Cedar were suitable for harvesting (Betteridge, et al., 2004), extensive areas of grassy woodlands were available for agricultural establishment (Barr & Cary, 1992), and whale and seal colonies in nearby off-shore waters promised lucrative supplies of oil (Chamberlain, 1989). In addition, the experimental program of John Macarthur with Spanish merino fine wool sheep was rapidly developing into a viable export industry, and pastoralism was also thriving (Barr & Cary, 1992).

Increasing numbers of settlers arrived throughout the early 1800s, and the colonial

administration could barely keep up with the demand for land. During the period from 1820 to 1846, the British perception of Australia underwent a gradual transformation, changing from a despicable penal colony, to a golden land of opportunity where fortunes awaited willing settlers (Clark, 1981; Frawley, 1994; Heathcote, 1972; Powell, 1976).

Development of the “waste lands” became the primary activity in the colony. The colonial administration favoured controlled, close settlement of limited acreages aimed at establishing family or “yeoman” farms to produce crops and dairy products to feed the colony (Barr & Cary, 1992; Frawley, 1994). Land was released through grants to reformed convicts, and sale to free settlers (Australian Bureau of Statistics [ABS], 1910). Government-sponsored clearing of native vegetation occupied a major part of settlers’ time, and in 1824 Governor Brisbane celebrated:

...11 500 acres cleared in two years, compared with only 55 000 acres in the first thirty years of settlement... (as cited in Bonyhady, 2000b, p. 80).

In the first of many attempts to gain control of pastoral land development, the *Imperial Wastelands Act 1846* (UK) was proclaimed by the British colonial administration. Through this legislation, the colonial government introduced a unique leasehold system that gave limited private property rights to squatters, permitting tenure of up to fourteen years and, for the first time, legitimising their activities (ABS, 1910; Holmes, 2000; Weaver, 1996).

Amended versions of the Wastelands Act followed, including the *Australian Waste Lands Act 1855* (Qld) (State of Queensland, 1996) and, most notably the *Crown Lands Alienation Act 1861* (NSW) and the *Crown Lands Occupation Act 1861* (NSW), collectively known as the Robertson Land Acts. Under these Acts, both settlers and pastoralists were able to occupy land under leasehold tenure with clearly specified conditions (Barr & Cary, 1992; Holmes, 2000).

For pastoral leases, use of the land was limited to grazing for profit, and agriculture was limited to personal domestic needs. Leasehold titles were available for an annual rental fee, and placed limits on the maximum acreage available, and the duration of tenure, but no other duties were placed on squatters (Holmes, 2000). The *Crown Lands Alienation Act 1861* (NSW) placed conditions on settlers attempting to establish viable agricultural enterprises. Similar to the pastoral leases, settlement leasehold was defined

around annual payments over a defined acreage, to a maximum of 640 acres. These agreements were offered in perpetuity, with the option of land purchase, but they also specified stringent conditions, including the requirements to:

- Build a residence within three years.
- “Improve” the land (Holmes, 2000; Powell, 1976), by fencing, clearing trees and planting crops (Barr & Cary, 1992; Bonyhady, 2000b).

Compensation for improvements undertaken by lessees was recognised, and some pre-emptive rights to purchase land upon successful completion of lease agreements were also offered. During this period much of the best pastoral land was converted to freehold (ABS, 1910; Holmes, 2000; Weaver, 1996). Some commentators, (e.g. Bradsen, 2000; Holmes, 2000) have argued that leasehold tenancies to land represented a golden opportunity to formalise land management obligations that was largely squandered with the transfer to freehold title.

Entrepreneurial squatters who had illegally occupied grazing runs in pursuit of lucrative wool enterprises, and who were formerly viewed as common criminals, transformed themselves into wealthy and powerful members of the colonial society, as they progressively claimed property rights over vast tracts of land (Barr & Cary, 1992; Weaver, 1996).

The model of government-sponsored land management in pursuit of the yeoman farm was repeated in other states including South Australia (Meinig, 1962), Victoria (Public Record of Victoria, 2008), and Tasmania (Davidson, 1938). After the 1850s gold rush, and two World Wars, settlement programs were employed as a means to disperse large population increases from urban centres (Barr & Cary, 1992; Dovers, 1992; Vanclay & Lawrence, 1995). In reality many of these land allocations were too small to support a family business, and efforts to survive on them lead to soil erosion, extensive tree clearance, and dryland salinity (Vanclay & Lawrence, 1995). Land settlement programs continued well into the 1960s, for instance in the Heytesbury district of Victoria, the Brigalow area of Queensland and the Ord River area of WA (Barr & Cary, 1992; Robin, 1998; Vanclay & Lawrence, 1995). Many of the new participants had no farming experience (Vanclay & Lawrence, 1995).

The colonial administration employed other regulatory measures to address environmental problems. Within the first five years of settlement governmental orders

were issued to address concerns with water quality and sedimentation, because of their impact on human health (Bonyhady, 2000b; Burton, 1992; Powell, 1976). Repeated issuing of similar orders suggests limited effectiveness or enforcement of their objectives (Bonyhady, 2000b; Powell, 1976).

Red Cedar and whale harvesting were at first the major export industries, and proceeded in a largely unregulated manner. Governor King in 1802 issued an order attempting to regulate cedar harvesting (Betteridge, et al., 2004; Bonyhady, 2000b), and in 1803 was considering a similar order to restrain whale hunting (Bonyhady, 2000b). On Norfolk Island, regulations were introduced in an attempt to reign in the slaughter of Providence Petrels, which formed an important food source for settlers there (Bonyhady 2000b). These regulations, although ostensibly directed at protecting biodiversity and environmental condition, were in reality mostly concerned with human health or employment wellbeing.

Colonial perceptions of native vegetation

The first descriptions of eucalypt forests were expressed in positive terms, but after thirty years they were looked on rather disparagingly. Words such as “interminable”, possessing a “dreary, uninteresting sameness” or “gloomy, devoid of diversity, beauty and sublimity” characterised these interpretations (Bonyhady, 2000b), and conveyed unfavourable comparisons with the vegetation of their English homeland. The task of clearing forests was looked on as noble in its intent, replacing “endless continuance of perplexity” of the vegetation with “order and useful arrangement” (Proudfoot, 1979), reinforced by religious and philosophical ideologies about the relationship between humans, Nature, and land. Inland explorers meanwhile, described the grazing potential of grassy ecosystems in glowing terms. In contrast colonial botanists such as Banks and Solander revelled in the novelty of the flora.

Over time, new generations of locally-born inhabitants, who lacked familiarity with the English countryside, became noticeably more accepting of the Australian landscape Bonyhady (2000b). By the mid 1800s, the well-to-do in society in Great Britain and Australia were absorbed in “fern fever” that saw all things associated with ferns celebrated (Bonyhady, 2000b). Eugene von Guerard’s painting *Ferntree Gully in the Dandenong Ranges* achieved lasting fame in Melbourne and London during this period (Bonyhady, 2000b). In Australia, reservation of small parcels of land “for public recreation and preservation of native flora” occurred, frequently associated with

rainforests, waterfalls and fern gullies along the east coast, and in areas that were highly sought for timber and agricultural production (Bonyhady, 2000b; Stubbs, 1999). The very first public reserves created in Australia, the Wombeyan Caves Reserve in 1865 and the Jenolan Caves Reserve in 1866 (Hamilton-Smith, 1998; Powell, 1976), were almost certainly established to preserve their natural features.

The burgeoning population in Sydney was demanding some public open space to provide relief from the pervasive urban squalor (Hall, 1988; Pettigrew & Lyons, 1979). In response to this demand, the National Park (later renamed Royal National Park) was created in 1879 to provide for the health, recreation and enjoyment of the population (Anon, 1979; Hall, 1988; Pettigrew & Lyons, 1979). National Parks in the other States soon followed. National parks were managed by boards of trustees or committees of management, who were mostly influential men, either in business or in wool. Their primary management objectives for parks focused on the recreational needs of the urban community. At least for the Royal National Park, development included such things as ornamental plantings, gardens, lawns, tennis courts, racecourses, accommodation, hunting, and timber cutting (Anon, 1979; Pettigrew & Lyons, 1979).

While the beauty and strangeness of Australian animals was admired, many species were hunted and killed in great numbers. Care for animals was limited to species viewed as suitable for game hunting, whether native or introduced, and these were protected under the *Game Protection Act 1866* (NSW) (Stubbs, 2001). As a result, many native animals were treated like vermin, and conversely game species were protected. Similarly, native plants were the subject of much awe and inspiration (Strom, 1979), but collected in large quantities by park visitors, to the extent that some species, such as Waratah, became seriously depleted in a short space of time (Pettigrew & Lyons, 1979), resulting in 1908 in a prohibition on collection in the Royal National Park.

Environmental awakenings

Concerns in the colony about the environmental impact of humans, including biodiversity, surfaced through the latter half of the 19th century, expressed in newspapers (Bonyhady, 2000b), and in public orations (Powell, 1976). This concern was articulated in more detail by Marsh (1864) in his book *Man and Nature*, which became widely read both in the USA and Australia (Powell, 1976). In it he warned that:

“Man has too long forgotten that the earth was given to him for usufruct alone, not for consumption, still less for profligate waste”,
(Marsh, 1864, p. 36, as cited in Powell, 1976).

Marsh’s book provided an early challenge to the prevailing development ethos (Frawley, 1994) and expressed clearly the destructive role that humans were having on the environment (Bonyhady, 2000b; Powell, 1976). In 1876 during a lecture presented in Melbourne, Baron Ferdinand von Mueller, the Government Botanist, spoke in words evoking a conservation ethic of wise use and inter-generational equity (Gillbank, 1993; Powell, 1976).

There was high level of interest in native vegetation associated with waterfalls and tree ferns, but as Bonyhady (2000b) points out, this often produced undesirable destruction from trampling, weeds, rubbish and uncontrolled collection, particularly of ferns. Interest in the reserves was primarily aesthetic, without care to minimise harm to the native vegetation, at least at a local scale.

Periodic drought, combined with extensive clearing led to serious issues with soil erosion, and the first serious government attempts at regulation to curb the problem were initiated in the late 1800s (Bradsen, 2000; Burton, 1992). Frances Myers, also known as “Telemachus” a regular commentator in the Argus newspaper, condemned pastoralists for their greed and inhumanity when thousands of animals perished during the 1883-84 drought (Bonyhady, 2000b). Rabbits had been introduced for the pleasure of hunters and were actively moved to new areas, but populations rapidly exploded to plague proportions by the 1890s, causing further land degradation (Rolls, 1994). The late 1800s was a period of economic prosperity, with the wool industry flourishing. But in the 1890s, prosperity gave way to economic depression, leading to bank closures, cut backs in public works programs and the ruination of many pastoralists who were operating with high debt levels (Menghetti 1984). Growing environmental concerns about profligate and wasteful use of natural resources led to “wise use” concepts coming into favour, both in Australia and the USA (Frawley, 1988; Wildes, 1995), and the introduction of the first flora and fauna protection legislation in Australia (Frawley, 1988).

By the mid 1850s the forestry industry was well established also. Forestry practices were wasteful and environmentally damaging, leading to the introduction of regulation to control harvesting practices. Declaration of the first forestry reserves occurred around

the 1860s (Bonyhady, 2000b), and was intended to protect areas from agricultural settlement (Frawley, 1994; Powell, 1976). Towards the end of the 19th century, pressure to reserve forests and woodlands grew in the face of competing demands for agricultural land. In the Bendigo area the Forestry Alliance, an alliance of mining and forestry interests, formed in 1888 with the intention of limiting the spread of agriculture (Bonyhady, 2000b), successfully lobbying for the declaration of forest reserves, many of which have more recently become national parks (e.g. the Box Ironbark national parks of Victoria).

At Federation, responsibility for natural resources, including biodiversity, was assigned to the newly formed centralised state governments. National parks and other public land reserves were proclaimed more with the intention of providing recreational opportunities for the growing urban population and acclimatisation societies, than for biodiversity conservation, and hunting, timber cutting, ornamental plantings and other pursuits were permitted (Anon, 1979; Pettigrew & Lyons, 1979; Strom, 1979). Meanwhile governments controlled the allocation of land for agricultural development elsewhere in rural areas.

The first half of the 1900s was a boom time for agriculture in Australia (Burton, 1992; Frawley, 1994). In this period, ‘wise use’ ideology became popular, an approach perceived by some to be not unlike current ‘sustainable development’ concepts (Wildes, 1995). Within ‘wise use’ concepts, it was assumed that biodiversity and natural resources were quite rightfully there for the use of humans, but in a sustainable way. Reeve (1999) comments that in the early years of settlement, the surrounding bush was abundant, and ecosystem processes functioned to filter out the harmful effects of agriculture. At the same time there was little awareness about how the actions of one landholder could affect others.

Countrymindedness

Towards the end of the 19th century, a distinctly Australian rural ideology developed. “Countrymindedness” (Aitken, 1985), or the Australian agrarian myth (Wear, 2000), became popular in the 1890s. According to the countrymindedness ideology, all Australians had country people, including farmers, graziers and other rural people, to thank for the prosperity and high standard of living that most enjoyed. The pioneering efforts of settlers in “taming the bush” were celebrated. Country people were, according to the ideology, innovative, self-reliant, practical and virtuous. Life in the country was

considered superior to that of the city dweller. Incomes were higher, terms of trade for agricultural commodities were good, transport and services were well established, social networks were strong, and the outdoor lifestyle was enjoyable and afforded independence. With countrymindedness there was no doubt that agricultural and pastoral pursuits were the right things to do in rural places (Lockie, 2000), leaving no room for conservation.

At the time of its origin, there was much truth in the countrymindedness ideology. At the turn of the century the Australian economy was “riding on the sheep’s back” with agricultural industries contributing about 25% of the GDP (ABS, 2005; Woods, 2001), and agricultural commodities making up 66% of exports. Primary production of all types accounted for about 36% of employment. Before the gold rushes in the 1850s, most people lived in the country (Aitken, 1985). Approximately 48% of the population lived in small settlements with fewer than 2500 people, and 36% lived in the capital cities (Woods, 2001). Agricultural industries commanded great respect in political circles. Much of the strength of countrymindedness came from its emphasis of the differences between city and country people and life, and the positive reinforcement and feelings of pride in country life it stimulated (Aitken, 1985). Countrymindedness later gained political expression when the Country Party formed in 1920 (Aitken, 1985).

The decline of the countrymindedness ideology beyond the 1950s parallels the decline in influence of the Country (National) Party, and both can be linked to common causes. Advances in technology, declining terms of trade for farmers, increasing attractiveness of city life (including for education), and a decrease in the relative value of agriculture compared to mining and exploration, manufacturing and the service industries, has stimulated a mass exodus of people, farmers and their children, from the country to cities. Economic rationalist policies have placed further strains on the yeoman family farm model by progressively removing protectionist subsidies and policies, such as the superphosphate bounty (1975), the dairy subsidy (2000), and in 1983, the tax incentive to clear native vegetation (Barr & Cary, 1992). In contrast to turn of the century statistics, agriculture is currently estimated to contribute 2.5% of the GDP (ABS, 2010a), with agricultural commodities comprising 16% of exports (ABS, 2010a; Roberts, Haseltine, & Maliyasena, 2009). Over 60% of agricultural produce is exported, and overall there has been an increasing trend in the value of agricultural exports. But the dramatic expansion in mineral and resources production accounts for

the reduction in the overall contribution of agriculture to GDP and exports (Roberts, et al., 2009). In 2009 employment in the agricultural sector was estimated to be 359,900 or 3.3% of the workforce (ABS, 2010b), a decline which is paralleled by the increasing proportion of people living in capital cities estimated to be at 63.9% of the population (ABS, 2010a).

These changes have resulted in massive challenges to family farms, which comprise 99% of agricultural enterprises in Australia (Productivity Commission, 2005). Along with changes in global governance of agriculture and increasing interest in environmental degradation that has occurred in agricultural landscapes, they have caused the relevance of the country-mindedness ideology to diminish.

Early Conservation Movement

While country-mindedness ideology was developing in rural areas, in cities the conservation movement was gaining momentum. The NSW Wildlife Preservation Society formed in 1909. It gave the first coordinated voice to a growing but fragmented, conservation-minded part of the population (Powell, 1976) that was increasingly concerned by the style of management in national parks (Pettigrew & Lyons, 1979). In the early 1900s biodiversity conservation was focused on public land through declaration of national parks (Strom, 1979), avoiding any conflict with private property rights (Wallington, et al., 2008). In response to growing concerns of the conservation movement, from the 1920s national parks management shifted from a recreational/amenity focus towards the conservation of native flora and fauna (Pettigrew & Lyons, 1979).

After World War II government intervention sought to stabilise agriculture through subsidies and support programs (Bell & Park, 2006; Higgins & Lockie, 2001) to maintain economic activity and ensure food supplies for the growing population (Argent, 2002). In Australia between 1930 and 1950, growing awareness of the connection between agriculture and land degradation saw soil conservation legislation introduced by State governments (Reeve, 2002), with scientific institutions mainly providing advisory services to landholders (Bradsen, 1988). In this period management of land degradation was still largely the responsibility of private landholders (Wallington, et al., 2008).

Aldo Leopold's land ethic gained currency in the 1940s (Leopold, 1949), presenting an ecocentric view of nature, grounded in evolutionary biology and

ecological principles, rather than religious or Western moral philosophical traditions (Callicott, 2006). Leopold's land ethic implored people to stop seeing biodiversity as just a commodity, and environmental land-use problems in purely economic terms (Boer, 1984; Frawley, 1994). Leopold's work laid the ethical foundation for the developing global environment movement.

Contemporary approaches to biodiversity and natural resource management in Australia

In the previous section I have reflected on the changing nature of natural resource management, and biodiversity management since pre-European times, up until the 1950s. I have highlighted the sudden and dramatic changes in natural resource management institutions, policies and practices that occurred when Europeans arrived, and the dominant and emerging discourses associated with natural resource management during the first 170 or so years of settlement. The new settlers were profoundly influenced by British law, religion, philosophy and land management practices, influences that contributed to the generation of great wealth and prosperity for many in the colony. In contemporary times we have come to understand that the policies and practices that produced those rewards have done so at great expense to biodiversity. In this section I review how changing environmental awareness and concern since the 1950s has led to the changes in institutions and policies used to address biodiversity and natural resource management in Australia, culminating with the current regional approaches.

Modern environmental era

The conservation movement continued to grow in the early 1950s, much of it driven from within the urban population (Bonyhady, 2000b), with the focus still on national parks and other public land. In 1956, Victoria became the first state to establish a single management authority to oversee management of national parks. Then the other states followed (Anon, 1979; Frawley, 1994), giving rise to the modern style of park management seen today. Statutory legislation was the preferred policy approach employed by governments (Lockwood & Davidson, 2010; Reeve, 2002), both for controlling the allocation of land for agricultural development and for declaring national parks and other conservation reserves. Dryzek (1997) described the dominant environmental discourse at the time as “administrative rationalism”, where scientific

information emanating from central government was respected and rarely challenged, and regulation was the key policy instrument used in environmental governance.

Between World War II and the early 1970s, government policies promoted agricultural development as a means of achieving economic growth and social recovery (Higgins & Lockie, 2002), and environmental issues rarely featured in political debates (Vanclay & Lawrence, 1995). That all started to change in the 1960s. A number of serious environmental disasters occurred. These included the London Killer Smogs in 1964 and the *Torrey Canyon* oil spill in 1967. In her 1962 book *Silent Spring*, Rachel Carson made the connection between agricultural use of DDT and biodiversity losses in distant places (Centre for Professional Development, 2001). Events such as these spawned modern environmentalism, an international social and political movement that challenged the development paradigm that had prevailed in countries such as the USA, Great Britain and Australia since the 18th Century (Frawley, 1994; Wildes, 1995). A rich philosophical debate ensued, focusing on whether a Western environmental ethic could be conceived of as anthropocentric or ecocentric. For examples refer to Attfield (2008); Hay (2002); Singer (1991); and VanDeVeer and Pierce (2003). This debate spawned diverse expressions of environmental ethical positions. These positions included deep ecology, social ecology, and ecofeminism, and in allied disciplines they included ecological economics, environmental law and a Judaeo-Christian stewardship ethic.

An ecocentric environmental movement, inspired by Leopold's land ethic, brought growing pressure to bear on governments, and in this period the first global treaties and agreements concerning biodiversity and the environment were created. These included the IUCN World Conservation Strategy in 1980 and the Australian National Conservation Strategy in 1983. The concept of sustainable development, which emerged in the Brundtland Report (World Commission on Environment and Development [WCED] 1987), was adopted by the Australian government in 1992 (HRSCEH, 2007).

This was also a period of intense government regulatory intervention in Australia and in most developed countries. Constraints on air and water pollution were initiated by organisations like the OECD, and sustainability concepts including the polluter-pays principle, the beneficiary-pays principle, the precautionary principle, and the principle of inter-generational equity were introduced into the global policy lexicon (Fisher,

2001; OECD, 1972).

Polluter-pays principle

The polluter-pays principle was first articulated by the OECD in 1972, and later applied to agriculture in the European Union in 1989 (Tobey & Smets, 1996). Since 1990 it has been recognised internationally as a legal principle. In some countries it is explicitly stated in legislation, while in others it underpins environmental policies and regulation (Peterson, 2006; Rosso Grossman, 2007). In Australia the polluter-pays principle does not usually have legal status, (although the Western Australian *Environment Protection Act 1986* is an exception), and should be regarded as a normative principle (Hatfield-Dodds, 2006), although arguably it is implicit in much environmental legislation.

Application of the polluter-pays principle involves the polluter “bearing the costs of reasonable measures” to “prevent and control accidental pollution”. The OECD guideline notes that there needs to be a direct connection between the measures taken and the accident prevention, and that the circumstances in which accidents may arise are variable (OECD, 1989). To this extent it borrows the concepts of “taking reasonable steps”, and “avoiding foreseeable harm” found in common law negligence (see Part B of this chapter).

The polluter-pays principle is intended to overcome externalities associated with environmental pollution. The principle is that polluters should bear the costs of reducing environmental pollution or repairing environmental damage resulting from their actions (Aretino, Holland, Matysek, & Peterson, 2001; OECD, 1972; Pearce, 1989). The rationale for the polluter-pays principle was an economic one. Its intent was to ensure that degradation (pollution) of scarce environmental resources (air, water, soil) did not escape accountability in markets, or create distortions in trade and investments (OECD, 1972). The polluter-pays principle is consistent with economic efficiency objectives to the extent that it taxes polluters, as opposed to subsidising them to not pollute, which would lead to a very different, and potentially less efficient outcome in the longer term (Marshall, 1998). The principle is seen as equitable (Aretino, et al., 2001), although Bromley (1996) considers this label as “superficial” and alludes to examples where it may be construed otherwise.

Although application of the polluter-pays principle to agriculture was endorsed by the OECD and the European Union in 1989, the complexities of applying the principle

are highlighted where non-point sources of pollution exist; where institutions and policies legitimise the right to pollute; and where agri-environment subsidies serve to compensate for the costs of meeting pollution standards (Marshall, 1998; Tobey & Smets, 1996).

The polluter-pays principle was later extended to include damage to biodiversity and other environmental assets (Marshall, 1998; Murray-Darling Basin Commission [MDBC], 1996), and in that context is now referred to by some as the impacter-pays principle (Aretino, et al., 2001; Standing Committee on Agriculture and Resource Management [SCARM], 1998).

One of the problems with the impacter-pays principle is that it potentially interferes with property rights, which are not clearly articulated in Australia (Aretino, et al., 2001). A legislated impacter-pays principle would essentially articulate an obligation to avoid or minimise environmental harm under existing property rights (Aronson, Milton, Blignaut, & Society for Ecological Restoration International, 2007). While some would argue this constitutes a change in property rights for which compensation should be paid (e.g., Kaspar, 2003; Ratnapala, 2004), others consider that obligations to not harm the environment are already embedded in existing property rights (Bromley, 1996; Freyfogle, 2006; Marshall, 1998; Raff, 2003). This is one of the reasons why the polluter-pays principle has not been widely used to address environmental problems in agriculture both in Australia (Marshall, 1998) and in Europe (OECD, 2002).

Impacters can repair environmental damage, or buy environmental credits to offset the damage (Aronson, et al., 2007), as now happens in Victoria and NSW with approved development proposals involving the clearing of native vegetation. In theory at least, the costs can be passed on to consumers, employees or shareholders (Hatfield-Dodds, 2004b). Difficulties arise when trying to apply the impacter-pays principle retrospectively, where non-point sources of harm are involved, and where scientific knowledge is problematic (Marshall, 1998), although it has been used in the context of contaminated sites where the impacter has been readily identifiable (Aronson, et al., 2007). Other difficulties with monitoring and enforcement, and the absence of clearly articulated environmental standards limit the effective application of the impacter-pays principle retrospectively, and some consider that to do so is unfair (Aronson, et al., 2007; Hatfield-Dodds, 2006; Marshall, 1998).

The beneficiary-pays principle

The flipside of the polluter-pays principle is the beneficiary-pays principle. The beneficiary-pays principle has two components which should be applied together:

- Direct beneficiary where a “user pays” principle applies, and;
- Indirect beneficiary where a “beneficiary compensates” principle applies (Aronson, et al., 2007).

The “user-pays” component is often seen, for example with entrance fees to national parks, which are commonly applied in Australia and the USA. The beneficiary-pays principle is also known as the “provider-gets” or the “community-pays” principle (Aretino, et al., 2001). Under this principle, those who benefit from provision of the goods, contribute to the cost for the prevention of their harm, or their repair (Aronson, et al., 2007; Marshall, 1998).

In effect the beneficiary-pays principle underpins cost-sharing guidelines associated with many natural resource management programs (Aretino, et al., 2001; Engel, Pagiola, & Wunder, 2008; MDBC, 1996). In Australia, Salinity Water Management Plans developed in the 1980s, and Land and Water Management Plans in the 1990s were based on the beneficiary-pays principle (Marshall, 1998). In theory the beneficiary-pays principle helps to reduce the burden on individual landholders.

More recently programs providing payments for ecosystem services have been based on the beneficiary-pays principle (Engel, et al., 2008), but this approach may inadvertently favour a continuation of *status quo* unsustainable practices (Hatfield-Dodds, 2006; Pannell, 2006), at least in Australian agriculture. Problems with the beneficiary-pays principle are largely concerned with how it is interpreted. In one interpretation, existing practices may be seen to have legitimacy, which then implies that any changes involving, for instance, improvements in environmental or biodiversity quality, should be seen as providing additional benefits to the public, and thus the public should pay for them (Hatfield-Dodds, 2006; Suvantola, 2004). Alternatively, public funds could be used to pay for voluntary actions by landholders to bring about the desired improvements. In a third interpretation, any changes in mandatory standards should be accompanied by compensation to landholders for opportunity costs and out of pocket expenses above any benefits that might accrue to them (Hatfield-Dodds, 2006). Other economic efficiency concerns arise where application of the beneficiary-pays

principle incurs high transaction costs or perverse incentives, or where doing nothing may be a preferable strategy (Pannell, 2006).

In the context of native vegetation management in Australia, a combination of the polluter-pays principle (through regulation) and beneficiary-pays principles (through incentive programs) has been employed. The Industry Commission (1998) envisaged that in an economic sense, determining a duty of care would mark the point where the polluter-pays principle ended, and the beneficiary-pays principle began. However, Lefroy and Stone (2003) argued that where biodiversity conservation on private land was concerned, a beneficiary-pays approach would entail lower transaction costs than a polluter-pays approach. Some authors have also suggested that the beneficiary-pays principle may work effectively as a transitional approach, when the introduction of additional responsibilities (polluter-pays principle) may need to be phased in gradually (Aretino, et al., 2001; Binning & Young, 1997).

The precautionary principle

The origins of the precautionary principle go back to Germany in the 1970s (Fisher, 2001; Peterson, 2006). The international definition of the precautionary principle was first articulated in the *Rio Declaration on Environment and Development* (United Nations Conference on Environment and Development [UNCED], 1992, Article 15). In Australia the precautionary principle is one of the foundational principles of the *National Strategy on Ecologically Sustainable Development* (Council of Australian Governments [COAG], 1992). Its definition echoes the UNCED one, but gives clearer emphasis to environmental degradation and omits reference to measures needing to be cost-effective (Peel, 2005). According to this definition the precautionary principle states that:

Where there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation...

COAG 1992 as cited in Dovers (2006)

In Australia the precautionary principle is now written specifically, or by inference, into some environmental statutes, e.g. the *Environment Protection and Biodiversity Conservation Act 1999* (Cth). It has featured in a growing number of court cases, and has been interpreted variably in different courts. Different interpretations of the

precautionary principle describe it as “common sense”, as balancing competing factors, as discretionary, and as representing a threshold test (Peterson, 2006). Although it is widely recognised in Australian legislation and in courts, it has also been widely criticised for reasons that include: excessive discretion in the way it has been implemented; excessive costs associated with the burden of proof requirements or precautionary actions; distortion of regulatory priorities; stifling of innovation and development; perverse consequences; and manipulation to create trade barriers (Peterson, 2006).

Applying the precautionary principle in environmental and biodiversity protection allows for decisions to be made on an incomplete knowledge base (Cooney, 2004; Dovers, 1995, 2005; Peterson, 2006). Not surprisingly there have been variable definitions given to the precautionary principle around the world, and variable consideration given to it in courts (Cooney, 2004; Peel, 2005). Peterson (2006) considers the question of whether it is a principle at all is still unresolved. For the purposes of this discussion I will assume it is accepted as a principle.

Definitions of the precautionary principle may be classed as weak or strong. Strong definitions, in addition to imposing obligations, also suggest that positive actions should be taken, do not require the cost-effectiveness of measures to be considered explicitly, and place the onus of proof onto proponents. Weak definitions lack these characteristics (Peterson, 2006). Cooney (2004) disagrees, suggesting those characteristics apply to all definitions, but notes that the application of the precautionary principle should be limited to situations where there are serious or irreversible threats of harm.

Currently there are no clear guidelines as to how it should be implemented in Australia, which Peterson (2006) suggests give rise to a number of problems. These include the potential for excessive discretion and a lack of transparency in how decisions are made, leading to inconsistent and unintended interpretations by courts and uncertainty for industry, the potential for proof demands to impose excessive costs on developers and industry, the potential for innovation to be stifled, and concern that regulatory distortion could occur. In the absence of clear guidelines judges and courts are faced with the difficult task of interpreting the precautionary principle (Dovers, 2000)

The principle of intergenerational equity

The principle of intergenerational equity is also prominent in the concept of sustainable development (WCED, 1987). It is concerned with ensuring that the actions of current generations do not compromise the ability of future generations to meet their needs (Beder, 2000). A fundamental aspect of the principle concerns the need to conserve biodiversity and environmental resources, the natural capital. As with the precautionary principle, there are weak and strong formulations of the principle of intergenerational equity. Weak definitions consider that any losses in natural capital may be more than compensated for by gains in economic or social capital that lead to wealth creation. The strong definition views natural capital as offering more than economic wealth, and thus requires that the natural capital not be degraded for future generations (Beder, 2000). Suvantola (2004) considers that the principle of intergenerational equity describes a moral and legal duty of care to biodiversity.

Agriculture and the environment collide

In Australia the first large environmental conflicts arose in the late 1960s, when large protests about oil and gas exploration on the Great Barrier Reef took place (Frawley, 1994). The first biodiversity audits revealed that the representation of flora and fauna in public land conservation reserves was not comprehensive (Frankenberg, 1971; Specht & Cleland, 1961, 1963; Webb, 1966). In 1964 the Australian Conservation Foundation was formed.

A successful campaign to save the Little Desert from clearing created furious debate in the Victorian parliament, and remains a watershed case for the environmental movement (Robin, 1998). Declaration of a national park in the area followed in 1968. In Victoria the Land Conservation Council was established in 1970 to review and recommend on public land use, including the use of national parks. Many national parks and other conservation reserves were proclaimed as a consequence of Land Conservation Council recommendations (Anon, 1979).

But conservation and agriculture were still viewed as separate domains – geographically, socially, and politically. Legislation for biodiversity conservation was largely focused on public land, and conservation organisations such as the Wilderness Society, formed in 1976, shared a similar focus. In the 1980s the interests and discourses of agriculture and the environment continued to collide. Where previously scientific organisations had functioned in an advisory role, promulgating ways to

improve agricultural production (Barr & Cary, 1992; Bolton, 1981; Bradsen, 1988; Higgins & Lockie, 2001), their research began to show clear connections between agriculture and increasing environmental problems (Barr & Cary, 1992; Wallington, et al., 2008). These problems included salinity, fragmentation of habitats and biodiversity loss, nutrients affecting water quality, the negative outcomes of irrigation and declining river health (Vanclay & Lawrence, 1995). Research continues to highlight these problems (e.g. Williams & Price, 2010).

International obligations brought the environment back into the sphere of the federal government (Wallington, et al., 2008), and here the focus on biodiversity conservation as an element of sustainable development became much stronger. Clashes over World Heritage areas (e.g. Frawley, 1991) highlighted the growing tensions between the Australian government and the more development-oriented state governments (Head, 2005b; Papadakis & Grant, 2003; Wallington, et al., 2008). The Federal Office of the Environment and the Australian Environment Council were created in the early 1970s. By 1974 the Whitlam government had established the Australian Heritage Commission and the Australian National Parks and Wildlife Service. They also formed a separate environment department and introduced legislation for environmental impact statements (Papadakis & Grant, 2003). State governments were also establishing environment agencies and legislation.

The rise of neoliberalism

While major environmental improvements resulted from statutory regulation, especially with point-source control of air and water pollution, and augmentation of the national conservation estate, it was not without its critics. In particular, those with neoliberal leanings mounted a strong case against regulation in the 1970s (Carter, 2007; Gunningham & Grabosky, 1998), stigmatising it with the label “command and control” (Dryzek, 1997). Critics claimed that command and control regulation was inflexible, inefficient, ineffective, confrontational, costly to implement and comply with, and often not properly resourced (Gunningham & Grabosky, 1998) — and not only in relation to environmental matters. It has also been claimed that regulation stifles innovation (Carruthers & Vanclay, 2007; Coglianese & Nash, 2001). Others (e.g. Driesen, 2003) have challenged the counter-suggestion that economic instruments necessarily encourage innovation. Additional criticisms from the agricultural sector included the perceived infringement of property rights, an unfair cost burden on landholders,

excessive bureaucracy and red tape, high enforcement costs, an adversarial nature, and inflexibility (Cocklin, Mautner, & Dibden, 2007; Dibden, Mautner & Cocklin, 2005; Industry Commission, 1998; Productivity Commission, 2004).

The fundamental premise of neoliberalism is that the best economic and social outcomes for society will occur when governments remove regulatory constraints from business, and step back from direct forms of intervention (Cheshire & Lawrence, 2005). Key elements of neoliberalism are: its adherence to individualism and freedom (Harvey, 2006), promotion of entrepreneurialism and self-help; small government; globalism; economic growth and; the upholding of private property rights (Lockie, 2000; Lockie & Higgins, 2007; Lockwood & Davidson, 2010).

By the 1970s the first rumblings of neoliberal trends in Australian agriculture appeared in response to emerging problems with subsidies (Cheshire & Lawrence, 2005). There were also problems with the growing economic importance of mineral and resources development, a crisis in the wool and wheat sectors, rising costs of inputs, and in 1976 the entry of Great Britain into European Union. The combination of these problems provided the trigger for rethinking agricultural policy, and the introduction of the first rural adjustment scheme by the Fraser Liberal government in 1977 (Higgins & Lockie, 2001). However it was not until the mid-1980s, during the Hawke-Keating Labor governments, that neoliberal ideology became more clearly embedded through agri-environment policies, with key reforms designed to promote greater efficiency, increase production capacity, and reduce the level of government assistance to farmers (Higgins & Lockie, 2001).

The use of economic policy instruments is fundamental to neoliberal approaches. Economic instruments operate by using or creating market signals such as prices. These signals encourage producers and consumers to integrate environmental concerns into their everyday decisions (Barde & Smith, 1997; Industry Commission, 1997). In the 1980s the application of economic instruments to biodiversity and environmental management gained momentum as their potential to compensate for short-comings of traditional regulatory approaches was recognised (Gunningham & Grabosky, 1998). A range of instruments that can broadly be described as “economic” were trialled in Australia and elsewhere. These included property rights instruments (e.g. covenants or easements permanently listed on title, long-term property management agreements, leasehold agreements, licences, and animal compensation trusts), financial instruments

(e.g. revolving funds and interest subsidies), and fiscal instruments (e.g. rebates, levies, charges, and subsidies).

After about 2000 the range of economic instruments expanded to include offset schemes (e.g. the Business & Biodiversity Offsets Program, and BioBanking), market-based instruments including auctions (e.g. Bush Tender), and tradeable permits (Gunningham & Grabosky, 1998; Industry Commission, 1997). In the conservation area, a change in ideology away from direct action (land acquisition) and regulation by government (Head, 2009) coincided with the realisation that conservation outside reserves was needed, particularly in agricultural areas (Hale & Lamb, 1997; Pressey & Logan, 1997).

Meanwhile efforts to address biodiversity and environmental degradation in rural areas of Australia were beset by major obstacles. These included the complex nature of the problems to be addressed, as well as the fragmented and poorly integrated state of government institutions (Lockwood, Davidson, Curtis, Stratford, & Griffith, 2010). In this period much of the biodiversity focus was still on public land with, for instance, strong regulation of the forestry industry undertaken in several states and continuing clashes with conservation groups over such things as threatened species, rainforest and old growth forest harvesting, clear felling and fire management. Legislation for threatened biodiversity, for instance the Victorian *Flora and Fauna Guarantee Act 1988*, was introduced by state governments to establish controls for the taking of native flora and fauna from public land. However, it had had limited application to private lands. In practice, private land conservation issues were dealt with through informal interactions between government or non-government organisation staff and landholders, but many localised, successful outcomes were achieved in this way (pers. obs.). In this period too, commonwealth and state governments engaged in significant structural reorganisation, to achieve what is known as “joined-up government” (Head, 2005a, 2009; Lane & Robinson, 2009). For instance, in Victoria three previously separate, and often conflicted, departments were amalgamated into the Department of Conservation, Forests and Lands, in an attempt to promote greater reconciliation of differences through enhanced communication and greater administrative efficiencies.

From localism to regionalisation

In agricultural areas governments adopted an approach that has been termed localism (Lockwood & Davidson, 2010). They relied mostly on education/suasion and economic

incentives to enlist voluntary landholder participation in biodiversity and natural resource management projects. Some commentators suggest this was a response to the criticisms of regulatory approaches, from the agricultural sector in particular (e.g. Cocklin et al., 2007).

Landcare has been the most prominent and successful example of localism in Australian natural resource management. The origins of Landcare can be traced back to the post-World War II period when state governments were advising landholders about how to remedy land degradation, and offering financial assistance for them to do so (Johnson, Poussard, & Youl, 2009). Recognising that projects undertaken by individual landholders were unlikely to achieve benefits beyond their properties, the state government in Victoria promoted catchment-based projects such as the Lake Eppalock Project in 1959 involving 300 landholders (Barr & Cary, 1992; Johnson, et al., 2009). Between 1960 and 1980, more than 100 group Conservation Area projects were undertaken, with private landholders working in partnership with the Victorian government (Curtis, 2003). Despite significant success these projects did not engender broad community support (Johnson, et al., 2009), and after the withdrawal of government input landholders were unwilling to carry out many of the required maintenance tasks (Barr & Cary, 1992; Curtis, 2003).

Throughout the 1970s and 1980s, as governments confronted serious land degradation issues such as dryland salinity, a number of state-sponsored and private organisations emerged to address natural resource management problems. These included the State Salinity Bureau, Farm Trees groups, and Land Protection groups in Victoria (Curtis, 2003), regional projects in the Darling Downs of Queensland, and Land Conservation District committees in Western Australia (Johnson, et al., 2009; Lockie & Vanclay, 1997). The first official Landcare groups were formed in Victoria in 1986, through a joint initiative of the Victorian government and the Victorian Farmers Federation (Curtis, 2003; Lockie & Vanclay, 1997).

The Decade of Landcare

The Landcare program was launched nationally in 1989, representing a partnership between the National Farmers Federation and the Australian Conservation Foundation (Curtis, 2003; Lockie & Vanclay, 1997). Landcare signalled strong federal government support for a participatory approach to the management of environmental degradation in rural, agricultural landscapes (Everingham, Cheshire, & Lawrence, 2006). The aims of

Landcare were to achieve more sustainable use of farming land, and to enhance biodiversity (Farley & Toyne, 1989). Landcare sought to shift the focus of environmental management away from central government to local communities (Everingham, et al., 2006), by building social capacity, awareness, and education (Curtis, 2003; Curtis & Lockwood, 2000), and thus empowering communities and encouraging participation, autonomy and self-determination (Curtis, 2003; Lockwood & Davidson, 2010). The Landcare model was underpinned by assumptions that local knowledge is valuable, that it is better suited to respond to local contexts with local solutions, and that the participation of local communities would lead to more efficient outcomes (Lane & Corbett, 2005; Lane, McDonald, & Morrison, 2004). It had a focus on learning to address problems that were not fully understood, and for which the scientific knowledge was imperfect. Discourses of cooperation, environmental responsibility, and voluntary participation were strongly associated with Landcare. A core objective of Landcare was to promote a stewardship ethic among landholders, but Curtis and de Lacy (1998) found that a strong ethic was already present.

Landcare represents a form of localism (Lockwood & Davidson, 2010) that has much in common with neoliberalism, including a fundamental respect for private property rights, individual rights and self-autonomy, and a desire to achieve greater efficiency and reduce transaction costs (Lane & Robinson, 2009). Lockwood and Davidson (2010) viewed localism as a rejuvenation of the rural agrarian ideology, or “countrymindedness”, with its emphasis on celebrating pioneering achievements (Aitken, 1985; McCarthy, 2007). Participatory programs such as Landcare can be seen as fulfilling neo-liberal objectives by providing a relatively low-cost option, while simultaneously permitting legitimacy for reduced government intervention (Gunningham, 2009b; Martin, 1997), both desired outcomes of the National Competition Policy (Lyster, 2002). Landcare also fitted in well with the key imperatives arising from sustainable development principles (Brown, 1991; Duxbury, 2005) that the Australian government had committed to in 1992.

Despite the above claims, Lockie and Higgins (2007) point out that the discourses of localism espousing cooperation, local protection and local solutions are at odds with those of neoliberalism which promote entrepreneurialism, competition and globalism. This contradiction is also reflected in the withdrawal of direct government funding for public services and facilities as local communities were offered greater opportunities to

participate in, and (theoretically) enjoy, individual freedoms brought about by market de-regulation (Martin, 1997). Gray (2001) claims that overall these changes have been to the detriment of regional communities in Australia. The approach of state governments in this neoliberal phase has been termed “action/regulating/governing at a distance” (Davidson & Lockwood, 2009; Gunningham, 2009a; Lockie, 1999, 2006; Lockwood & Davidson, 2010). Greening Australia, a non-government organisation established in 1982, illustrates this style of governing. Greening Australia was a prominent agent in delivering tree planting funds to local groups through programs such as One Billion Trees established by the Hawke Government in 1989.

Other non-government organisations like the Australian Bush Heritage Fund, established in 1991, and the Trust for Nature in Victoria, established in 1972, pursued conservation objectives with funding that was provided mainly by private donors. Often land with high conservation value was purchased, and then sold again with legal covenants attached.

Between 1990 and 2000 Landcare dominated the approach to managing land degradation in Australia (Wallington, et al., 2008). Landcare projects predominantly focused on mitigation of soil, salinity and water problems, but a biodiversity focus also emerged more strongly in later years (Curtis, 1997; Curtis & Lockwood, 2000). Government sponsored programs offering access to education and information were widely used to promote better understanding of biodiversity and its importance. They were intended to build capacity in the community, and motivate changed attitudes and behaviour in landholders (Curtis & Lockwood, 2000). These programs are now recognised as a necessary complement for all types of policy instruments promoting biodiversity conservation (Curtis & Lockwood, 2000).

Towards the end of the Landcare period in 2000, an Environmental Management Systems program (EMS) for agriculture was also trialled in some parts of Australia (Seymour & Ridley, 2005; Seymour, Ridley, & Noonan, 2007). An EMS is a type of self regulation, where voluntary participants work towards meeting the international ISO 14001 standard (with its potential economic benefits for accredited practitioners) to demonstrate environmental performance credentials (Seymour, et al., 2007). Participants undertake regular monitoring of their own activities and seek to continuously improve their environmental management. So far EMS has been adopted on a relatively small scale, and is not considered likely to bring about broad scale

environmental benefits (Cary & Roberts, 2009).

Although Landcare has been hailed as a success for its achievements in harnessing the efforts of over 37% of broadacre and dairy farmers, some 120 000 individuals, (Curtis et al., 2008; Nelson, Alexander, Elliston & Blias, 2004), and for building social capacity (Curtis, 2003), the desired improvements in land and biodiversity condition at a landscape scale have not been forthcoming (Duxbury, 2005; Lockie & Higgins, 2007; Paton, et al., 2004). The lack of financial accountability of many environmental investment programs has been highlighted by several state and federal government audit reports (e.g. Auditor-General of Queensland, 2010; VAGO, 2011; ANAO, 2008; NSW Audit Office, 2004).

Integrated catchment management

Integrated catchment management (ICM) was a logical extension of Landcare, holding the promise of a more holistic and coordinated approach, as well as greater scope for community participation in natural resource management decision-making (Ewing, 2003). In NSW policy supporting the Total Catchment Management program had been introduced in 1987 to provide a coordinated whole-of-catchment approach to natural resource management. This was formalised with the introduction of the *Catchment Management Act 1989* (NSW) (Ewing, 2003). In Victoria the *Catchment and Land Protection Act 1994* provided the legislative basis for community-based boards to be established in regional catchments across the state. Other states developed their own versions of ICM programs, not all of them having statutory recognition (Ewing, 2003).

The focus on catchments as an appropriate biophysical scale to address natural resource management problems has been long established in many countries including Great Britain, the USA, and Canada (Ewing, 2003). Robins (2007) maintains that these international examples, and the discourses surrounding them, have played an influential role in the adoption of ICM in Australia. The Murray-Darling Basin Ministerial Council defined ICM as:

“A process through which people can develop a vision, agree on shared values and behaviours, make informed decisions and act together to manage the natural resources of their catchment: their decisions on the use of land, water and other environmental resources are made by considering the effect of that use on all those resources and on all

people within the catchment.” (Murray-Darling Basin Ministerial Council, 2001, p. 1)

Other definitions for ICM encompass ideas of philosophy, process and product, where cooperative and collaborative relationships between government and local communities produce and implement catchment plans (Syme, et al., 1994 as cited in Ewing, 2003). Another emphasises subsidiarity and the devolution of power (AWRC, 1988 as cited in Ewing, 2003). Examples of ICM in Australia date back many decades, (e.g. Burton, 1992; Robins & Dovers, 2007), with the Coliban scheme for water management in Victoria during the 1860s suggested as being the original example (Powell, 1993).

Regional catchment management

Around 1997 the incoming Howard government committed to the ICM approach by formally establishing regional catchment management organisations (CMOs) effectively as a fourth tier of government (Gunningham, 2009b), and adopting a catchment-scale focus for natural resources management. They did so in the belief that it would better address the limitations and shortcomings of the Landcare approach (Curtis, 2003; Gunningham, 2009b). Other suggested reasons for adopting this approach were that it was a more appropriate scale to operate at (Everingham, et al., 2006), and that it was likely to generate a range of desirable outputs (Ewing, 2003). Some commentators have portrayed the move as reflecting the federal government’s desire to by-pass state government and deal directly with regional communities in natural resource management (Head, 2005b, 2009), and as an intensification of neoliberal strategies in natural resource management (Gunningham, 2009b; Lockwood & Davidson, 2010)

By the end of the 20th Century governments had become reluctant to employ statutory regulation in natural resource management (Head, 2005b), and the few regulations introduced during the 1990s and 2000s were highly controversial and unpopular (Gunningham, 2009b). The most significant regulation affecting biodiversity on private land was the introduction of vegetation clearance controls to phase out broad-scale clearing of vegetation. South Australia introduced these controls in the 1980s, and other states followed.

In the first phase of the Natural Heritage Trust (1997-2002) (NHT1) the federal government devolved funds via 56 CMOs to local community groups, many of them

Landcare groups, especially for catchment-scale or larger projects (Farrelly, 2005). The goals of NHT1 were to reduce land degradation and biodiversity loss by providing funding for local projects undertaken by community groups and individuals. It was in this period that a range of new economic instruments became prominent. Market-based instruments including offsets, tax and rate rebates promoting biodiversity conservation, auctions, and indexed incentive scales, were the focus of much government research at both commonwealth and state levels, (e.g. BDA Group, 2009; Collins & Scoccimarro, 2008; Grafton, 2005; Stoneham, et al., 2000).

Following criticisms of poor program design and management (see for example Curtis & Lockwood, 2000; Farrelly, 2005) NHT1 was followed by the National Action Plan for Salinity and Water Quality (NAP) which directed funds to targeted catchments with salinity problems. Regional CMOs were required to prepare strategic management plans for accreditation by government (National Action Plan for Salinity and Water Quality [NAP], 2000). Based on these strategic plans, the federal government allocated funding to the CMOs, and devolved to them the responsibility for distributing funds to their communities and overseeing the implementation, monitoring and reporting of individual projects (Lockwood & Davidson, 2010). This model was also applied to the NHT2 extension program (2003-2008), maintaining a strategic investment approach, with articulated priorities for biodiversity conservation, sustainable use of natural resources, community capacity building, and institutional change (Moore, 2005; Natural Resource Management Ministerial Council 2002).

In 2008 the newly elected Labor government replaced NAP and NHT with the Caring for our Country program, offering \$2.25 billion over 5 years (Lockwood & Davidson, 2010). A key feature of this program, was that a wider range of non-government organisations would be able to seek funding through competitive bidding processes, where previously they had been excluded. While 60% of funds were quarantined for regional CMOs to allocate, 40% was available for governments and other community and non-government organisations like WWF-Australia, Greening Australia, and Trust for Nature, potentially paving the way for increased numbers of biodiversity projects (Lockwood & Davidson, 2010).

New governance and the role of government

The new arrangements for natural resource management delivery in Australia represent a form of governance, defined as “the interactions among structures, processes and

traditions that determine how power and responsibilities are exercised, how decisions are taken, and how citizens or other stakeholders have their say” (Lockwood, et al., 2010, p. 987). Under a governance model, a range of stakeholders have influential roles in decision-making. In the context of this thesis, it was important to understand how commentators perceived the ongoing role of state and territory governments in Australia.

Some interpretations of governance in a neoliberal world portray the role of government as being largely supplanted by non-government agents including communities and business (see for example, Rose & Miller, 2010; Watts, 2004). These interpretations echo claims of “hollowing out of the state” and “governance without government” (Jessop, 1998; Rhodes, 1996). Other commentators consider this to be an exaggeration (Bell & Park, 2006; Gunningham, 2009a; Jordan, Wurzel, & Zito, 2005), and suggest that the role of the state has actually been strengthened (Bell & Hindmoor, 2009; Head, 2005a) largely through the retention of funding control and by the imposition of substantial auditing requirements on non-state actors (Davidson & Lockwood, 2009; Power, 1997, 2003).

Despite the rhetoric of deregulation, the implementation of neoliberal policies has been accompanied by the “rolling out” of other forms of regulation (Lockie & Higgins, 2007). These include a greater reliance on decentralised, consensual “soft” or “light-handed” regulation (Gunningham, 2009a; Head, 2009; Papadakis & Grant, 2003). Under this version of neoliberalism, the state may have experienced a change in its role and architecture (Gunningham, 2009b; Head, 2005b), but it has still retained critical functions as the ultimate source of democratic legitimacy (Bell & Park, 2006; Pierre & Peters, 2000; Wallington, et al., 2008). Lockwood et al. (2010) have adopted the term “new governance” to describe the current regional arrangements in Australia.

New governance in natural resource management

Under the new governance arrangements in Australia partnerships and collaboration between a range of actors, as well as participatory processes, are emphasised. The catchment scale focus extends the ICM model, by giving all CMOs statutory recognition. CMOs are administered by Boards of non-elected members drawn from within regional communities. The process for determining Board membership varies between states and territories, but appointments are usually made by the relevant Minister, based on skills and merit and with a proviso that the farming sector is well

represented (Larson 2009; Pannell et al. 2008). Increasingly roles are undertaken by members of the business, non-government and voluntary sectors who interact through networks that operate at multiple levels.

While there is widespread support for catchments as the appropriate scale for the conduct of natural resource management (Head, 2005a; Paton, et al., 2004), there is by no means a consensus, and multiple criticisms have been offered (e.g. Bennett, 2004; Everingham, 2009). Issues of concern include legitimacy, accountability, empowerment of local communities, de-centralisation versus de-concentration, parochialism and elitism, inclusiveness, and attention to public good outcomes, as well as efficiency and effectiveness (Gunningham, 2009b; Head, 2005a, 2009; Lockwood, et al., 2010; Wallington, et al., 2008). To date, according to Lockwood et al. (2010), guidance about how regional CMOs should operate has been inadequate. These authors have proposed eight normative principles for natural resource management governance (see Box 1). These principles provide criteria against which an evaluation of governance arrangements could be undertaken. I shall refer to these as good governance principles throughout this thesis.

My research aims to develop a framework to assist with the development of a statutory duty of care for biodiversity. An evaluation of the framework against these principles would be one potential way of elucidating its attributes.

Summary of biodiversity and natural resource management in Australia

The review of biodiversity and natural resource management in Australia has highlighted the sudden and dramatic changes in natural resource management institutions, policies and practices that have occurred since the arrival of Europeans. The development paradigm that prevailed for many years was based on European philosophies and understanding, and it brought great wealth and prosperity to many in the colony. The loss of biodiversity can be understood as a consequence of the policies and practices espoused by governments since settlement.

This review shows that as awareness of environmental degradation and appreciation of biodiversity grew, institutions and policies changed. Where the British government directed colonial affairs in the earliest period of settlement, political responsibilities were later vested in federal and state governments, with the latter taking responsibility for natural resource management. The more recent shift to a regional model for natural

Box 1 Eight principles for good governance (Lockwood et al. 2010)

1. Legitimacy

Legitimacy in a devolved, multi-level governance organisation should ideally operate according to the principle of subsidiarity, whereby responsibilities are discharged by the lowest capable level possible. The exception concerns enforcement which, it is suggested, should remain the domain of officials with democratic or legal legitimacy. To achieve legitimacy governance actors should also behave honestly and with integrity, avoiding distorting or manipulating facts to provide advantage to themselves (or disadvantage to others). Communicative rationality, involving high quality communication to convey complex information to stakeholders, and trust between partners, is an integral aspect of legitimacy.

2. Transparency

Transparency issues need to be addressed by clearly articulating who is charged with making decisions, how they arrive at decisions, and what information supported the decisions being made. Transparency also needs to consider the format in which information is made available, to suit a range of stakeholder preferences and needs, including such things as different delivery media (e.g. meetings, newsletters), and different languages to reach stakeholders from non-English speaking backgrounds.

3. Accountability

Accountability involves understanding who has responsibility for decisions and actions, and how they carry them out. Typically in the current regional model there is a great deal of upward accountability from local regional communities to state and federal government, but far less downward accountability. Horizontal accountability between partners must also be considered, given the increasing level of power and influence divested in non-government partners. Where accountability does not occur through democratic processes, adequate consultation processes must be organised to allow stakeholders to become informed.

4. Inclusiveness

Inclusive governance involves providing opportunities for participation from as wide a range of stakeholders as possible. Inclusiveness should entail collaborative participation during the design stages of governance as well as during decision making phases. Governance actors practising in an inclusive way, will not only actively seek input by targeting stakeholders at various scales, but also create opportunities for participation by removing known obstacles, e.g. by choosing suitable times and venues for consultation, providing child care or transportation to enable participation.

5. Fairness

Fairness in governance has multiple aspects. Governance actors must respect and treat stakeholders' opinions fairly, and they must ensure distributive fairness in the way costs and benefits of decisions are allocated. In addition it is incumbent on decision makers to show a consistency and absence of bias. While this does not imply that costs and benefits will necessarily be distributed evenly to all stakeholders, for instance where targeted, strategic investment is needed to achieve regional goals, it is necessary that decisions are not made in ways that are biased towards or against individual stakeholders. Transparency in decision making processes will assist in achieving fairness in governance.

6. Integration

A high degree of connection and coordination between levels of actors (vertical integration) and across actors within levels (horizontal integration) is indicative of good governance. In addition, strategic connectivity, with priorities, strategies and plans which reinforce, rather than conflict with each other is also highly desirable. Integration assists with reducing duplication of effort, and with the efficient distribution of resources.

7. Capability

Having appropriate capabilities, or capacity, at appropriate levels is a key element of good governance. Capability here includes systems, plans, resources, skills, leadership, knowledge, and experiences that allow responsibilities of governance actors to be met. The business of governance relies on such things as skills, leadership and competencies of staff, training opportunities, effective management systems, knowledge base, ongoing resourcing and long-term planning. The subsidiarity principle needs to be adhered to here, ensuring that downward devolution of responsibilities is matched by appropriate capability, especially in the resourcing area.

8. Adaptability

Effective adaptation involves the ability to incorporate new knowledge and learning and make mid-course adjustments to governance processes, to anticipate opportunities, risks and threats, and to reflect on past performance from an individual, organisational and system perspective. A reflexive governance approach is recommended.

resource management represents the latest move away from a centralised government style. Perceptions of biodiversity have also undergone significant change. Australian biodiversity has progressively been perceived of as comprising weird “Antipodean perversities”, to objects of scientific curiosity and wonder, and it is now valued as a vital element of sustainability and human wellbeing.

Policy approaches to biodiversity have also changed and diversified over the time of European settlement. All policy should be regarded as experimental, especially in the field of natural resource management and sustainability where so much uncertainty and complexity prevails (Dovers, 2005) The emerging role of regions and new governance in natural resource management over the past decade has been described as an ambitious experiment (Gunningham, 2009a; Robins & Dovers, 2007).

Because I will explore options for a statutory duty of care for biodiversity in this research, I will now focus on biodiversity policies in more detail. Before considering why a statutory duty of care for biodiversity could be a valuable addition to complement the existing policy portfolio, I will summarise the strengths, weaknesses, and gaps inherent in the main instruments used to regulate biodiversity conservation in the agricultural sector, drawing extensively on the treatment by Gunningham and Grabosky (1998), and using examples from Australia, the United Kingdom (UK), Canada, and the USA.

Types of policy instruments

In the preceding discussion I have alluded to many different policy instruments that have been applied to promote biodiversity conservation and natural resource management in Australia since European settlement. For simplicity, these instruments are classified here into five broad groups, and their application in the Australian context is reiterated.

1. Direct action by governments and non-government organisations to acquire land for conservation reserves (Collins & Scoccimarro, 2008; Martin & Verbeek, 2006). Direct action was used extensively by governments in state and federal jurisdictions commencing in the 1860s, when the first reserves were proclaimed, and continuing for the next hundred or so years. As ecological science broadened its focus to include protection of ecosystem function across a broad range of habitats, the need for conservation approaches that extended beyond public land was also recognised

(Burgman & Lindenmayer 1998; Commonwealth of Australia, 2007). As a consequence reservation objectives have been refocused on ecosystems occurring in arid and semi-arid parts of Australia. In agricultural and pastoral landscapes where the public conservation estate is limited, alternative approaches to conservation involving land management partnerships have gained increasing traction (Commonwealth of Australia, 2007). Privately funded conservation reserves have also become established.

2. Regulation has principally been command and control in style, but may also include self-regulation and cross-compliance measures. Command and control regulation had been the instrument of choice of governments since the earliest years of settlement in Australia, and was also widely used in the USA and the United Kingdom. Initially environmental regulation focused on addressing human health issues, and in some instances, maintaining sustainable industries. As public interest in conservation has grown, along with the conservation estate, so too did the suite of regulations related to conservation governance (Grinlinton, 1990). Growing criticism of command and control regulation from neoliberal commentators, and scepticism about the ability of command and control regulation to address natural resource management has resulted in a decline in its usage by governments (Lyster, 2002).

In 2002 the Victorian government introduced the Native Vegetation Framework, a regulatory mechanism designed to halt broadscale clearing of native vegetation (Department of Sustainability & Environment [DSE], 2008b). The objective of the regulations was to bring about a “net gain” in the quantity and quality of native vegetation across Victoria. The net gain approach allows for offsets, where losses in some areas may be compensated gains in others, as long as the result is a net gain. The accounting system behind the regulation is based on the accumulated scientific information base, and provides an objective way of determining net gain values. The regulation is designed to limit active, broad-scale clearing of native vegetation, including in grassy ecosystems. However, other threats to native vegetation such as loss through small-scale, incremental clearing, or vegetation loss caused by overstocking, are not addressed well in the Native Vegetation Framework. Similar offset systems also operate in New South Wales and South Australia. Gibbons & Lindenmayer (2007) discuss other limitations with offset approaches. Other forms of regulation, environmental self-regulation and cross-compliance have had limited use in Australia (Gunningham & Grabosky, 1998).

3. Voluntary approaches engage landholders or community groups in natural resource management activities. They are designed to effect behavioural change and enhance the likelihood of ongoing adoption of management practices compatible with biodiversity conservation. Examples of voluntary approaches include industry standards, codes of practice, and management agreements. Voluntary approaches dominated the policy arena for conservation in agricultural landscapes, particularly during the 1990s.

4. Education and awareness programs provide information and technical support to build social and human capital in natural resource management. They have been used for many years in Australian natural resource management. Government scientific organisations such as CSIRO originally functioned to provide advice to farmers about agricultural production improvements, but as the connections between agriculture and land degradation became apparent, the nature of their advice changed. Education/suasion was a major policy instrument employed during the Landcare era.

5. Economic approaches include fixed grants and incentives, property-based instruments such as leasehold agreements and covenants/easements that attach to title, revolving funds for land purchase and resale, tax rebates, market-based instruments such as auctions, and offset schemes with tradeable rights (Gunningham & Grabosky, 1998). Legislation such as the Robertson Land Acts, represented early examples of economic approaches used by colonial governments. The tax rebate offered in return for land clearing was a form of policy instrument that was used up until 1986. Then it was replaced by a tax rebate for native vegetation retention, highlighting a major change in the direction of government policy.

As the preceding discussion has shown, different types of policy instruments for biodiversity conservation and natural resource management have been more or less popular at different periods in Australian politics. The extent to which individual instruments have been used also varies between countries. For instance, in the USA emphasis has been on command and control approaches through legislation such as the *Endangered Species Act 1973* (Illical & Harrison, 2007), as well as on voluntary and cross-compliance measures through the *Food, Conservation, and Energy Act* (Farm Bill) (Cocklin, Dibden, & Mautner, 2006), and on incentive programs run by non-government agencies such as Defenders of Wildlife. UK policy currently focuses on voluntary programs and mandatory cross-compliance measures driven through the Common Agricultural Policy (CAP) (Davies & Hodge, 2006).

Strengths and weaknesses of instrument types

Individual policy instruments all have strengths and weaknesses and, if applied on a stand-alone basis, are likely to encounter problems which can lead to policy failure.

Direct action

Land acquisition for conservation reserves is a reliable approach for achieving biodiversity conservation, but its coverage is incomplete. For instance conservation reserves occupy approximately 10% of the terrestrial land area in Australia (Commonwealth of Australia, 2007), 12.1% in the UK (United Kingdom Association of National Park Authorities [UK ANPA], 2010), and approximately 4.4% in the USA (US Department of the Interior, 2008), yet many ecosystems are still poorly represented within the overall reserve networks.

Public conservation reserves are very important - increasingly so with the impending impacts of climate change on biodiversity. A recent study by Taylor et al. (2011) showed that threatened species with substantial representation in protected areas were more likely to have stable or increasing populations, compared to species that did not. However, protected areas are expensive to acquire and maintain. The Australian government has committed \$180 million to increase the National Reserve System by 25% between 2008-13 (Australian Government 2012) almost half the estimated amount required to achieve the target of reserving examples of 80% of ecosystems in each bioregion (PMSEIC, 2002).

Where government resources for ongoing management are limited or not applied strategically, serious issues with such things as control of pest plants and animals, and with control of erosion, may arise particularly where reserves abut private property. Funding for staffing and management of reserves is an ongoing challenge. While it is difficult to pinpoint expenditure in these areas, a 1999 study by the World Conservation Union estimated that expenditure on management of protected areas in Australia was \$3.59 per ha, well below the average of \$20.58 for developed countries (Commonwealth of Australia, 2007). In summary, direct action to achieve biodiversity is limited by the incomplete coverage it can provide for biodiversity and habitats (this is particularly evident in agricultural landscapes), and also by the expense associated with land acquisition and ongoing management. Poor resourcing for on-ground management may engender negative social sentiment towards public land managers and reserves,

particularly where fire, pest plants, and pest animals are concerned.

Regulation

Command and control

Command and control regulation has a number of strengths that make it an appealing policy instrument for governments. Touted strengths include its reliability, precision, predictability, effectiveness, administrative efficiency where complete bans are implemented, economic efficiency in enforcement where compliance is high, legitimacy, transparency, and equity (Carter, 2007; Gunningham & Grabosky, 1998).

Prior to 2000 biodiversity regulation was principally “command and control”, and designed for application to public land, e.g. threatened species and national parks legislation. These statutes have undoubtedly produced substantial benefits for biodiversity, but serious limitations became evident when they were transferred to private land. Common limitations of statutes include:

- Poor design that presents legislation with vague policy objectives, or poorly defined objects or procedures (Senate Standing Committee on Environment Communications and the Arts [SSCECA], 2009; Victorian Auditor-General's Office [VAGO], 2009).
- Biodiversity legislation not usually being inclusive of all biodiversity including common, currently unknown, or poorly valued biodiversity (Doremus, 2004; Rohlf, 1991).
- A focus on asset-based protection that may overlook the threat that poor management can have on ecological function (Curtis & Lefroy, 2010). For example, indiscriminate use of herbicides for pest plant control may have a negative impact on native biodiversity.
- Use of inflexible prescriptive measures, imposed at national or state government level, that are unsuited to the heterogeneous situations and changing circumstances in which biodiversity conservation must be carried out (VAGO, 2009).
- Lack of political will to apply provisions of statutes, in the face of complexity of provisions (VAGO, 2009), or conflict over perceived breaches of property rights and consequent social disapproval (Beynon, Kennedy, & Graham, 2005;

Gunningham & Grabosky, 1998).

- Lack of resourcing for responsible authorities to carry out monitoring and compliance, giving rise to low detection rates for non-compliance and moral hazard (Beynon, et al., 2005; Gunningham & Grabosky, 1998).
- Absence or limited resourcing for positive measures to promote conservation objectives, particularly on privately owned land in agricultural landscapes (Beynon, et al., 2005; Gunningham & Grabosky, 1998).
- Low social acceptability among agricultural landholders, because of perceived inequities in responsibilities and costs associated with implementation, erosion of perceived property rights and entrenched resistance to outside interference in property management (Illical & Harrison, 2007).

Self-regulation

In a self-regulatory regime, industries design and enforce standards themselves. Self-regulation in Australia is conducted in a wide range of industries including advertising, pharmaceuticals, broadcasting and media, and financial services, as well as among professional associations such as the Australian Medical Association, and state Law Societies (Taskforce on Industry Self-regulation, 2000). Within the agricultural sector, self-regulation in the cotton and sugar industries has been attempted with limited success (Beattie et al., 2001; Gunningham 2004b). Self-regulation by industries may be completely independent of government, or it may involve a role for government in deciding all or some of the rules that industries must abide by (Gunningham & Grabosky, 1998).

Industry self-regulation for biodiversity conservation is viewed as unreliable, ineffective, not transparent and unacceptable to broad sections of the community (Gunningham 1995; Gunningham & Grabosky, 1998). It has not been widely used in Australian natural resource management. However, as an element of tiered or responsive regulation it has considerable untapped potential, because of the reduced regulatory burden for government (Gunningham & Grabosky, 1998).

Cross-compliance regulation

In the USA and UK cross-compliance measures have been linked to payments through Farm Bill provisions (USA) or the Common Agricultural Policy (CAP) (UK). Different

forms of cross-compliance exist, reflecting the degree to which their requirements are mandatory or voluntary (Davies & Hodge, 2006; Kristenson & Primdahl, 2004). In the UK and the European Union, cross-compliance measures were introduced in 2003 as part of Agenda 2000 reforms of the CAP. Cross-compliance aims to achieve sustainable agricultural outcomes, and at the same time align the CAP more closely with broader societal expectations (Commission of the European Commission, 2007), by decoupling direct payments from agricultural production.

Cross-compliance measures have generally not been used in Australia, in part because they involve the use of subsidies. Australia has one of the lowest rates of agricultural subsidies in the world (OECD 2011). Because subsidies are viewed as trade-distorting in Australia, once removed, they are unlikely to be re-introduced (e.g. Cairns Group, 2009; Donald, Pisano, Rayment, & Pain, 2002; Potter & Burney, 2002). A limited example of a voluntary cross-compliance program in north-east Victoria, placed a “mutual obligation” on voluntary participants to undertake self-funded productivity improvements in return for a stewardship incentive. The concept was well received by landholders, but limitations in the design and implementation of the program made it difficult to distinguish genuine changes from “business as usual” intentions (Earl, Allan, & Curtis, 2005).

The absence of direct subsidies for agriculture in Australia limits the potential for a cross-compliance system of the kind used in the UK or USA. However, the concept of normative performance standards that function as eligibility criteria for participation in voluntary programs may have merit in an Australian context.

Voluntary approaches

Voluntary approaches have been used increasingly as biodiversity conservation and natural resource management has shifted focus to agricultural landscapes, and support for command and control regulation has waned. From the 1980s when Landcare gained momentum, through successive phases of NHT1, NAP, NHT2, and Caring for our Country, voluntary approaches have formed an important element of the policy mix. The advantages of voluntary approaches include low monitoring and compliance costs for government, preservation of choice to participate and/or withdraw, and the promotion of social capital and community interaction (Cocklin, et al., 2007). Administration costs are often assumed to be low (Cocklin, et al., 2007), but as Gunningham and Grabosky (1998) note they may be high if extensive negotiation of

contracts or monitoring are involved.

An Environmental Management System (EMS) represents an important example of a voluntary approach that has been trialled in agricultural systems. EMS has a number of strengths including its flexibility, sensitivity to market fluctuations, cost efficiency, practical standards, and reliance on peer pressure rather than government intervention (Gunningham & Grabosky, 1998). Voluntary self-monitoring and regulating through EMS also has a number of serious weaknesses that make it unsuitable as a stand-alone mechanism for achieving biodiversity conservation on private land. In particular where economic interests are strong and the likelihood of non-compliance detection is low, respect for self-monitoring and regulation requirements is not likely to occur (Edyvane, 2008) and the opportunity for free-riding is high (Gunningham, 2004a, 2004b).

In Australia EMS in agriculture has focused on areas such as pollution, waste and energy use rather than on biodiversity loss (Anderson, Lowe, Preece, & Crouch, 2001). Design problems, such as the focus on measuring process or activities rather than performance outcomes, have limited the potential for evaluating the effectiveness of many projects. Consequences include the maintenance of “business as usual” behaviour, and a lack of transparency in reporting. Adoption of voluntary codes of practice may be motivated more by a desire to avoid stringent regulatory measures or taxes than by a desire to improve environmental performance (Cocklin, et al., 2007; Cohen, 2004; Driesen, 2003; Harrison, 2001; Martin, et al., 2007).

Other perceived problems with voluntary approaches include limited funding (Bennett, 2004; Curtis, 2003; Perez, 2007); insufficient incentives to attract participation (Dobbs & Pretty, 2004; Duxbury, 2005); a focus on practices that improve farm productivity; (Barr & Cary, 2000; Everingham, et al., 2006; Lockie & Higgins, 2007; Pannell, 2002; Pannell, et al., 2006); ad-hoc distribution of projects that fail to bring enduring, additional benefits (Bellamy, McDonald, Syme, & Butterworth, 1999; Race & Curtis, 2009); limited ability to evaluate environmental outcomes (Cocklin, et al., 2007; Curtis, 2003; Gunningham, 2007; Lockie & Higgins, 2007) and; over-reliance on voluntarism to achieve solutions for what are highly complex problems on very large scales (Cocklin, et al., 2007; Curtis, 2003; Curtis & Lockwood, 2000; Lockie & Vanclay, 1997; Martin & Woodhill, 1995; Paton, et al., 2004).

Education and awareness

Programs to increase education and awareness of biodiversity issues are recognised as a
Applying a statutory duty of care to improve outcomes for biodiversity at a regional scale

necessary complement for most types of policy instruments (Gunningham & Grabosky, 1998). Because involvement in suasive approaches is voluntary, it is thus socially acceptable. From a government's perspective, education and information approaches are also highly cost-effective because they involve little monitoring or compliance effort, they provide the community with understanding and vital information about environmental issues, and they can function as a "softener" to make regulation more palatable (Gunningham & Grabosky, 1998). Education and awareness programs, including those supported by Landcare, are likely to lead to adoption of beneficial practices (Curtis & De Lacy, 1996a). However, as a stand-alone approach they are unreliable (Gunningham & Grabosky, 1998) and not likely to bring about improvements in biodiversity or natural resources at the scale required (Curtis & De Lacy, 1996b). Where biodiversity objectives are poorly aligned with production objectives, many farmers are likely to respond more strongly to economic incentives (Gunningham & Grabosky, 1998).

Economic approaches

Participation with economic instruments is strictly voluntary, but is usually binding for a specified term. In theory, economic instruments have several advantages over command and control regulation. They provide the flexibility for land managers to respond in various ways, allow for least-cost solutions to be pursued. They also encourage innovation (Barde & Smith, 1997; Industry Commission, 1997), although some would argue that command and control regulation also encourages innovation (e.g. Driesen, 2003; Porter & van Linde, 1995). Economic instruments also devolve decisions down to property level, allowing land managers to decide on their preferred level of financial input, and thus reputedly reduce costs of government enforcement (Gunningham & Grabosky, 1998). They also make the costs of compliance transparent (Industry Commission, 1997).

Market-based instruments are still relative newcomers in the area of environmental management, and their effectiveness may not be fully apparent for some time (Barde & Smith, 1997; Race & Curtis, 2009). Few evaluations have been carried out (Barde & Smith, 1997; Henderson & Norris, 2008), in part because they are typically used in conjunction with other instruments, and thus it is difficult to separate the effectiveness of each instrument (Barde & Smith, 1997). However, some studies have suggested that auctions in particular, can bring about significant cost savings in comparison with fixed

grants for biodiversity conservation on private land (Barde & Smith, 1997; Department of Sustainability and Environment [DSE], 2008a; Stoneham, Chaudhri, Ha, & Strappazon, 2002). Other commentators are less convinced. For instance, Morrison et al. (2008) question the relative efficiency of auctions compared with incentives based on a variable cost-share, and they also highlight the potential for inequitable access to programs, and for crowding out (Frey 1997; Reeson & Tisdell, 2006) to occur. Race and Curtis (2009) suggest that programs need a long-term horizon to promote continuing commitment, and to provide continuing training opportunities for landholders.

A number of other weaknesses associated with some or all economic instruments have been noted. These include a heavy reliance on provision of information to potential participants, a lack of dependability unless regulatory underpinning exists, and the risk that landholders may not react rationally (Driesen 2003; Gintis, 2000; Gunningham & Grabosky, 1998).

Economic instruments, although reputedly more cost-effective and socially appealing than statutory regulation, are less dependable and have not been effective in all situations, particularly if the incentive level is not sufficiently high (Bowers, 1999a; Gunningham & Grabosky, 1998). For instance, Dobbs and Pretty (2008) noted that agri-environment stewardship schemes in the UK attracted relatively few participants from highly productive areas where intensive farming practices pose a key threat to biodiversity. Similar observations were made in the Australian *Heartlands* initiative (Earl & Cresswell, 2005). Despite the enthusiasm for their use, economic instruments have not transformed regulation as the original proponents had hoped (Cohen, 2004). In particular, there remains a critical need for regulatory oversight in the areas of monitoring and enforcement (Henderson & Norris, 2008), and standards (Cohen, 2004), all functions that are frequently carried out by governments.

As highlighted above, individual policy instruments all have strengths and weaknesses, and if applied on a stand-alone basis, will encounter problems with efficiency, effectiveness, equity or social acceptability. Understanding of weaknesses in particular, assists me in this research by highlighting how a duty of care instrument could be developed in a way that avoids or compensates for the weaknesses in existing instruments, without interfering with their strengths.

Mix of policies

World-wide it is accepted that no single policy instrument will bring about optimal outcomes for natural resource management, and the use of a mix of instruments, including well-designed statutory regulation (Driesen, 2003; Harrison, 2001), is recommended to overcome this problem (Doremus, 2003; Gunningham & Grabosky, 1998). While the intended use of multiple policy approaches is evident in many strategies addressing biodiversity conservation, (Dovers, 2005) considers this has only been carried out to a limited extent. Dovers also considers that a clear rationale explaining why particular instruments have been chosen is often missing. As noted previously, Australian governments currently exhibit a preference for voluntary and market-based instruments, over more interventionist instruments such as direct action and command and control regulation, although the legal mechanisms to support the latter approaches remain intact.

In Australia many instruments for biodiversity conservation emphasise increasing the quantity of habitat. The intention with many (most) of these instruments is for long-term gains to be achieved, but Race & Curtis (2009) have identified reasons why this goal may not be realised. These include an inability to differentiate between status quo gains (i.e., those that would have occurred anyway) and genuine additional gains, poorly defined conceptualisations of what “long-term” means, and ad hoc delivery. Another problem is the absence of minimum performance standards that have allowed “crowding out behaviour” to arise (Frey, 1997; Reeson & Tisdell, 2006). There has also been a lack of recognition for ongoing good performance (Gunningham 2007b; King 2002).

An additional problem with voluntary programs is that they have rarely taken whole-of-property management into consideration, and have thus potentially provided funds to offset environmentally harmful activities elsewhere on participating properties (Race & Curtis, 2009). *The Native Vegetation Act 2003* (NSW) has gone some way to address this by introducing accredited property vegetation plans as an eligibility prerequisite for receipt of incentives. Property vegetation plans have also become prerequisites for drought relief funding and other structural adjustment programs (Lockie & Higgins, 2007). Preparation of a property vegetation plan is not mandatory, but once it has been agreed on, a plan becomes legally binding for landholders.

The shift to regional catchment/watershed governance has resulted in significant

delegation of responsibility for deciding the priorities for public investment in biodiversity conservation on private land to regional CMOs. The task of CMOs is a difficult one, particularly with respect to biodiversity conservation on private land. In part this is because significant shortcomings exist in current policy arrangements, which have led to instrument failure. Broadly speaking, instrument failure can be classified according to five underlying reasons. Gunningham and Grabosky (1998) identified three reasons for instrument failure:

1. Design flaws that prevent instruments from ever functioning successfully. For instance, in Australia the federal *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act), has been criticised for poor wording of a primary objective to protect biodiversity (SSCECA, 2009), while the Victorian *Flora and Fauna Guarantee Act 1988* (FFG Act) lacks clearly specified objectives (VAGO, 2009). The US *Endangered Species Act 1973* (ESA Act) has been criticised for its non-discretionary provisions, and failure to consider social and economic costs (Illical & Harrison, 2007). Design flaws may also include incomplete design, where a group of instruments may be applied to a particular circumstance, but the absence of a specific component in the policy mix limits the success of instrument implementation. For instance, an absence of minimum standards, and insufficient reporting, monitoring and compliance considerations have been identified as flaws in biodiversity policy instruments (Stoneham, et al., 2000). Other examples were mentioned on p. 53.
2. Application in inappropriate situations where particular instruments are unlikely to produce optimal outcomes or may lead to undesirable ones. For example, where the opportunity costs associated with threatened species conservation are high, landholders may be encouraged to adopt a “shoot, shovel and shut up” approach to avoid a financial burden that is perceived to be unfair (Gunningham & Grabosky, 1998). Loss of goodwill between landholders and government agencies in other natural resource management programs may be an unintended outcome (Frey, 1997).
3. Inadequate implementation where a well-designed instrument is appropriate to the situation, but a variety of other constraints prevent its effective operation, e.g. lack of resources, lack of political will, lack of understanding in other agencies about responsibilities that the instrument implicitly assigns (Beynon et al., 2004; Driesen,

2003; Environmental Audit Committee [EAC], 2008; Gunningham & Grabosky, 1998; VAGO, 2009). Under-resourcing of staff, downsizing of public agencies, managerialist appointments to environmental positions, and rhetorical rather than substantive policy definition, have been described as consequences of neoliberal influences that have led to inadequate implementation of traditional regulatory regimes (Lockwood & Davidson, 2010; Peck & Tickell, 2002)

To this list can be added:

4. Problems with regulatory architecture. Regulatory architecture refers to the design of legal and political institutions, and the ways that they interact to impede or promote the efficiency of biodiversity policies. Martin et al. (2007, p. ix) describe Australia's national regulatory architecture as "cumbersome and confused", identifying problems that include: duplicated interventions in different forms, different and sometimes contradictory approaches in different jurisdictions, diffusion of government efforts, and "venue shopping" - where policy makers search for suitable decision-making settings to air their discontent with current policies and promote their alternative preferred policies (Pralle, 2003). Examples, from Australia and overseas, include past CAP policies promoting agricultural intensification at the expense of biodiversity (Donald, et al., 2002), and the mismatch, duplication and overlapping responsibilities between national and state government regulations (Defenders of Wildlife, 2006; Martin, et al., 2007; VAGO, 2009). These may lead to high transaction costs, without necessarily achieving desired outcomes (Martin, et al., 2007).
5. Low social acceptability, where strong and organised resistance to a policy instrument can seriously obstruct its operation, irrespective of the actual design and intent of the instrument (Davies & Hodge, 2006; Farrelly & Conacher, 2007). Some command and control regulation falls into this category, especially biodiversity instruments that affect farmers. A perceived erosion of property rights, and unfair distribution of the cost burden associated with biodiversity conservation on private land underlies much of this opposition (Industry Commission, 1998).

Smart regulation

After reviewing the strengths and weaknesses of regulatory regimes in Australia and elsewhere, Gunningham and Grabosky (1998) coined the term "smart regulation" to

describe an approach that optimised regulatory design. Smart regulation, also known as regulatory pluralism, typically employs a mix of policy instruments designed to give complementarity to each other, but this occurs in a way that includes active roles for business, non-government and voluntary sectors (Gunningham, 2009a; Gunningham & Grabosky, 1998). In this sense it shares characteristics with the new governance concept of Lockwood et al. (2010). Gunningham and Grabosky (1998) identified five principles that underpin smart regulation based on their conclusions about instrument failure (see Box 2). These principles provide another useful set of criteria against which a duty of care framework could be evaluated.

Box 2 Five principles for smart regulation (Gunningham & Grabosky, 1998).

1. A mix of policy instruments and institutions is preferred. In many cases a mix of policies is likely to lead to more effective and efficient outcomes, than any single instrument would. Similarly, a mix of institutions including business, other non-government and community actors is recommended. However, it is also important to avoid proliferation of instruments and institutions which could lead to 'regulatory overload'.
2. Less interventionist measures are preferred. Intervention in this sense may refer to *prescriptive intervention*, where amounts, types or methods are specified (usually by government), or *coercive intervention* where third party pressure is brought to bear on producers to improve performance through for instance, taxes or other price signals. Low intervention approaches are likely to be more effective, efficient, and importantly, they are more likely to be socially acceptable than highly interventionist policy approaches.
3. An escalating regulatory response needs to be built in. If least interventionist approaches fail to achieve policy goals, a responsive enforcement pyramid (Braithwaite, 2002), with appropriate triggers, circuit breakers and credible sanctions, is required. Smart regulation also sets out a regulatory role for business (as self-regulator) and third party actors. There are two situations where a tiered regulatory response is not considered appropriate, where there is a serious risk of extinction or catastrophic harm, or where there is only one chance to influence behaviours.
4. Actors who are best placed to act as surrogate regulators should be empowered to do so. Examples of surrogate regulators could include locally-based Landcare committees, or third party commercial interests such as banks, or industry associations. Empowering actors is seen to overcome many of the current shortcomings of traditional regulatory approaches. It is based on an assumption that in some situations intervention by a third party may be far more potent than that by government. This approach appears to contrast with new governance principles of (Lockwood, et al., 2010), which emphasise that enforcement activities should remain the responsibility of recognised authorities.
5. Opportunities for win-win outcomes should be maximised. Much traditional command and control regulation has focused on limiting, preventing or penalising undesirable practices. Smart regulation emphasises the need to change the focus of regulation so that it instead encourages and rewards good environmental performance. A strong leadership role for government is implicit in this principle.

In this section I have presented an overview of the strengths and weaknesses of policy instruments that are used currently to address biodiversity loss. In addition, I have identified a number of examples in Australian natural resource policy where instrument failure has occurred, including examples where the absence of specific components in the policy mix has limited the overall success of the approach. A statutory duty of care for biodiversity has been suggested as a potentially useful policy instrument to complement the existing policy mix by adding missing components (Bates, 2001), and it is to the duty of care concept that the next section turns.

Part B - Duty of care concept

Introduction

The duty of care concept is widely known and has been applied in common law courts for centuries. More recently it has been codified in statutory law, including in applications that specify a duty of care to the environment. In this section I review literature about concepts relating to duty of care. In the review I also explore literature for evidence about how the law has addressed biodiversity specifically, the potential value of a statutory duty for care for biodiversity, and the major impediments to the proposal for a statutory duty of care for biodiversity. To begin, I will examine how Australian legal systems have addressed biodiversity conservation.

How the law has addressed biodiversity

Common law, property and biodiversity

Since Europeans arrived the dominant legal system in Australia has been common law, a system that was transferred directly from Great Britain. Common law is the customary law that is decided by the judiciary, on the basis of decisions made in precedent cases (Mann, 2002). Common law is not based on a firm legal theory, but is based on normative standards of law determined by judges (Mendelsen, 2007). In England common law replaced chthonic law progressively in the period leading up to the Norman Conquest in 1066, but it was only after this time that formal institutions associated with it began to emerge (Baker, 1990). Although many of the original elements of common law have changed or disappeared over time, the independence of the judiciary remains as one of the defining concepts of the system (Glenn, 2000).

In the 11th Century William the Conqueror declared that all land belonged to the Crown (Darbyshire, 1992). In feudal England it was common for the ruling monarch to reward loyal subjects with land grants, and land became a valuable economic asset (Bates, 2006). Over time property ownership became associated with wealth and power in British society, and common law has evolved to reinforce private property rights and economic interests of landholders, the feudal monarchs and nobility, and in recent times private land owners (Bates, 2003b, 2006; Bradsen, 2000; Gardner, 1998; Sperling, 1997).

The centrality of property in common law societies was further reinforced by the

liberal property theories of Thomas Hobbes and John Locke in the 17th Century. Both argued that the sole purpose of government was to protect life, liberty and property. Hobbes (1651) viewed government as the arbitrator between selfish, warring citizens, without which a society could not function. He supported the idea that property belonged to the Crown and was created by government (West, 2001). In contrast, Locke (1690) espoused a theory of “natural law” in which property was a natural right created through labour.

As much land as a man tills, plants, improves, cultivates, and can use the product of, so much is his property. He by his labour does, as it were, enclose it from the common... (p. 118).

Ownership of property has traditionally entailed three basic property rights:

- The right to exclude or restrict others from the land and its natural resources.
- The right to transfer ownership of the land and its natural resources.
- The right to use the land and its natural resources for benefit and enjoyment, as long as it does not harm neighbouring landholders or their property, or limit their ability to use and enjoy their property (Bates, 2006; Dodds, 1994; Gardner, 1998; Raff, 1998).

The absolute interpretation of property was famously enshrined in the words of Blackstone (1765) who stated:

There is nothing which so generally strikes the imagination, and engages the affections of mankind, as the right of property; or that sole and despotic dominion which one man claims and exercises over the external things of the world, in total exclusion of the right of any other individual in the universe... (Book 2, p. 1)

Blackstone’s interpretation is widely believed to have influenced the shape of common law both in England and Australia (Kercher, 1995; Prest, 2003), although Raff (2005) suggests these claims are overstated. It was widely assumed that ownership entitled a landholder to the unlimited use of land and the natural resources existing on it (Bates, 2003b, 2006; Bonyhady, 1992; Gardner, 1998). In this context, the plants and animals inhabiting land became the property of the landholder (Bates, 2003a). This interpretation, traditionally supported in common law, gives no consideration to

sustainability of natural resources even to the extent that extinction of species is permissible (Bates, 2003a; Gardner, 1998). Some commentators see this as a failing of the common law system (Bonyhady, 2000a; Bradsen, 2000; Gardner, 1998).

The above absolute view of property is increasingly under challenge in Australia and elsewhere (Bromley, 1996; Freyfogle, 2006; Gray, 2007; Gunningham, 2009b; Reeve, 2002). An alternative view of property holds that it involves a bundle of rights and responsibilities over land or other interests, such as water or minerals. Where an individual possesses sufficient rights and responsibilities, they may be considered to own a particular property (Honoré, 1961), even when others may have some rights. In this framework, individual rights and responsibilities may be removed (or created) without ownership of the land being compromised (Dodds, 1994).

Raff (1998, 1999, 2003, 2005) asserts that the common law property right to beneficial use and enjoyment carries implicit responsibility to care for the environment. The absence of articulated responsibilities in British and Australian common law are, in his view, oversights derived from misinterpretation of Biblical scripts by Blackstone, and subsequent misinterpretation of his words, that have influenced the evolution of British laws for over a century (Bailey, 2001). Central to Raff's thesis are the modern distinctions between the Australian common law view towards property, generally described as predominantly rights without responsibilities, and that which is embodied in the German Federal Constitution, in which obligations associated with land ownership are clearly alluded to (Raff, 1998, 2003).

The Australian Torrens system for registering title to land, introduced in 1857 in South Australia (Stein & Stone, 1991; Whalan, 1982), is the focus of Raff's inquiry. The Torrens system differs from the earlier Hanseatic Deeds system used in Germany and a number of other European countries, in the way property interest is registered. Essentially this difference has parcels of land registered by the Torrens system, whereas the older Deeds system registers a person's interests in land, but not the land itself (Whalan, 1982). In the context of Raff's proposition that land ownership entails responsibilities as well as rights, the Deeds system that focuses on interests rather than the land itself, would appear to hold better prospects for environmental outcomes.

Prior to 1857, the Deeds system was used in Australia, and its use continued in England and Wales until 1934 (Stein & Stone, 1991). It is this legal heritage in the way property rights were managed, shared with Germany until relatively recently, which

Raff (1998) contends provides scope for an adapted interpretation of property law in Australia.

The public trust

Common law property rights do not extend to natural resources that move, such as birds, air and water, although they could be taken into possession (Bates, 2006). According to Blackstone (1765):

“[Moveable things], being only the objects of the law while they remain within the limits of its jurisdiction, and being also of a perishable quality, are not esteemed of so high a nature, nor paid so much regard to by the law, as things that are in their nature more permanent and immoveable, as land and houses, and the profits issuing thereout.”(Book 2, p. 384)

The doctrine of public trust provides an exception. This doctrine is a common law mechanism that could potentially be applied in the protection of environmental assets on public land (Bonyhady, 2000a; Raff, 1998). Originally a Roman concept (Bates, 2006), the doctrine of public trust was given contemporary articulation by Sax (1970). The basis of the doctrine is that because some natural resources are of essential value to society, the government should not be able to allocate private rights to those natural resources, unless there is a benefit to society in doing so (Bates, 2006). Although widely used in the USA to protect environmental assets such as national parks, rivers, lakes, and foreshores on public land (Raff, 1998), Australian common law shows few examples where the public trust doctrine has been employed (Bonyhady, 2000a). Some commentators consider that this doctrine offers distinct possibilities for overcoming some of limitations of common law application to environmental issues on public land (Bonyhady, 2000a; Stein, 1996). However, recognition of the doctrine by Australian courts, a necessary pre-condition for realisation of this potential, has so far been limited (Bonyhady, 2000a).

Statutory law and biodiversity

In the absence of common law jurisdiction over public land, a system of statutory law, determined by governments, also exists to fill the legal void. The 7th Century Laws of Ine designed to protect forest trees, provide evidence that statutory measures were adopted early in England. Later acts, in the 16th Century, also aimed to protect trees, at a

time when demand for naval timber, building materials and firewood was increasing (Atkins, Simmons, & Roberts, 1998).

In practice, governments have increasingly assumed responsibility for mineral resources, air, water, fish, and biodiversity (Bates, 2006). They have employed statutory measures to regulate usage of these resources, to the point where it is widely assumed that sustainable environmental management can only be effected through statutory law. The comment of Brennan J provides a clear example that this view is held within Australian courts:

The management of a fishery to prevent its depletion by the public must be provided for, if at all, by statute. Harper v Minister for Sea Fisheries (1989) 169 CLR 314, 329, as cited in Bates (2006, p. 23),

Legislation to regulate use of the environment, including biodiversity, has become the cornerstone for governments in Australia and other common law countries (Fromond, Similä, & Suvantola, 2009; Jordan, et al., 2005; Rohlf, 1991). However the architecture of legislation has developed in an *ad hoc*, piecemeal and reactionary fashion (Gunningham, 2009a; Martin, et al., 2007), resulting in numerous, and sometimes conflicting content (Bates, 2003a; Farrier, 2002). As discussed previously, legislation for biodiversity conservation in agricultural landscapes has suffered from the additional problem of poor social acceptability and is unlikely, by itself, to generate landholders who are good biodiversity managers (Binning & Young, 1997). The search is on to find other more acceptable, effective, equitable and efficient ways to address these issues. This study into the potential value of a statutory duty of care for biodiversity is part of that search.

Common law duty of care

Broadly speaking a duty is “an act or a course of action that is required of one by position, occupation, social custom, law or religion” (American Heritage Dictionaries, 2006). Duty of care is most widely recognised as a legal concept associated with common law in countries such as Australia, New Zealand, USA, and Canada that have adopted the English legal system (University of Ottawa, 2007).

Duty of care is defined variously as:

- The legal obligation to take reasonable care to avoid causing damage (Martin & Law, 2006).
- The obligation owed to anyone whom it is reasonably foreseeable would be injured by that lack of care of that person (Nygh & Butt, 1997).
- A duty to use due care toward others in order to protect them from unnecessary risk of harm (Merriam-Webster's Dictionary of Law, 1996).

The term duty of care has evolved over time to its current form in common law. As early as the 14th Century, the concept of a person owing a duty towards another or their property was reported in the British legal literature (Luntz & Hambly, 1995), but only as an adjunct to other types of legal action (Baker, 1990). It was not until the case of *Donoghue v Stevenson 1932* (UK) that duty of care achieved formal recognition in its modern form as a key element of the tort of negligence (Luntz & Hambly, 1995). In general for a person to be liable for negligence in common law, a number of criteria must be satisfied:

1. It must be established that a person owes a duty of care to another person (either directly or in respect of their property). A duty holder will typically have a relationship that entails some position of power over another person. This relationship is clearly bounded. For instance, an individual doctor's duty is limited to the patients under his/her care, but does not include all people in need of medical attention.
2. A reasonable standard of care must be employed in carrying out or omitting to carry out a particular action. A "reasonable standard of care" in this sense refers to the actions that a reasonable person would do or would not do, in adhering to community standards (Nygh & Butt, 1997). While "reasonableness" is seen as an objective test in law (Bates, 2001), it is nevertheless a concept that is sensitive to context, including the degree of hazard associated with the actions (Bates, 2001), the personal characteristics of the parties involved, and their relationship to each other (Nygh & Butt, 1997). In that sense what is reasonable for one person may be unreasonable for another.
3. Any damage caused was reasonably foreseeable as result of the actions or omissions. Foreseeable harm or damage is the type of harm that, based on the best available science and knowledge, is likely to occur as a result of the

activities in question. Accidental harm is excluded from the concept provided no negligence is involved (Bates, 2006).

4. The harm or damage that occurred was not too remote from the breach of the duty (Bates, 2001, 2006; Kerr, 2002). This criterion recognises the ‘proximity’ or ‘neighbourhood’ principle articulated in *Donoghue v Stevenson 1932* (UK), allowing for indirect, as well as direct, causation of harm.

Common law changes constantly but incrementally (Glenn, 2000; Mendelsen, 2007), so the interpretation of these four criteria is subject to debate, and dissenting views are not uncommon. According to Trindade, Cane and Lunney (2007), the proximity principle has fallen out of favour in Australian courts in recent years. Common law is seen by many lawyers as a flexible, adaptable system capable of modifying itself to meet the needs of society as knowledge, technology and standards change over time e.g. (Gardner, 1998; Glenn, 2000; Kerr, 2002; Mendelsen, 2007), and yet many have reservations about the feasibility of the common law embracing a duty of care for biodiversity (or the environment) (e.g. Bates, 2003b; Raff, 1999).

Problems with a common law duty of care for biodiversity

Opinions vary as to whether there is capacity, within the current application of common law, to address biodiversity issues, and a number of serious problems have been identified. These include: difficulties in establishing standing for third parties (Bates, 2006; Bonyhady, 2000b; Lyster, Lipman, Franklin, Wiffen, & Pearson, 2009); variable interpretations of cause - effect relationships where cumulative impacts from non-point sources are often involved (Bradsen, 2000; Gardner, 1998); a reactive approach that deals with harm after the event (Bradsen, 2000; Lyster, et al., 2009) and requires proof (Bates, 2006); dependence on actions being brought to court (Lyster, et al., 2009); potentially high costs which act as a strong deterrent to initiation of complaints (Bonyhady, 2000a); and variable interpretations by judges (Bates, 2001).

Collectively these problems make it unlikely that a common law duty of care for biodiversity will be forthcoming in the near future. In particular, the reliance of common law on the doctrine of precedent, and its retrospective focus, make it unsuited to the circumstances of biodiversity conservation where prevention of future harm is needed. A common law duty of care for biodiversity will therefore not be considered in following sections of this thesis. In the next section I will consider duty of care in statutory law.

Statutory duty of care

Duty of care has been codified in statutory law in a range of disciplines including occupational health and safety, education and medical health. Examples of a statutory duty of care to the environment also exist in Australia, and in other countries such as New Zealand and Great Britain. Some of the more salient aspects of these environmental statutes are discussed below.

Australia

A number of Australian states have introduced a general duty of care to the environment through legislation. Examples include the *Soil Conservation and Landcare Act 1989*, the *Pastoral Land Management and Conservation Act 1989* and the *Natural Resources Management Act 2004* in South Australia, the *Catchment and Land Protection Act 1994* (CaLP Act) in Victoria, and the *Environmental Protection Act 1994* and the *Land Protection (Pest and Stock Route Management) Act 2002* in Queensland.

While each of these acts has included biodiversity within its terms of reference for the duty of care, for a variety of reasons none has effectively addressed the biodiversity issue. In Victoria the CaLP Act reformed and updated the *Soil Conservation and Land Utilisation Act 1959* and the *Vermin and Noxious Weeds Control Act 1959*, but it was largely confined to the contexts of the preceding legislation. “Biodiversity” was not a commonly used term, even in 1994, and although the concept of “land” included native flora and fauna, they were in many ways lost within the broader definition. In the CaLP Act, landholders must take reasonable steps to avoid harming their neighbours’ biodiversity, but have no requirement to avoid harming biodiversity occurring on their own property. In most cases there is an absence of supporting guidelines or codes articulating how the duty of care should be fulfilled. In the case of the Queensland *Environmental Protection Act 1994*, agricultural codes of practice have been prepared, but they are framed around land use rather than ecological processes, in effect limiting the application of the duty to instances where no major imposition on agricultural practices occurs.

In 2007 the South Australian Government released a draft Biodiversity Strategy, acknowledging that the then current approaches to biodiversity conservation were not sufficient (Department of Environment and Heritage, 2007). The strategy was designed to work in concert with the *Natural Resources Management Act 2004* (SA) and to assist

regional natural resource management practitioners in the preparation of their biodiversity priorities. The strategy includes the development of a landholder duty of care specifically to biodiversity as one of its objectives (due in 2011). Within their definition, a duty may be held to “...another person, their land (of which biodiversity is a significant part), or their use and enjoyment of that land.” (Department of Environment and Heritage, 2007, p. 73). The proposed South Australian duty of care is silent about how landholders should treat biodiversity occurring on their own land, in the same way as the Victorian CaLP Act is.

A contrasting approach to describing a statutory duty of care has been taken in the *River Murray Act 2003* (SA). Section 23(1) specifies that “a person must take all measures to prevent or minimise any harm to the River Murray through his or her activities”. The “River Murray” is defined as the whole river system including tributaries, anabranches, floodplains, wetlands, or estuaries associated with the river, its related beds, banks or shores, and the natural resources associated with it (Section 3). Natural resources include soil, groundwater, surface water, plants and animals and ecosystems. Section 23(2) describes “harm” as including a risk of harm, a risk of future harm, and anything declared by regulation to be harm to the River Murray, and not needing to be permanent. In this example, the duty is owed to the River Murray itself, rather than specifically to people or their property. This represents a clear departure from the common law duty of care model. It addresses one of the limitations that a common law duty of care would have in relation to biodiversity.

New Zealand

In New Zealand the *Resource Management Act 1991* (RM Act) contains a duty to avoid, remedy, or mitigate any adverse effect on the environment arising from an activity carried on by, or on behalf of, that person (Section 17). The RM Act contains a number of elements that are relevant for how a statutory duty of care for biodiversity might be framed in an Australian context. These are discussed briefly here. The RM Act has replaced 167 separate pieces of legislation (Industry Commission, 1998), ostensibly streamlining environmental governance arrangements. Thirteen administrative regions based on catchment boundaries were established, with a nested hierarchy of national, regional, and local responsibilities. A significant element of the RM Act is the introduction of a national Environment Court with responsibility for formal adjudication of the RM Act. Judges in the Environment Court have a multi-disciplinary background,

and are not democratically elected. Yet they have exceptional powers that include not only capacity to interpret the law, but also to declare what the law is and, in certain cases, overrule the findings of local authorities (Birdsong, 1998). However, there are serious criticisms of the RM Act, in particular relating to the way in which the Government has chosen to interpret and implement some of the more radical elements within it (Gleeson & Grundy, 1997; Grundy, 1997; Gunder & Mouat, 2002).

Unlike Australia and the USA, New Zealand does not have legislation like the EPBC Act or the US ESA Act recognising rare or threatened species (Seabrook-Davison, Ji, & Brunton, 2010). Consequently, determinations of significance in the RM Act may be influenced by vested interests, which could include developers, environmental interest groups, or local councils (Walker, et al., 2008).

The focus on effects-based management (which aims to regulate outcomes rather than activities) includes the concept of foreseeable harm, and the RM Act also has provisions for considering cumulative effects (Dixon & Montz, 1995). However, Birdsong (1998) maintains insufficient attention has been given to cumulative effects, which are important to consider in the case of harm to biodiversity. According to Grundy (1997) the focus on effects-based management represents a very narrow interpretation that fails to satisfy ethical concepts embodied in the sustainable management principles on which the RM Act is founded. Gleeson and Grundy (1997) suggest that local councils preferred to base their decisions on zoning provisions rather than effects, for reasons related to efficiency.

The RM Act has open standing provisions, designed to promote public participation. The open standing provisions provide any person with the opportunity to make a written submission in relation to national policy proposals, regional plans, or resource consent and heritage proposals. In addition, people who can demonstrate a specific interest that is greater than the interest of the general public may be granted standing to appear at hearings, even if they did not make a written submission (Birdsong 1998). However, a number of authors suggest that public participation provisions are undermined by other elements of the RM Act. These include the consent provisions, which give local councils discretion as to whether a proposal requires public notification or not (Gleeson & Grundy, 1997; Gunder & Mouat, 2002). It has been suggested that councils regularly recommend against notifications, in order to minimise public scrutiny (Gleeson & Grundy, 1997; Gunder & Mouat, 2002). Birdsong (1998)

suggested that approximately 95% of applications were not notified. The ability of the Environment Court to award substantial costs presents an effective deterrent to individual objections (Birdsong, 1998), and effectively favours big business interests over the community (Gleeson & Grundy, 1997).

The Industry Commission (1998) proposed the New Zealand RM Act as a suitable model on which to base a unified environmental statute in Australia. In this thesis, my aims in considering a statutory duty of care for biodiversity are more modest. I only contemplate a duty of care as an adjunct or complement to existing instruments, with no suggestion of replacing statutes. Despite this caveat, and the limitations mentioned above, the RM Act it is a useful source of information for my thesis.

United Kingdom

In the UK, the requirements of the mandatory Good Agricultural and Environmental Condition (GAEC) and Statutory Management Requirements (SMR) standards in cross-compliance policies (DEFRA, 2007b) show hallmarks of an environmental duty of care, although the term duty of care is not used explicitly. In a recent amendment to the English *Natural Environment and Rural Communities Act 2006*, Section 40(1) places a duty on all public authorities to conserve biodiversity. Early signs are that the biodiversity duty is too weak in its wording and in its attention to enforcement, to realistically be an effective mechanism for improving biodiversity conservation (EAC, 2008). Although public agencies now have a statutory obligation to incorporate the duty into their strategic planning, it appears that not all have done so (EAC, 2008). The UK focus on public agencies as duty-holders stands in contrast to much of the Australian discussion which has typically portrayed land owners and managers as duty-holders.

Problems with a statutory duty of care for biodiversity

In the previous sections I have noted some problems for biodiversity with existing environmental duty of care statutes, some of which were also identified as problems for a common law environmental duty of care. Problems with statutes include:

- A low profile given to biodiversity which can lead to it being overlooked.
- Codes/guidelines that are either absent or defined around enterprises, rather than around biodiversity or the environment.
- A focus on avoiding harm to neighbours' land (including biodiversity) but

silence on harm to one's own biodiversity.

- The issue of standing with regard to who might have an interest in biodiversity, and thus be able to take action in a court or tribunal.
- Unwillingness on the part of government to implement elements of a duty of care.

What a statutory duty of care for biodiversity could offer

A statutory duty of care could potentially augment existing mechanisms for protecting biodiversity by specifying measures designed to avoid foreseeable harm. It could be a mechanism for recognising minimum standards of acceptable biodiversity management, irrespective of threat status, tenure, or life-form. As a statutory instrument, it could occupy the policy space between existing regulatory instruments and voluntary approaches, provide a safety net extending some measure of protection to all biodiversity, and provide a vehicle for promoting a normative standard for biodiversity management.

The Australian Industry Commission (1998) proposed a statutory environmental duty of care as one of three pillars in its model for environmental sustainability. The duty of care was described as an instrument to operate in concert with other policy approaches, rather than as a stand-alone instrument. The three main elements of the duty of care included mandatory standards to address high risk situations, voluntary standards to be developed and used in preference to mandatory standards, and codes and guidelines describing beneficial practices associated with the standards. Key features of this duty of care model that were of interest to me included the use of standards to define environmental harm and reasonable steps, an outcomes-based focus, a non-retrospective approach, the focus of land managers as duty-holders regardless of tenure, and the concept of locally relevant standards.

The Industry Commission (1998) set out its model for a duty of care as part of a unifying environmental statute, not unlike the RM Act. While the presentation of the RM Act as a single environmental statute is very appealing, a restructure of existing legal and institutional arrangements is beyond the scope of this thesis. Other aspects of the RM Act have nevertheless provided useful ideas for my research. Particular aspects of interest to me included the provision for open standing, the role of a multi-disciplinary environment court, provision for considering cumulative effects, and the

focus on effects rather than activities.

Gardner (1998) presented an evaluation of the Industry Commission proposal for a duty of care. He highlighted a number of relevant issues, and suggested a range of options to address them. Key suggestions included: designing the duty broadly to address the public interest; employing administrative approaches and/or subsidiary law such as management plans or regulations, to provide more specific description of the legal requirements; making the limits of what is reasonable and practicable subject to requirements of the precautionary principle, and; establishing local or regional reference groups to develop standards, codes, and guidelines for their area. Gardner also identified issues with the democratic accountability of non-elected reference groups, and the potential for vested interests to unduly influence standards, as well as the need for a clear enforcement hierarchy.

The work of Bates (2001) evaluating the potential value of a statutory duty of care for biodiversity has also provided a helpful platform for this study. One of Bates' main conclusions was that a statutory duty of care for biodiversity would be a useful vehicle for articulating broad-based management standards, if used in conjunction with other policy instruments such as voluntary programs and financial incentives. He suggested that a statutory duty of care applied in a way that incorporated educational and awareness elements, could perform a useful role in elucidating boundaries between public and private responsibilities. A tenure-blind approach was seen as potentially offering a way to enhance the social acceptability of a statutory duty of care. Bates also suggested that a duty of care framed specifically around biodiversity could, in time, also provide a precursor for a broader and more comprehensive duty of care to the environment.

Key issues explained

Intermittent discussion about an environmental duty of care in the Australian literature has highlighted a number of other difficulties with the concept (e.g. Binning & Young, 1997; Industry Commission, 1998; Productivity Commission, 2004; Young, et al., 2003). These problems are discussed briefly below and some, but not all, are addressed in detail by this research.

Legal and implementation problems

Among lawyers the term duty of care has a very precise meaning, grounded in common

law, which circumscribes a relationship that may arise between two people, where one person owes a duty to another. The application of a statutory duty of care beyond this type of relationship represents a significant departure from its original intent and one that, in the opinion of many lawyers, is problematic (Shepherd & Martin, 2009). For some lawyers (e.g. Bates 2001, 2003b, 2006; Gardner 1998; Preston, 2007), and many (pragmatic) non-lawyers (e.g. Young et al., 2003), this is not an insurmountable problem – after all, what’s in a label? Common law is recognised for its flexibility (e.g. Gardner, 1998; Mendelsen, 2007; Preston, 2007), so it is possible that the common law could adapt to address contemporary problems with biodiversity, although it is also acknowledged that change is more often incremental than monumental (Glenn, 2000).

A statutory duty of care for biodiversity would overcome some other problems that a common law duty of care might encounter. It has been argued that where statutory law and common law conflict, then statutory law would normally have priority (Bates, 2006), but it is also recognised that if elements of statutes are not clearly defined then courts may refer back to common law in an effort to provide the necessary clarification (Shepherd & Martin, 2009). My intention in this research is not to provide thorough legal definition of a statutory duty of care because that task is better left to legal scholars. However, I have used the term duty of care for biodiversity throughout this research, and through interactions with informants I have acquired some sense of how acceptable the term is to different stakeholder groups.

Linguistic ambiguity

A major problem in the way duty of care is understood in a natural resource management context lies with linguistic ambiguity (Carey & Burgman, 2008). In particular, there is a problem with how duty of care differs from stewardship, and the two terms are often confused in public discourse (e.g. HRSCEH, 2001; Productivity Commission, 2004).

It is apparent that the terms duty of care and stewardship are frequently used interchangeably and ambiguously in natural resource management literature. Multiple meanings of duty of care have been identified by a number of researchers including Hatfield-Dodds (2004a), Lambert and Elix (2005) and Shepherd and Martin (2009), but no attempt to distinguish their meanings has been made. Articulation of the distinguishing characteristics of each term would assist policy makers, planners, landholders and others discussing duty of care and stewardship to do so with a shared

understanding. Linguistic ambiguity, also described as the “panchreston problem” (Lindenmayer & Fischer, 2007), can be a major constraint to meaningful dialogue. I address linguistic ambiguity between duty of care and stewardship in Chapter 4.

Property rights

As discussed in an earlier section of this chapter, different interpretations of the limits of property rights, and the extent to which they entail responsibilities as well as rights, persist in Australia. While Blackstone’s absolutist view (see page 61) may now represent a marginalised interpretation (Raff, 2005; Reeve, 2002), there has not been a serious debate to clarify how property rights should be interpreted in a contemporary Australian context. The perceived infringement of property rights remains one of the major impediments to legislation for biodiversity conservation, including that aimed at protecting threatened species, especially in agricultural landscapes.

Reeve (2002) comments that advances in natural resource management on private land have occurred in the virtual absence of property rights discussion during the period of integrated catchment management in Australia, and his comment is equally relevant now. However, the debate will need to happen at some stage, as clear property rights and responsibilities are a necessary prerequisite for the effective operation of markets. Clarification of rights and responsibilities is also likely to create stronger incentives for landholders to manage their natural resources, including biodiversity, sustainably (Industry Commission, 1998).

Bromley (1996) considers that the level of property rights activism is a barometer of activity in property law. Recent events with farmer Peter Spencer (Berkovic, 2010) may be an indication of impending changes. In 2010 Mr Spencer embarked on a hunger strike to protest at what he perceived to be a usurping of his property rights. In his opinion the implementation of NSW legislation, which has prevented him from clearing native vegetation on his property, has contributed to the federal government meeting its Kyoto targets (Berkovic, 2010). He argues that the federal government should therefore pay compensation for his lost property rights. The case is currently being heard before the Federal Court of Australia (Just Grounds Community, 2011).

The property rights issue is indeed a “slumbering dragon” (Reeve, 1999), and one that is yet to be fully stirred. My research does not address property rights issues specifically. However, property rights influence aspects of social acceptability, which I do explore.

Social acceptability

In addition to efficiency, effectiveness and equity considerations, social acceptability is also a key element of successful, enduring policy (Stankey & Shindler, 2006). Without broad public support, a particular policy instrument is unlikely to persist, regardless of its scientific basis or economic advantages (Howe, et al., 2005; Martin, et al., 2007). Where statutory regulation is involved, weak social acceptability may lead to high costs associated with enforcement for regulatory authorities, and a loss of goodwill from affected people (Davies & Hodge, 2006). Designing a socially acceptable duty of care framework was one of the major challenges for me in this research project.

Much of the social acceptability literature originates in the USA forestry arena (e.g., Brunson, 1996; Howe, et al., 2005; Shindler, Brunson, & Stankey, 2002), but the issue has also been reported in Australia and Europe in the context of aquaculture (Katranidis, Nitsi, & Vakrou, 2003; Mazur & Curtis, 2006), water allocations (Allan, Khan, & Davidson, 2008), water recycling (Menegaki, Hanley, & Tsagarakis, 2007), biodiversity (Davies & Hodge, 2006; Stankey & Shindler, 2006), climate change policies (Pett, 2007) and wind farms (Wüstenhagen, Wolsink, & Bürer, 2007). The similar concept of “public or community acceptability” has also been raised as an important consideration for policy development in the Australian literature (Gunningham & Grabosky, 1998; Gunningham & Young, 1997).

Despite the acknowledged importance of social acceptability, there are no clear guidelines by which it may be judged. This is in contrast to good governance in natural resource management and smart regulation where clear principles have been articulated (Gunningham & Grabosky, 1998; Lockwood, et al., 2010). Brunson (1996) provided a working definition of social acceptability arising from research undertaken in US forest management:

Social acceptability in forest management results from a judgmental process by which individuals (1) compare the perceived reality with its known alternatives; and (2) decide whether the “real” condition is superior, or sufficiently similar, to the most favourable alternative condition. If the existing condition is not judged to be sufficient, the individual will initiate behaviour — often, but not always, within a constituency group — that is believed likely to shift conditions toward a more favorable alternative (p. 9).

Brunson (1996) identified four key implications of his definition, and they provided relevant touchstones for my research.

1. Social acceptability judgements are made by individuals, based on available information, and largely on intuition (Howe et al. 2005). Information available to individuals is often filtered through networks of affiliations, so it is usual for individual judgements to reflect those of groups or organisations that individuals associate with (Brunson, 1996). Although the promotion of socially acceptable practices or conditions may be made more effectively to groups rather than individuals, evaluation of social acceptability based on the responses of individuals is likely to yield more reliable results.
2. Social acceptability is arrived at through a judgemental process. The idea of judgement implies comparative assessment of options (Howe et al. 2005; Stankey & Shindler 2006) and so, implicitly, individuals must have something to compare with, not unlike adaptive management decision-making (Allan & Stankey, 2009). Making judgements involves more than just reviewing and weighing up factual information. Judgements evolve from a complex suite of factors, including individual and cultural contexts, knowledge and understanding of alternatives and consequences, ethical concerns, attitudes and beliefs, risk perceptions, and trust in decision-makers (Shindler et al. 2002; Stankey & Shindler 2006). Individuals may be more or less aware of the relevant factors, but the latter will be unknown to a researcher evaluating social acceptability.
3. Social acceptability is not observable, and so must be inferred from behaviour. Furthermore, it is usually only a clear absence of acceptability that leads to expression in behaviour (Brunson, 1996). Acceptable or mildly unacceptable judgements may not be strong enough to trigger a behavioural response, and so may not be observable. In contrast, the measurement of attitudes is less reliable, because the linkages between attitudes and behaviours are not strong (Ajzen, 1991; Brunson, 1996). Despite the weak linkages, periodic attitudinal survey about social acceptability is still considered to be a critical element of responsible democratic processes (Brunson, 1996). Attitudinal surveys can play a valuable role in predicting how social acceptability might be expressed in behaviour.
4. Social acceptability judgements may be seen as provisional, because contexts,

conditions and individuals in a population are always changing (Howe et al. 2005). The implication here is that results of social acceptability surveys are not generalisable to different spatial and temporal contexts, or to different sets of individuals.

In the final stage of this research, the devised framework for a duty of care for biodiversity was tested for its social acceptability through attitudinal surveys. In addition the framework was evaluated against principles of good governance and smart regulation in a desk-top analysis. The findings are reported in Chapter 7.

Absence of an operational model

As I have discussed previously in this chapter, many existing Australian examples of statutory duty of care to the environment have shortcomings, especially in the way they address biodiversity conservation. Important shortcomings that I have sought to address include the framing of codes of practice around land use, rather than beneficial practices that promote biodiversity, such as in the Queensland *Environmental Protection Act 1994*, and the low profile afforded to biodiversity, such as in the Victorian *Catchment & Land Protection Act 1994*. The latter legislation is also framed so that landholders, as the duty-holders, must take reasonable steps to avoid harming their neighbours' land (including biodiversity), but places no obligation on how they should manage their own biodiversity. The South Australian Biodiversity Strategy includes a duty of care, but is similarly silent about how landholders should treat biodiversity on their own land (Department for Environment and Heritage [DEH], 2007). In contrast, the *River Murray Act 2003*, also South Australian legislation, describes the River Murray, including its biodiversity, as the object of a duty of care.

My intention was to design an operational framework for a duty of care that would situate biodiversity as the focus. The purpose was to provide a virtual policy framework that would allow policy developers and other stakeholders, particularly land managers, to visualise how a statutory duty of care for biodiversity could operate. In doing so I hoped to stimulate further discussion about duty of care in natural resource management.

The duty of care framework was envisaged as a complement to existing policy instruments, and one that would augment the overall effectiveness of policy approaches to biodiversity conservation. Natural resource management legislation in Australia is set within state jurisdictions, but governance is focused at a regional catchment scale. That

is to say, practical operation and implementation of legislation occurs at the catchment scale. For this reason a regional catchment setting was chosen to describe a duty of care framework, on the assumption that it would also operate at this scale (or at sub-catchment level). Chapter 6 outlines the development of the duty of care framework.

CHAPTER 3

Research Design and Methods

In this chapter I describe the research design including the research paradigm. I also explain the methods that were used for the creation and analysis of data to address individual research questions.

Introduction

Changing influences in the disciplines of law, politics, economics, sociology, religion, as well as technology and knowledge, combine to create novel policy settings. Natural resource management is one such field where policy is in a continuous state of flux, particularly with respect to biodiversity. Policy is influenced by the characteristics of biodiversity (see Chapter 1).

Our understanding of biodiversity is imperfect, and so too are the policies and practices employed to promote biodiversity conservation. As new information about biodiversity emerges over time, policies and practices often need to be adjusted. The continuing decline in biodiversity in Australia and elsewhere, suggests that the current suite of policy approaches is not sufficient. In this research I explore the concept of a statutory duty of care as a potentially useful policy instrument to augment the current approaches to biodiversity conservation. I focus on the potential application of a duty of care, and its social acceptability among stakeholders, in agricultural landscapes of Australia. The purpose of the research is to help guide the development and implementation of a duty of care for biodiversity in a regional catchment setting. The intended audiences for this research are the stakeholders in agri-environment policy development and implementation. These stakeholders include government policy developers as well as program implementation staff, landholders, and community, conservation and industry groups.

Conceptual framework

Kuhn (1962) popularised the idea of paradigms or worldviews being fundamental to understanding how scientific research is conducted. Paradigms are underpinned by

assumptions about the nature of reality (ontology) and the nature of knowledge (epistemology), which together give rise to methodological research approaches (Guba & Lincoln, 1994). Throughout the 1960s and 1970s social research theory was dominated by the idea that individual paradigms were fundamentally different from each other, and mutually exclusive (Crotty, 2003; Guba & Lincoln, 1994). Social researchers could adopt a qualitative or quantitative methodology, but it was considered logically impossible to adopt multiple perspectives at once, or use different methods in combination (Crotty, 2003; Morgan, 2007).

In the last 30 years research based on “pure” metaphysical paradigms has increasingly given way to pragmatism and mixed methods approaches (Creswell, 1998; Creswell & Plano Clark, 2007; Leech & Onwuegbuzie, 2009; Patton, 2002; Tashakkori & Teddlie, 2010), to the extent that some theorists now call the pragmatic approach the new paradigm in social research (Morgan, 2007).

A pragmatic approach using partial mixed methods was adopted for this research. With a pragmatic approach, the research questions, rather than any epistemological or theoretical perspectives, drive the choice of research methods (Patton, 2002; Tashakkori & Teddlie, 2010). Therefore, within a single research project both qualitative and quantitative methods may be used, in variable proportions, and sequentially or concurrently (Leech & Onwuegbuzie, 2009).

As mentioned, the main objective of this applied research was to explore the potential of a statutory duty of care for biodiversity as a policy instrument to advance biodiversity conservation. Prior to settling on the precise research direction, I undertook the literature review (see Chapter 2). This approach was extremely beneficial because from the literature, I was able to gain an understanding of relevant concepts associated with Australian natural resource management policy, and duty of care. Most importantly, the literature review highlighted key gaps in policy and understanding that my research could explore, and helped to ensure that my research would contribute to the wider literature. From this I developed the following research questions:

1. Why do we need to articulate a duty of care for biodiversity?
2. What is the cultural basis for the concept of “caring for others”?
3. What could an operational framework for a duty of care look like?
4. How socially acceptable would this framework be?

The research design

While it is simpler to explain the research design in linear terms, in reality this research involved iterative procedures throughout (see explanation on next page). Initial review of the literature led to development of the four key research questions presented above. Methods, including identifying units of analysis and sampling strategies appropriate to each question, were selected (refer to Figure 1, p. 10).

The first document review, addressing linguistic ambiguity between duty of care and stewardship was undertaken in the first half of 2006, and a list of characteristics was prepared. A second document review commenced in the second half of 2006. The purpose of this document review was to test for the cultural basis of an ethic of care for others. Key informant interviews to test the validity of this second document review were undertaken during the same period. Data from these interviews were also relevant to the issue of linguistic ambiguity, and so were analysed, along with data from the first document review, to address research question 1. The duty of care framework was initially based on information from the literature. However, the findings from the two document reviews, a workshop, and additional data from the key informant interviews contributed to the development of the framework. Testing of the framework was carried out progressively through mail surveys, a case study, and a desk-top evaluation. Table 1 sets out the timeline of formal data creation events. Figure 1 (Chapter 1, p.10) shows the relationship between research questions, methods, and thesis chapters.

The details of the framework were adjusted periodically, reflecting the influence of various inputs at different stages during the research. Multiple methods were used to address individual questions, and the research findings have been interpreted in relation to the literature reviewed. The use of multiple data collection methods offered a means to corroborate data from different sources and thus contributed to construct validity (Patton, 2002; Yin, 2009), as well as facilitating the exploratory design purpose.

The research process was iterative in the sense that different data collection methods were relevant to more than one research question, and at different stages during the research. For example, the key informant interviews designed to address research question 2, also contained valuable data that was relevant to all other research questions (see Figure 1, p. 10).

The opportunity to incorporate a quantitative mail survey after the research

commenced triggered a serendipitous and beneficial mid-course adaptation of the research design. As a consequence, this study is most appropriately described as following a partial, sequential mixed methods approach (Leech & Onwuegbuzie, 2009).

The use of mixed methods is valuable for allowing what Morgan (2007) refers to as abductive reasoning. In this form of reasoning the researcher can alternate between inductive and deductive reasoning that accompanies qualitative and quantitative methods respectively (Creswell & Plano Clark, 2007; Tashakkori & Teddlie, 2010). In this study key elements of a duty of care framework created using qualitative methods, were partially tested in quantitative surveys and analysed deductively. The survey results in turn, informed subsequent interviews undertaken using qualitative methods that were analysed using inductive reasoning.

Sampling strategy

The research commenced in 2005 and, with interruptions due to leave of absence during 2007-08 and 2010, continued until early 2011. Field-based sampling took place on a number of occasions, and in various locations. Details are provided in (Table 1). In the following section I will outline the methods employed to address each research question.

Table 1 Date and location of formal data creation events

Data creation activity	Date(s)	Location(s)
Document review	Early-mid 2006	CSU Thurgoona
Key informant interviews	August-September 2006	Thurgoona, Melbourne, Sydney, Canberra, Armidale, Wagga Wagga
Mail survey	2006	Corangamite region
DSE Workshop	April 2007	Melbourne
Mail survey	Late 2007	Wimmera region
Case study interviews	September 2009 – January 2010	West Gippsland, Melbourne, East Gippsland, South Gippsland

Methods for data creation and analysis are described together. As explained already, data creation methods often applied to several research questions. Detailed explanation of each method is provided the first time a method is identified, and referred to on subsequent occasions.

Data creation and analysis

Research question 1 – Why do we need to articulate a duty of care for biodiversity?

In the literature review I identified a number of reasons why it would be helpful to articulate a duty of care for biodiversity. I specifically address one of the identified problems, linguistic ambiguity. From the literature review it was apparent that the term duty of care has been used with multiple meanings, and in the natural resource management field, it is often confused with stewardship. This phenomenon is described as linguistic ambiguity (Carey & Burgman, 2008). Linguistic ambiguity is a specific type of linguistic uncertainty that arises when words have multiple meanings, and it is often not clear what meaning is intended (Regan, Colyvan, & Burgman, 2002). Linguistic ambiguity can lead to misunderstandings, it can obscure real differences of opinion, and it can also hinder the attainment of consensus. It occurs commonly in face-to-face situations such as workshops and committees (Carey & Burgman, 2008), as well as in literature (Shrader-Frechette, 2001).

Some resolution of linguistic ambiguity was advisable before investigating duty of care in depth, as I needed to understand the characteristics of duty of care and stewardship. Through reading the literature, and through discussions with my supervisors, my understanding of the terms was clarified, and this represented the first minor epiphany in my research. Out of that understanding the idea of defining characteristics that could be used to distinguish duty of care and stewardship emerged. I wanted to see how the notional characteristics for each term, derived through discussions, were reflected in the literature and discourses specifically focused on one or other of them. Document review and key informant interviews were selected as appropriate methods to address this question.

Document review

Document review involves systematic categorisation of information into either predetermined or emergent themes. It is a widely used tool for analysing linguistic and thematic content (Sarantakos, 2005; Silverman, 2006). As a method, document review has a number of advantages not available to other methods. In my research the ability to access documentary evidence from the past, including published and unpublished information was particularly advantageous for examining linguistic ambiguity. In

contrast to methods that involve interaction between researcher and participant, for instance in interviews, data from document review are non-reactive to, and therefore not affected by situational contexts (Sarantakos, 2005; Seale, 2003). However document review may also be susceptible to a range of limitations including: a lack of representativeness or accessibility, incompleteness, questionable reliability, and personal bias of the author (Sarantakos, 2005). On this last point, Seale (2003) notes that official documents often represent a position in regard to their topic, and so may be inherently biased. In my research, document review offered a convenient, low cost, and time efficient method for data creation.

A subset of 189 documents addressing duty of care or stewardship was selected. These documents were sourced from keyword searches in web search engine Google, and CSU library electronic journal databases. From this subset, documents that supplied either a definition or description of what was meant by the terms duty of care or stewardship, or examples of how the terms were used in relation to natural resource management issues, were selected. In total 51 items were used in the document review, including dictionaries, refereed journal papers, conference papers, media and electronic sources, books, and “grey” literature such as government reports and policy documents, as well as public inquiry reports and submissions (refer to Table 2). Although the dataset eventually created is not necessarily complete, this is not considered to pose a critical limitation, because documents were analysed qualitatively rather than quantitatively.

Table 2 Summary of documents reviewed for research question 1

Document type	No of documents reviewed (n=51)
Books	11
Journal articles	6
Government reports/policy documents	9
Other reports	5
Public Inquiry proceedings	4
Reference dictionaries	7
Conference papers	6
Media/Internet articles	3

The focus of analysis on recognition of linguistic ambiguity also meant that the reliability and personal biases of document authors was not of critical concern for this study. Documents were categorised according to themes that emerged inductively from the literature, and from discussions with my supervisors (refer to Table 3).

Relevant excerpts from material selected for the document review were placed into an Excel spreadsheet identifying the source and page number. Qualitative thematic content analysis involves categorisation of words or sections of text into codes (Dey, 1993). Using the thematic categories associated with each target term (Table 3), documents were then annotated, and manually analysed for thematic content. An example of the spreadsheet data is shown in Figure 2. The thematic categories used are those shown in Table 3. One new category emerged during the analysis (see Figure 2).

Table 3 Thematic categories with codes for duty of care and stewardship

Duty of care	Stewardship
Moral basis	Moral basis
Externally imposed (E)	Internal, personal (P)
Community standard (C)	Individual standard (I)
Obligatory (O)	Voluntary (V)
Articulated, codified (A)	May show in behaviour (B)
Enshrined in law (L)	Not enshrined in law (N)
Specific (S)	All-encompassing (G)

Semi-structured interviews

Semi-structured interviews may be regarded as guided conversations rather than a tightly structured set of queries (Yin, 2009), but the course of the interview is based on a loosely structured series of discussion points (Kvale, 1996; Patton, 2002). Discussion points may be itemised as a list of topics (an interview schedule), or in other situations discussion may be stimulated by other means including visual or other sensory media. Semi-structured interviews are commonly used in qualitative research to gain perspectives from other people about a phenomenon that cannot be gained from observations (Kvale, 1996; Patton, 2002). In this research two episodes of semi-structured interviews were carried out. These episodes occurred at different stages in the research process, and for different purposes.

Firstly, I carried out semi-structured interviews with a number of Australian-based individuals. I have called these individuals key informants. Key informants, because of their role or expertise, are able to speak knowledgeably about a subject. They should be distinguished from respondents, who speak from personal experience of the subject (Babbie, 2005). Key informants were purposively chosen because of their leadership in disciplines, which the document review suggested were relevant to the concepts of duty

of care and stewardship. These disciplines included philosophy, ethics, theology, environmental law and economics (refer to Table 4). A list of potential informants was developed based on personal knowledge of my supervisors, and also based on knowledge gained from the literature review. Eleven people agreed to participate. In the end, there were fourteen informants, because some of the agreed participants brought colleagues to the interviews.

SOURCE	DOC TYPE	TERM	QUOTE	THEMATIC CODES
American Psychological Association (APA):duty of care. (n.d.). <i>Merriam-Webster's Medical Dictionary</i> . Retrieved January 31, 2007, from Dictionary.com website: http://dictionary.reference.com/browse/duty_of_care	DICT	Duty of care	a duty to use care toward others that would be exercised by an ordinarily reasonable and prudent person in order to protect them from unnecessary risk of harm	C, O, S
North East CMA Native Vegetation Plan 2004, p37	GPOL	Duty of care	a legislative responsibility of land managers to sustainably manage land and water resources. Essentially it is an evolutionary concept that reflects community expectations of land managers to manage natural resources and will change over time as scientific understanding and community expectations change.	E, C, O, L, S *changes over time
Industry Commission (1998), p 144	PINQ	Duty of care	A number of farm organisations opposed codification but did support a voluntary duty of care.	V, B
DNRM Qld (2003), p12	GREP	Stewardship	The <i>stewardship</i> model, by contrast, draws the mutual obligations held between the resource holder and society <i>within</i> the boundary of the property right rather than deeming them to be external to the title. By this model, title holders accept their implicit and explicit legal obligations as stewards as a necessary condition of accepting title, not as something superimposed upon an otherwise autonomous right.	E, C, O, I, L, S

* indicates an emergent theme

Figure 2 Example of spreadsheet with data from the document review

An interview schedule was designed primarily to address research questions 1 and 2, but some informants (if time permitted) were also invited to comment on an early draft of the duty of care framework. The interview schedule is shown in Table 5. Only the first item on the interview schedule was discussed in relation to research question 1.

Table 4 Disciplinary expertise of key informants

Discipline	No. of Informants (n=14)
Economics	3
Economic history	1
Law	3
Environmental science	2
Indigenous ethics	2
Philosophy	2
Political science	1
Theology	2

N.B. Some informants had expertise in more than one discipline

Eleven interviews were undertaken, all at informants' workplaces. Most interviews occurred with informants individually, but in one instance two individuals participated, and in another instance there were three participants, thus resulting in a total of 14 informants. Interviews were approximately one hour in duration, and were audio-taped.

Table 5 Key informant interview schedule

1. Understanding of duty of care and stewardship (RQ 1)
2. Silo diagram as focus for discussion - how sound are the relationships shown? (RQ 2)
3. Ask about other sources of literature that would enrich this interpretation (RQ 2)
4. The wisdom of having a duty of care directly to biodiversity (RQ 2)
5. Comments on draft framework (optional if time permits) (RQ 3)

With permission from informants the interviews were audio-taped on an Olympus DSS voice recorder, and downloaded using Olympus proprietary software, ready for transcription. The process of converting spoken word into written text is more than a mechanical task. It involves transforming a living, ongoing conversation into fixed, static written words in a process that involves making interpretational choices rather than following standard rules (Bazeley, 2007; Kvale, 1996). Transcribed data are more manageable for analytical purposes than are audio data (Bazeley, 2007), but a number

of sources of error may arise.

Poland (2002) identified four sources of error commonly found in transcribed data:

- Incorrect sentence structure caused by errors of judgement by the transcriber.
- Misrepresentation of quotes, paraphrasing, or mimicking by the interviewee that can arise if quotation marks are not inserted into the transcription.
- Omission of words or phrases that may occur when the audio file is reset to replay unclear parts of the tape.
- Incorrect interpretation of words or phrases, sometimes arising when the audio file is not clear.

I transcribed the key informant interviews myself. Transcribing one's own interview data has a clear advantage in that the interview can be relived, and voices heard, complete with the subtle intonations and nuances that can be recognised only by having been there. For self-transcribed data, the fourth source of error was, in my experience, the one most frequently encountered.

To minimise transcription errors I adopted a transcription protocol (see Figure 3). Transcriptions were checked against the audio tapes, and corrected for typographical errors where necessary. Where speech remained undecipherable, the transcript was annotated to show the position on the audio file. Participants were assigned a unique alpha-numeric code to preserve their anonymity, and to make it clear who was speaking in the transcript (Figure 3). Other colloquial and non-verbal expressions such as laughter or pauses were also identified in the transcripts.

Both the audio files and the transcriptions were stored electronically. Transcriptions of these audio-taped interviews provided additional data for thematic content analysis. Throughout the analysis I returned to the audio files to listen directly to interviews, making corrections when they became apparent. To address research question 1, interview transcripts were analysed manually, following the same procedure that was used to categorise data from the document review. Categories were added as new ideas emerged from the interviews. Two new categories emerged during the interview analysis. Findings relating to research question 1 can be found in Chapter 4.

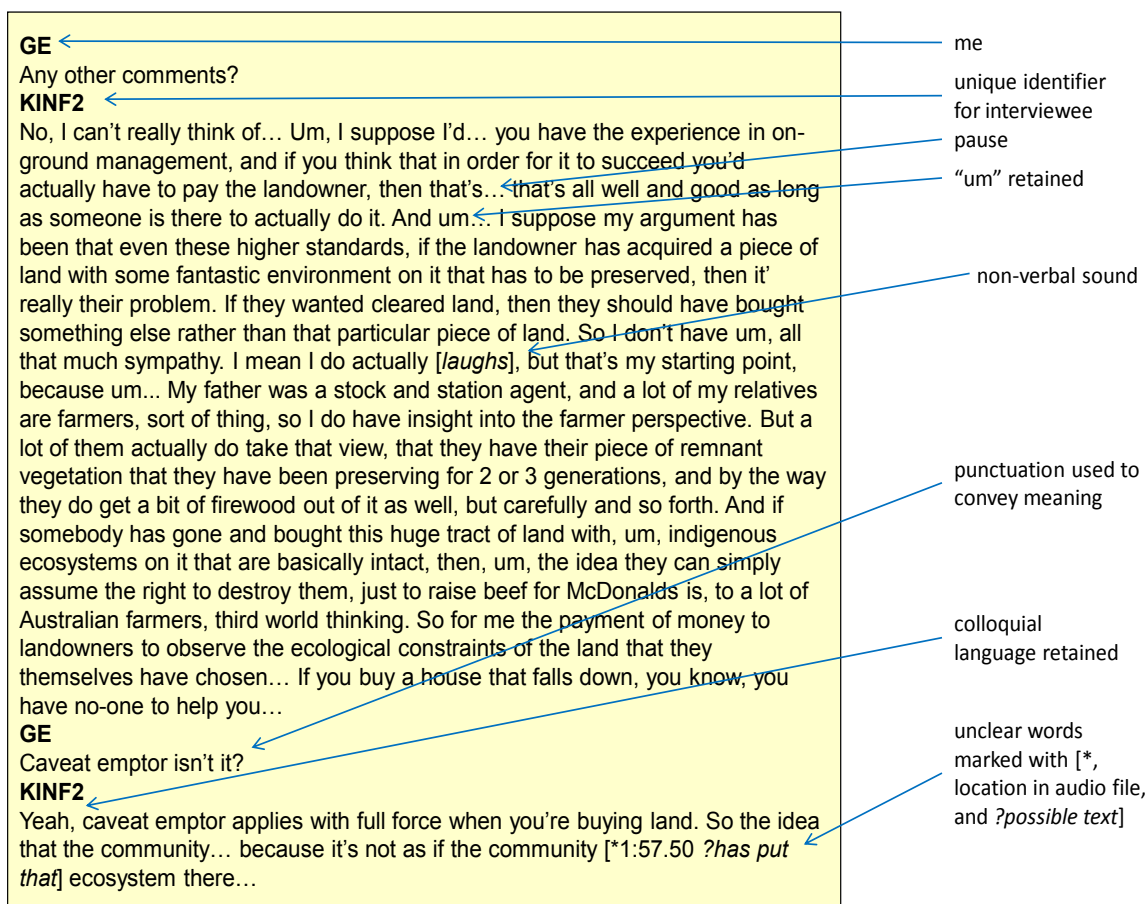


Figure 3 Interview transcription protocol

Research question 2 – What is the cultural basis for the concept of caring for others?

Duty of care is a well established term in Western legal traditions based on common law. From the literature review it is evident that laws, by and large, reflect the needs and wishes of society. Laws in turn are informed by religious and ethical principles, philosophy, economics, and the evolution of legal systems. I wanted to test the proposition that the ethical concept of caring for others, whether humans or other living organisms, has been reflected in these disciplines over time.

Understanding the extent and context where caring for other non-humans occurred, was an important consideration in the development of my framework, providing an indication of constraints that might apply in deciding whether an anthropocentric approach, or instead a bio/ecocentric approach would be more feasible. However, the time required to comprehensively review the relevant literature about caring for human and non-human others, across multiple disciplines, would have been prohibitive. In addition, my lack of familiarity across all the relevant disciplines was a limiting factor.

To overcome these limitations I first carried out a “topical document review” (see Noaks & Wincup, 2004; Silverman, 2006). From this I created a pictorial model that summarised the evidence of historical legal, philosophical, religious, and economic thinking about the concept of caring for others. Using the pictorial model as the focus for the discussion, I then sought to have the topical document review validated through interviews with experts in the respective discipline areas.

Document review

Document review was chosen as an appropriate method for creating data (see notes on p 80 for a detailed description). To address this research question documents were analysed to provide background material for the key informant interviews. The texts were selected to identify examples (see Noaks & Wincup, 2004; Silverman, 2006), rather than provide a comprehensive coverage of the relevant literature, in what is called a “topical document review”. The lack of comprehensiveness in the dataset is not limiting when document review is carried out in this way (Silverman, 2006). The purpose was to build a representation of discipline areas where the concept of caring for others could be identified as an underpinning theme (Atkinson & Coffey, 2004). Of concern in this type of document review is how documents are assembled and evaluated (Silverman, 2006).

Documents were identified from composite approaches including the broad literature review, key word searches on Google, and in the CSU library and electronic databases, as well as discussions with supervisors and peers. Initially I searched for historical philosophical references to the concept of “caring for others” in compilation literature about environmental ethics (e.g. Singer, 1991; VanDeVeer & Pierce, 2003). These sources contained relevant articles from a range of disciplines including economics, theology, and law, as well as ethical and philosophical texts. An assumption was made that the scholars referred to in these books had made important and lasting contributions to relevant academic discourses. Articles in these books suggested other relevant material, for example, writings about scholars such as St Francis of Assisi, St Thomas Aquinas, Kant, Smith, and Bentham. Progressively more texts were searched, based on additional key word searches, using words, word combinations, and terms such as “ethics”, “ethics and economics”, “ethic of reciprocity”, “reciprocity” and “the golden rule”. Of particular interest was whether “caring for others”, if it was implied, referred to humans or non-humans. In total 57 documents were analysed. These

included book chapters, reports, journal articles, and electronic web sources (refer to Table 6).

Both primary and secondary sources were used. Relevant material selected for the document analysis was placed into an Excel spreadsheet and labelled according to the document source author(s) and date, the author(s), (if different from the source authors), the discipline, and relevant text (Figure 4).

Table 6 Summary of documents reviewed for research question 2

Document type	No of documents reviewed (n=57)
Books/reports	28
Journal articles	25
Web articles	4

Analysis of documents for addressing research question 2 was broadly similar to that described previously (see page 80), but with several variations. For this research question, documents were analysed qualitatively based on thematic content that reflected, either explicitly or implicitly, the concept of caring for others. Indicative interpretations of text were then selected from each discipline, and represented in a schematic diagram (refer to Figure 5), illustrating the historical underpinnings to the concept of caring, in these disciplines. Although highly simplified, with disciplines represented separately in “silos”, the diagram provided a basis for discussion with key informants designed to validate the findings of the document review. Philosophy and ethics were combined in the diagram because of substantial overlap in texts reviewed.

Semi-structured interviews

The same 14 key informants were interviewed for research question 2 (refer to Table 4). I introduced the discussion with a short Powerpoint presentation, elaborating in more detail the conclusions I had drawn from the document review, and how they provided the basis for the silo diagram. Informants were invited to comment on the silo diagram (refer to Table 5 for the interview schedule). The transcripts that had been prepared previously as part of research question 1, were re-coded manually according to a different set of categories. The categories were predetermined, and reflected the themes shown in the silo diagram (Figure 5), as well as points 3 and 4 of the interview schedule (refer to Table 5). Thematic categories are shown in Table 7.

SOURCE	YEAR	AUTHOR	SUBJECT	DISCIPLINE					Relevant text	Interpretation
				Eth	Phil	Theol	Law	Eco		
Wilson	1999	Wilson	Golden Rule			x			Quotes from scriptures of various religions.	Ethic of reciprocity widespread; more about people than other creatures.
Franciscan Friars webpage		Franciscan Friars	St Francis of Assisi			x			These creatures minister to our needs every day; without them we could not live, and through them the human race greatly offends the Creator every time we fail to appreciate so great a blessing – Legend of Perugia 43	Ethic of care for others (including animals); could be interpreted as alluding to what we now call ecosystem services.
Singer	1991	Schneewind, p 148	Aquinas	x	x	x			Thomistic natural law tradition was the most enduring; accepted by both Catholics and Protestants. It taught that God's laws require us to act in certain ways which, whether we know it or not, are for the benefit of everyone.	Actions for the benefit of others/everyone. Human-centred caring for others.
Peterson	2000	Peterson, p 245	Aquinas			x			Thomas wrote in the context of a revived interest in the Middle Ages, in the notion of a "Great Chain of Being", which joined all creatures in a harmonious hierarchy.	Harmonious hierarchy
Sen	1967	Sen, p 53	Robbins	x				x	Quoting Robbins (1932) " ... It does not seem logically possible to associate the two studies [ethics and economics] in any form but mere juxtaposition. Economics deals with ascertainable facts; ethics with valuation and obligations".	Robbins perceives economics as dealing with facts and ethics as dealing with valuation and obligations, i.e. they are wholly separated.

Figure 4 Example of spreadsheet with data from topical document review

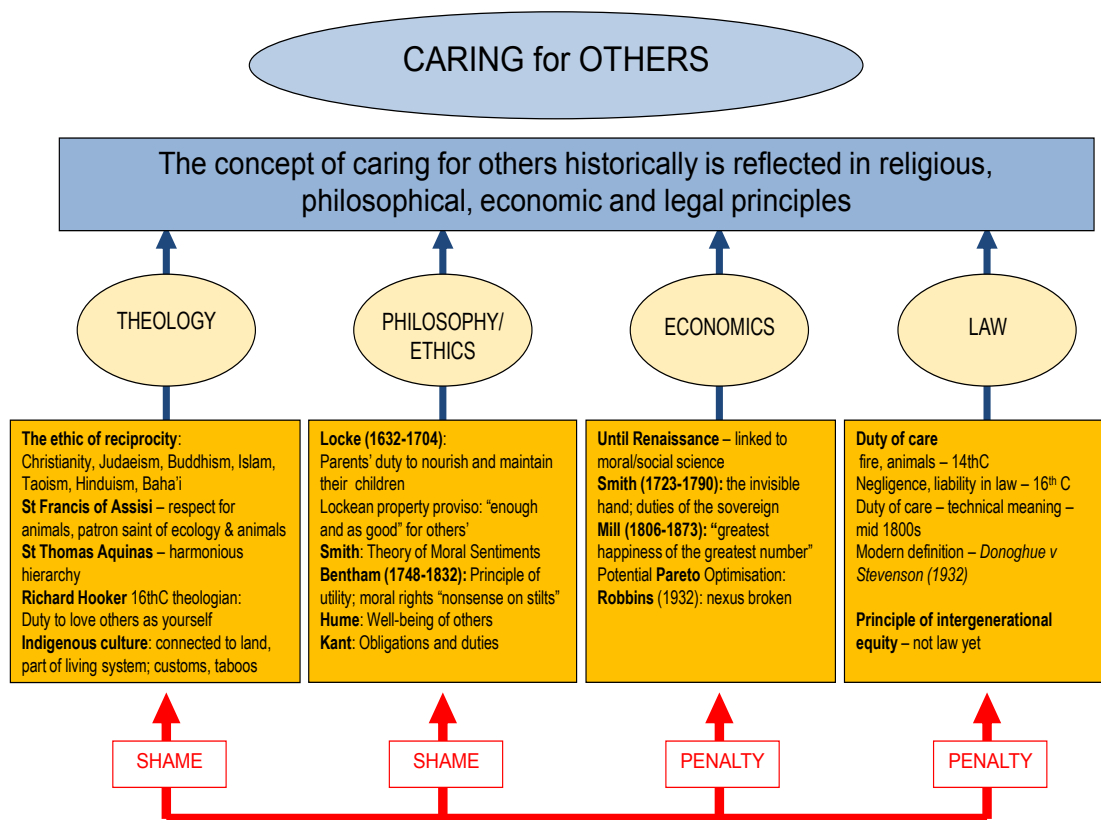


Figure 5 The silo diagram generated from the topical document review

Table 7 Thematic categories used to analyse data for research question 2

Thematic category
Overall validation of diagram
Theology
Ethics
Philosophy
Economics
Law
Duty directly to biodiversity (bio/ecocentric)
Duty indirectly to biodiversity (anthropocentric)

An example of a transcript coded for this research question is shown in Figure 6. The coded data was then interpreted to assess the extent to which the informants validated the silo diagram overall, within each discipline, and also their opinions about an anthropocentric or eco-centric framing of a duty of care for biodiversity. The findings from this analysis can be found in Chapter 5.

Research question 3 – What could a framework supporting a duty of care for biodiversity look like?

One of the main purposes behind this research was to design an instrument that would outline how a duty of care for biodiversity could be made operational at a regional catchment scale. In Chapter 6 I describe the development of the duty of care framework, charting its origins in ideas from the literature, through various iterations to the final format shown in this thesis.

As described previously (see Table 1), formal data creation events that contributed to the development of the framework included the literature review, document reviews, and the key informant interviews. The formal methods used in the creation of data are described elsewhere in this chapter. Informal methods used included feedback from notes taken at workshops and presentations, university seminars, conferences, and regular meetings and discussions with my supervisory team. The knowledge and understanding that came from the other data gathering exercises, also contributed to the development of the framework. Chapter 6 is written in a narrative format, describing in a flashback sequence, key events that influenced development of the framework, including formal and informal data creation events.

KINF 1
 Yeah, right, absolutely, yeah, mmm, ...
 I think what you need is a line because what informs the law is what you do with all this stuff. The law is only the product of government policy. It doesn't have a life of its own. It's just a product of government policy, and government policy is a product of all sorts of people feeding into it, like philosophical, religious, ethical concerns and all that. So once government decides what its policy is, you translate that into law. So you really need a horizontal line here [points to diagram between Law and other discipline silos], because you can feed those into government policy and then the line from government to law. That's all it is. Law translates government policy. Government policy reflects society's wishes. It reflects capitalist, western-style economics and democracy.

GE
 Yeah, and there is kind of a chronological sequence there.

KINF 1
 Mmmm, mmm, yeah, no, I think so. And I think you're informed by all this stuff. Over the centuries I mean, what is it about society..., the values in society..., they've come through all this stuff. Current values have been shaped by all this stuff you know...

GE
 Economics was also shaped by these things until fairly recent times...

KINF 1
 Capitalist society, we're still shaped by capitalism. And economics has its own view about property of course, which differs from lawyers. You know, "the market will take care of it" and the law says "no". Well government policy says the market won't always take care of things, particularly environment.

Figure 6 Example of transcript coded for research question 2

Key informant interviews

Ten of the key informants interviewed for research question 1 also commented on the framework. The same process of audio-taping and transcribing interview data described for research question 1 was also used here. Transcripts of the interviews were coded manually to reflect comments about specific elements of the duty of care framework.

Workshop

The timing of this research coincided with a major review of biodiversity policy in Victoria. As part of this process the Department of Sustainability and Environment (DSE) was preparing a White Paper - *Land and Biodiversity at a time of Climate Change*. Dr Jim Crosthwaite, a senior policy analyst at DSE, organised a time and place where I could present my duty of care framework to selected biodiversity policy staff, including members of the White Paper team. Participants were chosen by Dr Crosthwaite based on their work interests.

The workshop was attended by seven staff from DSE, three of whom were involved

in the preparation of the White Paper. From my perspective the purpose of the workshop was to share information, facilitate discussion about the framework and, from my perspective, gather data. I used a Powerpoint slide show to explain, step-by-step, the elements of the framework, and participants were invited to make comments or ask questions as the presentation proceeded. With the signed consent of all participants, the workshop was audio-taped, and a transcription of the discussion was later produced. Observational notes were also written by my supervisor Dr Catherine Allan during the workshop. Those notes highlighted the main discussion points.

Research question 4 – How socially acceptable would this framework be?

The framework was tested progressively throughout the research period. Data creation methods used for testing included two mail surveys, a case study with semi-structured stakeholder interviews, and a desk-top evaluation of the framework against key policy principles.

Mail surveys

By mid-2006 I had developed a framework outlining how a duty of care for biodiversity might operate. At the same time, my supervisor Professor Allan Curtis and some colleagues, were developing a survey exploring the implementation of natural resource management practices by rural landholders in the Corangamite region of Victoria (Curtis, Cooke, McDonald, & Mendham, 2006). I was invited to include some propositions to test the social acceptability of concepts embedded in the duty of care framework in the survey questionnaire. In late 2007 a similar survey was undertaken in the Wimmera region of Victoria (Curtis, McDonald, Mendham, & Sample, 2008), and I was again invited to submit statements to test my framework. Refer to Figure 7 for the mail survey areas. The survey design and administration employed a modified process (Dillman, 1979) that had been refined through the experience of Curtis and co-workers in successive catchment-scale surveys. Each survey included a series of statements exploring the social acceptability of the duty of care concept in relation to natural resource management, and to elements of my framework. Respondents were invited to rank their level of agreement with the statements, using a five-point Likert scale.

Pre-coded mail surveys are a commonly used method in social research, when researchers are interested in exploring the extent to which a larger sample of a

population holds particular views, or in exploring the influence of specific factors on a dependent variable. They are appropriate when researchers wish to discover and classify attitudinal responses (Sarantakos, 2005). In this instance the surveys provided an opportunity for preliminary testing of the duty of care framework, particularly in relation to its social acceptability among a large sample of rural landholders. Figure 7 shows the mail survey areas.

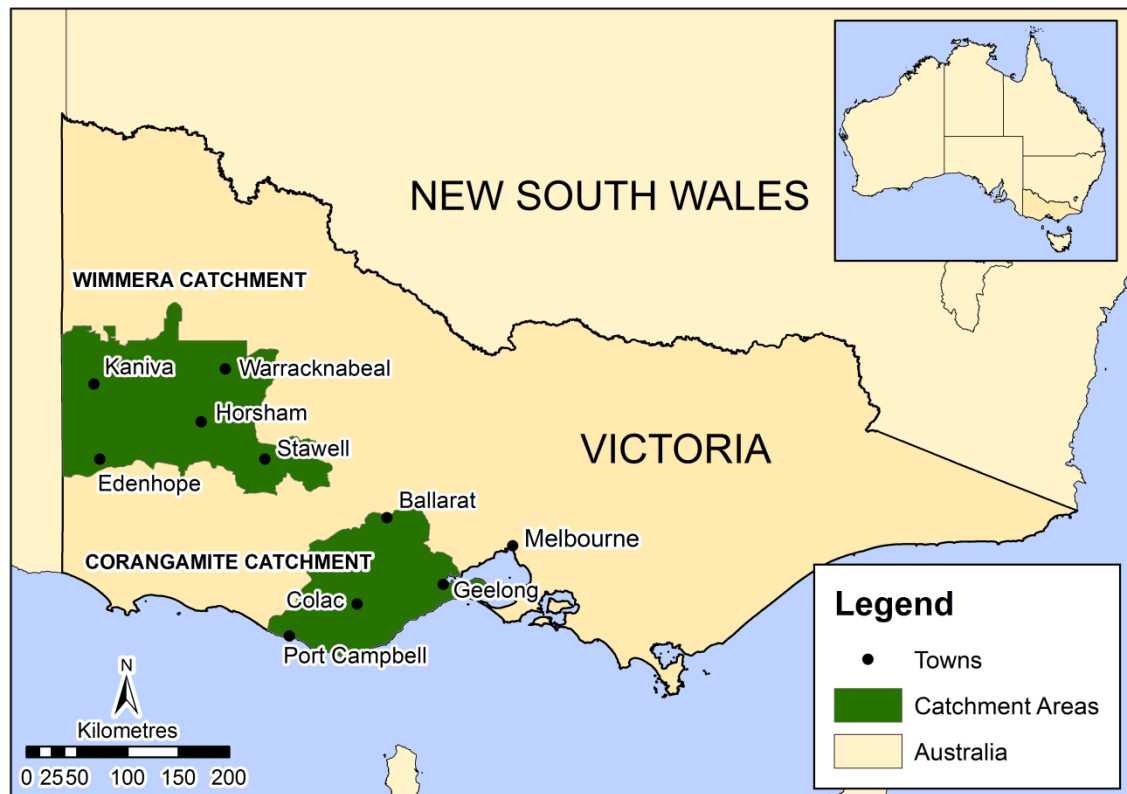


Figure 7 Map of mail survey areas

Statements were developed to explore landholder attitudes to four core concepts in the framework. I developed statements in conjunction with my supervisor Professor Allan Curtis, drawing on our collective knowledge of the literature and experience with developing survey items. Two statements were included in the Corangamite survey. The statements explored: 1) the moral imperative to care for biodiversity, and 2) the normative implication that wider society could have a say in framing a duty of care for biodiversity. The essence of statement 2 was repeated in the Wimmera survey, but with revised wording that was considered to have more precise meaning (statement 3). The remaining two statements included in the Wimmera survey explored: 4) the implication of legally binding requirements, and 5) the potential role that industry standards could

play in determining whether a duty of care was being met. Collectively these statements, listed in Table 8, represented a range of potential triggers for social unease about a duty of care.

For each statement, respondents were asked to choose a response option from *strongly agree*, *agree*, *not sure*, *disagree* or *strongly disagree*. In addition, a *not applicable* option was included. No background information or explanation of the duty of care concept was provided to participants. Pre-testing of the survey instrument with groups of rural landholders in both catchments suggested that survey recipients would understand the various statements, and would be able to respond appropriately.

Table 8 Mail survey statements

Corangamite (Curtis et al., 2006)
1. Landholders have a moral responsibility to act in ways that minimise harm to native plants and animals.
2. It is reasonable that the wider community asks landholders to act in ways that will not harm native plants and animals.
Wimmera (Curtis et al., 2008a)
3. It is fair that the wider community asks landholder to manage their land in ways that do not cause foreseeable harm to the environment.
4. In future, landholders should expect to be legally responsible for managing their land in ways that will not cause foreseeable harm to the environment.
5. Using industry standards developed with landholder input would be an acceptable way of determining if land is managed responsibly.

Surveys were mailed to randomly selected landowners with rural properties larger than ten hectares who were identified from ratepayer lists provided by local governments. Final checking to remove properties with deceased estates, public property (including city councils), and duplicate entries resulted in final mailouts to 972 landowners in the Corangamite area, and 1,000 in the Wimmera, which represents 8.8% of rural landholdings in the Wimmera region, and 11.25% in the Corangamite region, or 10% overall.

After a period of approximately 12 weeks, a final survey response rate of 57 per cent was achieved in the Corangamite area (552 surveys completed and returned), and 56 per cent in the Wimmera (526 surveys completed and returned). Of the returned surveys, 70 in Corangamite were unusable, and 23 were unusable in the Wimmera. Surveys were unusable because responses were returned uncompleted. This gave final questionnaire numbers of 482 for the Corangamite area, and 503 for the Wimmera. Data

from both surveys were analysed together in 2009.

Responses to the mail surveys were collated to produce frequency distributions, and analyses were undertaken to compare differences between different groups of landholders categorised as:

- Farmers or non-farmers.
- New property owners (less than ten years ownership) or longer-term owners.
- New settlers in the district (under ten years) or longer-term settlers in the district.
- Resident property owners, or non-resident or absentee owners.

These comparison groups were chosen because preliminary analyses had identified them as being significantly different on key items measuring values, attitudes and implementation of management practices (Curtis, et al., 2006; Curtis, et al., 2008). The significance of differences between these groups, with regard to questions relating to duty of care, was calculated using Kruskal-Wallis rank sum tests. All statistical analyses were performed using the SPLUS software package with basic data manipulation in Excel. The results of the mail surveys are included in Chapter 7.

Case study

The mail surveys provided some insight into the social acceptability of a duty of care for biodiversity among rural landholders. Findings from the mail surveys provided a basis for deeper exploration of social acceptability. When the framework had been developed to its final format, it was subjected to further testing through a case study based around the Bass Coast Landcare Network area of west Gippsland in Victoria. Semi-structured interviews with respondents were conducted for the case study (Babbie, 2005). In addition, the framework was evaluated against principles of new governance in natural resource management (Lockwood, et al., 2010), and smart regulation (Gunningham & Grabosky, 1998).

The case study was used within the broader research design, following the procedure outlined by Yin (2009). Case studies are an appropriate method to use in circumstances where researchers seek to understand a phenomenon, are investigating a real world situation, and where the purpose of the research is to achieve representation

in a context, rather than broad generalisation (Yin, 2009). The emphasis of my research was on testing the duty of care framework in a real world context.

I originally intended to conduct two case studies in Corangamite and Wimmera regions, where the mail surveys had been implemented. However, I needed support from locally based staff with connections to the rural landholder community to do this. As neither region expressed interest in supporting my project, I had to abandon that idea. In thinking about other potential areas for the case study, it made sense to look for an area where natural resource management thinking and practices were relatively advanced. I wanted the initial testing ground for the framework to be in an area where the conditions for positive outcomes were optimal. The assumption behind this approach was that if the framework did not attain some semblance of social acceptability in an optimal situation, it would be unlikely to do so under less optimal conditions.

The Goulburn Broken Catchment Management Area (CMA) and Bass Coast Landcare Network were two organisations with strong community links. Both organisations displayed willingness to trial new ideas, and a high level of social capacity, both attributes that I thought would be advantageous for the case study. The Bass Coast Landcare Network had developed and piloted a Stewardship Trial which, coincidentally, incorporated many elements of the duty of care framework, including educational elements, thresholds for meeting duty of care, an eligibility threshold for incentives, and a focus on recommended practices, all administered by a locally based, community committee. The Landcare network was well organised, and staff were highly professional and motivated to assist me, as they could see mutually beneficial outcomes might follow from the study. From previous experience, my supervisors and I considered the Goulburn Broken CMA was also an organisation with strong social capacity, as well as a demonstrated willingness to trial new approaches, and engage with exploratory research (Curtis, et al., 2000; Curtis & Robertson, 2003; Earl, Stelling, Titcumb, & Berwick, 2001). I approached both organisations to gauge their interest, and made a presentation to their respective management committees. Both were keen to support my project, but because of time constraints I was able to work only in the Bass Coast region (see Figures 8 and 9).

Building on the findings from earlier stages of the research, in the case study I explored the workability and social acceptability of the framework for a duty of care for

biodiversity in more depth. Twenty-three semi-structured interviews with stakeholders were undertaken. Discussions with interview participants focused on exploring the social acceptability of individual elements of the framework. Following the procedures described by Yin (2009), the framework in its entirety may be considered as the unit of analysis.

Semi-structured interviews

Five key stakeholder groups were identified as likely to hold opinions about the workability and social acceptability of the framework. As property owners, rural landholders were obviously important stakeholders. State government policy developers, and regionally-based staff from CMAs and the Victorian Department of Primary Industries (DPI) were other important stakeholders who, because of their roles in implementing natural resource management policy and programs, were considered likely to have an interest in a statutory duty of care for biodiversity. Representatives from a farm industry association, and a local government area, were the other stakeholders included in the case study.



Figure 8 Locality map showing case study area

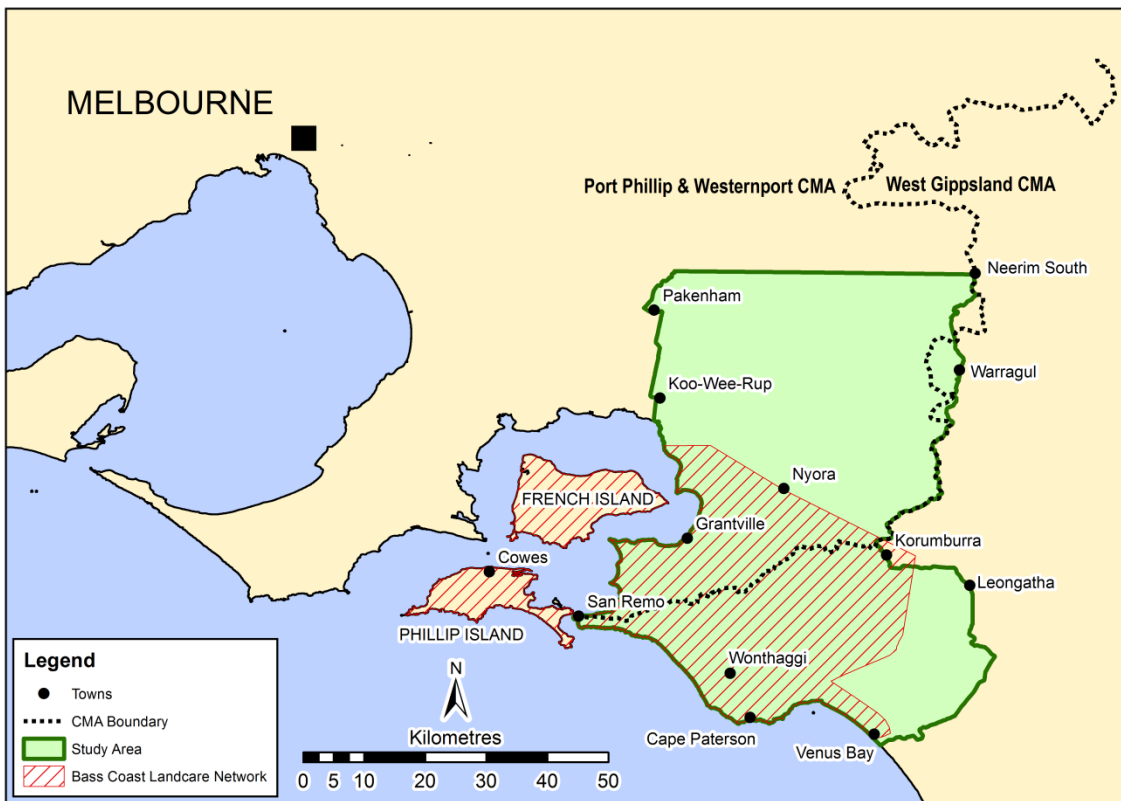


Figure 9 Detailed locality map of case study area

Farm industry associations such as the Victorian Farmers’ Federation are vocal advocates for their members over matters such as property rights, and their perspective on the framework was sought. Local government also plays an important role with private land management and planning, particularly through its role in implementing the *Victorian Planning and Environment Act 1987*.

Table 9 Case study interview selection criteria and number of interviews by occupation

Occupation	No. of interviews
State government - policy development	4
Regional program managers – CMA or DPI	5
Local government	1
Farm industry representative	1
Farmer	6
Non-farmer	6
TOTAL	23

I also considered including stakeholders from conservation organisations, as representatives of the broader community of interest, but eventually chose not to, because of the need to limit the scope of the study. The stakeholder groups selected for the case study, and the number of interviews for each group, are listed by occupation

type in Table 9.

With assistance from my supervisors I identified a range of policy staff as potential participants. Regional program staff and landholders were identified by Bass Coast Landcare Network staff. In the case of landholders, sub-attributes were used to guide the selection of participants (see Table 10). The sub-attributes reflected, as far as possible, a range of important landholder attributes that had been identified by Curtis and his co-workers (Curtis, et al., 2006; Curtis & Mendham, 2011; Mendham & Curtis, 2010) as being useful identifiers of different landholder cohorts, based on statistically significant links with the adoption of conservation practices by rural landholders in Victoria.

Table 10 Attributes used to select landholders for case study interviews, showing intended and actual numbers

Primary attribute	Sub-attribute	Intended no. (n=10)	Actual no. (n=12)
Occupation	Farmer	5	6
	Non-farmer	5	6
Landcare membership	Landcare member	4	7
	Not in Landcare	6	5
Occupancy type	Resident	8	11
	Absentee	2	1
Main enterprise	Beef	2	9
	Dairy	2	3
	Sheep	2	2
	Farm forestry	2	1
	Other	2	2
Secondary attribute			
Length of time on current property	≥ 10 years (long-term property owners)		8
	< 10 years (new property owners)		4
Length of time in district	≥ 10 years (older settlers)		9
	< 10 years (newer settlers)		3
Conservation work on property	Has done		9
	Has not done		3
Participation in Government programs	Yes		9
	No		3

Final selection of interview participants was influenced by the availability of individuals. I contacted policy and regional staff directly to organise a time and place for the interviews. Landcare staff approached landholders initially, and then provided

me with contact details for those who were willing to participate. This selection method resulted in a disproportionately high number of beef farmers participating. Fewer non-Landcare members participated, reflecting the difficulty in identifying and contacting such people. Absentee landholders proved to be almost impossible to locate and contact within the constraints of my project, thus making their representation less than intended. Two pre-test interviews were carried out to resolve any unforeseen problems with the interview process.

Interviews were conducted at participants' homes or workplaces, and at times that suited them. In most cases interviews were one-on-one, but in three cases there were two participants present. I needed to decide how many interviews to conduct. The interviews were intended to give a snapshot of stakeholder opinions, and I intended to analyse the results qualitatively. I didn't need a representative sample or a large sample size, because I was not intending to undertake statistical analysis of the data. Kvale (1996) suggested that many exploratory interview studies typically include 15 (± 10) interviews, but the appropriate number is dependent in part on the number of stakeholder groups, as well as time and financial constraints. After discussion with my supervisors I decided that about 20 interviews would be sufficient for my purposes, and in the end 23 interviews were undertaken. Interviewees comprised twelve landholders, four DSE policy staff, five regional program managers (CMA or DPI), one local government representative, and one farmer industry group representative. The framework provided the focus for discussion. Interviews were approximately one hour in duration, and were audio-taped for later transcription in the same way outlined for research question 1 (see page 84). Additionally, other landholder attribute data (Table 10) were collected during the interviews for use in analysis.

Transcription of audio tapes was undertaken by a commercial operator because of the quantity of transcription required. The transcription protocol described earlier was followed. Transcripts were checked against the audio files, for any necessary corrections and clarifications, and text that was difficult to decipher was annotated in the transcription so that it could easily be located on the audio file, to allow for revision later. After checking and correcting, transcripts were stored in a database using NVivo8 software (QSR International, 2008), ready for analysis.

Before starting the categorisation process, I read each document and annotated it to summarise key messages, interesting observations, and reflections, and to gain a

preliminary understanding of the content (see Dey, 1993; Richards, 2009). Refer to Figure 10 for an example of an annotated transcript. After completing this preliminary reading, I prepared a memo synthesising key points about each document. This memo provided a short synopsis of each transcript. Refer to Figure 11 for an example of a memo.

Transcripts were analysed in a systematic way using NVivo 8:

1. Initially text was categorised according to the main elements of the framework.
2. Data were categorised to illuminate strengths and weaknesses of the framework in relation to its workability and social acceptability.
3. Where respondents suggested ways in which the framework could be improved, these comments were also categorised.
4. Additional categories were added where the data suggested it. Revision of categories into a two-level hierarchical structure was undertaken after the first four transcripts had been analysed to make the data more manageable. Further revision occurred progressively during the analysis, and again at the conclusion. Eventually, the data were grouped by 31 primary categories, with between 1 and 17 secondary categories each.
5. When thematic categorisation had been completed, a series of coding inquiries, based on attributes of participants (see Tables 9 and 10) and coding categories, were undertaken to assist with interpretation of the data.

As mentioned previously (Chapter 2) social acceptability is a difficult concept to define, and even more difficult to measure. And yet it can be a critical element of successful policy implementation (Howe et al., 2005). In Chapter 2 I noted that although social acceptability is linked more strongly to behaviour than attitudes, in a pre-implementation phase of policy development some assessment of social acceptability, measured through attitudinal studies, is both valuable and necessary.

Data from interviews were analysed qualitatively for social acceptability. In the absence of clear principles, guidelines, or criteria indicative of social acceptability, I applied a scaling procedure similar to that described by Miles and Huberman (1994) for ordering cases using summed indices. Using a five-point Likert scale similar to that employed in the mail surveys, I assigned interview comments to qualitative categories for social acceptability.

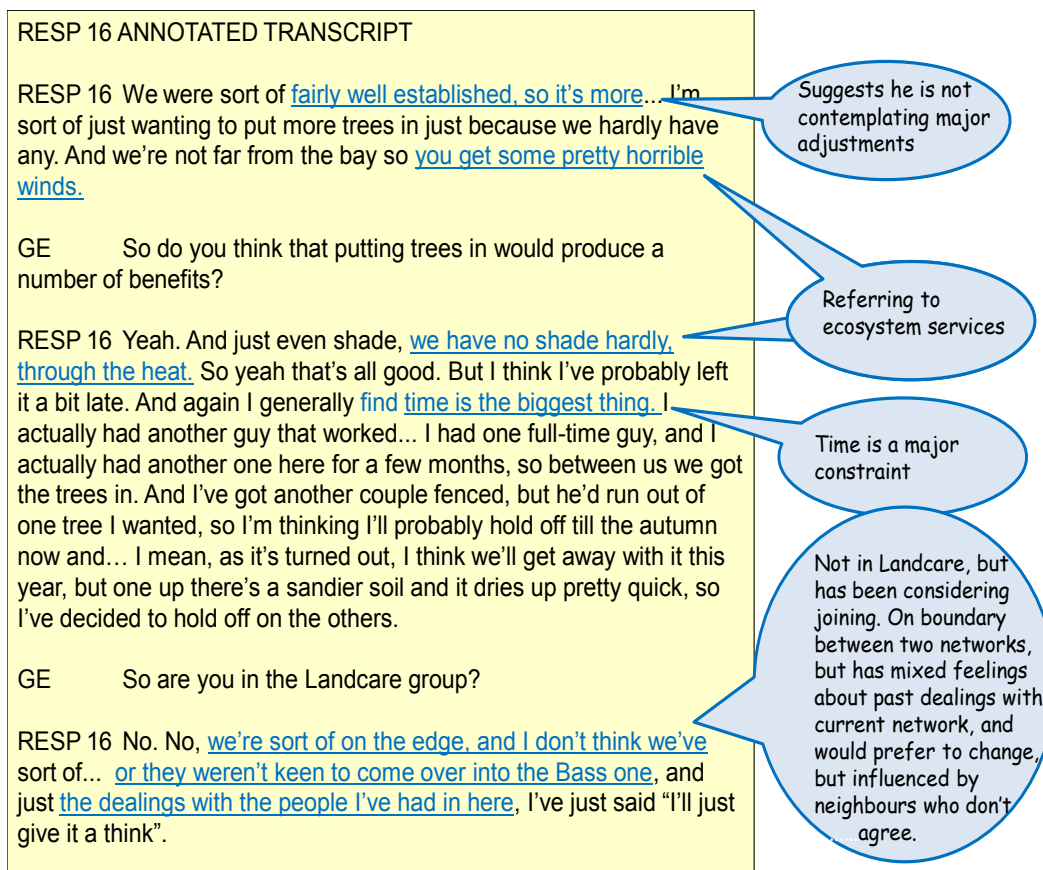


Figure 10 Example of an annotated transcript

Initial categories were *unconditionally acceptable*, *conditionally acceptable*, *not acceptable* and *non-committal/unsure*. A *no comment* category was also used in the data file. The *unconditionally acceptable* category was only assigned when comments were unequivocally supportive. Unconditionally acceptable comments frequently included superlative phrases, as the example in Figure 12 below illustrates, where the respondent described the supporting practices element of the framework as making “absolute sense” and “perfect sense”.

Where a respondent made multiple comments about a particular subject, I manually assigned an average social acceptability ranking for that person. Figure 13 shows an example of a coded transcript where RESP 12 made four comments about the supporting practices element of the framework. Two comments expressed conditional acceptability of the supporting practices. One comment was non-committal, while the fourth comment was unequivocally supportive. RESP 12 was assigned a “conditionally acceptable” code for supporting practices.

RESP 16 KEY POINTS

1 Third generation dairy farmer. Left school to go farming, and no education since. Farm has grown over the years, and his parents live nearby on the property.

2 Not overly talkative. It was difficult to get him talking expansively, and from the transcript it's apparent that I have talked too much.

3 Time is a major constraint for him

4 Finances are also a major constraint. Four young children and they all are or will go to private school (from conversation outside the interview). Adoption of practices would only happen if there was no cost associated with it.

5 Socially introverted, both he and his wife, and happy to be so. Doesn't want to be on committees. not in Landcare, not an active VFF member, not socially outgoing, happy acting on his/their own. He does the scoreboard for kids footy team, and his wife takes the photos (so neither of them has to talk to other people much).

6 Overall feeling about the framework - it's alright. No probing questions from him, so not sure how well he grasped the concepts.

7 The idea of actions taken on the property contributing to the wellbeing of the wider landscape appealed.

8 Consideration of the wellbeing of future generations is important.

9 Educational aspects of the framework are important.

Figure 11 Example of a memo summarising a transcript

Unconditionally acceptable

RESP 3 I'm much less concerned about practice stuff. I think that makes absolute sense, the practice things, particularly cross tenure, cooperative, weed control things. There's a whole lot of things where it makes perfect sense.

Conditionally acceptable

RESP 12 It would be unrealistic to expect you're going to accept all of them without question. I feel that there would be bound to be something that we think, "We don't really want to do that." In which case the individuals who are setting them would have to have really good reasons that are simple to understand...

Not acceptable

RESP 14 Landcare, now they started off at five metres wide, then they went to ten metres wide, now they've gone to fifteen metres wide. Well fifteen metres wide is just ridiculous.

Non-committal

RESP 12 We still have an interest, enough that we're experimenting with different things, seeing the effect of planting wildlife corridors, seeing the effect of organic fertilizers, those sorts of things, for our own interest and then so that... with the aim for me to get work in the field. I can then go and say, "Well this is what I've done. It's worked. I know, I believe in it so I'm going to promote it to you."

Figure 12 Examples of text coded by social acceptability categories

RESP 12 coded for SUPPORTING PRACTICES (overall rating **Conditionally acceptable**)

Reference 1 - 0.98% Coverage **Non-committal**
 RESP 12 We still have an interest, enough that we're experimenting with different things, seeing the effect of planting wildlife corridors, seeing the effect of organic fertilizers, those sorts of things, for our own interest and then so that... with the aim for me to get work in the field. I can then go and say, "Well this is what I've done. It's worked. I know, I believe in it so I'm going to promote it to you."

Reference 2 - 1.64% Coverage **Conditionally acceptable**
 GE So if there were some supporting practices nominated, how do you think you would feel about adopting them?
 RESP 12 It would be unrealistic to expect you're going to accept all of them without question. I feel that there would be bound to be something that we think, "We don't really want to do that." In which case the individuals who are setting them would have to have really good reasons that are simple to understand...


Reference 3 - 0.37% Coverage **Conditionally acceptable**
 RESP 12 Would there be opportunity for input or would it be delivered as... **Would I have an opportunity to go and have a say? Would there be community consultation?**

Reference 4 - 0.56% Coverage **Unconditionally acceptable**
 RESP 12 If I don't adopt them and I'm going to get taken, I'm going to be prosecuted?
 GE No, if you don't adopt them, it would be fine as long as you can show that you're still working towards the outcome.
 RESP 12 Oh, I think that would be ok.

Figure 13 Example of RESP 12 transcript coded at Supporting Practices, and annotated for social acceptability

The social acceptability rankings were then added into an Excel spreadsheet with the attribute data from Tables 9 and 10. The social acceptability rankings for individual elements of the framework could then be filtered by combinations of attributes. Table 11 shows social acceptability rankings for a selection of framework elements filtered for Landcare members. Individual social acceptability codes were then tallied for the framework overall, and individual framework elements.

Table 11 Example of Excel spreadsheet showing social acceptability rankings of a subset of framework elements, based on comments by Landcare members

Landcare 	Framework overall	Above standard	Eligibility	Transitional assistance	Education & Awareness	Desired outcomes
Member	CA	UA	UA	CA	UA	CA
Member	CA	CA	O	CA	UA	NA
Member	NA	UA	UA	UA	O	CA
Member	U	UA	UA	CA	UA	NA
Member	NA	NA	O	NA	UA	NA
Member	CA	UA	UA	CA	UA	O
Member	CA	O	NA	CA	UA	CA

The results were then broken down into participant attributes, to provide a more

detailed profile of social acceptability attitudes. The tables presented in Chapter 7 have been derived by this process. Table 12 shows an example of the tallied result for the overall acceptability of the framework based on the interview comments.

The processes involved in the analysis, and my thoughts and ideas about interpretation of the data, were logged in a journal to provide an audit trail of changes (see Bazeley, 2007; Richards, 2009). This journal was also stored in the NVivo8 database.

Table 12 Example of tallied social acceptability results

Occupation/ Attribute	No. Of Interviewees (N= 23)	Researcher assigned ranking adapted from Miles & Huberman (1994)				
		Unconditional	Conditional	Not acceptable	Non- committal /Unsure	No comment
State government	4	1	3	0	0	0
Regional government	5	1	3	0	1	0
Local government	1	0	0	0	0	1
Industry Rep	1	0	1	0	0	0
Farmer	6	1	4	1	0	0
Non-farmer	6	0	3	2	1	0
All landholders	12	1	7	3	1	0
Landcare	8	0	5	2	1	0
Non-Landcare	4	1	2	1	0	0
Resident	11	1	6	3	1	0
Absentee	1	0	1	0	0	0
Time in district <10 years	3	0	3	0	0	0
Time in district ≥10 years	9	1	4	3	1	0
Time on property <10 years	4	0	3	1	0	0
Time on property ≥10 years	8	1	4	2	1	0
All	23	3	14	3	2	1

Framework evaluation

Social acceptability is not the only criterion by which the success of policy instruments

may be judged. Other criteria frequently described in the literature relate to design qualities according to regulatory and governance principles (e.g. Graham, Amos, & Plumptre, 2003; Gunningham & Grabosky, 1998; Lockwood, et al., 2010; Ostrom, 1990; OECD, 1972). Towards the end of my candidature another set of policy principles for natural resource management in Australia were published (Ryan, Broderick, Sneddon, & Andrews, 2010), but these came too late for my project.

Two sets of guiding principles in the Australian natural resource management literature stood out (see Chapter 2). Gunningham and Grabosky (1998) had been a foundation reference throughout my research. This book included five principles for smart regulation that I felt could be applicable to the framework. Second, and more recently, Lockwood et al. (2010) published eight principles for good governance in natural resource management. Both sets of principles were highly relevant to my research, so it seemed appropriate to evaluate the duty of care framework for conformation to them. The twelve year difference in publication dates was also influential, as the period since the publication of Gunningham and Grabosky (1998) had seen the role of governance become increasingly important in natural resource management (see Chapter 2).

Gunningham (2009a) described regulation, including its various forms (e.g. state-sponsored, co-regulation, and self-regulation), as occurring midway along a spectrum between legislation and governance. The duty of care framework, developed initially with the intention of supporting a statutory duty of care, could also be perceived as an instrument of regulation or governance, and the chosen sets of principles provided a basis for evaluating the framework's merits through these two policy lenses.


Initially I carried out a subjective, desk-based evaluation of the framework for conformation to smart regulation principles (Gunningham & Grabosky, 1998), where I described characteristics that I could see in the framework. Lockwood and colleagues' article provided the opportunity to include an evaluation of smart regulation and good governance principles, to assess how well the framework embodied these principles (refer to Figure 14). As well as a subjective, desk-based evaluation of good governance principles, I also evaluated the framework against both sets of principles based on the interview data.

Governance Principles	
<i>Smart Regulation</i> Gunningham & Grabosky (1998)	<i>Good governance in NRM</i> Lockwood et al. (2010)
<ul style="list-style-type: none"> • A mix of policies and instruments • Least interventionist measures • Tiered regulatory responses • Tiered enforcement • Encouragement and rewards for good environmental performance 	<ul style="list-style-type: none"> • Legitimacy • Transparency • Accountability • Inclusiveness • Fairness • Integration • Capability • Adaptability

Figure 14 Principles of smart regulation and good governance in natural resource management

Interview transcripts were coded in NVivo8 for individual principles of smart regulation and good governance. I then queried the data to summarise the comments made about each principle. Using the same scaling procedure described above for ranking social acceptability (Miles & Huberman, 1994), I recorded how many interviewees had commented on smart regulation and good governance principles. I also ranked comments to reflect opinions of adequacy (+) or inadequacy (-) of the framework in addressing these principles. Discussion of the principles themselves had not been a focus for the interviews, and so not everyone made relevant comments. The proportion of respondents whose comments related to individual principles, was calculated to give a measure of the strength of the evidence. The data was placed in an Excel spreadsheet, to assist with filtering of the results. An example of this data is shown in Table 13. The table shows results for comments about smart regulation principles filtered for Landcare members. Where a respondent commented on a principle, a number appears in the corresponding cell. A value of 1 corresponds to an opinion that the duty of care framework was mostly adequate in relation to the principle. A value of 2 corresponds to an opinion that the framework was mostly inadequate in the relation to the principle. A blank cell indicates that no comment was made. These rankings provided the evidence for conclusions drawn in the evaluation.

Table 13 Example of Smart Regulation principles evaluated from interview data

Landcare 	Policy mix	Less intervention	Tiered regulation	Surrogate regulators	Win-win focus
Member		1		1	
Member	1	1	1	1	1
Member				2	2
Member	1		1	2	2
Member				1	2
Member			1	1	1
Member		1	1	1	
Member	1			1	1

1 = adequate, 2 = inadequate, blank cell = no comment

As discussed at the start of this chapter, each procedure carried out to address each research question has informed and influenced the development of the framework in an iterative process. I present findings from the mail surveys, the case study and the framework evaluation in Chapter 7.

Representation / Validation

In conducting this exploratory research project through a pragmatic lens, I sought to create a framework for a duty of care for biodiversity that would have the potential to be transferred, adapted, and customised to a variety of geographic and social contexts. Validity of the framework is most likely to be established if the audiences for whom it is intended find it useful.

I have endeavoured to validate the findings in several ways including corroboration using different data sources to address individual questions, respondent validation of interview transcripts, and evaluation of the framework. In addition I have shown how the findings and interpretations flowing from the research link to the key research questions, and I have considered rival explanations from the literature (Patton, 2002; Yin, 2009).

Ethical considerations

Much of the insight gained from this research is due to the informants and stakeholders willingly expressing their personal views and opinions during interviews. Out of respect for them, and consideration of unexpected or undesired consequences that might follow from their open and frank conversations, their anonymity has been maintained throughout the research except where they requested otherwise.

Interviews were conducted under approval from the Charles Sturt University Human Research Ethics Committee permit number 2005/182. Prior to commencement of interviews, workshops or the focus group, participants were asked to read an information sheet about the research project (Appendix 1) and sign a consent form (Appendix 2).

CHAPTER 4

Addressing linguistic ambiguity associated with duty of care

Introduction

This chapter partly addresses Research Question 1 – Why do we need to articulate a duty of care for biodiversity? In the literature review (Chapter 2), I highlighted a number of difficulties surrounding duty of care that need to be addressed before it is possible to contemplate the introduction of a statutory duty of care for biodiversity. As well as specific problems identified with existing Australian statutes that contain an environmental duty of care, a number of broad problems have been raised in public inquiries and discussion documents relating to duty of care (e.g. Binning & Young, 1997; HRSCEH, 2001; Industry Commission, 1998; Young, et al., 2003).

In this chapter, I address the problem of linguistic ambiguity (Carey & Burgman, 2008) associated with the use of the terms duty of care and stewardship in the context of natural resource management. Shared understanding of language is of fundamental importance with interdisciplinary studies (Bracken & Oughton, 2006), including those that involve environmental decision-making (Burgman, 2005; Wallace, 2007). As discussed in Chapter 3, to address this problem I used a qualitative research approach that included extensive document review and key informant interviews.

Fifty-one documents were reviewed. These include dictionaries, refereed journal papers, conference papers, media and electronic sources, books, and “grey” literature such as government reports and policy documents, public inquiry reports, and submissions. Fourteen informants were also asked to explain their understanding of the terms duty of care and stewardship.

Understanding Duty of Care and Stewardship

Linguistic ambiguity (Carey & Burgman, 2008) has been raised as one of the constraints impeding adoption of a duty of care for biodiversity, especially because of conflation with regard to the terms duty of care and stewardship. The word *steward*

originally described a person with responsibility for managing the household and staff of a nobleman or a king, although duties were sometimes extended to include management of financial affairs (Lerner, 1993; Oxford English Dictionary Online, 2007). In that sense, stewardship referred to the position or actions of a steward. In its contemporary usage, stewardship is defined as “the careful and responsible management of something entrusted to one’s care” (Merriam-Webster Online, 2006).

In its modern context stewardship has changed so that it now encompasses Christian religion, philosophy, business, land management, natural resource management, and governance (Australian Broadcasting Commission, 2007; Carr, 2002; Lerner, 1993; Macnamara, 2004; Roberts, 1992) and it has shifted from being a localised concept to one that is more worldly and holistic (Zeller, 1999). The binding concept in all of these applications, past and present, is that stewardship is about “looking after something not for oneself, but for another or others” (Bryden & Hart, 2000, p. 7). In its current form environmental stewardship is also very concerned with responsibility, respect for biodiversity, health of the environment and the principle of inter-generational equity, (Carr, 2002; Lerner, 1993; Zeller, 1999).

This description of the derivation of stewardship can be contrasted with the definitions of duty of care provided in Chapter 2. Table 14 shows key characteristics of duty of care and stewardship after the document review and key informant interviews had been completed.

Table 14 Key characteristics of duty of care and stewardship after document review and key informant interviews were completed

Duty of Care	Stewardship
Moral basis	Moral basis
Externally imposed	Internal, personal
Community standard	Individual standard
Obligatory	Voluntary
Articulated, codified	Not articulated, may show in behaviour
Enshrined in law	Not enshrined in law
Specific	All-encompassing
*Here and now	*For eternity, in the future

** Categories that emerged from the interview data*

How the Terms are Used in Public Discourse

A word or term may be used by experts in different disciplines with a range of

meanings, or the meaning of a word or term in a particular discipline may be different from its everyday meaning; these are known as dialects (Bracken & Oughton, 2006). When applied in a contemporary environmental context, the term duty of care appears to take on other meanings in addition to its common law connotation (Hatfield-Dodds, 2004a), with several different dialects of duty of care apparent in the natural resource management literature. For example, Bates (2001) and the Industry Commission (1998) use it to mean a mechanism contained in legislation and designed to promote a standard of outcome, while Binning and Young (1997) regard it as a financial threshold below which costs associated with environmental management should be borne by landholders, and above which public funds for assistance to landholders should be available. North East Catchment Management Authority [NECMA] (2005) describes duty of care as a system of ethics.

Similarly, the term stewardship has a variety of meanings, including a land ethic (e.g. Carr, 2002), a way of managing land that also incorporates improvements in productivity (Andrew, et al., 2007), a way of managing land above the duty of care to produce public good outcomes (Victorian Catchment Management Council/ Department of Sustainability and Environment [VCMC/DSE], 2003), and even an institutional program that facilitates partnerships between government and private landholders to facilitate on-ground works on private property (e.g. MDBC, 1996).

While many of these definitions are broadly consistent with the characteristics described in Table 14, other examples suggest duty of care and stewardship are used in ways that confuse their respective characteristics or result in them being used interchangeably. For instance, in its inquiry into catchment management, the Australian House of Representatives Standing Committee on Environment and Heritage (HRSEH) suggests that like duty of care, stewardship is an obligatory “duty”.

Use of the natural environment must recognise and attempt to discharge two duties:

Duty of care: to ensure that the actions one takes or proposes to take do not diminish, without their consent, the rights of others to enjoy to an equal extent the environment and its potential; and

Duty of stewardship: to use the environment so that future generations have the opportunity to use and enjoy the environment and its benefits to at least the same extent as the present... (HRSCEH, 2000, p. 98)

As with the HRSCEH, the Queensland Department of Natural Resources and Mines described legal obligations of stewardship, and in doing so confused the voluntary and ethical concept of stewardship with the obligatory and legal concept that is duty of care:

The stewardship model, by contrast, draws the mutual obligations held between the resource holder and society within the boundary of the property right rather than deeming them to be external to the title. By this model, title holders accept their implicit and explicit legal obligations as stewards as a necessary condition of accepting title, not as something superimposed upon an otherwise autonomous right...

(Department of Natural Resources and Mines, 2003, p. 12)

In literature from the general public and non-government organisations, recurring themes about duty of care included the lack of clarity in its meaning, the suspicion that it was a mechanism developed to allow governments to shift financial responsibilities for public good conservation on to landholders, and an assumption that non-productive conservation of biodiversity was solely a matter of public benefit (HRSCEH, 2001; Industry Commission, 1998). For example, the National Farmers Federation submission contended:

The concept of a duty of care is increasingly used by Government and by the conservation movement to justify placing the burden of public good conservation on farmers... (HRSCEH, 2001, p. 33)

How Terms are Used by Experts

Among the fourteen informants interviewed, understanding of duty of care and stewardship was expressed in terms consistent with many of the semantic characteristics described in Table 14. This is demonstrated in the following verbatim quotes from the interviews. Duty of care was generally recognised as a legal concept with defined boundaries, reflecting a responsibility imposed by society, for example:

... a duty of care means very much what it says - a responsibility which is assigned socially, and by legislation, in order to maintain aspects of

resources broadly conceived, for present and future generations...

KINF6 (economic historian)

... a duty of care is a legal concept that means something. So if you say that to a lawyer, the lawyer immediately turns into “lawyer mode” and starts going off on these specific concepts that apply whenever you mention it... KINF4 (economist/lawyer)

In contrast, stewardship was believed to be an ethical concept, less bounded, and often associated with Christianity. For example

The thing with stewardship is we tend to think of it in terms of just caring, not duty of care. A steward cares. You care for it because God’s given you care for your kids ... give[n] you the Earth in common; it’s yours, you know, to look after... KINF9 (philosopher)

Some descriptions of duty of care also included characteristics of stewardship. For instance, KINF4 (environmental scientist/theologian) described it this way:

... for me, a duty of care is fundamentally a moral issue in which I’m concerned more about my world than myself, and the world in that sense is in the broadest ... the people ... it’s the whole complex, messy system in which we live and experience on a day to day basis.

Emergent themes

An additional theme that allows differentiation between duty of care and stewardship also emerged during my review of documents, and was reinforced during interviews. In their public inquiry *Public good conservation: Our challenge for the 21st Century*, HRSCEH noted that duty of care is concerned with the “here and now”, while stewardship is concerned with the future and eternity (HRSCEH, 2001). KINF8 (theologian) also alluded to this temporal concept with the following comment:

Stewardship is different from the duty of care. Duty of care is absolute in philosophical terms. It’s absolute. That is, the human person in common law is of inestimable value, in and what they are of themselves at this particular time, and therefore you cannot damage them. You have to leave them in a position where they are at all times protected... Now, if we move from that to stewardship, stewardship is a different concept. Stewardship is rather leaving the landscape in a way in which

it may be beneficial to future generations, in other words not destroying it.

Discussion

The characteristics of duty of care and stewardship described in Table 14 provide a guide to assist with meaningful and unambiguous discussion about their potential application in the natural resource management field. Specifically, duty of care has a moral basis but is usually enshrined in legislation. It is externally imposed and obligatory, but it reflects a standard that is widely held by society. It is, in effect, a social norm, or something that governments seek to embed in society. It is usually articulated and/or supported by codes or guidelines, and is specific to particular entities. Duty of care also appears to be about the present.

Stewardship also has a moral basis, but clearly involves a personal ethic, internally driven and reflecting an individual, voluntary standard. It may be demonstrated in behaviour, but other priorities often limit its expression. For instance, the need to pay for a child's school fees may limit a farmer's ability to demonstrate a stewardship ethic by limiting financial capacity to purchase materials for on-ground activities. Stewardship is never translated into legislation. In contrast to duty of care, it tends to be more worldly and holistic, and often has a spiritual foundation. An emergent and related characteristic of stewardship is its focus on the long term, even "eternity", rather than the immediate.

Conclusion

The material referred to in this chapter has revealed some characteristics that can be usefully applied to help reduce linguistic ambiguity associated with the use of duty of care and stewardship. The interviews revealed that informants defined the terms in ways that were mostly consistent with the characteristics contained in Table 14, although some variation in understanding was evident. The use of terms in public documents, particularly public inquiry reports containing submissions from the public, revealed more variable interpretations of duty of care and stewardship, lending more weight to claims for a need to clarify their respective understanding. The results of this study provide some characteristics of the two terms that will lead to clearer understanding of their respective meanings and the contexts in which they are used. This information will

help to progress discussion about duty of care by providing a list of characteristics, enabling people to discuss duty of care and stewardship without ambiguity.

CHAPTER 5

Exploring the cultural basis for the concept of caring for others

Introduction

In the previous chapter I defined a set of characteristics that could usefully be employed to clarify understanding of the terms duty of care and stewardship in natural resource management discourse. Although its meaning in law is defined precisely, the term duty of care involves a curious juxtaposition of words that convey different sentiments, one a sense of obligation, the other a sense of nurture and protection. Duty of care involves not harming others which, expressed in positive terms, entails caring for others.

The moral concept of caring for (human) others is well established in contemporary Western society. In workplace, medical and educational settings it has been formalised with statutory duty of care standards, and it occurs in informal settings such as the outpouring of support for victims of natural disasters.

In reviewing literature about duty of care, I found myself being drawn into a range of discipline areas including law, religion, philosophy and economics. I gained an impression that the concept of caring for others, human and/or non-human, was well established in the historical literature from these disciplines. I wanted to know whether my impression was sound. This chapter addresses Research Question 2 – What is the cultural basis for the concept of caring for others?

Whether caring for (non-human) others is broadly-based in our contemporary society is another matter. Since Aldo Leopold's *The Land Ethic* was published in 1949, debate about human attitudes and ethics toward nature has ensued. Philosophers such as Callicott, Norton, and Rolston have been prominent participants in the debate. I wanted to know the extent that caring for non-human others was reflected in the writings of scholars. I anticipated this information could be useful, particularly as I had to decide whether to design my duty of care framework with an anthropocentric or bio/ecocentric focus. Anthropocentric ethics places humans at the centre of ethical considerations. In

older versions of anthropocentrism only humans were accorded intrinsic value. In response to criticisms (White, 1967), a modern Judaeo-Christian stewardship ethic – still anthropocentric in its perspective – construes humans as stewards or caretakers of other living things on earth, on behalf of God or some other divine being (Callicott, 2006). In contrast, biocentrism extends environmental ethics to all living things, entitling them to ethical standing. Biocentrism is focused on individual organisms. Ecocentrism in contrast, appeals to species, communities, and ecosystems, and is thus more holistic in its outlook than biocentrism. Leopold’s *The Land Ethic* sits within an ecocentric ethical framework. According to ecocentric ethics, humans are just plain members of an ecological community (Callicott, 2006).

As discussed in Chapter 3, in a multi-disciplinary study, it is difficult to gain more than a superficial knowledge across all disciplines. To overcome that, I conducted a limited topical document review (Noaks & Wincup, 2004), designed to highlight references to the concept of caring for others in the work of important scholars. The product was a discipline-based diagram (Figure 5, p. 93) that formed the discussion focus for key informant interviews with a selection of contemporary Australian scholars in each of the disciplines. Most informants were interviewed individually, but two were held with two and three participants respectively.

The areas of discussion that this chapter focuses on are shown below in Table 15.

Table 15 Key informant interview schedule (Research Question 2)

-
1. Silo diagram as focus for discussion - how sound are the relationships shown? (RQ 2)
 2. Ask about other sources of literature that would enrich this interpretation (RQ 2)
 3. The wisdom of having a duty of care directly to biodiversity (RQ 2)
-

In the following sections I describe the findings from these interviews, and discuss how they informed the research question. Suggestions for additional reading are reported within the context in which they were mentioned.

Cultural basis for the concept of caring for others

Most informants acknowledged that the proposition of a cultural basis to the concept of caring for others, presented in Figure 5 (Chapter 3, p. 93) is valid at a general level. Of the fourteen informants interviewed, 11 expressed general agreement with the

framework (Table 16) and thought it was a useful way to represent the information.

Most informants agreed there was a conceptual basis for caring for other in the disciplines of theology and philosophy/ethics (12 and 11 respondents respectively). The area that attracted most disagreement was economics, with only seven respondents agreeing that an ethic of care could be discerned in literature.

Table 16 Summary of responses to topic diagram

No of informants (n=14)	Concept overall	Specific disciplines			
		Theology	Philosophy/ethics	Economics	Law
Generally agreeing	11	12	11	7	9
Not generally agreeing	2	1	2	5	1
No comment	1	1	1	2	4

Support for conceptual underpinnings in law was not as strong, but a number of informants did not make specific comments, perhaps because the suggestion was not controversial to them. Only one informant expressly disagreed with the suggestion. Economists showed the least support for the diagram generally, and in relation to the individual disciplines. Support for an anthropocentrically-focused duty of care framework was stronger than for a bio/ecocentric design. In the following sections I will discuss informant responses to Figure 5 generally, and in relation to the individual discipline areas shown, including illustrative comments that informants offered in response to the silo diagram.

Theology

The concept of caring for others is embedded within many societies, particularly Western Judaeo-Christian societies, even though the incidence of sectarian conflict in many places around the world today might cast doubt on its importance in modern society. Most of the major religions contain a reference to “the golden rule”, otherwise known as the ethic of reciprocity, which advises that people should always treat others as you would like them to treat you. References to the ethic of reciprocity can be found in scriptures of Buddhism, Christianity, Confucianism, Hinduism, Islam, and Judaeism, (Wilson, 1991). The diagram in Figure 5 highlighted the ethic of reciprocity as evidence for the concept of caring for others, as well as the teachings of several prominent

theologians including St Francis of Assisi, St Thomas Aquinas, and Richard Hooker. St Francis of Assisi, in his work *Canticle of All Creatures*, promoted respect for all animals, describing them all as God's creatures (Haldane, 1991). Within the Catholic Church, St Francis is the patron saint of ecology and animals (Pope John Paul II, 1990). St Thomas Aquinas sought to bring together Greek thought and Catholic doctrine, as a way to discover what he referred to as natural law and right reason. Modern interpretations of Aquinas' writings suggest he understood there to be an harmonious, but hierarchical relationship between God and other living organisms including plants and animals (LeBlanc, 1999; Peterson, 2000). Richard Hooker, an influential 16th Century theologian known as the Anglican Aquinas, declared that "everyone has a duty to love others as yourself" (Cur Deus Homo, i, 2, as cited in Haldane, 1991). The religious systems of Indigenous Australians were also presented as an example where the concept of caring for others was evident (Bennett, 1986; Rose, 1988, 1999, 2005).

Most informants accepted the religious foundations for the concept of caring for others, especially in Christianity. For instance:

...particularly in relation to Protestant theology, there are all sorts of writings... KINF6 (economic historian)

KINF3 (economist) commented that

...Biblically there's a lot of lines in there about environmental management...

KINF4 (economist/lawyer) disagreed, and their exchange went as follows:

...But, you know, did a 14th Century farmer worry, think that he or she could have a real impact upon the world?...KINF4

...If you go back to ancient Israel, there was a biblical mandate to rest the land every seven years... KINF3

...Right, but that's good farming practice because it's more efficient for the farm. The concept that a farmer could negatively impact the world forever is something I don't think a 14th Century farmer even thought about... KINF4.

KINF4 has highlighted the problem of attributing modern values, beliefs, and ways of thinking to medieval people. However, the problem is not solved by denying KINF3's

interpretation of the Bible. In fact, in the absence of more compelling evidence we can only ever speculate what medieval farmers were motivated by.

KINF8 (theologian) echoed the view that we can only speculate on the motivations of medieval farmers, but considered that by the time of the Industrial Revolution, some supporters of Christianity were beginning to express concerns about environmental management. The work of Marsh (1864) bears testimony to this. KINF8 stated that the religious underpinnings alluded to in the diagram provided sufficient justification for the proposition:

...it is quite true that you have been able to draw out of all these, elements that you can use now...

Some insights about the ethic of reciprocity arose during the interviews. KINF12¹ (anthropologist) drew a distinction between anthropocentric reciprocity that extends from humans to others (including non-humans), and bio/ecocentric reciprocity where humans are participants embedded in a system, and where reciprocity occurs in both directions:

...In a human sphere I think that's pretty fair, but in terms of the wider world you can search long and hard actually, to find really clear articulations of the idea of mutually entangled life systems where reciprocity really moves back and forth...

Embedded reciprocity, implies that both human and non-human entities have responsibilities to care for others, and the obligation to carry out actions exists regardless of whether the actions are reciprocated (Rose, 2005). In contrast, extended reciprocity more closely parallels concepts found in behavioural and economic literature, for example (Bowles & Gintis, 2002; Gintis, Bowles, Boyd, & Fehr, 2005), where reciprocal actions are the preserve of humans only.

KINF12 contrasted Christianity, Judaeism, and Islam as religions that have a separate moment of creation specific to humans, with Taoism, Confucianism, and Indigenous Australian culture where everything was created at once. In the former group reciprocity is extended, whereas in the latter group reciprocity is embedded. With an embedded form of reciprocity:

¹ KINF12 is Dr Debra Bird Rose from the Australian National University. Dr Rose requested that she be identified in this study.

...Whether your care is reciprocated or not, your responsibility is still there... It would be quite interesting actually to sort out... how, if and how, that a human-centric ethic of care does get articulated in relation to the non-human world... KINF12 (anthropologist)

From an Indigenous perspective KINF13 felt it was more appropriate to speak of spirituality:

...the religion and the ethics part of it, or the spirituality part of it, all came back from that early duty of care, that obligation to care for Country...

KINF13 also echoed KINF12's comments about embedded reciprocity:

...we always believed, and we still do, that we're part of our totem, which is the animal or the plant. And so that plant or that animal gave something to us. It had a duty of care to us, and we had a duty of care to that. So it was a two-way thing...

KINF9 (philosopher) commented that, as well as having religious underpinnings, anthropocentric reciprocity may also have practical underpinnings such as mutual dependence on each other:

...The weakest form of reciprocity, that's still the foundation form, is called "in the same boat" reciprocity... When people are all in the same boat, viz-a-viz the same problem, then you automatically come back to foundations of reciprocity...

Philosophy/Ethics

In Figure 5, I presented examples of important Western philosophers whose works, by my interpretation, had reflected the concept of caring for others in some way. These philosophers included John Locke (1632-1704), the highly influential philosopher who was himself influenced by Richard Hooker (see p.126). Among his extensive works, Locke wrote of parents' duty to nourish and maintain their children (Locke, 1690), and articulated his property proviso that allowed for appropriation of land so long as there was "still enough and as good left" (Locke 1690, V, p.32). This can be interpreted as displaying consideration of other people. Smith and Bentham, both mentioned in the previous section for their economic theories, also wrote extensively about philosophy and ethics, highlighting the blurry boundaries between these disciplines prior to the 20th

Century. Smith's work *A Theory of Moral Sentiments* (1790) examined the role of ethics in determining human behaviour, and set out moral obligations that people owe to society (Castle, 1991), thus displaying consideration of others. By the 18th Century, the Lockean theories of moral rights were widely criticised (Haldane, 1991). Bentham described them as "nonsense on stilts", and instead promoted his principle of utility as a fundamental duty of all individuals and governments (VanDeVeer & Pierce, 2003). David Hume (1711-1776) used the examples of parental care and human concern for the wellbeing of others as evidence of virtue and care for others (Schneewind, 1991). Immanuel Kant (1724-1804) promoted duty-based ethics in a philosophical strand known as Deontology. In contrast to Utilitarianism, which focuses on consequences and rights, Deontology focused on human obligations to others, and actions as the determinants of good ethics (Schneewind, 1991).

Most informants confirmed the validity of the diagram as far as philosophy/ethics was concerned, acknowledging that the selected individuals were important figures in Western philosophy.

...All these are major thinkers in aspects of philosophy including moral philosophy, and all of them are complex thinkers... KINF6 (economic historian)

One informant made no comment, and two (KINF6 and KINF4) challenged the diagram's implications that Locke's property proviso and Smith's invisible hand carried any notions of caring for others.

KINF8 (theologian) suggested that the Protestant ethic may have been an important influence overlooked in my document analysis. KINF8 suggested that I read the work of Luther, Calvin and, more recently published work by Max Weber on the Protestant ethic.

Economics

From the document review, I gained the impression that economics and moral philosophy had been closely linked at least until the Renaissance (Zaratiegui, 1999). Rowthorn (1996) described how market economies of small-scale societies were embedded in systems of moral codes and informal sanctions, reflecting the close personal relationships that existed between individuals. These systems or rules, were weakened when economies expanded to include transactions with distant, anonymous

parties, as has happened progressively in Western societies since the 18th Century. Moral consideration in economics was gradually replaced by a belief that markets played a charitable role in society. Adam Smith, credited as a key architect of capitalism, played a role in this transition. KINF6 (economic historian) commented:

...when [Adam] Smith was writing on economics, the economics discipline was still very, very wide, and he himself helped to define it...

In his book *A Theory of Moral Sentiments* (1790) Smith wrote about duties to others, parents' duty to children, and (in different words) an ethic of reciprocity. His concept of the invisible hand (Smith, 1790) strengthened the notion that markets would by themselves care for the wellbeing of society as a whole (Castle, 1991). The point here is that Smith can be interpreted as caring for the wellbeing of others in his claim that the invisible hand would "...advance the interest of the society, and afford means to the multiplication of the species" Smith (1790, IV.10.1).

This interpretation of the invisible hand of Adam Smith drew varied comments from informants. KINF3 (lawyer) and KINF9 (philosopher) agreed that the invisible hand concept carried implicitly the notion of caring for others because, according to KINF3 it "... best serves society, and it helped the people best". KINF9 supported this notion:

...I'd say Smith's still got it, and even Mandeville has still got it in a way...

but recognised that a different interpretation of Smith existed and, citing economist Joan Robinson, commented that:

... economics has just diffused the whole problem of self-interest and morality, because it's shown that if you are acting in self-interest you are doing morally the right thing. That's the claim... KINF9 (philosopher)

KINF4 (economist/lawyer) reflected that view with the comment:

...the baker doesn't make you better because the baker owes you a duty, the baker makes you better because it's in his interest, and that's what the invisible hand is about.... there are no duties within capitalism. Each person is looking after their own, but the invisible hand leads to social improvement by default.

The framework also listed John Stuart Mill and Vilfredo Pareto as prominent economists, whose writings embodied the concept of caring for others. Mill, building on the work of Jeremy Bentham, promoted the goal of achieving the greatest happiness for the greatest number (Bentham, 1907; Mill, 1863; West, 2001).

However, KINF5 (economist) pointed out that Mill was:

...actually not very Benthamite. He's a Utilitarian pin-up, but he's actually very fuzzy ... Mill recognises the cultural formation of the individual essentially, whereas Bentham essentially is atomistic...

Pareto (1848-1923) was an Italian sociologist, economist, and philosopher who attempted to describe a complete theory of sociology that encompassed political theory, economics, political science, sociology, and psychology. Although his work was multi-disciplinary, much of it has been interpreted from individual disciplinary perspectives, including his economic Pareto Improvement principle (Samuels, 1974).

The Pareto Improvement principle assumed that economic efficiency was gained if a policy or exchange resulted in one person being better off, but no person being worse off (Samuels, 1974; VanDeVeer & Pierce, 2003). A modification of this principle, the Potential Pareto Optimality principle, also known as the Kaldor-Hicks Compensation Test, required that state A is better than state B if it is potentially possible for the gainers to compensate the losers, and still remain better off (Ackerman & Heinzerling, 2004; Samuels, 1974). In its logic, Potential Pareto Optimality is concerned about the welfare of others and incorporates distributive justice principles in a way that the Pareto Improvement principle does not. To this extent it can be interpreted as embodying the concept of caring for others.

No comments were made about Potential Pareto Optimality, except one made by KINF4 (economist/lawyer) who described Pareto as a social planner and not an economist. Certainly, the separation between economics and moral philosophy continued into the 20th Century, culminating in the work of Robbins that pronounced the nexus between the two disciplines was broken (Alkire, 2002; Sen, 1967), and that “[e]conomics deals with ascertainable facts; ethics with valuations and obligations” (Robbins, 1945, p. 148). Among the informants, particularly the economists, there was general agreement that modern neo-classical economics has little to do with moral philosophy or the concept of caring for others:

...We don't..., there's no concept of duty of care in economics... KINF4
(economist/lawyer)

...So I think you won't actually get much on duty from economics...
KINF5 (economist)

KINF5 also recommended the work of Walras who, in answer to Rawls' theories of welfare economics, established the idea of bounded exchanges in economics that set limits to economic transactions, essentially defining moral rules that economics operates by. Slavery provides a good example. Slavery is now abolished, and while it is possible to hire a person to carry out work, it is no longer possible to buy a person (legally).

The proposition that the concept of caring for others was embedded in economics was the one questioned most frequently, with five informants offering differing viewpoints. Opinions ranged from complete denial that the concept of caring for others was implicit in economics, to suggestions that the links were tenuous or narrowly-based. The strongest questioning came from informants with a background in economics, but even then opinions varied - as the following exchange between KINF3 and KINF4 illustrates. In this exchange, KINF3 (economist) was searching for examples to support the notion that the concept of caring for others is implicit within economics. KINF4 (economist/lawyer) counters every suggestion as falling within the domain of social planning rather than economics.

KINF4 *You won't find anything in economics.*

KINF3 *Well, I don't know. There might be some theories that sort of... I don't think there's a theory of duty of care. There's perhaps some things that are at least starting to relate to it. I mean you've got things like a Rawlsian social welfare function...*

KINF4 *No, no, the Rawls..., but those sort of social decision making...*

KINF3 *I'm trying to think of things that perhaps speak for it. Nothing speaks for it directly, I will agree with that. OK, but let me just throw a few things in. Weak sustainability, alright? If you brought in weak sustainability, that's the argument I mentioned before that you try to maintain your overall capital base. Now you can destroy a number of ... weak sustainability you can replace natural capital for manmade capital, you've just got to maintain your overall capital. But if you do*

destroy some natural capital like biodiversity, you have to replace it with something else. That might be manmade of course, but you have to try and maintain the capital base overall. So you can't destroy something and just ignore it under weak sustainability. It has to at least be replaced.

KINF4 Right, but see, all of these concepts are all social planning concepts.

Informants were more equivocal about the proposition as it related to economics than to the other disciplines. However, it was acknowledged that recent developments within the field of economics, are indicating a reappearance of ethical consideration.

Law

The concept of caring for others in law can be traced back to the 14th Century version of duty of care when people were under an obligation to ensure that their fires or animals did not harm others (Baker, 1990; Kiralfy, 1958). Over time the meaning of duty of care changed (Baker, 1990), but by the 1800s, in association with the tort of negligence, it had gained some technical meaning in the courts (Baker, 1990; Plucknett, 1956). The modern definition of duty of care dates back to the case of *Donoghue v Stevenson [1932]*. In this case Mrs Donoghue successfully argued that Mr Stevenson, a manufacturer of soft drinks, had been negligent in supplying her with a bottle of ginger beer that had a decomposed snail in it, and which made her ill subsequently (Luntz & Hambly, 1995).

Among the informants there was widespread agreement that enactment of laws is based on society's expectations, which are themselves informed by the other discipline strands shown in Figure 5.

...all these things matter, but what can change the practices is law. If there's no law you don't have to do it, if there is law you do have to do it. That's the way society works. So the extent to which these things underpin a legal reaction is important... KINF1 (lawyer)

...even if it had never been articulated as a legal concept, it would still be a fundamental concept for any society ... all those kinds of things are just fundamental to human societies... KINF12 (Indigenous anthropologist)

...You can run law and ethics together. They reciprocally reinforce each other. You need them to be mutually self-supporting... KINF9 (philosopher)

KINF2 (lawyer) agreed that

...the whole concept of sustainable development is about caring for present and future generations...

KINF9 (philosopher) also noted that in the USA some states have Good Samaritan laws, where a person is obliged to assist others in need of help.

From an Indigenous Australian perspective, law is strongly linked to the concept of caring for others and, as Glenn (2000) has suggested with chthonic societies generally, the laws are interwoven with beliefs, morals, and behaviours, and promote a worldview that sees humans as not being dominant, but as living in equilibrium with nature.

KINF13 (Indigenous elder) described Indigenous law in this way:

...we definitely had law that controlled what we could do and what we couldn't do with the environment, with the biodiversity. And when you look at, say for argument's sake, specific animals or whatever, and the concept of totems, there was a law that forbid you to eat your own totem, but other people were allowed to, and you were allowed to eat their totem etc. And if you broke those laws you got in big trouble...

Only one informant raised objections to the diagram. KINF4 (economist/lawyer) considered that the legal concept of duty of care is more about relationships and power, than about caring for others. This viewpoint is consistent with legal opinion that denies the possibility of the duty of care concept being adapted to incorporate biodiversity objectives (see Chapter 2).

Caring for others - human and non-human

Having confirmed with a majority of informants that the concept of caring for others was embedded in our culture, I wanted to understand the extent to which others included non-human others. This was an important step in the research because I was undecided whether to set my duty of care framework within an anthropocentric or bio/ecocentric context.

As described previously, KINF12 had spoken about different types of reciprocity –

embedded reciprocity characterised in bio/ecocentric religions such as Taoism and Indigenous Australian societies, in contrast to extended reciprocity characterised in Western cultures and religions. Her observation was repeated in relation to the Western philosophers mentioned:

...But what's interesting is they all start with a set of human ethics, and for one reason or another, may or may not extend it outward, but it's always an extension... KINF9 (Indigenous anthropologist)

It is evident, from the literature (e.g., Glenn, 2000; Kwaymullina & Kwaymullina, 2010; Rose, 1996, 1999, 2001, 2002) and from the preceding discussion, that chthonic societies such as that of Indigenous Australians have a complex system of laws, customs, and spiritual beliefs that are interwoven with components of nature – plants, animals, ecosystems, places. Within these societies, caring for others is obligatory, and reciprocal, and “others” includes plants and animals:

...It was something that was put into us from very early on, and has carried on from generation to generation. It was never questioned why we do this. You just did it... KINF13 (Indigenous elder)

...the Aboriginal people that I worked with a lot in the floodplain country, where there are big saltwater crocs, that was their culture ...when they go fishing they call out to the crocs to let them know where they are, so that the crocs stay away. “Croc, you're up this end of the billabong, so we'll go down to the other end of the billabong.” They're communicating back and forth, and that is the reciprocity of mutuality... But if one of them was taken by a croc, they would kill that croc ... because it had broken its duty of care... KINF12 (anthropologist)

Historically, examples of caring for non-human others can also be found in Western societies. Well known examples include most of the Roman Glossators in the 11th Century who attributed moral rights and duties to animals (KINF2, lawyer), and St Francis of Assisi in the 12th Century who preached respect for all animals (Justice Peace and Integrity of Creation, 2006). Medieval pantheist societies in Europe treated animals as moral beings, even subjecting them to trial which, in some cases, led to punishment by exile or death (Evans, 1906; Raff, 2003).

Despite the above evidence, anthropocentric views of the world and nature have

been far more prevalent in Western societies than bio/ecocentric views. For instance, St Thomas Aquinas promoted the idea of an harmonious hierarchy which saw all living organisms linked in an ascending hierarchy of importance. As spiritual beings, humans were second only to angels, with animals and plants ranked below (LeBlanc, 1999; Peterson, 2000). The Bible was interpreted as giving humans dominion over nature, and the unlimited right to exploit nature to meet their needs (White, 1967). Locke and Smith had humans firmly as the central focus of their works, as did Bentham and Mill, although consideration of moral obligations by the latter two scholars extended to all sentient beings (VanDeVeer & Pierce, 2003). Although Kant did not promote human obligations towards animals, he did recommend that they be treated kindly, as that would be beneficial for humans, helping them to treat each other kindly (VanDeVeer & Pierce, 2003).

In law too, the common law did not consider the environment. As KINF1 (lawyer) put it:

...Common law never had to because it didn't know there was a problem...

Even where there was a clear problem with the environment, early statutes were often focused on protecting human wellbeing, rather than on protecting biodiversity or the environment *per se* (see Chapter 2).

An ethic of care for biodiversity in contemporary Australia

In contemporary Australian society, the ethic of care towards biodiversity, as represented in the key disciplines discussed in this chapter, can be summarised as follows:

- Christianity is the dominant religion, and now clearly promotes stewardship, an anthropocentric ethic of care towards the environment. Where dominion over nature had previously been interpreted as granting unlimited rights to exploit or use nature, it is now taken as a directive to act in a custodial role, linked to the idea of providing equity to future generations of people (Attfield, 2003).
- In philosophical disciplines, debate about the relative merits of anthropocentric or ecocentric approaches continues in Australia and elsewhere (see for example Callicott, et al., 2011; Callicott, et al., 2009; Colyvan, et al., 2009; Justus,

Colyvan, Regan, & Maguire, 2009; Norton, 2011). The importance of nature is widely accepted, and an ethic of care is expressed by the community through diverse channels that include community conservation groups as well as electronic and print media. A burgeoning tourist industry operates on the back of an environmental ethic of care. Environmental education is taught widely at primary, secondary and tertiary levels.

- Despite the evidence of an ethic of care for biodiversity, the economic system creates serious problems for proponents of biodiversity conservation (Attfield, 2008). Economics in Australia is dominated by neo-classical economics, and is strongly anthropocentric. Biodiversity, with often poorly defined markets, has not fared well under neo-classical economics, as growing lists of threatened species testify (Booth, 2009). However, newer schools of economic thought, including ecological economics, have emerged to challenge neo-classical economic models. These approaches offer different ways of viewing human economic behaviour (Gintis, 2000; Gintis, et al., 2005; Perkins, 2006), and increasingly there are calls for ethical consideration to be returned to economic thinking (e.g. Rowthorn, 1996; Sagoff, 1988; Spash & Paavola, 2002). New economic approaches to valuing natural resources (sometimes including biodiversity) include the use of market-based instruments (e.g. Grafton, 2005) that place a value on ecosystem services (Daily, 1997; Daily, et al., 2000) or assets (Pannell, 2008), as well as a range of other approaches to valuation (e.g. Hajkowicz, 2008; TEEB, 2010a, 2010b; Tisdell, Nantha, & Wilson, 2007).
- If laws reflect society's wishes, it can be concluded that Australian society has a clear wish to protect its biodiversity. A plethora of statutes designed to protect biodiversity has emerged in recent times (see Chapter 2). The problem with these laws however, is the patchy and incomplete protection that they afford biodiversity. Legislation typically aims to protect biodiversity at high risk of extinction (e.g., threatened species legislation), occurring on particular land tenures (e.g., national parks and public land conservation reserves), or high value biota (cute and furry). Statutes that provide protection for biota outside these parameters are less common.

A duty of care to...?

The ethic of care for biodiversity in Australia is clearly anthropocentric, notwithstanding the ecocentrism of Indigenous Australians. Consequently, a duty of care for biodiversity with an ecocentric orientation might be a particularly radical step. I asked my informants about the merits of an ecocentric versus an anthropocentric approach. Not all of them offered a clear opinion, but three expressed support for an ecocentric duty of care directly to biodiversity. For example:

...But why complicate the issue ... It's only our human-centred sort of existence and attitudes in the past, that's the only reason it hasn't been done before... KINF1 (lawyer)

...in an ideal sense you would have it directly to the biodiversity ... a duty of care directly to biodiversity would be a really good thing, and would get away from this anthropocentric issue... KINF2 (lawyer)

Despite supporting the ideal of an ecocentric approach, KINF2 raised a salient point:

...the problem with law and governmental practice is that it actually relies on human beings to enforce it. Even if the principles are not anthropocentric, the fact is that you need a human being to actually stand up and say it, and if you don't give the human beings the rights to do the standing up and saying, then it just becomes another philosophical good wish...

At issue here is the question of standing, as discussed in Chapter 2. For an ecocentric duty of care to succeed, it would be necessary to have open standing provisions, so that anyone could take action in court on behalf of biodiversity. KINF5 (economist) offered a similar observation, but also perceived an ecocentric duty of care as creating an accountability issue:

...I think it probably is a quantum leap. I'm not arguing whether or not it's desirable, or reasonable, but I think it's a very big shift... I would certainly make it [the duty of care] to the community, because biodiversity is not going to be able to enforce it. This is an issue of accountability...

Most informants recommended against a duty of care directly to biodiversity. The

following quotes highlight some of their reasons:

...I've never seen a concept of duty of care in any society apart from among forest dwellers, a real concept of a duty of care. One has to move to that... it is very hard in our utilitarian society to get people to move to duty of care... KINF8 (theologian)

...Conceptually it's not such a big leap, and here I think we all agree that it's not a big leap conceptually. But the conceptual leap doesn't solve the practical problems... So you're worried about, sure you've got a duty of care conceptually, but it's so attenuated at this level, that virtually any other consideration is going to trump it, just about... KINF9 (philosopher)

Two informants (KINF6, economic historian; and KINF2, lawyer) suggested that extending the duty of care concept from an interpersonal relationship to a relationship between individuals and the wider community might be acceptable, because all people belong to a community. They suggested that it could then be argued that harming biodiversity would harm community wellbeing for either current or future generations. In this sense, duty of care could be addressing the principle of inter-generational equity, which is seen as broadly acceptable in the community.

Conclusion

The findings in this chapter provided valuable information to help with the next phase of the research. From the findings I made two main inferences:

First, the majority of informants gave general support to the proposition that a concept of caring for others, essentially an ethic of care, is embedded in historical texts from Western religious, philosophical, legal and, to a minor extent, economic literature. All of these disciplines strongly influence contemporary public policy in Australia. This gave me the confidence to proceed with the development of a duty of care framework for biodiversity.

The second inference I drew from this work was that in both historical Western society and contemporary Australian society the approach to caring for others has largely been an anthropocentric one, notwithstanding the ecocentrism of Indigenous society and culture. Caring for others has predominantly been directed at human others.

On the basis of this information I decided to design the duty of care framework within an anthropocentric context.

CHAPTER 6

Development of an operational framework for a duty of care for biodiversity

Introduction

The previous chapters have described the findings from discrete studies undertaken within the overall research project. The culmination of these steps was a framework outlining how a duty of care for biodiversity could operate in an Australian regional catchment setting (Figure 15, see enlarged copy in back cover insert). The development process was complex and took some time. In this chapter I explain the framework's foundations and the key steps on the journey to create it. The chapter is presented chronologically using a series of phases. Issues that arose on the way are numbered sequentially through the chapter.

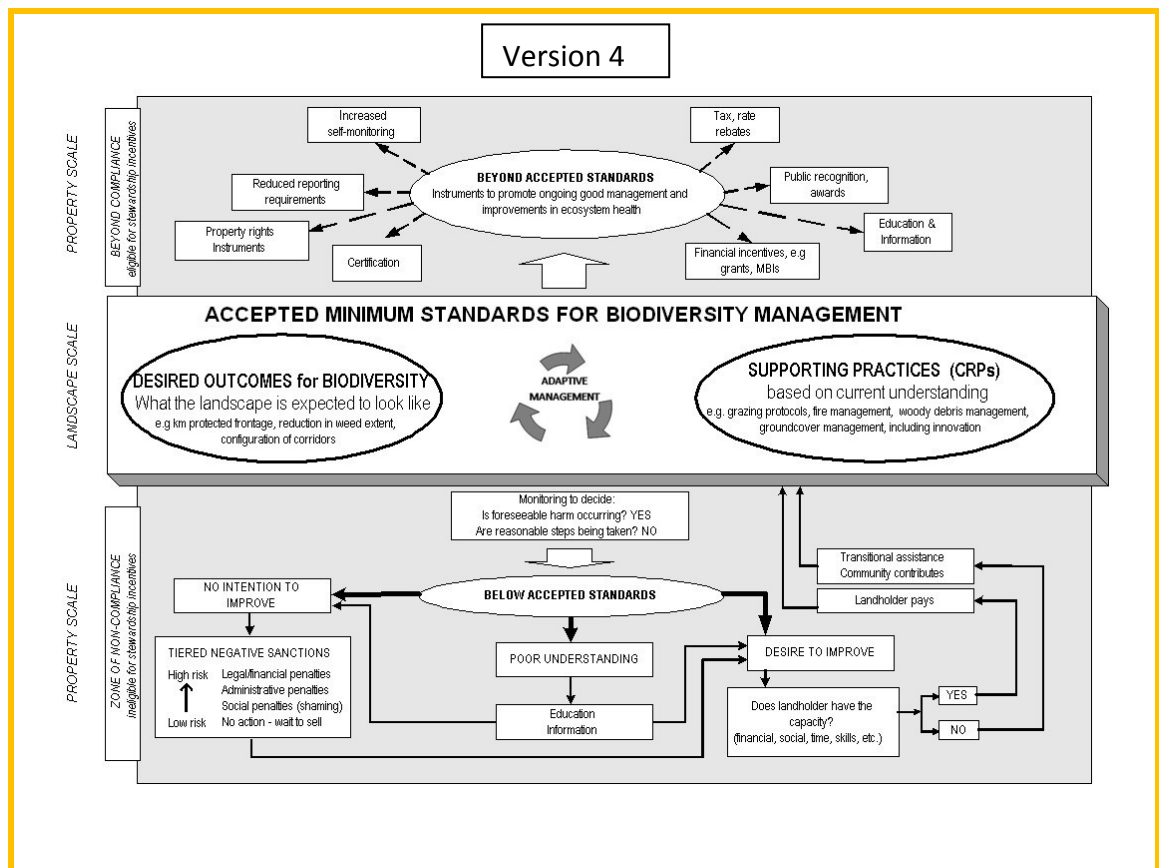


Figure 15 A duty of care framework, Version 4, 2009 (final version)

Phase 1 - Initial ideas

Initial ideas about what a statutory duty of care for biodiversity could look like, were based on key literature including Bates (2001), Binning & Young (1997), Gardner (1998), Industry Commission (1998), and Young et al. (2003). Bates (2001) considered a duty of care specifically for biodiversity, whereas most of the other literature conceived of a broader duty of care to the environment. My observations from literature, and from existing examples of statutes with duty of care inclusions, was that the broader environmental focus often left biodiversity “out of the picture” (see Chapter 2), so a focus specifically on biodiversity would be preferable. Based on my own expertise with biodiversity management, I thought that a duty of care for biodiversity would, by default, encompass most, if not all, of the broader suite of environmental issues. I was also influenced by Bates (2001), who envisaged a statutory duty of care as a complementary policy instrument, rather than a stand-alone one, and having an educational role, rather than a focus purely on enforcement.

At first I envisaged duty of care as a “safety net”, with a statute containing a duty of care to underpin other, more specific statutes such as threatened species legislation or national parks legislation (Figure 16). The focus of my research was on developing an operational framework for a statutory duty of care, not the legal statute itself. Nonetheless, in order to develop a framework, I needed a statement that outlined the basic premise of a duty of care, something that might appear as an article in legislation.

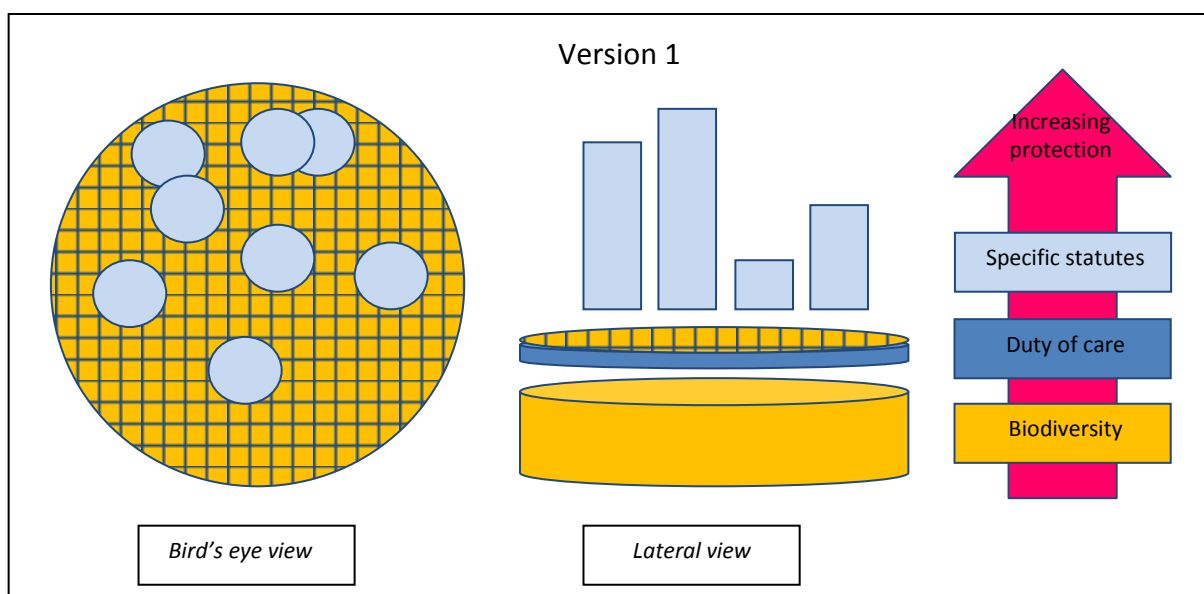


Figure 16 A duty of care for biodiversity Version 1, 2005 - a "safety net"

My solution was to create a hypothetical statement that I imagined could be inserted into the Victorian *Catchment and Land Protection Act (1994)*, or similar legislation (Figure 17). A premise of this duty of care was that it concerned “taking reasonable steps to avoid harming” biodiversity, rather than “the environment” generally or “neighbours”, which distinguished it from almost all others (excluding the *River Murray Act 2003 (SA)* and the *Adelaide Dolphin Sanctuary Act 2005 (SA)*).

Resource managers have a duty to the community (that values biodiversity), to take reasonable steps to ensure that their land management does not cause foreseeable harm to the biodiversity over which they have influence.

Figure 17 Statement of a hypothetical duty of care for biodiversity

But a duty of care framework needs more than a statement in legislation. A key feature of the Industry Commission (1998) model for a statutory duty of care, was its three tiers which included: i) mandatory targets for high risk assets, ii) voluntary targets based around locally-determined and outcome-based standards, and iii) codes of practice and guidelines to support voluntary targets. This model offered a regulatory framework in which a duty of care could potentially operate, and it is where my early ideas about a duty of care framework originated. But there were many other issues that needed detailing, and these provoked questions from the outset.

Issue #1 – How does duty of care differ from stewardship?

As explained in Chapter 2, the literature suggested there was a lack of clarity about the meaning of duty of care, with respect to how it should be interpreted in the natural resource management context. As explained in Chapter 4, linguistic ambiguity between duty of care and stewardship was evident in the natural resource management literature, and the terms were often conflated. The list of characteristics to distinguish duty of care from stewardship provided useful boundaries that helped me with development of the framework (see Table 14, p. 116).

Issue #2 – What scale could this duty of care operate at?

An initial premise for the duty of care was that it would operate within a regional governance setting, akin to the regional catchment arrangements currently found in Australia. But I still needed to decide on a scale of reference that would be workable. As discussed in Chapter 1, the definition of biodiversity includes genes, species, communities and ecosystems, so I considered each of these biodiversity scales for their

workability in a duty of care framework. Workability included such things as the ease of application, the existing knowledge base, and potential inclusion of all biodiversity elements. I also considered other spatial units and frames including an enterprise focus, an asset focus, and a focus that specified neighbours as the object of the duty.

A duty of care focused on genes or species

A duty of care focused on genes was discounted immediately. As well as being too numerous, and largely unknown to the general community of people, there is no accessible way of measuring their presence or changes in abundance, or interpreting the significance for biodiversity conservation overall. Biodiversity represented as species, is a better known and understood concept than biodiversity at the genetic level, but a duty of care for biodiversity pitched at a species level would have a number of problems. There are thousands of native species in Victoria alone, and the prospect of having a duty of care framed around each species was not feasible. This approach would result in many conflicting objectives and recommendations, would be difficult to administer, and it would not deal with unknown or poorly known species.

A duty of care focused on communities

Communities of plants and animals, sometimes known as assemblages, seemed more feasible than genes or species as a potential focus for the duty of care framework. A duty of care for plant communities could, for instance, be applied to Ecological Vegetation Classes (EVCs) in Victoria, and could be related more readily to recommended management practices. Goals and objectives could be related to vegetation community benchmarks, which have been defined in Victoria and NSW (Oliver, Jones, & Schmoldt, 2007; Parkes, Newell, & Cheal, 2003). A duty of care operating at this scale would be independent of genes, species, and also economic situations and enterprise type.

A duty of care focused on ecosystems

Ecosystems represent a higher level of organisation of biodiversity and include communities of organisms interacting with each other, and with their physical environment (Groom, et al., 2006, p. 473). An ecosystem-scale approach offered a broader focus than that offered by a community-scale approach, and seemed better suited to encompassing plants and animals together. An ecosystem focus would also imply a reference to ecological processes that support a broad array of biological

functions and provide ecosystem services to humans (Groom, et al., 2006). An ecosystem focus for a duty of care to biodiversity seemed to be conceptually suitable, as it could accommodate a landscape perspective, and include unknown and poorly known organisms. An ecosystem focus would also be independent of economic situations and enterprise type.

A duty of care focused on enterprise types

The existing environmental duty of care framework in the *Environmental Protection Act 1994* (Qld) is supported by codes of practice that are defined around specific enterprises. For example, there are codes of practice for agriculture (including pasture and cropping enterprises), pig producers, cane growers and dairy farmers. Gunningham and Grabosky (1998) consider there are operational benefits in having an enterprise-focused environmental duty of care, but as I have discussed in Chapter 2, this approach keeps the focus on production and for biodiversity, perhaps more than for other environmental elements, can be constraining.

A duty of care focused on a geographic area

Natural resource management is conducted through geographically-based regional networks, and a geographically-based duty of care for biodiversity had some appeal. From a social perspective a geographic focus seemed feasible given existing natural resource management administrative arrangements (i.e. catchment management organisations), although it was not clear that it would necessarily lead to widespread outcomes for biodiversity. One obvious disadvantage envisaged with this approach was the difficulty in managing a duty of care in a varied landscape.

A duty of care focused on neighbours

In common law, a duty of care is owed to another person, and that person has typically been defined as a “neighbour”. The Victorian *Catchment and Land Protection Act 1994* defines the duty of care in this way. For biodiversity this poses a problem, related to the characteristics of biodiversity (see Chapter 1), particularly for unknown, poorly known or common species that may not be highly valued by neighbours. In developing this framework for a duty of care for biodiversity, it is accepted that biodiversity is valued for a range of reasons, in a range of ways, and by a range of people.

A duty of care focused on assets

I also considered whether a duty of care could be focused on biodiversity assets where, for instance, a higher duty of care standard would be assigned to higher value assets such as threatened species. This approach could result in numerous different standards. I discounted this approach because of the administrative complexity it would entail, the equity issues it would create, and concerns that a focus on assets without considering ecological processes would not provide the safety net for biodiversity that I was seeking.

After considering all of these options I decided that the duty of care framework focused on ecosystems and ecological processes would be most appropriate for the purpose. I wanted to design the framework to keep biodiversity as the central element, and to operate at a landscape scale, broad enough to accommodate the needs of all elements of biodiversity including genes, species and communities of organisms, their habitats, as well as the common, unknown, uncharismatic and lowly valued elements. By focusing on ecological processes, the processes that underpin ecological function, I thought the framework would have the best chance of addressing those aspirations.

However, I also recognised that some type of geographic focus was necessary to fit within the current governance arrangements for biodiversity conservation. I concluded that within each regional catchment area, a small number (perhaps 3-6) of sub-catchment areas could be defined, and within these areas a duty of care for ecosystems, individually or in groups, could be described. The catchment care principle (Hatfield-Dodds, 2006; The Wentworth Group, 2003) also pitched decision-making around the maintenance of landscape scale function, and it was an important influence on my thinking about the duty of care framework.

Issue #3 – Who should the duty holder be?

Typically in statutes, the regulatory authority is specified as the subject of the legislation, and is required to ensure the objectives of legislation are met. In contrast, the Victorian *Catchment and Land Protection Act 1994* [Sec 20] specifies both land owners and the regulatory authority (“the Secretary”) as subjects of the duty. So in this instance, the regulatory authority has obligations associated with overseeing the legislation, as well as obligations as a land owner. Land owners have a duty not to harm the land of neighbouring land owners, and not to harm soil or water. Biodiversity is a component of “land”, but is not expressly identified in sections of the Act.

As Bates (2001) pointed out, land owners are not the only ones who cause harm to biodiversity. Other perpetrators may include third parties or staff from other government departments fulfilling statutory objectives that conflict with biodiversity conservation objectives. Some examples include:

- A roads management agency clearing vegetation in the interests of road safety.
- A fire management agency undertaking frequent fuel reduction burning in the interests of residential safety.
- An aerial spray contractor undertaking specific tasks that may adversely impact on biodiversity.
- A lessee who manages land for a specified (often short) period of time, for a specific purpose, e.g. an annual crop, but is not the owner of the land.

While minimising harm to biodiversity on privately owned land was the clear focus for my research, I wanted to create the framework in such a way that it could potentially be applied in all of the situations mentioned above. For this reason I elected to define resource managers as the duty holders in my duty of care framework. This term is broad enough to encompass all the categories of potential perpetrators of harm to biodiversity listed above.

Issue #4 – An anthropocentric or a bio/ecocentric framework?

As discussed in Chapter 5 I had come to the conclusion that historically the concept of caring for others, essentially an ethic of care, had been soundly embedded in disciplines that contribute to the legal system. I had also gained the impression that “others” in this sense referred predominantly to human others. The other important consideration was the recognition that laws are fundamentally social artefacts requiring humans to enact, and interpret them (Martin & Verbeek, 2006). Without humans to advocate on its behalf, biodiversity has no “voice”. When contemplating how to design an operational framework for a statutory duty of care for biodiversity, the need to give “voice” to biodiversity was one of the most compelling reasons for selecting an anthropocentric setting for the framework.

A duty of care owed to the community, rather than to biodiversity directly, was an anthropocentric approach that appeared to have merit. The advantage was that it would enable the community to act as an advocate for biodiversity (Martin & Verbeek, 2006), and as a witness to hold duty holders to account. In this way the framework would

retain an anthropocentric character, thus presenting a less dramatic shift from the way the duty of care concept has traditionally been applied, than would be the case with a bio/ecocentric approach.

Issue #5 - Who is *the community*?

Community is a term most often used to denote geographically located communities, but as Dovers (2005) suggests, in the natural resource management context it is more usefully expanded to include a broader concept of the community of interest. I adopted this broader concept, following the typology of Harrington et al. (2008). In this typology, the community of interest umbrella includes: geographically-located communities of place; affected communities who may be located outside the geographically defined area where the interest is situated; special and general interest groups such as industry bodies, Landcare groups or conservation groups; communities of practice, such as farmers or conservation practitioners; and communities of identity such as Indigenous people or youth. Harrington and colleagues suggest that the application of the typology of community of interest will assist with the balanced representation in the design of community-based, participatory programs. So the framework envisaged an important, but at this stage largely undefined role for the community of interest. However, I envisaged a role for members of a community of interest, in providing a voice for biodiversity.

Effectively this would provide for open standing (see earlier sections of the thesis), allowing third parties, such as interested individuals, conservation groups or industry groups to take action in response to a perceived breach of a duty, and potentially providing them with a role as surrogate regulator. Government agencies could also be interpreted as representing the wider community. Legitimacy issues associated with community-based committees are discussed in a later section (see p.164).

Issue #6 – How could *reasonable steps* be interpreted in the context of biodiversity?

The concepts of taking reasonable steps and avoiding foreseeable harm are derived directly from the common law definition of duty of care, but they also featured in documents describing the polluter-pays principle (see Chapter 2). The concept here implies more than avoiding harmful actions, instead invoking the idea of undertaking beneficial (if small) actions for biodiversity. I decided that current recommended practices (CRPs) for an ecosystem were appropriate surrogates for reasonable steps in

the context of a duty of care for biodiversity. The term current recommended practice followed the definition given by Clifton et al. (2004, p. 3):

[Current recommended practices are] *specific management practices that are recommended by industry and adopted by at least some leading producers to achieve land use that is more sustainable from economic, social and/or environmental perspectives.*

As Clifton et al. (2004, p. 3) explained, this terminology modifies the synonymous term “best management practice”, by recognising the inevitability of changes in such things as knowledge, technology, climate, and societal expectations that will result in changes to our concepts of management practices. CRPs should also be distinguished from practices that are required by legislation, which are sometimes described as minimum standards. CRPs within the duty of care framework would be based on the best science available, notwithstanding imperfect knowledge about biodiversity, ecological processes and responses.

Issue #7 Changing standards

Literature about cost-sharing arrangements suggested a change in current recommended practices should be linked to impacter-pays or beneficiary-pays pathways (Aretino, et al., 2001; OECD, 1975), depending on the cost of implementing new practices. Where impacters were likely to incur substantial costs associated with a change in recommended practices, transitional assistance from taxpayers to relieve the cost burden for a specified time period, was seen to be fair. Caveats associated with transitional assistance included a requirement that it only be applied to areas of industries or properties where the practices were relevant and not to prop up non-viable enterprises, and that it not lead to trade distortions (Aretino, et al., 2001; OECD, 1974). Australian policy on shared investment stipulated a range of conditions where transitional assistance might be appropriate including those where high costs associated with regulatory or legal compliance are involved, where facilitation of rapid change in behaviour is desired, or where the public good benefits are far greater than the private benefits and the practices required are less attractive to the impacter. Furthermore transitional assistance should be offered for a clearly specified, short-term timeframe, although the exact duration would be dependent on such things as the extent, severity, and significance of the problem (SCARM, 1998). Where biodiversity is concerned, time-frames based around expected response rates, and allowing for lag phases would

also be relevant considerations. In circumstances where a change in recommended practices involved minor or no costs to impacters, transitional assistance provisions would not need to be invoked. The idea of transitional assistance as a mechanism for providing limited, temporary assistance to help resource managers reach a new duty of care standard (Aretino, et al., 2001; Binning & Young, 1997; Hatfield-Dodds, 2006) was also incorporated into the framework.

By May 2006, the second version of my framework had taken shape, summarising my thinking thus far (Figure 18). In this framework there were two realms of management represented - at or above the duty of care standard, and below the standard. The impacter-pays principle and the beneficiary-pays principle were identified in different parts of the framework. The duty of care in this version was represented as a line (the purple line in Figure 18), corresponding to locally agreed, voluntary standards aligned with codes of practice based on current recommended practices. A pathway for representing a change in recommended practices is shown (the green lines in Figure 18), with the option for transitional assistance shown (the blue lines in Figure 18). Mandatory standards were shown as a higher order attribute, reserved for priority sites or assets, and were expected to be beyond a duty of care. The framework showed only limited detail about below standard management (the red lines in Figure 18). Below standard management was identified with a failure to discharge a duty of care, and although it is not shown in Figure 18, I envisaged a pathway (see the red arrow, lower left of Figure 18) leading to negative sanctions including shame and penalties that were identified in the silo diagram (see Figure 5, p. 93). Notes in Figure 18 alluded to the option of transitional assistance in this area of the framework, but no pathways for this had been specified. The three elements of the Industry Commission's (1998) regulatory model — mandatory standards, voluntary standards, and codes and guidelines — were all represented in this version of the framework.

At this point I undertook the first round of interviews with key informants, seeking a critique of my thoughts thus far, as part of the iterative development process. In Chapters 4 and 5 I have presented other findings from those interviews. Comments by key informants about the framework are summarised in the following section.

Phase 2 - Feedback on the framework version 2

As discussed in Chapter 5, most key informants supported an anthropocentric model for

a duty of care, and the framework was structured in that way. Some informants reaffirmed their support upon seeing the duty of care statement (Figure 17) and framework version 2 (Figure 18):

We think, KINF11 and I, we think to value things in nature is appropriate too. But we do think 1) claims that call on humanity tend to be stronger, and 2) that the community to which we justify are other human beings, and that itself places certain kinds of human-centric limitations on what you can do... KINF9 (philosopher)

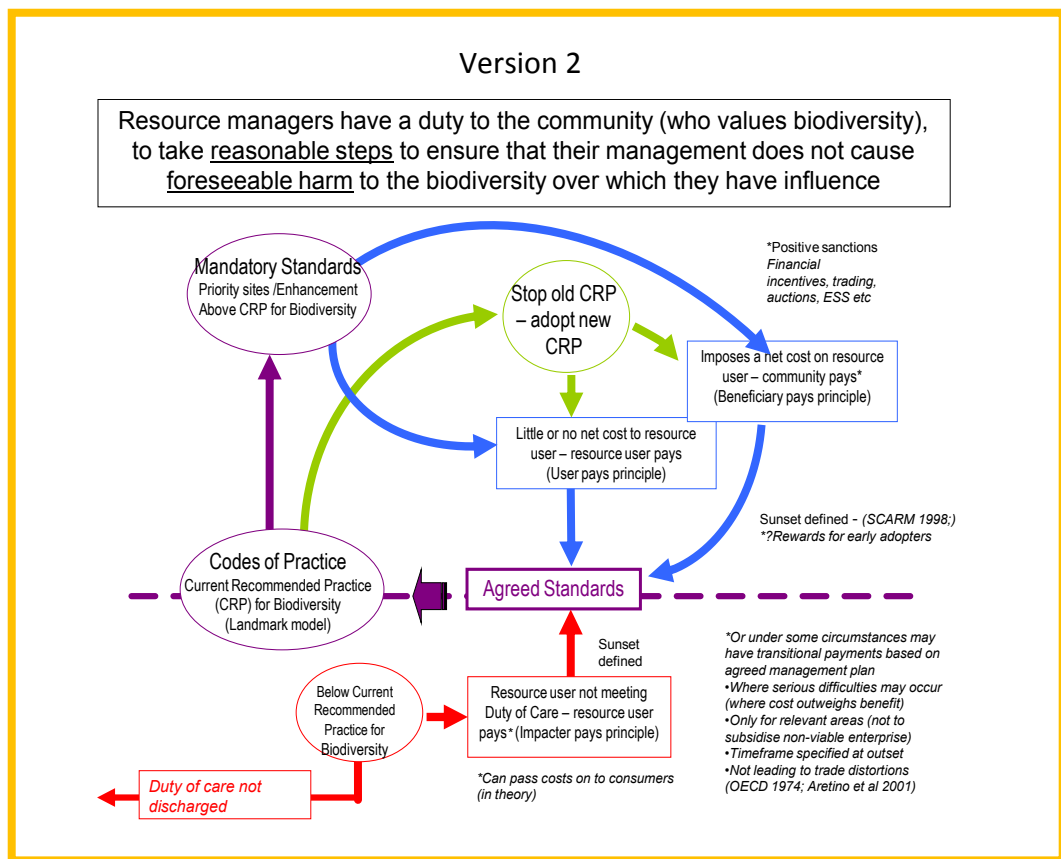


Figure 18 Duty of care framework Version 2, August 2006

In Figure 17 KINF12 (Indigenous anthropologist) recognised a triangulated relationship, analogous to that found in Indigenous social systems, between the duty holder (carer), the community (witness, advocate, enforcer), and biodiversity (cared for). This relationship is shown schematically in Figure 19. KINF12 offered this example by way of analogy:

So if the Kangaroo people in Country A [duty holders] really start [messing] up [kangaroos/biodiversity], kangaroo people in Country B

[witnesses/advocates/enforcers] *would interfere, and say “this is going very badly wrong, this is intolerable.”*

This triangulated representation makes it easier to appreciate how the duty of care framework could potentially operate in a variety of situations (Figure 20), as I have discussed above (see Issue # 2). KINF9 (philosopher) also recognised this aspect:

This is a national framework, isn't it, and international if you want...

In my thesis I have narrowed the application of the framework to resource managers who are land managers in agricultural landscapes. This context was chosen on the assumption that the implementation of a duty of care at this scale is likely to yield the greatest gains for biodiversity in a short time-frame.

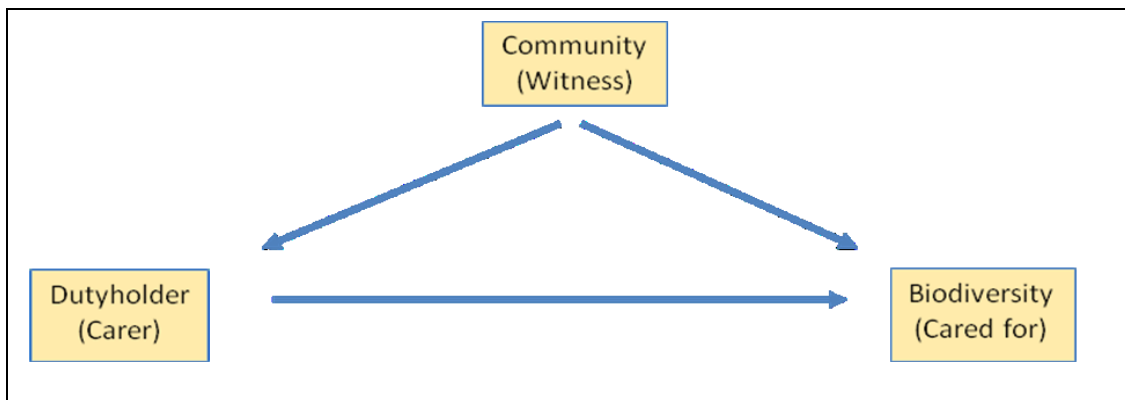


Figure 19 Triangulated relationships between duty holder, the community and biodiversity

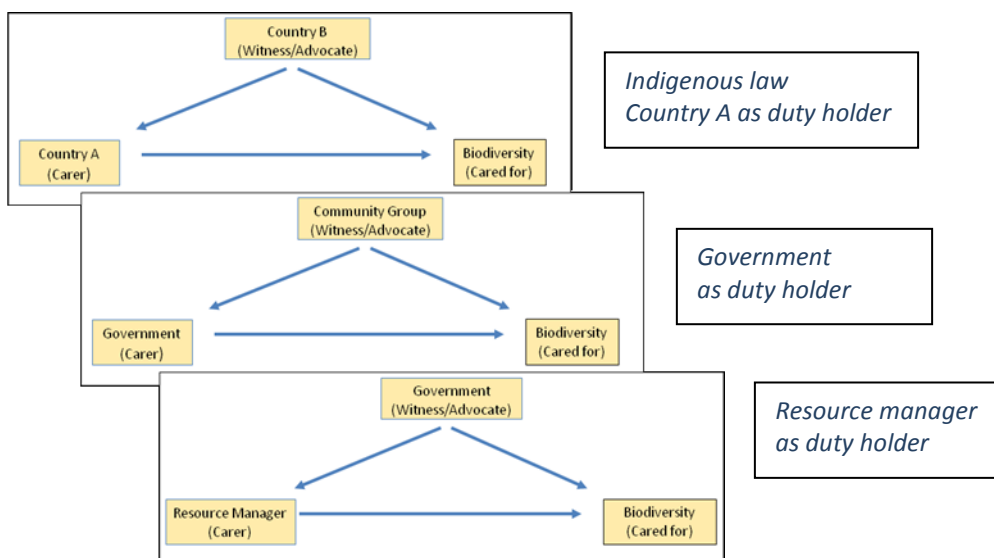


Figure 20 Duty of care relationships in different socio-political contexts

KINF5 (economist) compared the framework to the catchment care principle (Hatfield-Dodds, 2006; The Wentworth Group, 2003) noting that the stated intention of the framework, that duty holders should “take reasonable steps”, made it broader and more positive than just “not doing harm”. KINF5 also stressed the importance of stating clearly whether the underlying principle in the duty of care standard was merely to avoid harm, or something else.

Other informants made similar comments. For instance KINF1 (lawyer) suggested emphatically:

...I don't like the term maintain or improve, why can't we just say improve? What's your problem? If you allow maintenance to creep in there, we're going to lose. You've got to have improvement. You could say, "when I talk about a duty of care on regulators that duty could actually encompass improvement in biodiversity outcomes". Not maintenance but improvement, given that we're so bloody low on biodiversity stocks as it were, and all the material tells us that, why not? There's got to be an advance.

KINF12 viewed her own duty of care to students as extending beyond what was specified in legislation, to include helping them develop as individuals, and suggested that a duty of care for biodiversity might encompass a broader objective:

...if the larger goal is for a flourishing earth system, and given all the damage that has already happened, then we need to more than minimise the foreseeable harm. So in a way, if a duty of care ... what is the duty of care? Maybe that has to be asked. Is it just to maintain an already damaged status quo, or is it to enhance flourishing systems?

Issue #8 - What are the agreed standards?

The previous comments highlighted that the agreed standards shown in the framework were not articulated. This raised many questions in my mind about what the standard meant, what the outcome-based goals might be, and how foreseeable harm might be articulated. I decided that the duty of care should be articulated around the concept of “not harming”, but that it should also incorporate, as KINF1 suggested, an objective to go beyond maintenance, and to incorporate some improvement in biodiversity outcomes. I envisaged the duty of care standard as having a small amount of

redundancy built into it, on the assumption that adherence to the standard would certainly be incomplete, and that some continuing harm to biodiversity would always occur. I agreed with KINF1 that if the goal was set to a maintenance level, then the result would be an overall loss in biodiversity. The “net gain” approach adopted in the Victorian Native Vegetation Framework (DSE, 2008b) operates on similar principles (refer to Chapter 2, p. 47). In this sense, I envisaged the standard to be set at making small improvements for biodiversity, but not substantial improvements. The reason for this was that the duty holders would comprise a relatively small number of individuals who were being asked to meet obligations imposed on them by the wider community. It would be unfair to expect them to make large improvements and shoulder the burden alone. This helped to clarify the niche that a duty of care would occupy, in contrast to voluntary stewardship which clearly focuses on making substantial improvements. I also began to see agreed standards as the core of the framework, rather than just an element, and desired outcomes and supporting practices as the two components of it.

Implicit in the agreed standards was a focus on ecosystems and ecological processes across landscapes, rather than particular biodiversity assets. There was also an assumption that each ecosystem (or groups of similar ecosystems) would have an agreed standard, with a set of desired outcomes and supporting practices. For instance, lowland grassy ecosystems, which might include native grasslands and grassy woodlands, might have a desired outcome seeking to ensure that regular reproduction (an ecological process) of plants occurs. This desired outcome could be matched with recommended practices that define seasonally appropriate fire, slashing or grazing management regimes. This approach would ensure that biodiversity (represented by functional ecosystems) remained at the heart of the duty of care framework. It also suggested that the mandatory standards shown in the framework Version 2 (Figure 18) should be removed from it. Mandatory standards, as shown in the framework Version 2, were typically constructed as uniform, state-wide standards, and focused on protection of high value assets such as threatened species or national parks, or on control of vegetation clearance (Industry Commission, 1998) rather than specific ecosystems or ecological processes. The Industry Commission report recommended that mandatory standards should be replaced by voluntary standards as far as possible. The assumption in the framework version 2 (Figure 18), also shared by the Industry Commission (1998), was that locally defined standards would be equivalent to, or higher than, state-wide ones, and could potentially be enacted in ways that were more efficient, or at lower cost

to duty holders.

Another assumption about the agreed standards was that they would be tailored to suit local settings. I envisaged they would be “nested” within higher level standards and objectives, such as state-wide or catchment-based targets, and modified to suit local situations (but in a way that was not perverse to these other targets). KINF5 (economist) suggested that it might be more appropriate to describe this process of modification to local settings as local interpretation, or “bounded negotiation” rather than one of open negotiation:

...it's more of a matter of applying a principle in a more concrete way at a local scale ... because there are some things that don't require regional interpretation. In this case, things with less than 5% of original extent, you're not allowed to bloody touch them, full stop, or you have to protect them, full stop.

KINF1 (lawyer) identified the NSW Natural Resources Commission as a current institution that has adopted a similar approach to having state-wide targets interpreted at local catchment level:

...the Natural Resource Commission targets..., so you've got another excuse for saying this is the way to do it, because it's an established way...the government [i.e. the NSW state government] has now decided that you have one body setting these targets, and CAPs [Catchment Action Plans] have to basically establish how they're going to do it. So they've got to look at these benchmarks and indicators, and consider how they're going to do it, which is really what you're doing.

In keeping with the Industry Commission (1998) model, I had described the agreed standards as voluntary. KINF1 suggested they should be mandatory standards. After compiling the results of Chapter 4, where I articulated characteristics of a duty of care, the concept of voluntary standards in a statutory duty of care appeared contrary. Consequently, in Version 3 of the framework, the higher order mandatory standards (Industry Commission, 1998) had been removed, but the agreed standards were adjusted to reflect standards as local interpretations of higher level targets that, once finalised, would become mandatory. Gardner (1998) had proposed a similar arrangement for an environmental duty of care, where the legal requirements would be detailed in plans or

regulations, but codes of practice would remain voluntary.

Issue #9 - How could *foreseeable harm* be interpreted in the context of desired outcomes for biodiversity?

The meaning of foreseeable harm in the context of the framework had not been considered in any detail at this stage, but it was apparent that there was no clear way of “valuing” biodiversity, quantifying public and private benefits from biodiversity, or of directly measuring harm to it. The types of foreseeable harm to biodiversity that I envisaged are those that have the potential to disrupt ecological processes (Pressey, Cabeza, Watts, Cowling, & Wilson, 2007). They include degradation or loss of biophysical habitats, altered hydrological flows, nutrient or chemical additions, unsustainable harvesting, and introduced species (Bennett, et al., 2009). In the context of foreseeable harm to biodiversity, scientific uncertainty may arise caused by, for instance: the lack of complete information; the incidence of multiple, cumulative impacts; long lag phases before harmful effects become apparent; and the irreversibility of extinction (Gunningham & Grabosky, 1998). In these circumstances the precautionary principle provides a mechanism for dealing with scientific uncertainty, but as Peterson (2006) has observed, owing to lack of clear definition, implementation guidelines, and legislative provisions, it has not been applied in a consistent manner. Gardner (1998) suggested that in a duty of care designed to meet the objectives of ecologically sustainable development, fulfilment of the precautionary principle could be a way to establish the limits of what is “reasonable and practicable”, but he offered no further explanation of this idea. The precautionary principle was discussed in Chapter 2.

In my framework the desired outcomes focus on maintenance of ecological processes, because a) they operate across landscapes and, b) they underpin the sustained protection of biodiversity assets (Bennett, et al., 2009; Pressey, et al., 2007), as well as the provision of ecosystem services that humans rely on (Wallace, 2007). In the absence of systems which directly measure ecological processes, I envisaged the use of surrogates, such as measures of threat abatement or habitat condition, notwithstanding their recognised limitations (Possingham, Wilson, Andelman, & Vynne, 2006; Pressey, 2004). These measures could be presented in terms of quantity, quality or spatial configuration, and would lend themselves more readily to the setting of criteria for measurable change and outcomes, and correlation with practices (Wallace, 2007).

Much natural resource management follows this approach in practice, and is

articulated in regional catchment strategies and various biodiversity management plans that specify desired outcomes for improvement in biodiversity quantity, quality or spatial configuration. The approach here seeks to articulate desired outcomes as representing the avoidance of foreseeable harm to biodiversity through maintenance or small improvements in ecological processes (using measurable surrogates). All resource managers would have an obligation to manage their land and water in ways that contributed to the achievement of these outcomes.

In the framework desired outcomes would become mandatory goals for all resource managers within a designated area. I envisaged that desired outcomes would be referred to in statutes, but their detailed articulation would be placed in documents external to the legislation itself, similar to the way that Regional Catchment Strategies are provided for under the Victorian *Catchment and Land Protection Act 1994*. In contrast the current recommended practices would remain voluntary, but their adoption by resource managers would guarantee compliance with the duty of care. One reason for retaining voluntary adoption of recommended practices is to allow duty holders the flexibility to develop their own solutions. Resource managers would have the opportunity to develop innovative practices that achieve the desired outcomes in more cost-effective or convenient ways. Together, the desired outcomes and the CRPs would elaborate a minimum standard of acceptable biodiversity management (a biodiversity standard) for each ecosystem within a designated sub-catchment area. Resource managers who were unable to demonstrate how their management practices were helping to achieve the desired outcomes would be deemed to be not meeting their duty of care.

Issue #10 – Public-private benefit – who should pay?

The framework doesn't cover the question about who should pay in great detail, but it is acknowledged as an important aspect of duty of care deliberations. Transitional assistance touches on the issue about who should pay. The framework identified transitional assistance as an option for regulators to use when resource managers were being asked to change to a different suite of recommended practices (see Figure 18), and also noted that in some circumstances, it might be an option to help with bringing biodiversity management up to the desired standard. This promoted discussion by a number of the informants.

KINF1 (lawyer) felt it would not be necessary to prescribe transitional assistance in legislation, other than to mention it as a possibility, and provide regulators with it as a

tool. As a mechanism for cost-sharing between landholders and taxpayers KINF1 felt that transitional assistance would be appropriate for equity reasons:

Is it equitable that people should suddenly be ramped up to a new standard when they've invested in the old one, and now they've got to be doing something different? And should the community pay for that?... Absolutely!

However, KINF1 also cites the South Australian example of paying landholders compensation associated with the introduction of native vegetation clearance regulations, as one of the risks associated with transitional assistance:

...they paid for that for ten years before saying "No, enough's enough, we're not doing it any more". Everybody got used to it, so that is what will happen.

Other informants also expressed reservations about transitional assistance. For instance KINF3 (economist) was opposed to farmers being treated differently to other businesses:

...do we always want to get into this [transitional assistance]? Because you are a member of a community, and communities do change things, and we take it on the chin all the time. I think, almost, you have to say to yourself, "OK let's think of this in terms of farmers", and when we deal with farmers you think, "Oh it's a special case". I'd say a farm is a business like any other business, and [ask] would this model fly if we were talking about OH&S with dry cleaners. I think you've almost got to parallel this in every other case, and can it be generalised to an off-farm business. And if we can truly generalise it to there, then I'd say it's reasonable for the farming cases.

The Industry Commission (1998) took a similar view, suggesting that where representative standards were in place, the cost of meeting those standards to an individual resource manager was irrelevant.

KINF4 (economist) identified the potential for moral hazard to occur where transitional assistance is offered:

...it creates this dangerous incentive, and the incentive is to hold out, and wait for the assistance...

I am not an economist, and economics is not the main focus of this research, and so I have opted for a “soft” approach, which does include provision for transitional assistance. The merits (or otherwise) of this approach are left for others to decide.

KINF10 (environmental scientist/theologian) and KINF9 (philosopher) suggested a loan component in transitional assistance might help to minimise moral hazard, ensuring the loan recipients shared some of the risk. KINF14 (environmental scientist) suggested that an auction system such as EcoTender, might also be useful in this context.

Phase 3 - The middle years

The early phases of the research were substantially focused on developing the conceptual elements of the framework, drawing on literature and key informants for inspiration. In Phase 3, my research emphasis shifted more towards refining the framework. I continued to derive inspiration from literature, from feedback given in presentations where I displayed the framework, and also through a workshop with staff from the Department of Sustainability and Environment in Victoria. It was during this phase that I began formally testing the framework, commencing with the first mail survey in late 2006.

The comments and suggestions from Phase 1 and 2 gave me much to think about and absorb into the developing framework. By mid-2007 the framework had changed substantially (see Figure 21). In the framework Version 3, the agreed standards had been renamed as a standard of normal biodiversity management (shown in green in Figure 21). A key difference was that the desired outcomes had now been identified clearly as part of the standard, informing (see green arrow in Figure 21) the current recommended practices for individual ecosystems. The range of options flowing from below the standard for normal biodiversity management had expanded, and now included an education/awareness pathway (blue lines in Figure 21), as well as transitional assistance (pink lines in Figure 21) and negative sanctions (red lines in Figure 21) pathways. I had always envisaged the framework as a tool that promoted positive actions towards biodiversity, rather than one that relied predominantly on punitive measures. However, Gunningham and Grabosky (1998) had emphasised that there would always be a need to have a strong enforcement capability to underpin educational and voluntary measures. Sanctions including the potential for civil liability

were integral to the statutory duty of care proposed by the Industry Commission (1998). However Gardner (1998) viewed this as a weakness, recommending that remedies should be found through administrative processes. As Shepherd and Martin (2009) have noted, existing statutes with duty of care provisions, generally include a combination of administrative measures, with legal remedies available where compliance with the former does not occur. These authors also note that disallowance of civil dispute resolution through court processes removes an important mechanism for allowing social norms to develop. I included provision for tiered negative sanctions (including legal approaches) based on the risk to biodiversity, but in a way that situates them as measures of last resort when other measures have failed.

Higher level mandatory standards had now been removed from the framework. As these higher order standards were typically constructed with a state-wide focus, they were not suited to this framework, which was designed to operate at a regional scale. Above the standard of normal biodiversity management (green dotted line in Figure 21), a “reasonability” test (red box in Figure 21) had been inserted as part of decision-making about the provision of transitional assistance, when a change to a new standard was implemented. At this stage the framework made no reference to above-standard management. Conceptually I viewed above-standard management as the realm of stewardship, where policy instruments supporting voluntary biodiversity conservation activities would play an important role. However, stewardship was not represented in the framework Version 3 (Figure 21).

By phase 3 the framework had become more expansive, depicting how a duty of care for biodiversity could operate in conjunction with a range of other policy instruments, and illustrating different points in a cycle where individual instruments could be appropriately employed. Implicitly in the framework, there were a number of places where decisions would need to be made, and so the issue of who should make the decisions arose.

Issue #11 – Who decides?

The revised framework Version 3 contains eight decision points in it, i.e. places where decisions have to be made (numbers 1-8 in Figure 21), and potential decision-makers needed to be identified. From the literature (see Chapter 2) it was clear that the social acceptability of the framework, among other things, would depend on genuine opportunities existing for the participation of communities, especially, but not

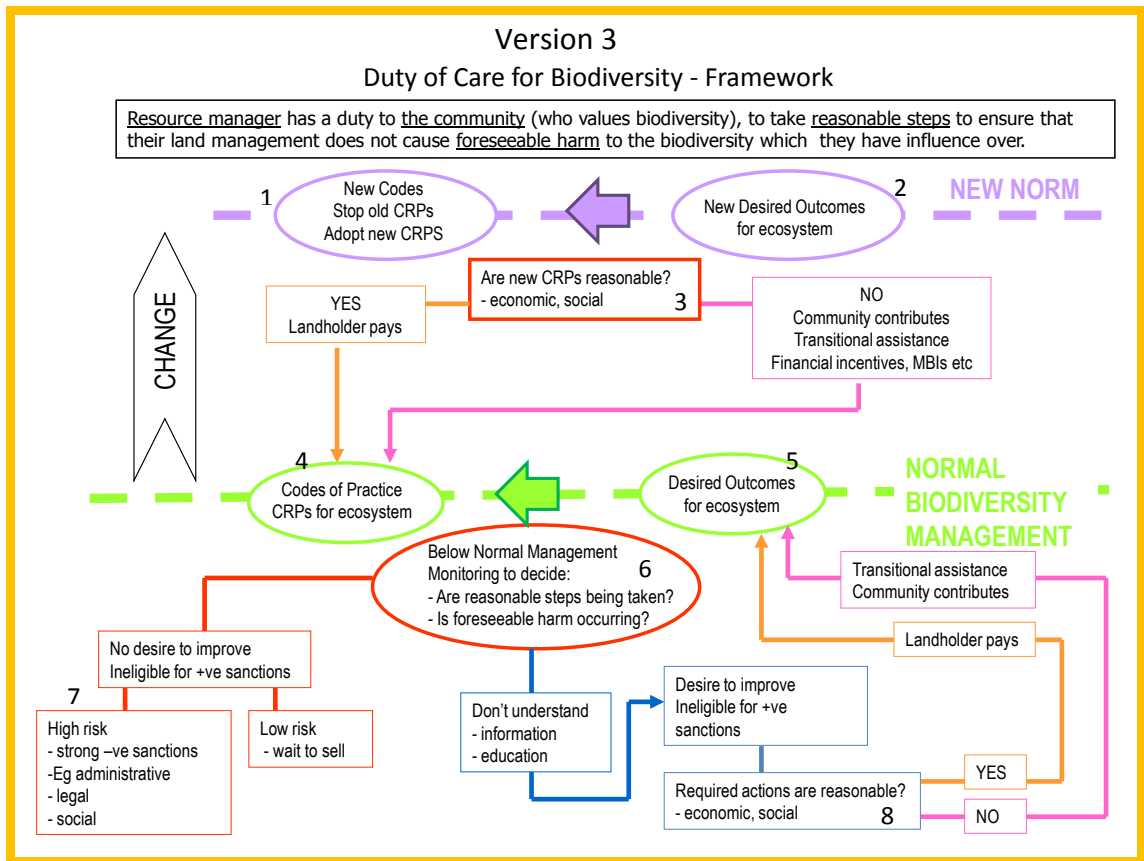


Figure 21 Duty of care framework Version 3, April 2007

exclusively, comprising local representatives. The overarching statement for the duty of care for biodiversity implied an important role for a community of interest, potentially including local and non-local people (see Issue #4 in this chapter).

One of the most significant decisions involved settling on the desired outcomes for an area. The concept of smart regulation described by Gunningham and Grabosky (1998), suggested an expanded role for third party participation in regulatory activities, and lessons from Landcare and governance literature also emphasised an important role for non-government actors (Curtis & De Lacy, 1996a; Curtis & Lockwood, 2000; Head, 2007).

In the common law tort of negligence, “reasonable care” is the care that a “reasonable person” would take in avoiding foreseeable harm. In one of the earliest definitions of reasonable care as it was applied in common law, Jones (1807, p. 330) described it as

...the normal standard in terms of the “generality of rational men”.

The judgement on *Blyth v Birmingham Waterworks Co* [1856] 11 Ex Ch 781 referred to negligence as:

...the omission to do something which a reasonable man, guided upon those considerations which ordinarily regulate the conduct of human affairs, would do, or doing something which a prudent and reasonable man would not do.

In common law courts, members of the jury are considered to be reasonable people, and in a legal sense, are characterised as people who:

- Possess the faculty of reason and engage in conduct in accordance with community standards.
- Are influenced by the nature of the relationship between parties.
- Are influenced by relevant personal characteristics of the defendant, e.g. age, mental stability, and skills (Nygh & Butt, 1997).

Also implicit in the legal definition is the understanding that a reasonable person is appropriately informed, capable, aware of the law, and fair-minded. If jury members do not possess all these attributes at the start of their tenure, they are assumed to have acquired them by the time they reach their verdict.

Borrowing from the concept of the reasonable person, I imagined a community reference group which I called a committee of reasonable people. I envisaged that responsibility for determining the desired outcomes would rest with committees of appropriately informed and reasonable people, comprising representatives with expertise and/or interest in biodiversity, drawn not only from the local community, but also more broadly from the community of interest. A community reference group of this type could also be conceptualised within a deliberative democracy framework. Within this theoretical context, the role of a committee could be construed as involving reasoned discussion and consideration in the public interest that leads to new insights and transforms initial perspectives into a shared collective outlook (Meadowcroft, 2004; O'Neill, 2001).

I envisaged that committees would operate at a sub-catchment scale, and develop desired outcomes specific to ecosystems occurring in their area using consensus-building methods. Models for this type of committee can be found; for example in the

Conservation Management Networks in Victoria and NSW, which undertake conservation management in specific, regional ecosystems across multiple land tenures (Context P/L, 2008). Ostrom (1990) also described a range of community committees that have been established to address environmental management at local scales. Margerum (2008) described three types of community committees. According to Margerum's typology, the committee I envisaged could be categorised as somewhere between an action collaborative and an organisational collaborative. Action collaboratives are predominantly represented by local individuals, community leaders, and regional agency staff, and focus on achieving outcomes through direct action, such as on-ground works. In contrast, organisational collaboratives typically include a broader selection of stakeholders including non-local interest groups and government representatives. The focus of organisational collectives is mainly bringing about change through plans, programs or budgets, rather than implementation of on-ground works.

The establishment of community reference committees is not without challenges. Questions about appropriate membership and skills, and issues around parochialism, time constraints of community members, and adequate resourcing are all major challenges that confront community-based natural resource management (Farrelly & Conacher, 2007; Lane & McDonald, 2005; Marshall & Stafford Smith, 2010; Robins & Dovers, 2007). For committees of this type to function successfully, a level of social capacity is necessary, and it is acknowledged that they may not be suitable in some areas. Ostrom (1990) has also noted that recognition and respect by government are critical components for the successful operation of community reference committees.

Other important decision points existed around compliance, enforcement and transitional assistance (Figure 21). I envisaged tiered structures for compliance monitoring, remediation, and enforcement with punitive sanctions as a last resort. For compliance and enforcement, the idea of a regulatory pyramid (Braithwaite, 2002; Gunningham & Grabosky, 1998) that provided a role for third party (non-government) intervention, was appealing. I envisaged that monitoring of desired outcomes and biodiversity condition could also be carried out at multiple scales including observation and measuring at property scale by local monitors, and broad-scale catchment monitoring undertaken by government agencies. As well as defining desired outcomes, the committees of reasonable people could potentially play a role in deciding if non-compliance had occurred, reviewing monitoring results, and deciding whether

transitional assistance was appropriate.

Workshop with DSE White Paper and biodiversity policy staff

In April 2007 I held a workshop with policy staff from DSE in Melbourne, including several members of the White Paper team, where I explained the duty of care framework and sought comment on it. For the White Paper team the workshop was timely, as duty of care was one of the policy options they were considering. The key themes that arose during the workshop are outlined below.

Linkages between desired outcomes and supporting practices

The point was made that limitations in current scientific data and understanding made the links between desired outcomes and supporting practices tenuous:

The challenge there Gill is to convert whatever the codes of practice might mean back to... how they link back to the outcomes for the ecosystem. ... Partly it's about how those ..., whatever those things that landholders do will be impacting on the ecosystems as a whole ... which is based around whatever science we've got, and understanding the causes and linkages between actions and outcomes... DSE20

It's that ongoing, underlying problem with the outcomes. An outcome that we talk about is an outcome for a whole area, but the codes of practice, by definition, we are applying at another scale, of individuals and enterprise. How do they add up to produce that causal link?... DSE19

KINF5 had made a similar observation during the key informant interviews, identifying the lack of information and understanding as one of the major gaps facing natural resource management in Australia:

...we don't have the information base to tell us what net damage is. That raises really big questions about our resource governance. If we can't tell where the sources of harm are, then we'll never manage them...

However, DSE20 also commented that current work within DSE was seeking to address this problem, which is encountered in biodiversity policy development broadly:

That's what I'm saying, making that link between what is happening at some scale, and what it means in that ecosystem, is a challenge. But

there are plenty of opportunities ... some of the work that DSE is doing might help fill that space... DSE20

Following on from this discussion DSE20 also suggested that a two-way feedback interaction between desired outcomes and supporting practices was needed (in contrast to the framework which showed an arrow pointing in one direction only). This highlighted the need for an adaptive management cycle to be incorporated into the framework.

The capacity of a duty of care to address new, potentially harmful, technologies and practices before they became entrenched was raised as a desirable characteristic:

The issue is really with the duty of care's integration with other tools to address new technologies before they take hold. The GM moratorium is a classic example, so that's one I'd like to suggest. The other is integration with the farming system, so you've got mechanisms to stop things happening before they even start... DSE15

Adaptive management

An adaptive management cycle could help to satisfy this need, and it was embedded in the final version of the framework (Version 4, see Figure 15). In its simplest definition, adaptive management is “learning by doing” (Walters & Holling, 1990). As well as informing management practices, adaptive management has also been applied more recently to the design of policies, particularly in contexts such as natural resource management, where complexity and uncertainty abound, and simple static solutions are not available, or not adequate (Allan & Stankey, 2009).

Adaptive management has been recognised as having three distinct forms. Evolutionary adaptive management refers to a trial and error approach, where early management choices are fairly haphazard, and later choices are based on a subset that gives better outcomes. Passive adaptive management occurs when historical data and knowledge is used to determine a new preferred management approach. In contrast, active adaptive management involves the conscious and deliberate use of policy and practices in an experimental way, designed to provide further learning (Allan & Curtis, 2005; Allan & Jacobson, 2009; Walters & Holling, 1990).

In the duty of care framework it is assumed that adaptive management could take any of these forms. For instance, a farmer who trials a novel management practice and

compares it with other established practices, may be said to be undertaking evolutionary adaptive management. Another farmer may take a passive adaptive management approach, for example setting up an Environmental Management System (EMS) involving a documented cycle of continuous improvement (Wilson, Edwards, & Carruthers, 2009). Active adaptive management is more likely to be initiated and managed by an agency or research organisation, as part of a structured experimental program. It is also understood that each form of adaptive management would entail application at different scales, temporally and spatially, and with differing levels of rigour in design and implementation. Consequently, the expectations associated with outcomes would also be quite different.

This provision for adaptive management is one of the strengths of the framework, and is encouraged by the use of “voluntary” codes of practice, linked to specified outcomes. It also puts pressure on agencies to apply active adaptive management strategies to test and validate the links between outcomes and practices. The lack of scientific evidence to support causal links has been a recognised barrier to adoption of best management practices (Curtis & De Lacy, 1996b). The following example illustrates the risk associated with promoting best practices emphatically without a strong scientific basis. Recent research examining best management practice of willow removal for river restoration, undertaken by the Landscape Logic program, has found evidence of perverse outcomes for riparian health. These perverse outcomes have arisen because of a) incomplete understanding of habitat impacts resulting from loss of shade, and b) incomplete implementation of policy, where landholders have removed willows, but retained open riparian areas for grazing, rather than replacing them with native vegetation as the policy prescribed (Davies et al., 2012).

Mechanism to facilitate a social norm

One participant thought the framework could potentially be a very powerful mechanism for promoting behavioural change:

I was just going to say the bit that attracted me the most I think is..., you could do it without thinking it's regulation, which is the social ... local structured discussion about what you expect from your neighbours. And if that process was run properly, the social pressure on neighbours that would come from that would produce change in and of itself, and sort of

begs the question of whether you would go through that administrative nightmare of tying it to regulation... DSE18

In making this comment DSE 18 recognised in the framework, a mechanism that could facilitate the development of a social norm capable of operating independently without statutory regulation. Social norms are the informal rules that underpin common, day-to-day behaviour in our society (Minato, Curtis, & Allan, 2010). Some authors have suggested that social norms play an important role in ascribing certainty where formal rules governing behaviour are either absent or ambiguous (Horne, 2001; Schudsen, 2001). Social norms are learnt through the observation of the behaviour of others. They provide constraints on self-interested behaviour that might adversely affect the interests of a group (Minato, et al., 2010).

DSE18's comment also highlights an aversion to statutory regulation that was reflected at other times in the workshop by other participants. An important element of this aversion concerned the enforcement capacity and expectations that could arise with the introduction of a statutory duty of care for biodiversity. In the context of my research, which was seeking to address shortcomings of existing policy approaches, including existing statutory approaches, to biodiversity conservation in agricultural landscapes, the comment was a particularly salient one. Enforcement enacted through social processes is an integral part of social norms, particularly "injunctive norms" (Horne, 2009). Injunctive norms have a strong moral underpinning, and involve social attitudes of approval or disapproval, supported by external sanctioning (Horne, 2001; Minato, et al., 2010). Horne (2001) also suggests there is an inverse relationship between the strength of social norms and the level of government intervention, suggesting the latter creates a form of "crowding out" of norms.

Committees of reasonable people

The idea of a committee of reasonable people was viewed with interest, and it coincided with the experience of one participant (DSE15) with Conservation Management Networks. The autonomy and accountability of committees was questioned by two participants:

What happens if there's a change in composition of the community ... and the new purchaser of the land is not interested? ... DSE17

What happens if the committee of reasonable people is captured by local interests? What mechanisms have you got to deal with that? ... Isn't that third party right, or the government having some sort of oversight role? DSE15

Issues of accountability and autonomy are prominent in Australian natural resource governance literature (e.g. Farrelly & Conacher, 2007; Lane & McDonald, 2005; Robins & Dovers, 2007). As mentioned previously, although the idea of the committee of reasonable people was developed from the legal concept of the reasonable person, it resonated with concepts found in the deliberative democracy literature. In this literature much discussion of accountability, autonomy and the broader theme of legitimacy may be found (e.g. Dryzek, 2001; Meadowcroft, 2004; O'Neill, 2001; Parkinson, 2003). While a comprehensive examination of these issues is beyond the scope of this thesis, some discussion is warranted.

Unbridled autonomy of representative committees gives rise to risks of personal or vested interests gaining undue influence in decision-making, as the comment by DSE 15 alludes to. The literature suggests there would be an important role in addressing accountability, by ensuring the processes and outcomes of a community representative committee were justifiable in the public interest. This role could readily be undertaken by the state, which has the democratic legitimacy to act on behalf of the public (Meadowcroft, 2004), but an intermediary role for a third party, with conferred legitimacy to oversee committee functions (Gunningham & Grabosky, 1998), could also be envisaged. In either case, the state would be required to play a key role in setting the boundaries to guide committee deliberations (Gunningham, 2009b; Meadowcroft, 2004), and ensuring that decisions made by committees could withstand public scrutiny (O'Neill, 2001).

Other controversial aspects of community-based committees relate to issues of representativeness and scale (e.g. Dryzek, 2001; Meadowcroft, 2004; O'Neill, 2001; Parkinson, 2003; Walzer, 2007). While it is not the intention in this thesis to evaluate the enormous literature on the topic, some approaches are potentially useful in the context of this study. On the matter of representation, for instance, Dryzek (2001) has suggested that representation should be determined on the basis of “constellations of discourses” about a particular topic. This approach lends itself more to group-based approaches to deliberation, where representatives are drawn from communities of

interest (Harrington, et al., 2008), rather than citizen-based approaches such as citizen advisory committees or citizen juries (Meadowcroft, 2004; O'Neill, 2001), where representatives are less likely to be associated with particular discourses. Representatives drawn from “community of interest” stakeholder groups are more likely to satisfy accountability and authority aspects of legitimacy (Parkinson, 2003).

Under Dryzek’s proposal, lack of representation is not an issue because no exclusion of participants is required. However an approach that allows for potentially unlimited numbers of participants, stands in contrast to a widely held proviso that deliberation can only occur between small numbers of individuals (Parkinson, 2003; Walzer, 2007). The solution to the problem of representation and scale offered by Parkinson (2003) rests on three main criteria:

1. Stakeholders should have a say in deciding such things as who is a relevant stakeholder, the relationship between representatives and the body they represent, the selection process, and proportional representation.
2. Where a committee has a decision-making role, as opposed to an advisory role, representation should be decided through an election process, and representation should give equal voice to every stakeholder.
3. Representatives should be free to allow their initial ideas to be transformed through the deliberation process, into preferred collective outcomes. Representatives also have a responsibility to communicate those outcomes back to their constituents, persuading them in the same way that they were persuaded during the deliberation. Parkinson also annexes this dual role for representatives to the idea of Mansbridge (1999) that deliberation occurs a multiple scales, and with varying degrees of formality, thus rendering the scale issue less critical.

Although these details about the committee of reasonable people have not been specified in this thesis, the importance of addressing them should not be understated. It is one of the ongoing aspects of the framework that warrants further investigation and development, and the literature mentioned offers some clues as to how that could be approached.

Adoption of supporting practices as a guarantee of compliance

In the framework, supporting practices were not designated as mandatory, but their adoption was identified as a guarantee of compliance. DSE17 noted that a precedent for this approach could be found in Victorian legislation:

There is an analogy in the Road Management Act where a road manager is required to adopt a Road Management Plan. And then if they are following that plan, and they can demonstrate they are following that plan, then they are taken to have met the standard of care for managing the road...

Cross-compliance measures implemented in the European Union as part of the Agenda 2000 reforms, and in the USA (DEFRA, 2007b; Kristenson & Primdahl, 2004), provided a model to base compliance aspects on. The British GAEC standard represents a type of duty of care standard, where landholders must reach the standard (calculated as a numerical index) before becoming eligible for subsidies (DEFRA, 2007b). I considered the potential for cross-compliance measures to work in an Australian setting would be limited, because subsidies are not widely used to support agriculture.

I had evaluated a stewardship trial in north-east Victoria that used a form of cross-compliance known as “mutual obligation” to determine eligibility for incentives. Although the mutual obligation concept showed promise as an element for implementing a duty of care, I concluded that this particular trial had not operated in a way that fulfilled that promise (Earl, et al., 2005). The idea of an eligibility threshold, whereby managers needed to demonstrate a minimum standard of biodiversity management before compliance was attained, was appealing. I incorporated an eligibility threshold into version 3 of the framework (see Figure 21). Over time the eligibility threshold evolved into two distinct thresholds (see Figure 22), a mandatory compliance threshold delineating minimum standard biodiversity management from below standard management, and an eligibility threshold delineating minimum standard biodiversity management from management that is beyond the minimum standard

Crossing latter threshold would be voluntary, but managers would become eligible for assistance or recognition through a suite of voluntary (stewardship) policy instruments. This type of assistance would only be available to managers who were intending to undertake biodiversity management additional to the accepted minimum standard.

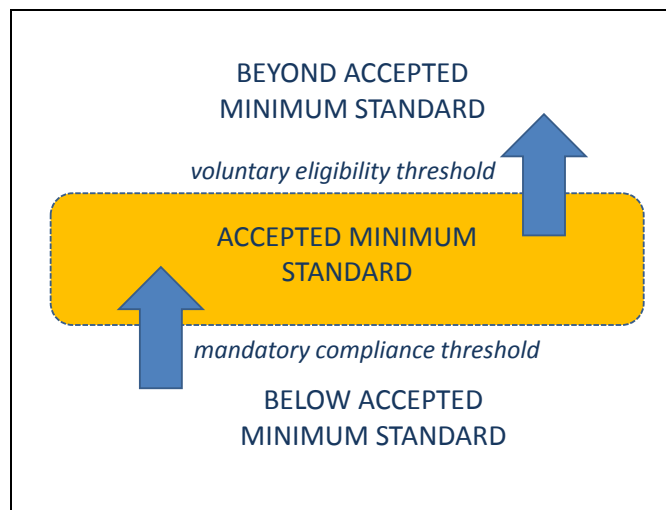


Figure 22 Thresholds associated with the duty of care standard

Triggers for government intervention

The framework version 3 provided a schematic outline identifying points where government intervention could occur to promote biodiversity management, including points designed to bring management up to a minimum standard (see Figure 21, p. 161, numbers 6 and 8). This contrasts with the emphasis of current policy, where much of the effort is directed at providing incentives to promote voluntary conservation on private land, beyond a minimum standard. This aspect of the framework was viewed positively by workshop participants:

It helps us to identify where there are tipping points of government intervention. There could be any number of interventions around education and awareness-raising, there could be government intervention up here in the stewardship area. There's obviously a sense of government intervention off the side here, bringing people up to speed. But when you think about government dollars as a whole, and how you might split the dollars from here to here to here, and what your outcomes might be, it's useful for painting a picture, but it doesn't actually tell me though how should we prioritise government spending ... What I find interesting is we talk about stewardship payments 'up here', and we haven't even got the 'down here' sorted out... DSE18

Introducing a duty of care for biodiversity

The issue of property rights arose several times in the workshop, both in the context of how they were understood and how they were treated in fact, and also in relation to introducing a duty of care:

...you did mention the limitations of statutory law “challenges property rights”. I think the one that is wrong there is – “challenges presumed property rights”. It’s so critical to emphasise that because rights are socially determined... DSE15

They are not absolute. Property rights are not absolute. Our society has modified them... DSE17

In this third phase of my research, I was also invited to make a short presentation to the DSE White Paper scientific panel. The panel was reviewing submissions to the preliminary Green Paper, and a number of catchment management authorities (CMAs) were calling for an environmental duty of care to be introduced. A key concern of the panel was how the desired outcomes would be codified in legislation. As discussed earlier in this chapter (see Issue #9), I envisaged that detailed descriptions of desired outcomes, the mandatory element of the duty of care, would be contained in associated documents such as management plans, rather than specified in legislation itself.

Amending the Land Act was suggested during the DSE workshop as an efficient way to introduce a statutory duty of care, particularly with the current high rates of turnover being experienced in Victoria:

...if you tried to raise the social norm through the duty of care, one of the clearest ways I’d set in there, is inserting something in that guy’s legal property right ... Why not look at the Land Act itself? It is absolutely silent on biodiversity. So go back to the heart of the Crown privatising land, allowing agriculture to use streamside reserves, blah, blah, blah, and it’s silent on biodiversity. And that’s why it’s better to insert something that becomes a bit more fundamental ... You know to get into that system where it’s brought up in front of the person at the point of purchase, that’s when you change a social norm, and I think that’s where you want to drive it home. It might take you ten years but

eventually everyone has signed off on it, and “I’m buying the land, and I’m signing off on the condition”... DSE16

Although well beyond the scope of my research this remains an interesting proposal. DSE17 also commented that provisions in the *Planning & Environment Act 1987* (Vic) also allowed for binding agreements to be made between land owners and Local Government:

...the Planning & Environment Act for example provides for S173 agreements, which are agreements which bind landowners, usually between the Council and the land owner, in which the land owner will agree to abide by planning conditions, and that planning restriction actually runs with the land. It is enforceable against subsequent owners. That is sometimes used in planning cases to actually bind land owners to particular planning conditions that relate to the environment, preserving some aspect of the land, and they are used, have been used quite frequently. Certainly in this department I remember seeing quite a lot of them, back in the late 80s and 90s...

Phase 4 – The final framework (version 4)

I made multiple revisions to the framework between 2007 and 2009, incorporating many of the constructive suggestions and comments that I had gained through interviews, the DSE workshop, and discussions. The final version of the framework is shown in Figure 15. The key changes made to the framework in this phase (between versions 3 and 4) are listed below:

- The framework has been expanded so that it now outlines a suite of potential policy approaches, with an accepted minimum standard for biodiversity management (the duty of care standard) embedded in it. It provides a representation of how policy responses and instruments could be varied to suit a range of biodiversity management situations. The framework could be applied as a statutory instrument, or in the absence of legislation it could be applied as an instrument of governance (albeit with limitations to enforcement options).
- The duty of care standard incorporates an adaptive management cycle to facilitate learning and information flows, and is designated to operate at a landscape scale.

- Two thresholds are associated with the minimum standard, a mandatory compliance threshold and a voluntary eligibility threshold that enables managers to access to stewardship rewards and incentives (see Figure 22).
- Policy approaches to address biodiversity management that is below or beyond the minimum standard are designated to operate at a property scale.

Using the 2009 version 4 of the framework (Figure 15) I proceeded to the final stage of the research, which involved testing the framework for social acceptability in greater detail. Chapter 7 describes the findings.

CHAPTER 7

Testing the framework for social acceptability

Introduction

This chapter reports on three separate tests that were conducted during the research. The chapter is divided into three sections that report on each testing event. In the first section I report on the findings from two mail surveys conducted in the Wimmera and Corangamite regions of Victoria, designed to provide a preliminary indication of the social acceptability of a duty of care for biodiversity. The second section describes the findings from a case study that investigated the social acceptability of the framework in the Bass Coast area of Gippsland in Victoria. In the third section I report the findings of a desk-top evaluation of the extent to which the principles of smart regulation (Gunningham & Grabosky, 1998) and good governance in natural resource management (Lockwood, et al., 2010), are exemplified in the framework.

Mail surveys

As discussed in Chapter 2, social acceptability judgements are complex and largely intuitive. The mail surveys provided the opportunity for preliminary testing of the social acceptability of the duty of care concept among rural landholders. As described in Chapter 3, a small number of statements about duty of care were included in broader surveys of rural landholders in the Corangamite and Wimmera regions. The five mail survey statements are reproduced here in Table 17.

The survey items

1. Landholders have a moral responsibility to act in ways that minimise harm to native plants and animals.

This statement was included in the Corangamite survey only. It was designed to test the social acceptability of a duty of care for biodiversity as a broad, moral concept, with no reference made either to the term “duty of care” or duty of care as a legal instrument. My expectation, based on social acceptability theory (Stankey & Shindler, 2006), was

that this survey item, as an abstract concept, would elicit stronger support than items addressing more specific aspects. The statement was not included in the Wimmera survey, so that the limited space in that survey could be directed towards aspects that were expected to be more contentious.

Table 17 Mail survey statements

Corangamite (Curtis et al., 2006)
1. Landholders have a moral responsibility to act in ways that minimise harm to native plants and animals.
2. It is reasonable that the wider community asks landholders to act in ways that will not harm native plants and animals.

Wimmera (Curtis et al., 2008a)
3. It is fair that the wider community asks landholders to manage their land in ways that do not cause foreseeable harm to the environment.
4. In future, landholders should expect to be legally responsible for managing their land in ways that will not cause foreseeable harm to the environment.
5. Using industry standards developed with landholder input would be an acceptable way of determining if land is managed responsibly.

2. It is reasonable that the wider community asks landholders to act in ways that will not harm native plants and animals.

The statement explored the social acceptability of a normative duty to not harm native animals and plants. It invited participants to consider whether it was reasonable for the wider community to have a say in their management towards biodiversity. An important element of the framework was the committee of reasonable people, a community-based committee comprising representatives from the “community of interest” associated with biodiversity management. Representation on the committee would potentially include non-local interests. This statement explored the social acceptability of having the interests of the wider, non-local community towards biodiversity, being considered. The term “reasonable” was used, as a term that is closely linked with the language of duty of care. This statement was included in the Corangamite survey.

3. It is fair that the wider community asks landholder to manage their land in ways that do not cause foreseeable harm to the environment.

A statement exploring the social acceptability of a normative duty of care for biodiversity was also included in the Wimmera survey. The wording of this statement was altered slightly, substituting the word “fair” for “reasonable”, and setting the

statement in the present tense. “Fair” and “reasonable” are terms that are frequently used conjointly, and arguably as synonyms. While “reasonable” may be linked to the duty of care concept, the word “fair” has no clear association with it. The change in wording for this survey item offered potential benefits in distancing the statement from the concept of a legal duty of care (so that responses were less likely to be influenced by an attitude towards a legal instrument), and also in observing whether there were any noticeable differences in the responses to items 2 and 3. A grammatical shift to the present tense created a sense of immediacy in the statement.

4. In future, landholders should expect to be legally responsible for managing their land in ways that will not cause foreseeable harm to the environment.

The focus of my research was on examining whether a legal (statutory) duty of care for biodiversity could be applied. This statement referred specifically to a legal instrument that could underpin the moral responsibility towards biodiversity, and was intended to provide preliminary insight into the social acceptability of a statutory duty of care among rural landholders. It provided a contrasting scenario to those alluded to in the previous survey items. The statement was included in the Wimmera survey only.

5. Using industry standards developed with landholder input would be an acceptable way of determining if land is managed responsibly.

Supporting practices form an important element of the duty of care framework (see Figure 15, inside back cover). I envisaged that supporting practices could be developed collaboratively by researchers, industry representatives and landholders, and presented in the form of codes of recommended practice, similar to those used in industry standards. This statement explored the acceptability of industry standards, developed with input from landholders, as a way of describing responsible land management. The statement was included in the Wimmera survey only.

The findings

Analysis of data from the mail surveys identified significant differences in responses from participant groups in the two survey regions, Corangamite and Wimmera. These results have been published (Earl, Curtis, Allan, & McDonald, 2010).

Participant groups

As explained in Chapter 3 (see p.99), landholders were assigned attributes which, based

on previous analyses (Curtis, et al., 2006; Curtis, et al., 2008) showed significant differences on key items in surveys of attitudes, values and implementation of management practices. To verify the suggestion that farmers were more likely to be long-term property owners (≥ 10 years), long-term settlers in the district (≥ 10 years), and resident landholders than non-farmers, the data were analysed using a two-tailed Proportions test. Farmers and non-farmers were compared for each of the three attributes individually, and for all attributes combined. The results, shown in Table 18, indicate that farmers are more likely to be longer-term settlers in the district, longer-term property owners, and resident landholders than non-farmers. Differences between farmers and non-farmers are highly significant ($p < 0.001$) for all comparisons.

Table 18 Relationship between farmers/non-farmers and three key landholder attributes

	Longer-term settlers in district (≥ 10 years) (A)	Longer-term property owners (≥ 10 years) (B)	Resident landholder (C)	Combined attributes (A + B + C)
Corangamite				
Farmers	96% (n=243)	91% (n=237)	88% (n=226)	81% (n=221)
Non-farmers	66% (n=202)	66% (n=205)	66% (n=198)	44% (n=188)
Wimmera				
Farmers	95% (n=321)	92% (n=313)	92% (n=322)	84% (n=308)
Non-farmers	78% (n=153)	71% (n=151)	50% (n=157)	38% (n=144)

Responses to survey items

To simplify the presentation of data, responses to the survey items have been grouped into three categories – “agree” (combining agree and strongly agree), “disagree” (combining disagree and strongly disagree), and “not sure”. “Not applicable” responses are shown in data tables, but were not included in analyses to determine statistical significance. In discussing the results, “disagree” and “unsure” percentages have often been combined, especially where “unsure” responses formed a substantial proportion. The assumption here was that the primary determinant of interest was between respondents that agreed, and those that did not (i.e. disagree + unsure).

Support for duty of care as a moral concept

In the Corangamite region there was substantial agreement overall (73%) with the statement that landholders have a moral responsibility to minimise harm to native plants

and animals (see Table 19). Among farmers (52% of the respondent sample) 67% were in agreement, but a substantial minority either disagreed (14%) or were uncertain (12%). It is tempting to conclude from these results that the concept of a duty of care is broadly acceptable across the range of rural landholders in the Corangamite region. However, as other research has shown, support for abstract concepts is often accompanied by limited understanding of the likely impacts and consequences, or the alternatives (Stankey & Shindler, 2006).

The difference in mean responses was statistically significant ($p < 0.05$) for all paired groups tested, suggesting support for the moral foundation for a duty of care was stronger among non-farmers, new settlers in the district, newer property owners and non-residents. Refer to Table 19. While the proportion of farmers to non-farmers was roughly similar (52:43), proportions in other groupings were quite disparate: longer-term settlers versus new settlers (80:16), long-term property owners versus new owners (78:20), and residents versus non-residents (73:21). The strongest support was found among the smaller segment of the respondent groups.

Table 19 Landholders have a moral responsibility to act in ways that minimise harm to native plants and animals (rural landholders, Corangamite 2006, N= 486)

	Agree	Not sure	Disagree	N/A	Significance
Overall	73%	13%	12%	1%	
1a Farmers (n=238, 52%)	67%	18%	14%	1%	$p < 0.01$
1b Non-farmers (n=199, 43%)	82%	9%	9%	1%	
2a Longer-term settlers (≥ 10 years) in the district (n=370, 80%)	71%	16%	12%	1%	$p < 0.01$
2b New settlers (< 10 years) in the district (n=76, 16%)	87%	3%	9%	1%	
3a Longer-term property owners (≥ 10 years) (n=359, 78%)	70%	16%	13%	1%	$p < 0.01$
3b Newer property owners (< 10 years) (n=90, 20%)	89%	2%	8%	1%	
4a Resident on property (n=334, 73%)	72%	16%	11%	1%	$p < 0.05$
4b Non-resident (n=95, 21%)	81%	7%	11%	1%	

Support for duty of care as a social norm

The majority of Corangamite respondents (54%) agreed with the statement that it is reasonable that the wider community asks landholders to act in ways that will not harm native plants and animals, but support was stronger among non-farmers (69%) than farmers (44%) Refer to Table 20. Newer settlers in the district, newer property owners

and non-resident property owners indicated significantly greater support for the proposition ($p < 0.01$) than their paired counterparts, but represented smaller segments of the sample population. Importantly, among all respondent groups a substantial minority either did not agree or were unsure about the proposition (44%), and among farmers the majority did not agree or were unsure (54%). So again the strongest agreement was found among the smaller segment of the respondent group.

In contrast to Corangamite, the majority of farmers in the Wimmera survey (52%) agreed with the similar statement that it is fair that the wider community asks landholders to manage their land in ways that do not cause foreseeable harm to the environment, although a substantial minority of farmers either disagreed or were uncertain (48%) Refer to Table 21. Among non-farmers there was 68% agreement, with 31% either disagreeing or not sure, reflecting a similar response to Corangamite.

Table 20 It is reasonable that the wider community asks landholders to act in ways that will not harm native plants and animals (rural landholders, Corangamite 2006, N= 486)

	Agree	Not sure	Disagree	N/A	Significance
Overall	54%	20%	24%	2%	
1a Farmers (n=237, 52%)	44%	23%	31%	1%	p<0.01
1b Non-farmers (n=198, 43%)	69%	17%	14%	1%	
2a Longer-term settlers (≥ 10 years) in the district (n=369, 80%)	51%	21%	26%	1%	p<0.01
2b New settlers (< 10 years) in the district (n=76, 17%)	68%	17%	13%	1%	
3a Longer-term property owners (≥ 10 years) (n=357, 78%)	51%	22%	25%	1%	p<0.01
3b Newer property owners (<10 years) (n=90, 20%)	69%	14%	14%	2%	
4a Resident on property (n=334, 73%)	52%	22%	25%	2%	p<0.01
4b Non-resident (n=95, 21%)	68%	16%	15%	1%	

However, in the Wimmera survey non-farmers represented only 32% of the sample population in 2008. In other groups there was majority support for the statement, but among long-term settlers, long-term property owners and residents, substantial numbers of respondents (45-46%) either disagreed or were uncertain.

The mean variation was statistically significant for each paired group, but the proportional representation of each group was quite disparate. In Wimmera, farmers represented 66% of respondents, long-term settlers 86%, longer-term property owners

82%, and residents 76%, consistent with the traditional production landscape for the region. These proportions are slightly higher than in Corangamite, where amenity or lifestyle landscapes are more widespread (Barr, Wilkinson, & Karunaratne, 2005) and the extent of production landscapes is diminishing.

Table 21 It is fair that the wider community asks landholders to manage their land in ways that will not cause foreseeable harm to the environment (rural landholders, Wimmera 2008, N= 503)

	Agree	Not sure	Disagree	N/A	Significance
Overall	57%	21%	21%	1%	
1a Farmers (n=316, 66%)	52%	23%	25%	1%	p<0.01
1b Non-farmers (n=154, 32%)	68%	18%	13%	1%	
2a Longer-term settlers (\geq 10 years) in the district (n=414, 86%)	54%	22%	23%	1%	p<0.01
2b New settlers (< 10 years) in the district (n=49, 10%)	84%	12%	4%	0	
3a Longer-term property owners (\geq 10 years) (n=393, 82%)	55%	21%	24%	1%	p<0.01
3b Newer property owners (<10 years) (n=69, 14%)	75%	17%	6%	1%	
4a Resident on property (n=368, 76%)	54%	22%	24%	1%	p<0.01
4b Non-resident (n=108, 22%)	69%	17%	13%	1%	

Support for a duty of care as a legally defined instrument

Most Wimmera respondents did not agree with the statement that in future, landholders should expect to be legally responsible for managing their land in ways that will not cause foreseeable harm to the environment (Table 22). There was a fairly even distribution of those who agreed (36%) and those who disagreed (37%), and a significant proportion who were unsure (26%). When looking at the pair-wise comparisons, there was a low level of acceptability for this proposition among farmers, longer-term settlers, longer-term property owners and those residing on properties. This statement elicited the least support among farmers at 41%.

Even among non-farmers and non-residents there was only minority support for the statement (48% and 42% respectively), with most respondents disagreeing or uncertain. In each group at least 23% of respondents were unsure, indicating there was a potentially large “swinging” element of the Wimmera landholder community where the topic of a legally defined duty of care is concerned. No clues to the underlying reasons

for the high level of disagreement and uncertainty could be deduced from the data, suggesting a need for further research to explore this aspect. The survey results suggest that low social acceptability would pose major impediment to the implementation of a statutory duty of care.

Table 22 In future, landholders should expect to be legally responsible for managing their land in ways that will not cause foreseeable harm to the environment (rural landholders, Wimmera 2008, N= 503)

	Agree	Not sure	Disagree	N/A	Significance
Overall	36%	26%	37%	1%	
1a Farmers (n=316, 66%)	30%	27%	41%	1%	p<0.01
1b Non-farmers (n=153, 32%)	48%	25%	27%	1%	
2a Longer-term settlers (≥ 10 years) in the district (n=414, 86%)	32%	27%	40%	1%	p<0.01
2b New settlers (< 10 years) in the district (n=48, 10%)	67%	23%	10%	0	
3a Longer-term property owners (≥ 10 years) (n=394, 82%)	33%	25%	41%	1%	p<0.01
3b Newer property owners (<10 years) (n=67, 14%)	54%	34%	12%	0	
4a Resident on property (n=368, 77%)	34%	26%	39%	1%	p<0.05
4b Non-resident (n=107, 22%)	42%	25%	33%	0	

In all pair-wise comparisons, the differences between groups were statistically significant, with the differences between residents and non-residents being less pronounced than with the other groups. As with previous results however, it must be remembered that some groups were represented by relatively small proportions of respondents, e.g., non-farmers (33%), new settlers in the district (10%), new property owners (14%), and non-residents (22%).

Support for codes of conduct

More respondents agreed (39%) than disagreed (17%) with the statement that using industry standards developed with landholder input would be an acceptable way of determining if land is managed responsibly, but a large number were not sure (43%) (Table 23). A similar response came from farmers as a group, with more agreeing than disagreeing, but many were unsure. Among non-farmers 48% agreed, and a small number disagreed (10%) but 41% were unsure. Among the other groups more respondents agreed than disagreed, but there were higher numbers of respondents who

were uncertain about the statement. Support was highest among new settlers in the district (69%) and newer property owners (57%).

Table 23 Using industry standards developed with landholder input would be an acceptable way of determining if land is managed responsibly (rural landholders, Wimmera 2008, N= 503)

	Agree	Not sure	Disagree	N/A	Significance
Overall	39%	43%	17%	1%	
1a Farmers (n=316, 66%)	35%	43%	20%	1%	p<0.01
1b Non-farmers (n=152, 32%)	48%	41%	10%	1%	
2a Longer-term settlers (\geq 10 years) in the district (n=412, 86%)	36%	46%	17%	1%	p<0.01
2b New settlers (< 10 years) in the district (n=49, 10%)	69%	20%	10%	0	
3a Longer-term property owners (\geq 10 years) (n=393, 82%)	36%	45%	18%	1%	p<0.01
3b Newer property owners (<10 years) (n=67, 14%)	57%	34%	7%	2%	
4a Resident on property (n=368, 77%)	38%	42%	18%	2%	Not significant
4b Non-resident (n=106, 22%)	44%	43%	12%	0	

Among residents more respondents were uncertain (42%) than agreeing (38%), and among non-residents similar numbers agreed (44%) or were uncertain (43%). All pairwise comparisons were statistically significant except for residents versus non-residents. However, as with the previous statements, it must be remembered that the support was higher among groups that currently represent a small proportion of respondents.

The use of industry standards to provide quality assurance has become well established around the world. In the Australian agricultural sector, programs like Environmental Management Systems (EMS) include provision for industry standards and codes of practice. The statement that industry standards for biodiversity management, developed with landholder input, could be used as an indicator of compliance drew the least conclusive responses in the survey, with high levels of uncertainty in all groups (Table 23).

Summary

The findings from these surveys suggest that a moral concept of a duty of care for biodiversity is socially acceptable to a substantial majority of rural landholders (73%), with only 12% expressing disagreement (see Table 19). However, specific aspects of a

duty of care, including the role of a community of interest in setting standards for biodiversity management, the prospect of a legally defined duty, and the prospect of industry standards being used to determine acceptable management, were not received with the same degree of support. These contrasting findings, between the abstract and more tangible propositions, are consistent with others reported by Stankey and Shindler (2006). The results provided valuable signposts, highlighting the need to explore social acceptability of duty of care in ways that stakeholders could relate to their own circumstances. These results also provided a clear indication that a detailed exploration of landholder attitudes towards the framework would be valuable. By examining attitudes towards individual elements of the framework, a more nuanced assessment of its social acceptability might be made. Farmers stood out as an important and highly organised group that were currently not overly supportive of the duty of care aspects explored in the survey. With these results in mind I proceeded to the next stage of testing the framework, a case study in the Bass Coast area of southern Victoria.

The Bass Coast case study response

As explained in Chapter 3 I was looking to test the framework in an optimal setting. I assumed that if the framework could not attain a reasonable level of social acceptability in an area with high levels of human and social capacity, then it would be safe to conclude that it would not be successful in other areas with lesser capacity. The Bass Coast area was suitable, because the Landcare network had recently conducted a stewardship trial, which incorporated some of the features of the framework. I conducted interviews with twenty-three purposively chosen stakeholders. Refer to Chapter 3, p. 101 for details about selection procedures.

This section describes the findings about a case study testing for social acceptability of the duty of care framework. As explained in Chapter 3 (p. 107), I have scored the coded interviews to construct a social acceptability scale that enabled me to rank each respondent, based on their comments about individual framework elements, and the framework overall. In the following sub-sections I will firstly present a summary of the findings. Then I will discuss the social acceptability of the framework in greater detail, describing the findings relating to core elements of the biodiversity standard – desired outcomes; supporting practices; the committee of reasonable people and; the adaptive management cycle (Figure 15, see fold out copy in back cover). Non-core elements of the framework are then discussed in order of diminishing ranking for social

acceptability. These non-core elements include: approaches to above-standard management; provision of education, information and training opportunities; articulation of a minimum standard of biodiversity management; compliance; enforcement; and transitional assistance. In total twelve elements are discussed. Where support was strong, elements are discussed briefly. More detailed consideration is given to aspects that attracted moderate or low social acceptability, and which appear to be more contentious. Finally in this section I will discuss the response to the framework overall, based on comments made directly during the interviews.

Summary of results

Social acceptability of the framework was interpreted by considering the relative proportion of respondents whose comments indicated unconditional, conditional acceptability, or no acceptability. The absence of comment about a particular element of the framework was also noted. To organise the results, elements of the framework were grouped into three broad categories of acceptability based on the responses of interviewees. Table 24 presents the summary data.

As the sample numbers for some of the sub-groups were very small, it was considered inappropriate to analyse results statistically. Analysis of results is therefore limited to proportional and percentage measures, and the focus of discussion is on results that show “clear” patterns or differences.

Group 1 - Strong acceptability

The framework elements in the first group (highlighted green in Table 24) were considered acceptable overall, in that more respondents expressed unconditional acceptability than conditional acceptability, and there was little or no indication of unacceptability. Education, awareness, and training provisions stood out as the framework element with the strongest social acceptability, with fifteen respondents (65%) expressing unconditional acceptability for them. Approaches to above-standard biodiversity management, were also viewed positively by sixteen (70%) respondents (Table 24). Eleven respondents expressed acceptability for the adaptive management provision in the framework, including nine (39%) who expressed unconditional support. However a substantial proportion of respondents (48%) made no comment about this element. Eleven respondents (48%) expressed support for the idea of an eligibility threshold, including eight (35%) whose support was unconditional. However, ten

respondents (43%) did not comment on this element, and one (5%) found the idea unacceptable.

Table 24 Summary of social acceptability of the framework elements

Framework element	Social acceptability of the duty of care framework elements* (N= 23)				
	Unconditionally acceptable	Conditionally acceptable	Not acceptable	Non-committal/ Unsure	No comment
Education, awareness, training	15	0	0	1	7
Approaches to above-standard management	10	6	1	1	5
Adaptive management	9	2	0	1	11
Eligibility threshold	8	3	1	1	10
Articulation of a standard for biodiversity management	7	11	1	1	3
Transitional assistance	6	12	2	2	1
Enforcement	3	15	3	1	1
Committee of reasonable people	0	18	3	0	2
Supporting practices	5	10	3	1	4
Compliance	1	15	2	0	5
Desired outcomes	1	11	5	3	5
Introducing legislation	3	5	12	2	1

*Researcher assigned categories, method adapted from Miles & Huberman (1994)

Group 2 - Moderate acceptability

In the second group of elements, defined as being moderately socially acceptable, a majority of respondents who commented, indicated their support was conditional (highlighted yellow in Table 24). In this group, a maximum of five respondents indicated a lack of acceptability for any particular framework element. Articulation of a standard for biodiversity management, transitional assistance, enforcement, the committee of reasonable people, supporting practices, compliance, and desired outcomes are the framework elements deemed to be moderately acceptable.

Group 3 – Weak acceptability

In the third group a majority of respondents found the framework element unacceptable. Only one element was grouped in this category — the suggestion of a legislated duty of care for biodiversity. Only eight of the 23 respondents (35%) expressed support for the idea, and 12 (52%) found the proposal unacceptable (highlighted red in Table 24).

The following sections discuss each of the twelve elements in greater detail. Social acceptability is presented in terms of all respondents, by occupational groups, and other attributes where a clear pattern is observable. Key issues are listed and discussion of underlying reasons for the concerns of respondents is also included. The overall

acceptability of the framework was also estimated. Results from both approaches suggest the framework has moderate social acceptability in its current form. More detailed discussion of the overall acceptability of the framework follows the sections addressing individual elements.

Testing the core elements of the biodiversity standard

The core part of the framework is the accepted minimum standard of biodiversity management, which I will call the biodiversity standard. The biodiversity standard consists of two core elements — desired outcomes and supporting practices. Desired outcomes and supporting practices are linked by an adaptive management cycle (Figure 15). A committee of reasonable people, although not a part of the biodiversity standard, is a key element of the framework. These four elements are discussed in this section.

1. Desired outcomes

Acceptability of the desired outcomes provisions was moderately strong, coming from 12 respondents (52%), but 11 of the supporters nominated conditions. Five respondents (22%) thought the desired outcomes were not acceptable, four of them landholders. Five interviewees made no comment. Of the 10 government participants, 50% expressed acceptability for the desired outcomes provisions (but four nominated conditions), and only one found them clearly unacceptable. Seven out of the 12 landholders interviewed (58%) expressed conditional acceptance of the desired outcomes, but four (33%) thought they were unacceptable (Table 25).

Table 25 Social acceptability of desired outcomes provisions by occupation

Occupation	No. of participants (N= 23)	Assigned Ranking*				
		Unconditionally acceptable	Conditionally acceptable	Not acceptable	Non-committal/ Unsure	No comment
State government	4	0	2	0	2	0
Regional government	5	1	2	1	0	1
Local government	1	0	0	0	1	0
Industry Rep	1	0	0	0	0	1
Farmer	6	0	3	2	0	1
Non-farmer	6	0	4	2	0	0
Time in district <10 years	3	0	3	0	0	0
Time in district ≥10 years	9	0	4	4	0	1
All	23	1	11	5	3	5

*Researcher assigned categories, method adapted from Miles & Huberman (1994)

All three landholders who had been in the district for less than 10 years expressed conditional acceptability, but among the longer term residents, four expressed conditional support, and an equal number found the desired outcomes unacceptable. No other differences between landholder cohorts were apparent.

There was broad support from respondents about having clearly articulated, outcome-based goals. For instance RESP3 underscored the importance of an outcome-based approach for accountability and forming judgements:

You need a prism to look at it and form the judgement, rather than just "Oh, yeah, they were trying hard", or all these other sloppy things that get into the practice thing, which is literally: "Did they try?" Then that slides into "Is he a nice bloke, and did we see him a lot at the meetings" or all this sort of stuff ... he may not have done them [agreed actions] because his wife is crook, or he was disorganised. They may be all very legitimate, reasonable reasons, but if that led to something not happening, then you need to know that, it's a legitimate opinion...

RESP3 (state government)

For RESP1 the desired outcomes reinforced an existing belief that state government has an important role to play in facilitating the development of a sound scientific basis for regional communities to work with:

My sense is that it just re-emphasises to me the absolute important need to actually get the right type of information out to these areas, so that they can actually use that information to inform them... RESP1 (state government)

RESP20 echoed this view, emphasising the importance of sound science to underpin the desired outcomes:

I like the desired outcomes. Having those based on some good stuff is really useful. How you get there ... useful if it's good, solid science. ...actually having something to aim for, having an articulated standard, a clear understanding of what's expected, is also a driver for people...

RESP20 (non-farmer)

Issues with desired outcomes

Despite the acceptability of desired outcomes in principle, many potential issues and conditions were raised. These were particularly salient when considering how the desired outcomes would operate as part of a statutory instrument. Issues included:

- Problems with prescribing desired outcomes in legislation.
- Difficulties in defining desired outcomes unambiguously.
- Complexity in having multiple sets of standards.
- Equity issues with regionally distinct standards.
- The potential for perverse regional standards.

Some of these issues, e.g. ways to avoid perverse outcomes, had already been raised during the workshop, and addressed during development of the framework (see Chapter 6). Other issues were new.

Problems with defining desired outcomes in legislation

The administrative complexity of prescribing and maintaining detailed descriptions of desired outcomes for multiple areas, and multiple ecosystems in legislation, mentioned by the DSE White Paper scientific panel (see Chapter 6), was also raised during the interviews:

One of the problems I would see with setting this up will be in getting agreement in what are those things, what they should be aspiring to, because you can't nail them down. And if you can't nail them down, they are always difficult to get into legislation... RESP9 (local government)

The inefficiency of the Special Area Plan model under the *CaLP Act 1994* was mentioned as an existing example where this problem arises. Special Area Plans are listed as schedules of the Act, and require parliamentary approval every time they are amended. A more agile system might see desired outcomes described in broad, encompassing terms in legislation, but the details expressed in separate documentation attached to, for instance, regional or sub-regional biodiversity management plans or strategies. This approach would overcome the problem highlighted by RESP9. It is in

keeping with the approach suggested by Gardner (1998).

Difficulties in defining desired outcomes unambiguously

I described in Chapter 6 how desired outcomes could be framed using surrogate measures of harm reduction, e.g. reductions in extent of weeds, reduction in distance between patches, reduction lengths of grazed frontage. Interviewees identified problems with this approach, particularly with defining parameters precisely:

Even the outcomes themselves could be difficult to define, “Yes you’re there, no you’re not” without ambiguity. So weed extent for example. Are we talking all weeds? Are we talking specific weeds?... RESP19 (regional government)

... how do we determine what harm is, and how much. There is a sort of measurement issue... RESP1 (state government)

The importance of having clearly defined, measurable goals (desired outcomes) cannot be overstated. Desired outcomes could provide the benchmarks from which adaptive management and monitoring could proceed. Choosing appropriate desired outcomes for local areas could be a difficult task, and an important role for state government in providing tools to assist this process is suggested. The earlier comments (p. 188) by RESP1 and RESP20 also imply a role for government in providing a scientific basis for the development of desired outcomes. RESP19 has nevertheless raised an important point about potential difficulties in defining desired outcomes clearly and measurably. To some extent this issue, which arose repeatedly during the interviews, is a result of the “emptiness” or lack of specific detail in the framework.

Complexity in having multiple sets of standards.

Interviewees from state and regional government raised concerns about administrative complexity that might arise from having regionally distinct standards, with potentially different sets of desired outcomes:

Phoof! - specifying these things though, oh, it gives me a headache. If I had to negotiate these... RESP3 (state government)

RESP3 is imagining a situation where many sets of standards for ecosystems, in many areas were being negotiated. An alternative scenario might envisage desired outcomes being developed incrementally, where there was a need to do so, in order to address a

specific, recognised problem. An incremental introduction of desired outcomes would limit the workload of all parties, and also allow for trials to be implemented and evaluated.

Equity issues with regionally distinct standards

Equity issues were also raised in connection with regionally distinct standards:

The unfortunate thing is when you're dealing with people on the ground there's often an issue with equity. And if they know that someone up the road is getting away with an activity, and they're not because they're in a more sensitive environmental area, then that could produce a lot of issues... RESP8 (regional government)

In practice equity issues may already arise, for instance if a landholder owns discrete parcels of land which happen to be in different municipalities. Examples of landholders being able to apply for incentives for one part of their property but not the other, based on Landcare boundaries are uncommon, but not unheard of (e.g. Earl, 2004). RESP20 (non- farmer) raised the issue:

... the standards of it have to be set locally, and that creates the next issue of, you know, standards for Warragul, are they the standards for Korumburra? You know, two kilometres over the hill. I've got a farm here and a farm there. Different standards?

RESP5 (regional government) recognised that the whole-of-catchment management area was too large for the purpose of allocating responsibilities for catchment-wide targets:

Our last RCS, we tried to do everything. We didn't break it down per region, we just had the themes, and we didn't have assets as specific as that, and nobody really knew what part of this target that they were responsible for. So you had to start going down a retro-fitting task of saying "What does this target mean for the different areas?" And because the target said "a 20 per cent improvement in biodiversity", what if that meant something different for the Yarra than it did out West? It's very, very difficult to try and retro-fit what that might mean...
RESP5 (regional government)

RESP18 and RESP20, both non-farmers, were supportive of desired outcomes being framed at a sub-catchment scale:

...you're on the right track when you said "a local area". You're not trying to get us here in South Gippsland, and the Wimmera people, to get an agreement on their thing... RESP18 (non-farmer)

I reckon developing standards for the description of biodiversity, and a local committee to describe what that is, is fine... RESP20 (non-farmer)

2. A committee of reasonable people to define the desired outcomes

The framework proposed that committees of reasonable people should be convened to determine the desired outcomes for ecosystems in sub-regional areas (see Chapter 6). The concept of a committee of reasonable people was broadly acceptable to 18 respondents (78%), but no-one expressed unconditional support. The three respondents (13%) who found the committee concept unacceptable included a regional government representative, a farmer, and a part-time farmer. Two respondents made no comment.

Issues with the committee of reasonable people

Respondents raised a range of concerns about the concept of the committee of reasonable people. This was not surprising, as the framework contained little detail about how committees might function. Important issues raised include:

- Authority and respect.
- Autonomy, accountability, and transparency.
- Representativeness.
- Capacity and resourcing.

Authority and respect

A number of respondents questioned what authority and respect a committee of reasonable people might have within their communities. As unelected, and potentially self-elected, representatives it was not clear to respondents if, or how, committees would establish the legitimacy and authority to determine the desired outcomes for their area. Concerns about the risk of vested interests, local capture, and a mismatch between power and responsibility underpinned many of the comments, from state and regional

government respondents, for example:

... you may end up with people that are pushing their own barrow. ... like the classic example is that you have two people from different sub-catchments, but one guy's incredibly green, and super keen on biodiversity, and he might be able to manipulate the situation so that in one catchment you have ... this rigorous set of rules, but in the other you might have people on the committee that really don't know anything about biodiversity, and they just let anything go through... RESP8 (regional government)

... most people who join committees have a personal agenda to some extent, even if their heart is on the good side of things as well. But there's a personal reason why they are interested, and perhaps that's because they've done a lot of stuff on their own property and [overtalk]... RESP7 (regional government)

... it's not an elected thing ... you've got to think about how they get to set the priorities for the whole local community... RESP3 (state government)

It becomes difficult when you have local people telling, or trying to influence, what is happening on a person's property ... it's bad enough having government, but when a "townie" is telling them, that's even worse... RESP9 (local government)

Landholders expressed varying opinions. Some found the idea of committees setting biodiversity standards appealing, although acknowledging potential difficulties with gaining authority and respect for their decisions:

I get very nervous about committees that make decisions that influence other people's livelihoods and the way in which they do their business. So setting, sort of the local parameters, I would be really, really nervous about... RESP20 (non-farmer)

With any committee you're going to have a personality clash with someone, and they would... That's where you'd have to have time for some people to see the thing, and some people might never see it

because Joe Blow is on that committee, and “I wouldn’t do what he suggested, whether or not...”, sort of thing... RESP15 (farmer)

I would hope it wouldn’t go the way of a lot of committees and things – if it was this [committee of reasonable people], it would be really great, it would be really empowering, and you would bring about really significant change that needs to happen. That’s how I feel... RESP12 (non-farmer)

Autonomy, accountability, and transparency

Several respondents expressed concern about the level of autonomy that could be extended to committees, and saw it as an accountability issue. Most respondents from state and regional government were strongly in favour of committees being held accountable to a statutory authority, rather than being wholly autonomous:

... it’s really quite critical that there is some kind of designated authority... I just think that there’s too many risks, too many risks around governance of decisions, if you like... I think decisions need to kind of rest in a slightly higher-order, establishment structure...RESP4 (state government)

...if this stands alone, and these people ultimately make the decision, who wears it when it goes pear shaped? Because I can see what’s going to happen if this was the case, and it does happen to us now where you get these little groups floating around the country, when things go pear shaped the phone rings here. ...You’re going to create an entity with this amount of power if you like, then opposite to that they’ve got to be able to wear the responsibility that goes with it, and not think that someone else will solve their issues... RESP6 (regional government)

I’d be very concerned about [a legal entity] being vested in the community, because I think the community is captured by own local politics and influences. So in some ways the advantage of having a government entity, like a department, is that it can be a bit ... hands off. It doesn’t actually get involved in the local politics... RESP1 (state government)

RESP3 echoed this view contrasting the capability for strategic thinking between state

and community agents, and alluding to the sub-principle of subsidiarity:

...I see a great wisdom in having a sort of tension between a higher level authority, and a more local authority ... both have their role to play. In the conservation game that usually means that the higher level group, notwithstanding politics, has more opportunity to think more strategically, and more long term, because it's less affected by local interest. And local interest is important, but local interest is not a good place to set standards, and that is often because it is too sensitive to local effect... RESP3 (state government)

Transparency in decision-making processes was an issue raised by state government respondents:

... this type of model ... would rely pretty heavily on ensuring it has access to the right type of information, the right processes, the right kind of controls and transparency, and all that sort of stuff. So they become quite sophisticated... RESP1 (state government)

RESP3 considered how much transparency would be sufficient for a government to establish probity in its oversight of the regional allocation of taxpayers' funds, comparing Local Government decision-making, as an elected committee using highly transparent processes, with a jury decision-making where a randomly selected committee makes decisions away from scrutiny:

So there's an interesting tension there about how transparent — you want some transparency, but if you go for maximum transparency then it becomes more and more politicised as people are mindful of everyone watching how they vote. So someone who is a local landholder who might be feeling a bit exposed by being a bit too green, or a bit too brown, or whatever, ... so there are all those issues about transparency around a ... committee of reasonable people... I think the system that works for me is where you can ... see enough of what's going on, and you don't necessarily have to see the people and their behaviour. I'm interested in seeing the results of behaviour. So if there's a system which allows me to look in to the results easily enough, then as a kind of a party with a broader responsibility, let's say, for the Victorian

community, my job is just looking in, and seeing if it looks like it's more or less on track; and if it is, then I'm not fussed, and that's that point...

RESP3 (state government)

Comments about the integration of committees were made by state and regional government respondents only, in relation to hierarchical upward accountability to state or regional statutory authorities, or when discussing types of committee models. For instance RESP6 (regional government) described the relationship between Catchment Ecosystem Advisory Groups (CEAGs) and the CMA board:

Those people [CEAG members] are from that area, those districts. So obviously that's the conduit from community, from every aspect of their interest and experiences, to feed that back through, and ultimately to the Board for that strategic level of understanding about what's actually going on out there. So in principle, what you're talking about is actually occurring... So their [the CMA board] role is to advise back to the CEAGs if you like, the appropriate processes to be able to achieve what the aspirations of the CEAGs are... RESP6 (regional government)

This perspective locates committees in a purely advisory role, whereas other government respondents envisaged committees operating with limited autonomy, within boundaries set by statutory authorities, or more autonomously still:

... if a community's not a full partner in development, for me that's a critical guidance in whether that is community-based NRM [natural resource management], or whether it's just some other sponsored form of natural resource management, and that's how I see CMNs [conservation management networks] at the moment. I think there's a willingness to lead them down a path to community empowerment, but it's not there at the moment... RESP2 (state government)

Representativeness

A number of respondents questioned how representative a committee would be, with some suggesting that committee membership can result in separation from the “rank and file” community constituency:

We've got plenty of examples of where there's been a fair bit of community momentum around things. Then things have fallen over

because they just haven't been able to sustain it, or it's had to morph into something that is much more official, and therefore it doesn't become the community anymore, ... some bureaucrat type thing...

RESP1 (state government)

Comments around the amount of consultation that might occur with landholders, and the amount of genuine input that landholders could make, also touched on the issue of representativeness. RESP18 (non-farmer) commented that opportunities for consultation would be desirable, and RESP14 (farmer) expressed a desire for comprehensive consultation, noting the time requirement involved:

... you cannot just take a handful of people all saying "that's going to be the standard", won't work. You've got to get everyone involved, and that's going to take a long time to work out what is the standard...

RESP14 (farmer)

RESP14's comment here stands in contrast to the principles of deliberative democratic processes that rely on decision-making by representative stakeholders (see Chapter 6).

A final set of comments broadly related to representation, concerned "serial committee members", individuals who belong to multiple committees:

... a problem I see with the community committee. You'll have the same group of people. Like, I won't be there, because I don't have the time. You'll have the same sort of group of people that will be..., they're available for that, and they'll be on another committee, they'll be on the Landcare, and they'll be on this, and they'll be on that... RESP21 (non-farmer)

Capacity and resourcing

Comments about the capacity of community-based committees alluded to the need for a high level of expertise, particularly in the fields of biodiversity and agriculture, either within the committee membership, or available to it from external sources. RESP3 (state government) summed up the challenge for committees of reasonable people, describing in simple terms, the complexity of their task:

... you've got to get your head around different world views, and about the merits or otherwise of certain actions.... So it's not like "What's

your personal opinion about these?” ... there are several attributes, and several different points of view, and “I need to count some of the things, and they interact with each other”... It’s the sort of thing which most regional processes couldn’t do very well. Certainly a Landcare group just isn’t going to have the capacity to do a decent version of it for the foreseeable future.

As well as resourcing in the form of outside expertise to support decision-making, other resources such as those needed for implementation, administrative support, and reimbursement for time and travel were the main issues mentioned. RESP1 (state government) also expressed concern that once they were formed, committees might have an expectation of gaining access to government funding:

If there is an expectation that “I have to be in one of these groups”, or “one of these groups has to be in existence for us to start getting this sort of help”, then that’s potentially a problem, because it can mean that the formation of the group itself is more important perhaps, than maybe what outcomes are being achieved.

There was a view that the committees might work well where communities were highly motivated to improve biodiversity outcomes, but not so well in areas where that motivation was absent:

...if you had a system like I said before, where the motivation is not to get better, and so the majority - a group of people - set a low standard, and that is the majority, and they don’t have an interest in getting better, so next time they just set the standard again. So essentially, it opens the way for a group to enshrine a low standard and to not improve.... RESP3 (state government)

3. Supporting practices

Overall the supporting practice provisions were moderately acceptable to 15 respondents (65%), with five respondents (22%) expressing unconditional acceptability, and 10 indicating conditional support. Three respondents, including two landholders and one regional government representative, found the idea of supporting practices to be unacceptable. With so many landholders expressing support for the supporting practices provisions, there were no recognisable differences between landholder cohorts.

The idea of non-mandatory supporting practices was acceptable to most landholders, and did not conflict with the strong “don’t tell me what to do” attitude expressed by many. Apart from landholders who found the supporting practices unacceptable, there was little comment to suggest landholders were greatly concerned about the need to document practices, although some thought they might need to improve the standard of their record-keeping:

Oh I don't think it would be too hard. I've sort of done a little bit with environmental best practice courses, with the Network courses, and done a whole farm planning course. I probably haven't kept it all up to date, but I don't think it would be too hard to fit into. I think I could provide a fair bit of evidence... RESP17 (farmer)

Issues with supporting practices

The main issues arising in relation to the supporting practices included:

- The need for proof.
- Mixed messages about best practice.
- Legitimacy of innovative practices.
- Managing innovative practices of landholders.
- Champions and the power of demonstration.
- Changing standards.

The need for proof

Landholders were concerned with supporting practices being based on sound information, and the concept of proof was an important driver of the social acceptability of decisions about biodiversity management:

... the individuals who are setting them would have to have really good reasons that are simple to understand, that would help me to see why it's relevant... RESP12 (non-farmer)

... one of my concerns about Landcare is that it's heading off down a track of a lot of feel-good stuff that's not supported by good science.

There's a lot of emphasis heading towards improving soil microbes, and, you know, all of this sort of stuff, and applying organic solutions, and muck and mystery, and "do stuff at the full moon".... And it's being packaged up in organic and environmental, biodiversity, sustainability stuff, which is not legitimate.... Show me the science before telling me this is good... RESP20 (non-farmer)

... when you've seen what works then you may bring it back out, and ask farmers to use it. And then if they can see that that was a good idea I'm sure that they'd be quite happy to use it, but I don't want to be experimented on... RESP22 (non-farmer)

The demand for proof was also justified by several respondents who commented on past examples of so-called "best practices" that were later disproven, identifying the lack of scientific certainty as an important barrier to adoption:

Well vegetation management is a classic, you know, even just out of good intentions. There's willows, there's marram grass on the coast, there's people planting native trees versus indigenous, and so on. We were all planting pine trees first and... RESP19 (regional government)

A lot of the things I've seen done recently with Landcare stuff up around the hills in Dargo, where they've ripped out a whole heap of willow trees because they don't think they're suitable for rivers, and then washed half the paddock down the river straight afterwards, that's been designed by people that really haven't put a lot of thought into it... RESP22 (non-farmer)

Two respondents (RESP20 and RESP16) also identified a need for supporting practices for biodiversity to be linked with production benefits, as a key driver of adoption:

... part of my gripe about the supporting practices is that a lot of emphasis on these supporting practices [shown in the framework] relates to things that are still a step removed from productivity... And anybody who is saying that dollars in the pocket at the end of the day don't matter has lost the point, because unless that is able to occur, the rest of it down the line doesn't happen... RESP20 (non-farmer)

Mixed messages about best practices

Other respondents observed that agricultural extension and research promotes practices leading to production improvements, often at the expense of biodiversity. In part this is a reflection of conflicting advice emanating from organisations pursuing different objectives, but it also points to a lack of trust in expert advice:

Best practice appears to be, in a lot of cases, higher stocking rates coming from perhaps advisors and farm consultants, you know, “maximise the usage of grass on your property”, and high fertiliser use. So farmers, in some ways, are being encouraged to get as much as they can out of their land, which might go against what I would term best practice... RESP17 (farmer)

... the current recommended practices that are developed and advocated by DPI, for example ... are very much focused on production agriculture, and I don't believe they're particularly good for biodiversity outcomes... RESP2 (state government)

... it's alright to say you have expert views but sometimes expert views aren't always expert. Very often they're someone's idea of what things should be... RESP22 (non-farmer)

Legitimacy of innovative practices

The framework seeks to encourage innovation by resource managers who might wish to explore different methods to achieve the desired outcomes. Opportunities for innovation were welcomed by many respondents, especially landholders:

I think that's [innovation] important ... there may be a better way out there, so I think that needs to be encouraged... RESP16 (farmer)

The legitimacy of innovative practices developed and undertaken by landholders was raised. RESP2 (state government) commented that landholders were currently excluded from being the developers and holders of expertise in best practices, because it is the domain of government. Consequently cases arise where officially sanctioned “best practices” are not supported by the farming community. RESP2 perceived this as a barrier to adoption, particularly where alternate practices were favoured by local landholders:

So community has no involvement in developing the practice, the agency does that as the expert holder of knowledge. So this is another blockage, another barrier to having this framework actually being operationalised... RESP2 (state government)

RESP20 (non-farmer) expressed caution about adopting innovative products and techniques until they had been scientifically tested and proven, reinforcing his earlier comment:

... Quite happy for that [innovative trials] to happen. But where it's not supported [by science] is where my concern is though... RESP20 (non-farmer)

Champions and the power of demonstration

Respondents also recognised there was a need for active champions to be promoting supporting practices within their areas. The power of demonstration was also acknowledged as a powerful driver for adoption of practices. Several landholders commented that adequate time was needed both for the development of innovative practices, and their adoption by farmers:

It takes a bit of activity to happen to inspire others. You know you might only have one person in the whole river system that does something, and then slowly one by one, others fall into line and it just happens. Whereas you can go out there and try and push people into it and it doesn't happen any quicker. I think you've got to sort of lead by example... RESP17 (farmer)

Changing standards

The greatest concern about the supporting practices was what happens when the recommendations change:

What if the landholder has already followed the recommendations and guidelines, and then they're changed, and he then has to follow a new set which costs him another lot of money? That would create justifiable resistance... RESP12 (non-farmer)

... the people who ... felt obligated, or were obliged to apply practices that were found not to work might say, “All right, how do I get compensated? I’ve had to do this...” RESP19 (regional government)

Management of changing standards is discussed in the section on transitional assistance.

4. Adaptive management cycle (including monitoring)

An adaptive management cycle is situated between desired outcomes and supporting practices in the framework (see Figure 15). Monitoring, to establish whether supporting practices are leading to the desired outcomes, is a key activity embodied within the adaptive management cycle and is discussed under this sub-heading. Other specific aspects of adaptive management were not addressed in detail during the interviews.

In total 11 respondents (48%) expressed support for an adaptive management cycle in the framework, including nine (39%) who found the idea unconditionally acceptable. However, no-one made comments suggesting it was unacceptable, and 11 respondents did not comment at all, suggesting that provision for an adaptive management cycle in the framework was either not controversial, or not well understood by a substantial proportion of the respondents.

Issues with adaptive management

Only two conditions associated with adaptive management were raised directly by respondents. They included:

- The difficulty in maintaining momentum of an adaptive management cycle.
- Expert-centred adaptive management.

In addition, two other issues have been identified:

- Need for proof – the apparent mismatch between support for adaptive management, and the need for scientific proof, identified in the previous section.
- Linguistic ambiguity in the way respondents refer to adaptive management.

Difficulty in maintaining momentum

The issue of maintaining momentum and enthusiasm for an adaptive management cycle where observable changes are small or take place over an extended period of time, was

raised:

... the challenge here will be to maintain the enthusiasm, or maintain this adaptive management cycle, to keep that rolling, because we know that people get enthused and then things don't happen, or they don't see the results that they were expecting, and then things fall away a little bit... RESP1 (state government)

Expert-centred adaptive management

RESP2 suggested that an “expert-centred” perspective held by government departments precluded the possibility of community members being the developers and holders of best practice knowledge, and was an impediment to the implementation of an adaptive management.

The adaptive management cycle can be expert-centred or it can be expert plus community centred, and at the moment if you're in my department it's expert centred. So community has no involvement in developing the practice, the agency does that as the expert holder of knowledge ... I'd like to [show] that “look, community does work with adaptive management, and it does develop new knowledge and holds it”...RESP2 (state government)

Need for proof

Comments about the need for scientific proof of benefits of supporting practices made earlier in the chapter, underscore a fundamental problem with adoption of best management practices. A key rationale for the demand of proof has been the failure of so-called best practices, such as willow removal, to meet their sustainability objectives. In an adaptive management paradigm, the notion of “best practice” would be replaced by one of “practice A being better compared to practice B” within particular settings, encompassing spatial, temporal, biophysical and climatic variation.

Linguistic ambiguity

The term “adaptive management” was used in different ways by respondents. Comments suggest there is some level of linguistic ambiguity or misunderstanding about the different types of adaptive management. The following comments by landholders, alluding to something akin to evolutionary adaptive management, can be

contrasted with the third comment by a state government respondent, who was speaking more about active adaptive management (Allan & Jacobson, 2009):

We do a lot of that, yes. You see whether it works first before you implement it over everything... RESP21 (non-farmer)

...we're experimenting with different things, seeing the effect of planting wildlife corridors, seeing the effect of organic fertilizers, those sorts of things ... We've got a diary where we've written down what we've done ... I know it's a time of change, and I know a lot of this we're finding out as we go along... RESP12 (non-farmer)

Look, it totally has to have this cycle in it because we know so little about recovery of semi-natural systems... It would need to be something which, every three or four years or, ideally, almost all the time, you're essentially refreshing with whatever the new understanding is, of how to do it... RESP3 (state government)

Adaptive management relies in part on an effective monitoring regime. For this reason issues with monitoring are included here.

Issues with monitoring

Key issues with monitoring included:

- Biodiversity characteristics.
- Establishing causal links between desired outcomes and management practices.
- Resourcing.
- The use of monitoring information for compliance purposes.

Biodiversity characteristics

Biodiversity characteristics including seasonal variation, lag phases, dormancy periods, the rates and scales of change, and the inability to measure ecological processes directly, were raised as issues with monitoring:

... Are we talking how you're going to measure them consistently? You could throw up all those sort of questions pretty easily, you know. You

can measure them at this time of year, and it's different to that time of year... RESP19 (regional government)

... I would imagine you couldn't rely on monitoring to know if you've got an improvement in one, two, three years but maybe five or 10 years... RESP5 (regional government)

Causal links between outcomes at a landscape scale to practices at a paddock scale

One of the major difficulties with measuring impacts on biodiversity (positive or negative), arises because of limitations on scientific information about causal links between actions on the ground, and biodiversity outcomes across the landscape. This problem was raised in different ways by several respondents during the interviews, for example:

It's really about getting a better handle on the relative importance of doing different interventions in the landscape, on biodiversity outcomes. So if we get back to that idea that we're really aiming for species persistence as our ultimate biodiversity outcome, that needs to translate to "I'm doing action (a), (b) or (c)" in these different... But potentially in these parts of the landscape, what impact is that going to have on biodiversity and persistence... RESP1 (state government)

Resourcing for monitoring

Doubts were raised about the likelihood of resources for monitoring being provided:

... if they're not going to monitor it, doesn't matter what rules are in place, you may as well just..., you're wasting your time... RESP14 (farmer)

The use of monitoring data for compliance purposes

Cautionary remarks about the use of monitoring data for compliance purposes (compliance monitoring) came mainly from state and regional government interviewees. Four respondents suggested that monitoring data alone could not be relied on to determine if a person was compliant with a biodiversity standard. They pointed out that there could be a range of valid reasons, not indicated by monitoring of bio-physical outcomes, why non-compliance with a biodiversity standard occurred. For instance, unexpected social situations, an intractable problem with weeds, or situations with low

potential for recovery could all contribute to a failure to reach the standard of biodiversity management. The importance of knowing these reasons was emphasised by RESP3, as a matter of accountability, rather than for punishment.

Another serious limitation with compliance monitoring for biodiversity outcomes, is the inability to “see into the space” of activities and outcomes at the level of individual properties. To attain this capability would require significant “ramping up” of investment in monitoring, and although remote sensing technology may eventually provide this level of detail, currently it is perceived to be very expensive, and potentially highly controversial. With these constraints, compliance monitoring would depend on combinations of landscape scale and local observations to gain any traction.

Testing non-core elements of the framework that are strongly acceptable

1. Approaches to above-standard management

The framework proposes that a range of potential rewards would become available for resource managers voluntarily operating at a standard beyond the duty of care for biodiversity (Figure 15). Sixteen respondents (70%) commented favourably on the provisions for beyond-standard management. In addition, five respondents (22%) made no comment, and only one (4%) suggested the approach was not acceptable. Ten of the 12 landholders interviewed expressed unconditional or conditional support.

2. Eligibility threshold

The framework included an eligibility threshold whereby land managers could choose to pursue management beyond that of the biodiversity standard. By implication this management would be seeking to achieve outcomes that were additional to those specified in the standard. In doing so land managers would become eligible for a broad range of other incentives and rewards. A decision to cross this threshold was envisaged as entirely voluntary. Eleven respondents (48%) found the idea of the eligibility threshold acceptable, including eight (35%) who expressed unconditional support. Some considered that the eligibility threshold provided a positive incentive for landholders to reach the higher standard. Some thought it represented a fairer way of allocating funds, by giving preferential access to rewards to those who had already demonstrated a commitment to responsible land management, rather than handouts without any commitment to ongoing maintenance:

The thing I think about it is that those moneys that are made available would be better used by someone that was in this category. They've got their mind in the right place as to what they want to do... RESP15 (farmer)

...that idea is that you have to have your priorities set, and all that, and you have to be in it before you can apply, get all those. That's a good idea. That's an incentive... RESP18 (non farmer)

Some respondents also alluded to existing programs, including the Bass Coast Land Stewardship Trial, where an eligibility threshold limits access to stewardship incentives.

There was little information offered by respondents to suggest dissatisfaction with this eligibility threshold, except for one farmer. RESP11 was amenable to the provisions for a higher of standard management, but disliked the eligibility threshold because of its potential to set farmers against each other, in a competitive way:

...the worst thing is you'd have farmers competing against farmers, because then you end up getting a heart attack.

3. Provision of education, information, and training opportunities

The provision of education, information, and training opportunities was seen as unconditionally acceptable to 15 respondents (65%), including 11 (48%) of the 12 landholders interviewed, and no-one indicated that it was not acceptable. Seven respondents (30%) made no comment.

Many respondents spoke of the importance of education, information, and training for what they called “tree-changers”, urban people moving to rural properties for the first time. Respondents characterised these people as having poor understanding about how to manage land or biodiversity well, and as being a key audience for the educational component of the framework:

They may be very smart intelligent people, but they haven't got a clue when you get to this. You know, they've got a paddock, that's it. It's an investment area... RESP21 (non-farmer)

Testing non-core elements of the framework that are moderately acceptable

1. Articulating a minimum standard of biodiversity management

Eighteen respondents (78%) favoured having minimum standards for biodiversity articulated, with only one landholder expressing outright opposition. Seven respondents (30%) expressed unconditional acceptability, while 11 (48%) indicated there were conditional aspects to their support. Overall, the social acceptability of articulated minimum standards for biodiversity was moderately high.

Government respondents identified a range of benefits that could flow from articulated standards for biodiversity. These included helping to keep biodiversity on the political agenda, and potentially adding clarity to existing provisions of the *Catchment and Land Protection Act 1994*. A key benefit of articulating biodiversity standards was in having a statement of value for the “voiceless” biodiversity that could “push against” other statements of value:

...if your interest area doesn't have an equivalent duty of care, then you start to get “done over” sort of thing, because the notion of “reasonable” and “foreseeable”, and all those kind of words ... they work best when they bang up against the next bubble of reasonableness and foreseeableness... If they've both got the same sense of words, then they can kind of bang up against each other, and find a boundary to their behaviour, whereas in the kind of “protecting humans” sphere, like in a national park, you've got to do everything you can to make sure..., so Parks Victoria are always running round managing its duty of care for the park users, but the more they do that, the more it impinges on the unstated duty of care for the park values... RESP3 (state government)

Most regional government respondents thought articulated standards for biodiversity would assist them to achieve their goals, although one respondent was not sure if they would help at all. The local government respondent commented that articulation in legislation was necessary before local government could act on them. Most landholders too, expressed conditional support for the idea of articulated standards for biodiversity management.

Issues with articulating a minimum standard of biodiversity management

Issues underpinning the conditional acceptability of an articulated minimum standard included:

- The need for government to operate at the same standards.
- The proviso that standards were not too restrictive.
- The proviso that sufficient time was allowed for their introduction.

These issues are self-explanatory, and in the interests of limiting the size of the thesis, no further discussion of them is made. The most commonly expressed condition, across all respondents who commented, was that articulated standards should not be legislated. This is addressed specifically in the section on introducing a duty of care as a statutory instrument.

2. Compliance

Compliance processes incorporated into the framework include determinations of compliance or non-compliance with the standard of biodiversity management, and the extension support offered to assist non-compliant land managers to move towards a compliant state. It does not include processes associated with enforcement using punitive sanctions. Transitional assistance is discussed separately in the following section.

To delineate the boundary between compliance and non-compliance, the framework contains another threshold, which I have called the mandatory compliance threshold (see Figure 22, p.171). Determination of compliance or non-compliance would be based on whether a resource manager was taking reasonable steps (based on adoption of the supporting practices or innovative practices), to avoid foreseeable harm to biodiversity (based on the desired outcomes). Compliance would be assessed at the property scale. A decision of non-compliance would provide the trigger for educational or information options, transitional assistance options, or last resort enforcement options.

Sixteen respondents (70%) found the idea of compliance as shown in the framework to be acceptable, but 15 (65%) nominated conditions attached to acceptability. Two respondents (9%), a farmer and a non-farmer, found the idea unacceptable. No patterns in cohorts were evident in the data.

The concept of tiered regulation or “soft law” was appealing to many respondents. The comment by RESP11 typifies the response:

...I know the guy who's over here at Ellinbank who does a lot of that work, but he'll go out there and sit down and have a cup of coffee and talk to you about the problem, but he'll also go out to you with some advice how you can fix it. Some of these blokes say, "Right, you are not to let that manure go in the creek but we're not going to tell you what to do, because you might sue us if it didn't work". So you then, don't know where to go. So it should be, "If you've got a problem and you want, we'll help, we'll help, we'll help". And then after 3 months, if nothing's happened and you can say, "Well, look, mate what do you want to do? What are you going to do? These are your options"... RESP11 (farmer)

Issues with compliance

RESP22 (non-farmer) found all aspects of compliance and enforcement unacceptable, except where they concerned weeds. Other specific issues mentioned were:

- Logistical problems with third-party monitoring of biodiversity management on private property
- Resourcing.
- Making yes/no “gateway” decisions
- The need for a permeable compliance threshold.
- Who should conduct compliance activities.

Logistical problems with third-party monitoring of biodiversity management on private property

Problems with third-party monitoring of biodiversity management on private land have already been discussed in the discussion about monitoring. RESP14 (farmer) felt this issue was sufficient to make the compliance provisions in the framework unacceptable, while others considered the problem as challenging but not enough to negate the acceptability entirely.

Resourcing

Allied to the previous issue, resourcing for compliance activities was also identified as a potential problem, by two government respondents:

...there's a big cost in ramping up something like that and you'd have to be very clear about how much is that literally going to cost and what the benefit is and what we're going to get out of that... RESP1 (state government)

...I think it would be a money-chewer, getting people out visiting properties, assessing properties... RESP5 (regional government)

Making yes/no "gateway" decisions

The framework has a compliance threshold built into it, but little detail about how compliance decisions could be made. Respondents suggested issues such as legitimacy, knowledge and capacity, subjectivity, vested interests, data integrity, and skill deficiencies, already discussed in relation to other elements of the framework, were also significant factors that could lead to contested decisions, as well as potentially expensive and counter-productive outcomes here. The use of a computer-based modelling tool, using criteria to make decisions, was suggested as a solution to this problem. The EnSym program, previously known as the Catchment Management Framework (Eigenraam, et al., 2005), used in the Bass Coast Land Stewardship trial could potentially be applied in this way. EnSym allows outcomes across multiple environmental attributes, including carbon, terrestrial biodiversity, aquatic functions and salinity, to be estimated from on-ground actions in particular landscape settings (Eigenraam et al., 2005).

The need for a permeable compliance threshold.

RESP3 and RESP1 (both from state government) spoke at length about thresholds, based on their past experience with policy development in the natural resource management area. They suggested that yes/no "gateway" decisions should be avoided in policy instruments, because they attract maximum resistance. For threshold decisions, including decisions about compliance and non-compliance, the focus of policy development needs to be on making the threshold permeable under appropriate conditions while still retaining clearly defined boundaries:

...as soon as you invent a split or a threshold, you've got to think hard about how to move people ... from one side to the other... So there's something about this magic of having boundaries, but allowing people..., having good processes to transition across the boundaries...

RESP3

In this sense the threshold needs to present a clear barrier, but a one-way pathway to negotiate the threshold also needs to be in place. The duty of care model presented by Young et al. (2003) envisaged penalties and discouragement would be the mechanisms driving the one-directional pathway. I envisage something similar would operate with my framework, but educational opportunities and transitional assistance would provide additional drivers for compliance. In addition, repeated attempts to cross the threshold should be permissible, so that an initial verdict of non-compliance is not necessarily a final one. The multiple pathways identified in the framework to facilitate compliance, go some way to achieving this end.

Who should conduct compliance activities?

In the framework I had envisaged that the committee of reasonable people might play a role with compliance activities, in addition to their role in deciding on desired outcomes. Responses to this suggestion were mixed, with some supporting the idea, and others expressing concern about the potential workload on volunteers, and the implications of decision-making by peers. A range of suggestions about who should initiate compliance action were made. Neighbourly chats were considered variously as effective or not effective:

...if I couldn't get through to that person, that neighbour, no one else will... RESP14 (farmer)

I didn't try to bully him or anything, I just went and suggested "Do you think this'd be a good idea?", and he just said "No"... RESP15 (farmer)

Other suggestions included a Landcare representative, a respected and informed member of the local community, a farming leader, a Local Government representative, or a third party combined compliance/enforcement agent. This last suggestion was a novel one, slightly "outside the square" in its thinking but worthy of merit:

...let's say DSE are at the very top. I would nearly suggest that once you come from DSE down to the policy group [committee of reasonable

people], and then underneath that policy group you would then have a policeman if you like. That policeman I believe should nearly be a private tier ... it could be like a contracted organisation if you like, that might only be half a dozen people ... it could even be the actual police force itself ... They could employ a private tier under their banner...

RESP10 (industry representative)

RESP6 (regional government) described how the Environment Protection Authority and the Department of Primary Industries operate as a tag-team to conduct compliance and enforcement activities in Gippsland, citing this as a good working arrangement.

3. Transitional assistance

The concept of transitional assistance was supported by 18 respondents (78%), with 6 (26%) expressing unconditional acceptability, and 12 (52%) expressing conditional support. Two landholders (9%) found the concept unacceptable, and both were beef farmers who had lived in the district for over 10 years.

Transitional assistance, as a one-time offer, was viewed favourably by state and regional government respondents, and most landholders. In particular, a ratchet system that doesn't allow backsliding was supported:

I've heard about that as a process that might have been used in Denmark to bring landholders all under the line. They had a stepped system to bring them up to the line, and once they got to the line they were on their own. But I think there were penalties for going back under... RESP4 (state government)

Transitional assistance was seen as a fair way to help landholders adjust from past policies which have been harmful to biodiversity. Time-limited assistance to help support changes, with clear forewarning, and a diminishing level of assistance over time was also supported, and seen as something that governments might find more palatable than open-ended funding programs. RESP10 (industry representative) likened it to the way exceptional circumstances (EC) payments are pulled away as times get better.

Issues with transitional assistance

The main issues with transitional assistance included:

- A dislike of the “gateway” yes/no decision-making.

- A perception that it was discriminatory.
- A need for appropriate time-frames.

Gateway decision-making

Several respondents expressed dislike for the yes/no gateway decisions identified in the framework (see the Compliance section), considering them to be highly vexing, undiscoverable and contestable. (RESP3, RESP1). The use of market-based instruments (MBIs) was suggested as a more suitable mechanism for fulfilling the function without the same degree of problems arising (RESP3, RESP8).

Perception of discrimination

One landholder who disagreed with the idea of transitional assistance felt that it was discriminatory, and that financial assistance should be available to any landholder regardless of capacity. Another, RESP13 (farmer), supported the idea of transitional assistance but felt that the government should just pay to get everyone up to standard, as a way of denying landholders the right to complain or resist. RESP3 suggested that if MBIs were used in this context, there would not be a need to run them separately from MBIs operating in stewardship programs for beyond-compliance management.

Flexible time-frames

The need for transitional assistance to operate with flexible time-frames was suggested, for instance, where a landholder had short term cash-flow problems (RESP6). A flexible and extended time-frame was preferred by RESP11 (farmer) and RESP15 (farmer).

4. Enforcement

The importance of enforcement was acknowledged by most interviewees, but a number of important issues with the framework provisions were raised, and the social acceptability was rated as moderate. Eighteen respondents (78%) thought the enforcement provisions were acceptable, and but only three (13%) expressed unconditional acceptability for them. Three landholders, all beef farmers, and all resident in the district for more than ten years, found the enforcement provisions unacceptable. Two respondents cited the past inadequacies of enforcement efforts by local and state governments as reasons for unacceptability. The third response was grounded in a belief that government has no right to interfere with private land

management.

There was strong support for the alternative pathways to compliance offered in the framework, and also acceptance from most interviewees that negative sanctions needed to be there as a last resort. Respondents recognised the importance of having credible sanctions that could be carried out when called for, and that were commensurate with the harm being punished:

The rich people say “I’m going to pay the fines”. They don’t care about a few hundred dollars when they are planning for a subdivision in the future worth a few million dollars... RESP18 (non-farmer)

Twenty per cent of people do the right thing all the time... Ten per cent of the population never do the right thing... And then there’s the 70 per cent who will do the right thing depending upon what they see happening to the 10 per cent... RESP20 (non-farmer)

You probably need the stick to make an example of people now and then... RESP8 (regional government)

Issues with enforcement

- Lack of political will and resources
- Enforcement responsibility

Lack of political will and resourcing

Lack of political will and resources to carry out enforcement was identified as a key issue. The framework is set up so that enforcement using punitive sanctions is the measure of last resort, and in theory at least, it should be the measure resorted to least.

Enforcement with negative sanctioning is not the preferred approach among state and regional government respondents, particularly where social acceptability is low:

... that’s where government is typically weak. So it will tend to choose every other route other than going hard on an individual, because that looks like the government ganging up on someone... RESP1 (state government)

RESP9 gave a harsher assessment, and RESP18 doubted the political will would ever be there:

...basically all governments are pretty gutless, and everyone loves to do education, everyone loves the soft things, but nobody likes doing the hard things ... governments don't want to enforce because it can become politically troublesome for them, and costly ... The lack of resources or will to do the enforcement side of it ... when it gets to the pointy end of the enforcement, it's hopeless... RESP9 (local government)

I don't think there'd ever be a court, a jury or a judge or anything that would fine a farmer for abusing a natural thing... RESP18 (non-farmer)

RESP19 (regional government) expressed a strong preference for building community norms around environmental care, although conceding that it wasn't happening fast enough, but RESP8 (regional government) wondered whether that approach would ever be strong enough to make the necessary difference to biodiversity outcomes:

Enforcement responsibility

The majority of respondents (61%) were emphatic that enforcement should be carried out by state or local government, but some suggested that it should not be the government:

It needs to be a government authority... RESP20 (non-farmer)

The trouble we have with these types of things Gill is that all the government bodies, whether it be Southern Rural Water, whether it be DPI, whether it be EPA, it doesn't matter who it is. They're a government body, and the farmers struggle with being told what to do by government bodies... RESP10 (industry representative)

As discussed in the compliance section above, a third party enforcement function was also suggested by RESP10.

Testing non-core elements of the framework with low social acceptability

1. Introducing a duty of care for biodiversity as a statutory instrument

Respondents identified the legislative aspect of a duty of care for biodiversity as the least acceptable part of the framework. Only eight respondents (35%) expressed support for the statement, and five (22%) indicated conditional acceptability (Table 26).

Landholders were evenly divided about a legislated duty of care, with 6 (26%) expressing unconditional or conditional support, and 5 (22%) finding it not acceptable. Landholders supporting a legislated duty of care included both full-time and part-time farmers, and their approval was often premised on an assumption that their current management would be sufficient to guarantee compliance:

I've got nothing to worry about, and I would be behind it because I think a lot more should be done to be honest... RESP13 (farmer)

No patterns could be identified in other cohort groups.

Table 26 Social acceptability of introducing a legislated duty of care for biodiversity

Occupation	No. of participants (N= 23)	Assigned Ranking*				
		Unconditionally acceptable	Conditionally acceptable	Not acceptable	Non-committal/ Unsure	No comment
State government	4	0	0	4	0	0
Regional government	5	0	2	2	0	1
Local government	1	0	0	1	0	0
Industry Rep	1	0	0	0	1	0
Farmer	6	1	2	3	0	0
Non-farmer	6	2	1	2	1	0
All	23	3	5	12	2	1

*Researcher assigned categories, method adapted from Miles & Huberman (1994)

Twelve respondents, including five landholders and seven government representatives, indicated that a legislated duty of care with biodiversity standards would not be acceptable, but gave different reasons for their disapproval.

Issues with the introduction of a statutory duty of care for biodiversity

The main reasons underpinning the low social acceptability for the introduction of a statutory duty of care for biodiversity can be grouped as follows:

- A dislike of legislative/regulatory approaches in general.
- Concern that a statutory instrument introduced at this point would attract maximum resistance.
- A preference for the slow evolutionary development of a duty of care.
- Specific concerns about particular elements touched on elsewhere.

A dislike of legislative/regulatory approaches in general

Four landholders (17%), including full-time and part-time farmers, and some that actively undertake environmentally beneficial works on their properties, just preferred to have voluntary standards to work with:

...if it's voluntary; the last thing we want is government trying to tell farmers what to do. You get a better result by working with farmers in many ways... RESP11 (farmer)

This view was also shared by RESP2 (state government) and RESP19 (regional government).

Concern that a statutory instrument introduced at this point would attract maximum resistance.

None of four state government respondents expressed support for a legislated duty of care for biodiversity, although some conceded that over time their opinion might change (RESP4, RESP3). Their chief concern was that the introduction of duty of care legislation as the leading “bright line” instrument for inducing a change in biodiversity management was likely to be threatening to landholders, and consequently attract maximum resistance:

... it has really benefitted us to not explicitly deal with duty of care, not because it's not an important concept, but because it was really unhelpful to make it a headline issue ... if you focus on the ability for people to make the movements, that is what you essentially want, and then at some later stage you start to clean a few boundaries, you will probably make more success than starting with the boundary... RESP3 (state government)

A number of state government staff drew on their previous experience with legislation to explain their concerns. For instance, RESP4 described the experience with introducing the legislated part of a Special Area Plan under the *Catchment and Land Protection Act 1994*:

So the second step, we have discovered, is much harder, because it's not too threatening for a community just to say “Yes we want our area declared special, and yeah, we agree with the water values” and whatever, that's not too threatening. It becomes a whole new ballgame

when you start to talk about a management plan that has been approved by the minister, and that is the way land will be managed... RESP4 (state government)

RESP1 described a similar experience with the use of the Habitat Hectares metric in the Native Vegetation Framework:

When that was used for the government investments base, people accepted it, it was all fine. When it started being used for deciding on whether people could clear land, then all of a sudden it's a highly contested thing... RESP1 (state government)

A preference for the slow evolutionary development of a duty of care

As a corollary to the previous concern, six of the nine state and regional government respondents (26% of all respondents) expressed a preference for the slow, evolutionary development of a duty of care instrument. Respondents referred to the need to test individual elements of the framework, to develop tools to remove subjective decision-making as far as possible, and to run pilot studies in a range of biophysical and socio-economic settings. The lack of detail contained in the framework also contributed to the reluctance towards the introduction of the framework in its current state. There was strong opposition from government respondents to the idea of introducing duty of care legislation without developing the supporting frameworks first. Essentially their comments reflect a desire to see the establishment of a social norm before the introduction of legislation:

If you and I agreed, here and now, we were just about to introduce this, and I was sitting here with a pot of MBI money for the next five years, and you were sitting with your bright line, and we wanted to roll it out, we may well work towards this [implementing the framework] without talking about this [duty of care] explicitly for several years. So you might get yourself up to shape. So we might create the communities of practice and da, de, da. So we do all the bits, so that everyone became familiar with all of the ideas... RESP3 (state government)

RESP21 (non-farmer) made a comment reflecting the need for a social norm:

...you've just got to get that accepted, haven't you? That minimum standard. Once people accept that, then I don't think it'd be that difficult...

Specific concerns

A number of other specific concerns were mentioned. These have already been addressed in earlier discussions about particular elements of the framework. They included concerns about the political palatability of a statutory duty of care, costs associated with enforcement and administration, the scientific basis, and the need to have clearly defined outcomes and definitions of harm.

RESP20 (non-farmer) identified other concerns about a legislated duty of care:

One is that community-building tends not to occur when there is a legislative imperative that's driving it. And secondly, that the administration of legislation tends to attract people who are administrators of the legislation, or converts them into administrators of legislation. And they sort of lose the focus on "what we're trying to achieve" and head towards "we're implementing the legislation".

The first part of the comment alludes to the inverse relationship between social norms and legal norms suggested by Horne (2001) and Minato et al. (2010).

Testing the social acceptability of the framework overall

The final aspect of the case study involved assessing the overall social acceptability of the framework. Direct questioning, was carried out towards the end of the interviews, after participants had commented on the elements of the framework. Participants were invited to give a summary comment about their overall perception of the framework. Responses were scaled, as explained in Chapter 3. Based on this approach, the framework was acceptable to 17 of the 23 respondents (74%). Fourteen respondents (61%) expressed conditional support for the framework overall, while three respondents (13%) expressed unconditional support. Three respondents (13%) found the framework unacceptable overall (Table 27).

Among state and regional government respondents eight out of nine (35% of all respondents) were supportive, for example:

I think the model of trying to actually get a bit of self-regulation, self-assessment, and self-awareness, is the right model... RESP1 (state government)

It's very consistent with our current thinking so it will be very useful... RESP2 (state government)

In contrast, RESP19 (regional government) expressed doubt about the usefulness of the framework, and was non-committal:

Look it might [help]. I don't know whether it would in that context, or the extent that it would in that context ... it may not help a great deal... RESP19 (regional government)

Table 27 Overall social acceptability of the framework

Attribute	No. of participants (N= 23)	Assigned Ranking*				
		Unconditionally acceptable	Conditionally acceptable	Not acceptable	Non-committal/ Unsure	No comment
All	23	3	14	3	2	1
State/regional government	9	2	6	0	1	0
Local government	1	0	0	0	0	1
Industry Rep	1	0	1	0	0	0
Farmer	6	1	4	1	0	0
Non-farmer	6	0	3	2	1	0
Landholders combined	12	1	7	3	1	0
Landcare	8	0	5	2	1	0
Non-Landcare	4	1	2	1	0	0
Time on property <10 years	4	0	3	1	0	0
Time on property ≥10 years	8	1	4	2	1	0
Time in district <10 years	3	0	3	0	0	0
Time in district ≥10 years	9	1	4	3	1	0
Resident	11	1	6	3	1	0
Absentee	1	0	1	0	0	0
Beef	7	1	2	3	1	0
Dairy	3	0	3	0	0	0
Trees	1	0	1	0	0	0
Hobby farm	1	0	1	0	0	0

*Researcher assigned categories, method adapted from Miles & Huberman (1994)

Three of the twelve landholders interviewed found the framework as a whole to be unacceptable (Table 27). They were all beef farmers, resident landholders, and all had lived in the district for over 10 years. One farmer and one non-farmer rejected the

framework as an unacceptable example of outside interference. The following comments exemplify their views:

Because the people that make the rules, they're not farmers ... got no knowledge, no idea. You cannot put down rules from the text book, because it does not work. If you put down the rules from the farming community and say "Well okay, these are what we've all come up with, and this is the way we all should do it", well then fair enough. No way from government. No way. ...because they've got no experience, and no farmer will listen to the government tell them how to run their farm, will not do it... RESP14 (farmer)

... as far as I'm concerned that [the duty of care framework] isn't something that I think is acceptable ... Because as I said, it really has nothing to do with anyone other than the owner of it, providing they're not doing something that is, you know, is impacting on everyone around them. ... I don't have any tolerance at all for wanting to interfere with what people are doing within their own operation. I don't see it as necessary, and I really just think you're overstepping the mark completely... RESP22 (non-farmer)

For RESP14, the underlying premise was that knowledge of appropriate management of farmland, could only be attained through direct experience, thereby denying credibility of government agencies and researchers. Although the framework is designed to enable farmers “to come up with” innovative management practices, RESP14 was strongly opposed to any role for government in deciding on management practices, and this view prevailed in the response. In contrast, RESP22’s comments reflected a strong belief in the absolute rights of land owners to manage property as they see fit, and to decide what constitutes harm. The third landholder, also a part-time farmer, expressed reservations about the framework overall, but expressed a range of opinions about individual elements. People who had lived in the district for less than 10 years all found the framework conditionally acceptable, in contrast to longer term settlers, where a third found it unacceptable. Resident landholders were more likely to support the framework overall, than not support it. Landholders whose main enterprise was dairying, farm trees or hobby farming, all found the framework conditionally acceptable, while those with beef as the main enterprise expressed a range of views. No

clear differences were found between other landholder cohorts (see Table 27). Based on the groupings described previously for Table 24, this result suggests the framework has moderate social acceptability overall (Group 2 response).

Evaluation of the framework against policy principles

In this third and final phase of testing, I conducted a desk-based evaluation of the framework. As mentioned in Chapter 3, the evaluation was based on sets of principles related to smart regulation (Gunningham & Grabosky, 1998) and good governance in natural resource management (Lockwood, et al., 2010). Governance describes institutions, processes and roles that may be undertaken by a range of stakeholders (Lockwood, et al., 2010). Regulation is distinguished by the central role played by government, in either direct or indirect fashion, whereas in governance, the state may be one among many players (Gunningham, 2009a). Smart regulation (Gunningham & Grabosky, 1998) or regulatory pluralism, has become the mantra for good regulatory design (Doremus, 2003). Gunningham and Grabosky (1998) characterised five principles associated with good regulatory design (see Chapter 2, Box 2, p.5959):

1. A mix of policy instruments and institutions is preferred.
2. Less interventionist measures are preferred.
3. An escalating regulatory response needs to be built in.
4. Actors who are best placed to act as surrogate regulators should be empowered to do so.
5. Opportunities for win-win outcomes should be maximised.

Towards the end of the research period, Lockwood et al. (2010) published a set of guiding principles for good governance in natural resource management. These principles relate to eight key themes in governance: legitimacy; transparency; accountability; inclusiveness; fairness; integration; capability; and adaptability (see Chapter 2, Box 1, p. 45).

A statutory duty of care for biodiversity would clearly be a regulatory instrument, and the framework would also be regarded as a regulatory instrument. To evaluate the credentials of the framework as a well-designed instrument, I carried out a brief desk-top evaluation of it, attributing evidence to smart regulation principles.

The framework could also operate in a governance-oriented policy setting, where the role of government might be less central. To evaluate the design credentials of the framework as a well-designed instrument of governance, I carried out a desk-top evaluation against the principles of Lockwood et al. (2010). The same procedure was followed in evaluating the framework against good governance principles.

The framework through the lens of smart regulation

The framework incorporates a number of features that conform to good regulatory design principles (Driesen, 2003; Gunningham & Grabosky, 1998).

1. Mix of policy instruments.

The framework shows how a duty of care for biodiversity could operate in conjunction with other policy instruments. It presents a biodiversity standard linked to legislation, but also demonstrates how other regulatory instruments such as enforcement, education and awareness programs, voluntary and economic instruments, would potentially need to be “switched on” to address particular regulatory responses relative to the biodiversity standard. The framework could also operate as a regulatory instrument without statutory recognition, by excluding the enforcement provisions. However, the absence of a strong enforcement component would render the mandatory aspects of the framework ineffectual, thereby undermining a key characteristic of a duty of care.

2. Less interventionist measures.

A statutory duty of care for biodiversity as envisaged in the framework would represent a more interventionist approach than currently exists for addressing biodiversity management. As discussed in Chapter 2, a key rationale for having a duty of care was to provide a component that is currently missing from the policy portfolio. However, the framework incorporates a suite of mechanisms, including some that could be classed as less interventionist, such as the focus on outcomes.

The focus on outcomes leaves land managers to decide which practices to adopt. It also provides opportunities for the development of innovative ways to achieve the outcomes that may be less costly and more efficient. This approach entails less intervention than prescriptive approaches which seek to identify and prescribe recommended practices. Measures such as self-monitoring and reduced reporting that are proposed options for beyond-standard management (see Figure 15), could also be construed as less interventionist when compared to the options proposed for addressing

below-standard management.

3. Tiered regulatory response

The framework incorporates a tiered response to non-compliance, ranging from positive measures designed to move land managers to a compliant state, to tiered negative sanctions as a last resort, when there is no apparent intention to comply with the standard. The tiered regulatory provisions in the framework were well received by case study respondents.

4. Surrogate regulators

The framework provides for community-based committees to play important roles in determining locally relevant, desired outcomes for biodiversity, and potentially in undertaking monitoring and compliance monitoring within local areas. As discussed in the case study findings, a range of issues concerning legitimacy, accountability and authority could arise if community or third parties were charged with enforcement roles. Similarly, there was greater acceptability for agents with clear authority and conferred legitimacy to be involved with the determination of desired outcomes. For other aspects of regulation such as monitoring and non-enforcement compliance, the prospect of surrogate regulators was acceptable.

5. Opportunities for win-win outcomes, rewards and encouragement

An articulated standard of biodiversity management with an eligibility threshold, together with opportunities for training and transitional assistance, provide incentives for resource managers to ensure their management is not harmful to biodiversity. The eligibility threshold also provides a mechanism for curtailing “crowding out” and “free riders” which are both issues at present. The rewards for management that is beyond the biodiversity standard, also act as a positive incentive to promote good stewardship of biodiversity. The provision for innovative practices within an adaptive management process offers the potential for win-win outcomes, where novel approaches that are less costly or more efficient, may be developed.

In summary, the framework does display characteristics that conform to smart regulation principles. However, an operational framework would need to address a range of other criteria to evaluate its workability, and be articulated in much greater detail than it currently is. Gunningham and Grabosky (1998) note that tensions between

different criteria will arise depending on the context of the policy issue, and the perspective of different actors. For instance, where a policy issue requires a rapid response to a problem, less emphasis may be placed on transparency and inclusiveness, and more on effectiveness.

The framework through the lens of good governance

The good governance principles of Lockwood et al. (2010) provided a set of criteria which the authors suggested offer critical guidance for the design and evaluation of governance instruments and institutions. These principles provided useful criteria to evaluate the framework against.

1. Legitimacy

As mentioned in Chapter 2, legitimacy is an important issue in the evolving regional governance arrangements in Australia. Input or conferred legitimacy, of the type associated with democratic elections, is the domain of governments. It stands in contrast to output or earned legitimacy, where non-elected parties acquire legitimacy with their constituents through their leadership, achievements and success at building consensus (Lockwood, et al., 2010; Wallington et al., 2008).

Decision-points in the framework (see Figure 21, p.161) suggest roles for elected and non-elected parties, and thus involve issues of both types of legitimacy. Decisions about defining desired outcomes, deciding on supporting practices, monitoring of outcomes, monitoring for compliance, transitional assistance, and enforcement actions are all flagged. As well as an important role for government, potential roles for community or third party actors are suggested, invoking the sub-principle of subsidiarity. Concerns about legitimacy arose repeatedly during the case study interviews, with recurring questions about “who would do it?” in relation to elements of the framework. It is clear the framework in its current form has not addressed legitimacy issues sufficiently.

2. Transparency

Transparency, in terms of identifying who would make decisions, how they would arrive at decisions, and what information would support their decisions, has not been emphasised in the framework. Decision points have been identified in the framework, but specific details related to transparency are not specified. The use of MBIs and modelling tools such as EnSym, which were suggested as mechanisms for dealing with

gateway decisions, may provide opportunities for improving transparency.

3. Accountability

The framework sets out a mechanism whereby resource managers would be held accountable to the community that values biodiversity. The concept of who is a resource manager, and who represents the community, is deliberately flexible. For instance, where the resource manager is a private landholder, the community could be represented by the state government, the committee of reasonable people, a third party interest group, or some combination of these. If the government was the resource manager, it could be held to account by the community represented by a third party interest group, the committee of reasonable people. In this context the government could be held to account for decision-making processes, for example with the issuing of permits, or for on-ground management, for example with national park management.

Accountability could potentially flow in vertical and horizontal directions. The framework has not specified horizontal or vertical accountability pathways, which is indicative of its sketchy, preliminary nature. Further development of accountability pathways would be required before the framework could be implemented.

4. Inclusiveness

Provision for inclusiveness in the framework is made through community-based committees, envisaged to represent local and non-local stakeholders, and to involve consultation processes (although these are not specified). Processes by which supporting practices or innovative practices would be determined, and the adaptive management cycle, could also be set up in ways that maximised inclusiveness.

5. Fairness

The need for fairness, particularly in decision-making, is embodied in the concept of the committee of reasonable people. Similarly, fairness in decision-making about non-compliance, and transitional assistance would be a necessary component of an operational framework. Fairness in decision-making, (for instance, avoiding bias, or rising above vested interests), would need to be demonstrated through transparent processes for the framework to meet this criterion.

6. Integration

Vertical integration of strategic priorities with locally defined desired outcomes would

be facilitated by the requirement for committees to operate within a setting of “bounded negotiation”. This approach would reduce the opportunities for committees to describe outcomes that were perverse to higher-order objectives. Horizontal integration between actors, including government and non-government organisations could be facilitated through the supporting practices provisions, and the committees of reasonable people. Ensuring that a range of actors with an interest in practices participated in decision and review processes (within the adaptive management cycle) would assist.

7. Capability

Capability would be a critical component in the successful operation of a framework. An important function within the framework, determining the desired outcomes, is flagged to be carried out by a community-based committee. Capability of the committee, either within its membership or with the assistance of external expertise, would be a key aspect to consider in making the framework operational. The case study reported in this chapter was carried out in an area where social capacity to undertake natural resource management was high. The adaptability of the framework to areas with less capability is untested, and would be a valuable question for future research to address.

8. Adaptability

As explained earlier (Chapter 6, p. 165) the framework offers opportunities for adaptive management. Implementing adaptive management is easier said than done. Allan and Curtis (2005) highlighted a need for support in the form of training and resourcing, to help embed adaptive management into natural resource management. Articulation of adaptive management protocols, including the facilitation of reflexive learning, appropriate timelines, and participants would be needed in an operational duty of care framework.

The key areas where adaptive management would be operational under the framework, involve (a) active adaptive management to test the assumed links between desired outcomes and supporting practices, and (b) evolutionary and passive adaptive management trialling and testing locally developed and innovative management practices. The framework also provides for adaptability in the way specific policy mechanisms could be applied in response to individual situations and management performance. Rather than promoting a fixed policy approach, for example a funding

program that offered only incentives, the framework offers pathways recommending different approaches to suit particular situations.

Summary of desk-top evaluation

From this brief evaluation against principles of smart regulation and good governance, some inferences about the framework can be made. At a superficial level the framework displays characteristics consistent with four of the five principles of smart regulation. However, it is more interventionist than current approaches to biodiversity conservation on private land.

In the current version of the framework some governance principles are addressed better than others. The principles of inclusiveness and adaptability are embedded well in the framework, but the other principles are not so evident. This does not imply that the framework is necessarily fatally flawed as a governance instrument. To some extent the absence of good governance principles is a reflection of the sketchy, empty nature of the framework in its current state. Adherence to the legitimacy principle, for instance, would more readily be evaluated in a trial implementation of the framework. Further development, and more detailed articulation of framework elements, may also augment the expression of good governance characteristics.

Evaluation based on the Bass Coast case study responses

The desk-top evaluation shows that expression of smart regulation principles in the framework is not an indicator of good design as an instrument of governance. I also examined data from the case study interviews to see whether interviewees commented on smart regulation or good governance principles in connection with the framework. The method used in this evaluation is explained in Chapter 3. Summary results are shown in Table 28 and Table 29. In these tables, $N=23$ (the total number of respondents), n equals the number of respondents who commented on a criterion, and $n+$ equals the number of respondents whose comments suggested the criterion was addressed adequately in the framework. The strength of opinion that criteria are addressed in the framework is measured by $n+/n$, and the strength of the evidence is measured by n/N .

With the exception of the criterion of less intervention, commentary about smart regulation principles was fairly low, with a maximum of 13 out of 23 interviewees (57%) expressing relevant views. In contrast 20 of the 23 interviewees made comments

reflecting the level of intervention associated with the framework. Only eight of the 20 comments (40%) suggested support for the framework as a less interventionist approach. Supporting comments identified the focus on desired outcomes, rather than on practices, as reflecting less intervention. However this positive perception was overshadowed by the lack of support for a statutory instrument, which was considered by twelve interviewees (60%) to be unacceptable (see Table 28).

Provision for win-win outcomes in the framework was not well supported. Of the thirteen interviewees who made relevant comments only seven (54%) thought the framework adequately provided for win-win outcomes. The types of outcomes envisaged by interviewees included private benefits that might result from actions to promote biodiversity, and the outcomes that might result from innovation. The low support was mainly attributable to perceptions about the lack of sound science linking practices to outcomes, and the desire for practices to be linked to production benefits.

Fewer interviewees commented on the mix of policies, tiered regulatory responses, and provisions for surrogate regulators in the framework, but most (100%, 92% and 77% respectively) were strongly supportive of these elements. As discussed in previous sections, potential roles for community and other third parties in determining the desired outcomes, carrying out compliance activities, and conducting last resort enforcement drew a range of opinions and suggestions.

Table 28 Evidence of smart regulation principles in the framework as identified by interviewees (N=23)

CRITERION	Amount of evidence (n/N)	Supportive of framework (n ⁺ /n)	Strength of support
Mix of policies	7/23 (30%)	7/7 (100%)	Strong, but limited evidence
Less intervention	20/23 (87%)	8/20 (40%)	Moderate, strong evidence
Tiered regulation	12/23 (52%)	11/12 (92%)	Strong, moderate evidence
Surrogate regulators	13/23 (57%)	10/13 (77%)	Strong, moderate evidence
Win-win outcomes	13/23 (57%)	7/13 (54%)	Moderate, moderate evidence

A low to moderate number of interviewees commented on good governance principles, except for legitimacy, which attracted a high level of response (87%). Most people indicated concerns about the way in which legitimacy issues were addressed in the framework, and only five (25%) expressed positive views (Table 29). Concerns

about legitimacy were evident in comments about multiple elements of the framework including the committee of reasonable people, the scientific basis for supporting practices, decisions about non-compliance, decisions about transitional assistance, and enforcement responsibilities.

Table 29 Evidence of good governance principles in the framework as identified by interviewees (N=23)

CRITERION	Amount of evidence (n/N)	Supportive of framework (n ⁺ /n)	Strength of support
Legitimacy	20/23 (87%)	5/20 (25%)	Weak, strong evidence
Transparency	5/23 (22%)	1/5 (20%)	Weak, limited evidence
Accountability	8/23 (35%)	2/8 (25%)	Weak, limited evidence
Inclusiveness	7/23 (30%)	5/7 (71%)	Strong, limited evidence
Fairness	12/23 (52%)	2/12 (17%)	Weak, moderate evidence
Integration	7/23 (30%)	3/7 (43%)	Moderate, limited evidence
Capability	9/23 (39%)	7/9 (78%)	Strong, moderate evidence
Adaptability	12/23 (52%)	11/12 (92%)	Strong, moderate evidence

Support for transparency, accountability, and fairness provisions was weak, but less than half of the respondents commented (20%, 25% and 9% respectively). As with legitimacy, concerns about these provisions arose in connection with multiple elements of the framework. The lack of specific detail in the framework was a contributing factor to the concern. For example, interviewees were unable to perceive how the committee of reasonable people would be accountable, because the framework did not contain that level of detail.

The number of interviewees who commented about inclusiveness, capability, and adaptability varied between seven (30%) and 12 (52%), but support for the way the framework provided for these principles was strong among those interviewees. Inclusiveness was perceived to be embodied in the committee of reasonable people, the potential for landholder participation in developing local and innovative solutions, and in potential roles for non-government agents in compliance activities. Capability principles recognised in the framework included the provisions for technical support for the committee of reasonable people. Adaptability, embedded in the framework as an adaptive management cycle, was recognised by nine interviewees. Provision for a community-based committee of reasonable people was also seen as a positive model for

a reflexive governance approach by one interviewee.

Evaluation of the framework according to smart regulation and good governance principles, based on data from the case study interviews shows a similar pattern to the desk-top analysis. Overall the evaluation suggests the framework has accommodated three principles of smart regulation reasonably well, excluding the principles of less intervention, and the provision of win-win outcomes. However, it is yet to display the same level of conformation to good governance principles. Four of the good governance principles, legitimacy, accountability, transparency and fairness were perceived by interviewees to be inadequately addressed in the framework. The data also suggest that good regulatory design is not necessarily an indicator of good governance design.

Summary of testing results

Testing of the framework through the mail surveys, the case study and the evaluation against policy principles, has yielded much information about the social acceptability of the framework in its current form (see Figure 15). The mail surveys indicated that while social acceptability for a normative, moral duty towards biodiversity was relatively strong, support for a legislated form was much weaker. The case study data produced a similar result, with support for an articulated, non-legislated standard of biodiversity moderately strong, but only weak support for a legislated instrument.

The case study interviews have uncovered a wealth of information about the social acceptability of the framework. Among the case study participants, social acceptability for the framework overall is moderately strong, with greatest support expressed for non-regulatory aspects such as education, awareness and training, approaches to above-standard biodiversity management (analogous to stewardship approaches), and articulation of voluntary standards for biodiversity. Adaptive management is also well supported, although a relatively high number of interviewees, especially landholders, made no comment about it. Social acceptability of provisions for desired outcomes, community reference committees, and supporting practices were all moderately strong, but a range of conditional requirements were nominated. In contrast to the mail survey findings, no clear differences of opinion based on landholder attributes could be found.

The desk-top evaluation of the framework against principles of smart regulation and good governance, suggested the former were accommodated reasonably well in the framework, but the latter not so well. The good governance principles that were not well

embedded in the framework include legitimacy, accountability, transparency, and fairness. From the case study analysis, it is clear that many of the key issues identified by interviewees can be related to those good governance principles. The findings suggest policy instruments that address principles of good governance are more likely to attain a higher level of social acceptability.

The results from the mail surveys and case studies have uncovered complex and nuanced responses about the social acceptability of the framework. In addition, the evaluation of the framework against policy principles has highlighted strengths and weaknesses in its structure. The implications of these findings are discussed in the next chapter as part of a discussion about the contributions arising from my research.

CHAPTER 8

Discussion

Introduction

My initial aim in this research was to explore the potential for a statutory duty of care to improve biodiversity outcomes at a regional scale. I was guided loosely by four research questions that form the basis of chapters 4-7. The research questions were:

5. Why do we need to articulate a duty of care for biodiversity?
6. What is the cultural basis for the duty of care concept?
7. What could a framework supporting a duty of care for biodiversity look like?
8. How socially acceptable and workable would this framework be?

I have identified that a statutory duty of care does have the potential to improve biodiversity outcomes at a regional scale. My research has made the following contributions to knowledge:

1. I have addressed a major impediment to the application of a statutory duty of care for biodiversity – reducing the linguistic ambiguity in the use of duty of care and stewardship in natural resource management discourses.
2. I have developed a conceptual framework that outlines how a duty of care for biodiversity could operate within a broader natural resource management policy setting. This overcomes another major impediment – the absence of a guideline to assist with the implementation of a duty of care at a regional catchment scale.
3. I have tested the social acceptability of a duty of care for biodiversity in three ways. These were a) mail surveys to rural landholders in two regions of Victoria, b) case study interviews using the conceptual framework as the vehicle for assessing stakeholder views, and c) an evaluation of the framework against two sets of policy principles. I found that the idea of a legislated duty of care for biodiversity was less acceptable than a non-legal articulated standard, from data

gained through the mail surveys and the case study interviews. Overall I found there was moderate acceptability for the framework, but a lack of conformation to good governance principles was an important constraint. I found that the framework adheres well to the principles of smart regulation, but less so to the principles of good governance.

In the following section I will substantiate these claims in greater detail, discussing the contributions of my research in the order shown above.

Contribution to knowledge

1. Addressing linguistic ambiguity between duty of care and stewardship

My contribution to reducing linguistic ambiguity between duty of care and stewardship has been the development of a set of distinguishing characteristics for each term. During the literature review I identified linguistic ambiguity as a major impediment to the articulation of a duty of care for biodiversity. Linguistic ambiguity can lead to misunderstandings, obscure differences of opinion, and hinder the attainment of consensus (Regan, et al., 2002), all relevant issues in duty of care discourse (Industry Commission, 1998; Productivity Commission, 2004). It was apparent to me that in natural resource management literature, duty of care had been frequently conflated with stewardship. I needed to address this problem early in the study, so that I could proceed with a clear understanding of duty of care and how it differed from stewardship.

Other authors had also noted the multiple meanings attached to duty of care and stewardship (Hatfield-Dodds, 2004; Lambert & Elix, 2005). For instance, duty of care has variously been described as a mechanism in legislation designed to produce an outcome (Bates, 2001; Industry Commission, 1998), a financial threshold delimiting public and private responsibilities (Binning & Young, 1997), or a system of ethics (North East Catchment Management Authority, 2005).

Similarly, stewardship has been ascribed various meanings including a land ethic (Carr, 2002), a way of managing land that also incorporates productivity improvements (Andrew, et al., 2007), a way of managing land above the duty of care that produces public good outcomes (VCMC/DSE, 2003), or an institutional program that facilitates partnerships between government and private landholders (MDBC, 1996).

My research went further than recognising that duty of care and stewardship were used with multiple meanings. I developed a set of defining characteristics for the two

terms (see Table 14, p. 116). The characteristics will enable discussions about duty of care and stewardship to be carried out with greater clarity, reducing the potential for linguistic ambiguity to be perpetuated. The characteristics are described in Chapter 4 of the thesis. The research findings were published in the international journal *Environmental Management* (Earl, et al., 2010a). The paper has been cited once in the published literature (Lamarque, et al. 2011).

Duty of care is characterised as having a moral basis, but it is typically enshrined in legislation. It is externally imposed and obligatory, but reflects a standard that is widely held by society. Effectively it is a social norm that governments seek to embed in society. Duty of care is usually articulated and/or supported by codes or guidelines, and is specific to particular entities.

Stewardship is also characterised as having a moral basis, but clearly involves a personal ethic that is internally driven, and reflects an individual, voluntary standard. It may be demonstrated in behaviour, but other priorities often limit its expression. Stewardship is never translated into legislation. In contrast to duty of care, it tends to be more worldly and holistic, and often has a spiritual foundation.

I tested the validity of these defining characteristics of duty of care and stewardship in a review of 51 documents that included dictionaries, refereed journal papers, conference papers, media and electronic sources, books, and “grey literature”. I also tested the validity of these characteristics against the understanding of duty of care and stewardship expressed by 14 key informants. I found that the meanings of duty of care and stewardship expressed by the general public and non-government organisations often lacked clarity. For example see (HRSCEH, 2001; Industry Commission, 1998). Literature from government documents also displayed some conflation of the terms, (e.g. HRSCEH, 2000; DNRM, 2003). Among the key informants, understanding of the terms was usually consistent with the characteristics I had identified. An additional pair of distinguishing characteristics emerged during the document review, and was reinforced during the key informant interviews. Duty of care can be characterised as concerned with the present, the “here and now”, while stewardship is more concerned with the future and eternity.

2. A framework to guide application of a statutory duty of care for biodiversity

The major contribution of my research has been the development of a framework that

outlines how a statutory duty of care for biodiversity could be applied at a regional scale. The framework's originality lies in the way it integrates a range of policy instruments with a (duty of care) standard of biodiversity management. It is the overall construction of the duty of care framework that is novel, even though many of the elements are familiar. The framework depicts an example of regulatory pluralism, illustrating how a duty of care could be applied to improve outcomes for biodiversity at a regional scale. It also constructs the duty of care in a novel way that situates biodiversity as the focus of the duty. A description of the framework was also published in (Earl, et al., 2010a). Development of the framework was described in Chapter 6.

Prior to my research, no framework existed to guide the operation of a statutory duty of care for biodiversity at a regional scale. A major focus for my research was to design a framework to fulfil that function, and assist policy makers, program managers and land managers to understand how a statutory duty of care for biodiversity could be applied in a regional setting.

To begin with I imagined how a duty of care for biodiversity could be described in a way that could be incorporated into legislation (see Figure 17, p. 143). Initial inspiration came from legal and policy literature, and from existing environmental statutes that contained duty of care provisions. As discussed in Chapter 2, I discounted the potential for an effective common law duty of care for biodiversity because of problems identified in the literature (e.g. Bates, 2003, 2006; Bradsen, 1988; Gardner, 1998; Lyster, 2002; Raff, 1999).

I focused instead on the possibility of a statutory instrument, but found that biodiversity was not represented well in many existing environmental statutes containing a duty of care. Bates (2006) had also noticed in policy literature a misplaced assumption that attainment of sustainability objectives would automatically accommodate the needs of biodiversity. To avoid the shortcomings evident in existing statutes I chose instead to focus on a duty of care specifically for biodiversity.

I defined the duty holders as resource managers who have influence over biodiversity. This was intended to denote a broad suite of managers whose management actions may impact directly or indirectly on biodiversity, a point noted by Bates (2001). Resource managers include those involved with public and private land management, short-term lessees or contractors, and government or statutory authorities with decision-making responsibilities. The duty holder was required to take reasonable steps to avoid

foreseeable harm to biodiversity, adapting directly from the common law duty of care (Bates, 2001, 2006). Reasonable steps and foreseeable harm are also found in the definition of the polluter-pays principle (OECD, 1989). The concepts are also closely aligned to the catchment care principle (Hatfield-Dodds, 2006), but as KINF 5 (economist) noted, the requirement to take reasonable steps, embedded in my framework, implies more than just avoiding harm, and provides a point of departure from the catchment care principle.

In contrast to most statutes, the South Australian *River Murray Act 2003*, provided an alternative model for duty of care, with the duty owed directly to the River Murray, a non-human object. The *Adelaide Dolphin Sanctuary Act 2005* is another example where the object of a duty of care is not human. The structure in these two statutes, which keeps non-human environmental elements (including biodiversity) as the object of the duty of care, was more suited to my objective to keep biodiversity as the main focus.

Mindful that this (ecocentric) structure represented a major departure from the common law construct of a duty of care, I envisaged a triangulated (anthropocentric) model where the object of the duty of care was cast as the community of interest, who would act to provide a voice for biodiversity. Authors such as Dovers (2005) and Harrington et al. (2008) have foreshadowed the community of interest as an appropriate level for stakeholder participation in natural resource management. I sought the opinions of key informants, prominent Australian academics in the field of environmental law, economics, anthropology, philosophy, religion and environmental policy, about the wisdom of an anthropocentric or ecocentric approach. The majority of informants suggested an anthropocentric approach was more consistent with how the ethical concept of caring for others had been interpreted in historical and contemporary Western society. I proceeded then to develop the framework with the anthropocentric structure.

The object of my duty of care was defined as the community that values biodiversity. In this aspect my construction departs from the common law concept (Bates, 2001, 2003; Shephard & Martin, 2009). It also differs from other environmental statutory duty of care legislation, which has identified the object of the duty as either “the neighbour” (consistent with the common law interpretation) or “the environment” (for example with the *River Murray Act 2003* (SA) and the *Environment Protection Act 1994* (Qld)). My construct set up a triangulated arrangement whereby the

resource manager owes the duty to the (human) community of interest that values biodiversity, and advocates on behalf of the voiceless biodiversity. This arrangement is a novel approach for a duty of care structure, but overcomes a well known and widely debated problem about how to represent nature (e.g. Callicott, 1994; Martin & Verbeek, 2006; O'Neill, 2001). It also provides for open standing in courts, thus addressing another impediment to a duty of care (Lyster, et al., 2009).

I designed the framework with an outcome-based arrangement for the duty of care standard. A standard based on outcomes was implicit in the Industry Commission (1998) model for a duty of care. In contrast, the New Zealand *Resource Management Act 2001* has an effects-based system (Birdsong, 1998) that some authors have described as problematic (see pages 68-69). In my framework, desired outcomes, based on ecological function, are cast as the surrogates for foreseeable harm. This representation borrows from ecological studies (Bennett, et al., 2009; Pressey, et al., 2007; Wallace, 2007) that identify key ecological processes as being necessary for effective biodiversity conservation at a landscape scale. A landscape focus is also evident in the catchment care principle (Hatfield-Dodds, 2006). Avoidance of harm is analogous to the “net gain” concept (DSE, 2008b). Reasonable steps were construed as the actions that reasonable people would take, or not take, in order to avoid causing harm to biodiversity. The framework (see Figure 15) evolved, so that reasonable steps were represented as supporting practices, analogous to recommended practices for biodiversity (Clifton, et al., 2004). An adaptive management framework (Allan & Stankey, 2009) provided the linkage between desired outcomes and supporting practices.

These three elements – desired outcomes, supporting practices, and an adaptive management cycle – together formed the biodiversity standard in the framework, with a duty of care embedded in it. The statutory duty of care proposed by the Industry Commission (1998) expressed a preference for voluntary standards. My work on linguistic ambiguity had identified the obligatory nature of duty of care, and from that I concluded that the duty of care standard in my framework could not be a voluntary one. In my framework, the desired outcomes were constructed as having mandatory status, while adoption of the supporting practices remained voluntary. This represented a key difference between the Industry Commission model and my approach.

In keeping with the Industry Commission model, and the current emphasis on

partnerships and collaboration between government and the community in natural resource management governance, I envisaged a committee of reasonable people to oversee the biodiversity standards within a sub-catchment area. Gardner (1998) had suggested community reference committees with decision-making responsibilities should be established, but offered no further comment about how they should be constructed. The committee concept I used was developed from the legal construct of the reasonable person as someone who:

- Possesses the faculty of reason and engages in conduct in accordance with community standards;
- Is influenced by the nature of the relationship between parties; and
- Is influenced by relevant personal characteristics of the defendant, e.g. age, mental stability, and skills (Nygh & Butt, 1997).

Also implicit in the legal definition is the understanding that a reasonable person is appropriately informed, capable, aware of the law, and fair-minded. The concept of the committee of reasonable people also dovetailed with concepts of deliberative democratic processes involving community participation (Meadowcroft, 2004; O'Neill, 2001). I envisaged that committees would engage in reasoned discussion and consideration in the public interest that would transform initial individual perspectives into a shared outlook, and create new insights (Meadowcroft, 2004; O'Neill, 2001). The committee of reasonable people formed the fourth core element of the framework.

The framework also had designated pathways and elements (policy approaches) to address biodiversity management considered to be beyond the biodiversity standard, as well as for management below the standard. Most of these elements, such as education and training programs, incentives, market-based instruments, transitional assistance, and enforcement measures are employed regularly in natural resource management (Collins & Scoccimarro, 2008; Gunningham & Grabosky, 1998; Young & Gunningham, 1997). The novelty of the framework lies in the way it links the biodiversity standard to other policy approaches in an integrated system of regulatory pluralism, following the suggestions of Gunningham and Grabosky (1998).

Two thresholds were incorporated into the framework. With an eligibility threshold, access to rewards and opportunities would be limited to land managers who were managing their biodiversity beyond the standard. This threshold was designed to reduce

“crowding out” behaviour (Frey, 1997), a perverse phenomenon that has been associated with incentive schemes (Minato, et al., 2010). It was also intended to provide a mechanism to overcome “additionality” issues (Race & Curtis, 2009). The other threshold, based on management at the whole of property scale, was designed to delimit compliant and non-compliant management. It was designated as a mandatory threshold, in that all resource managers would have an obligation to cross from a non-compliant to a compliant standard of management. The reward associated with crossing the compliance threshold lies in the avoidance of negative sanctions, be they social sanctions such as shame, or more punitive sanctions such as financial or legal penalties.

Mandatory and voluntary compliance thresholds are a characteristicly found in cross-compliance measures associated with agri-environment subsidies in the European Union and the USA (Davies & Hodge, 2006; DEFRA, 2007b; Kristenson & Primdahl, 2004). The use of thresholds in this way is not commonly found in Australian natural resource management policy instruments, because subsidies are viewed as trade distorting (Aretino, et al., 2001). The use of property management plans to establish eligibility for drought relief and structural adjustment measures is a recent Australian example where a threshold has been applied (Lockie & Higgins, 2007). Thresholds are also applied in some forms of industry codes such as DairySat and MilkCare, where industry compliance standards are applied.

The framework was intentionally presented without much specific detail, so that it could be tailored and adapted to suit different bio-physical, geographic and socio-economic circumstances. By showing how a duty of care for biodiversity could be made to operate with other policy instruments, the framework was intended to encourage more flexible and adaptable usage of policy instruments, to suit individual contexts.

3. Employing tests for social acceptability

This research is the first to explore the social acceptability of a statutory duty of care for biodiversity. Social acceptability involves complex and largely intuitive decisions made by individuals drawing on knowledge and understanding of alternatives, experience, attitudes and beliefs, risk tolerance, and trust in decision-makers (Shindler, et al., 2002; Stankey & Shindler, 2006). Brunson (1996) maintains that social acceptability is best judged by peoples’ behaviour, where low acceptability can provide the stimulus for a change in behaviour. However, he also notes the important role that attitudinal surveys play in gauging the social acceptability of policies prior to implementation. He suggests

the best (but not the only) way to ascertain social acceptability is to ask people directly.

I tested the framework for social acceptability in three ways. The first test was undertaken through mail surveys of rural landholders in two regions of western Victoria. Results from the surveys were published in the *Australasian Journal of Environmental Management* (Earl, et al., 2010b). The second testing method employed was a case study with stakeholder interviewees commenting on the social acceptability of the framework. The third test was an evaluation of the framework against the principles of smart regulation and good governance.

Testing for social acceptability with mail surveys

In the mail surveys participants were invited to comment on particular aspects of duty of care. A key finding from the surveys was that the idea of a legislated duty of care for biodiversity was less acceptable than the idea of a moral duty (essentially a social norm). This finding is consistent with Stankey and Shindler (2006) who found that social acceptability is likely to be stronger for more abstract concepts, where the understanding of consequences, alternatives and risks is less likely to be clear. Similarly, Mazur and Curtis (2006) found that social acceptability in the aquaculture industry was stronger where perceived individual risks were lower.

Testing for social acceptability with case study interviews

The case study interviews offered a way of testing social acceptability of the duty of care framework in more detail, focusing on particular aspects of the framework. By inviting comment about individual elements of the framework, the case study provided new insights into the social acceptability of a duty of care for biodiversity. The idea of a legislated duty of care stood out as the aspect of the framework attracting the weakest social acceptability, reinforcing the mail survey finding. A similar result was reported by Dibden et al. (2005) who found from a series of workshops with farmers that command and control regulation was their least preferred policy instrument.

From the interviews, seven of the twelve framework elements were ranked as having moderate social acceptability, but with conditions associated with support for them. The core framework elements desired outcomes, committee of reasonable people, and supporting practices were in this group of moderately acceptable elements. The provisions for compliance, enforcement, transitional assistance, and articulation of a standard for biodiversity management were the other moderately acceptable elements.

Overall the framework was rated as having moderate social acceptability.

The prominence of governance issues as constraints on the social acceptability of the framework is an important finding from this research. The committee concept was a particular sticking point. Concerns about the committee concept were raised frequently during the case study interviews, and included accountability, autonomy, the potential for vested interests and local capture to gain undue influence, and the potential for perverse outcomes. These concerns align closely with issues such as legitimacy, accountability, transparency, and subsidiarity that have been raised frequently in governance literature (e.g. Bell & Park, 2006; Connelly, et al. 2006; Gunningham, 2009a; Head, 2005; Lockwood, et al., 2010; Paavola, et al., 2009; Pahl-Wostl 2009; Wallington, et al., 2008).

For the framework as a whole to be socially acceptable, all the elements would need to function well and achieve strong social acceptability. The results suggest that in its current form, the framework falls short on this account. Insights gained from this case study, provide a complex and nuanced picture of the social acceptability of a duty of care for biodiversity. Although the results cannot be generalised, we can begin to appreciate which elements of the duty of care framework might be more or less acceptable to key stakeholders. For policy makers considering introducing a duty of care for biodiversity (or the environment) the results suggest areas where further research could usefully be carried out.

Testing for social acceptability by evaluating the framework against policy principles

I also evaluated the framework against the policy principles of smart regulation (Gunningham & Grabosky, 1998) and good governance in natural resource management (Lockwood, et al., 2010). To my knowledge, no evaluation of a policy instrument against these policy principles has been published. The evaluation showed how well the principles were reflected in the framework. The evaluation was conducted as a desk-based analysis, and by interpretation of interview data from the case study.

I found that the framework conformed well to the principles of smart regulation (Gunningham & Grabosky, 1998), with the exception of the principle of less intervention. It is not surprising that the duty of care framework is construed as more interventionist, as its purpose is to fill a gap in the existing suite of policy instruments

addressing biodiversity conservation. Within the policy approaches embedded in the framework, there are variable scales of intervention implied, including some, such as those proposed for management beyond the standard (see Figure 15), that could be considered as less interventionist.

The evaluation of the framework against good governance principles reinforced the case study finding of concerns with governance issues. The evaluation highlighted legitimacy, accountability, transparency and fairness as particular areas where the framework performed poorly. These results suggest that conformation to good governance principles (Lockwood, et al., 2010) would be a prerequisite for strong social acceptability.

In summary, my research has made a number of important contributions to knowledge about a duty of care for biodiversity. I have created a set of characteristics that can be used to reduce linguistic ambiguity in discourses about duty of care and stewardship in natural resource management. I have created a framework that outlines how a duty of care could be made operational in a regional setting. I have tested the framework for social acceptability, in the process providing new insights into the underlying reasons for the lack of support for a duty of care. I have highlighted the possible relationship between strong social acceptability and adherence to good governance principles in the framework.

CHAPTER 9

Conclusion

In this chapter I revisit the aims of this research, and summarise the key findings that have arisen from it. I will also summarise my contribution to knowledge, and reflect on the methods I have used. Finally I will discuss the implications of the findings, and suggest directions for future research.

Project rationale

My research explored the potential for a statutory duty of care, applied at a regional scale, to improve biodiversity outcomes. The topic arose out of the recognised ongoing decline of biodiversity in Australia, and a gap I perceived in the range of policy instruments currently available to halt this decline.

Research questions

The series of research questions were identified to guide the research. The questions developed were:

1. Why do we need to articulate a duty of care for biodiversity?
2. What is the cultural basis for the duty of care concept?
3. What could a framework supporting a duty of care for biodiversity look like?
4. How socially acceptable and workable would this framework be?

Summary of findings

1. Why do we need to articulate a duty of care for biodiversity?

I identified a statutory duty of care for biodiversity as a potentially useful instrument to add to the existing complement of policy approaches used to address biodiversity decline. Despite regular discussion in the legal and policy literature during the past two decades, I concluded from the literature review that research and practice into the practical application of a statutory duty of care in natural resource management was at a very early and formative stage. I also concluded that existing environmental statutes

with duty of care provisions did not address biodiversity needs well. These two observations provided sound reasons for articulating a duty of care for biodiversity.

One of the impediments to a statutory duty of care for biodiversity, evident in the natural resource management literature, was the confusion, and often conflation, of duty of care with stewardship. To address linguistic ambiguity associated with these terms I developed a set of characteristics to distinguish them. These characteristics were initially derived from the literature and from discussions with my supervisors. In a document review of international and Australian literature I found the characteristics were often reflected in discourses about duty of care and stewardship. Key informant interviews with experts in the disciplines of environmental law, economics, anthropology, philosophy, theology and environmental policy were used to validate the findings of the document review.

The characteristics are summarised as follows:

- Duty of care is characterised as having a moral basis, but is typically enshrined in legislation. It is externally imposed and obligatory, but reflects a standard that is widely held by society. Effectively it is a social norm that governments seek to embed in society. Duty of care is usually articulated and/or supported by codes or guidelines, and is specific to particular entities. Duty of care is situated in the present, the “here and now”.
- Stewardship is also characterised as having a moral basis, but clearly involves a personal ethic that is internally driven, and reflects an individual, voluntary standard. It may be demonstrated in behaviour, but other priorities often limit its expression. Stewardship is never translated into legislation. In contrast to duty of care, stewardship tends to be more worldly and holistic, and often has a spiritual foundation. Stewardship is concerned with eternity, and the future.

The characteristics are presented as an aid to enable clear and unambiguous discussion about a duty of care to proceed. The list of characteristics addresses one of the impediments to the introduction of a statutory duty of care for biodiversity.

2. What is the cultural basis for the concept of caring for others?

In reviewing literature about the duty of care, my attention was drawn to a range of disciplines beyond law, notably historical literature about religion, ethics, philosophy, and economics. I developed an impression that caring for others was a well established

cultural concept, especially in Western societies, as well as in some non-Western legal and religious traditions, including that of Indigenous Australians. I carried out a topical document review to summarise my impressions. I then used the document review findings as a basis for testing the proposition that there was a strong cultural basis for the concept of caring for others. Data were gathered from expert practitioners during the same interviews undertaken to address the previous research question.

Most informants agreed with the proposition that the cultural concept of caring for others, or an ethic of care, is broadly embedded in the fields of law, religion, ethics and philosophy, but less so in economics. These results gave me confidence that in Australia, a framework for a duty of care for biodiversity would be well-grounded in an ethic of care.

The majority of informants suggested a statutory duty of care to non-human “others” was likely to be less acceptable than an anthropocentrically-focused model. On the basis of their opinions I decided to develop the framework for a duty of care for biodiversity with an anthropocentric focus.

3. What could a framework supporting a duty of care for biodiversity look like?

The main product from this research is a framework designed to underpin a statutory duty of care for biodiversity that could operate in regional catchments of Australia. The framework evolved through the research period, undergoing a series of revisions prior to the final version (see Figure 15). Initially I envisaged the framework as a “safety net” that would extend a level of protection to biodiversity not encompassed by other forms of legislation. The Industry Commission (1998) model was also very influential in the early phase of framework development. Between 2005 and 2009 the framework went through a series of iterations, informed and influenced by literature. Feedback from key informants, workshop participants, and audience questions at presentations also contributed to the incremental changes that were made.

The final version of the framework expanded to include policy pathways for management above and below the duty of care standard, integrating a broad range of policy instruments in a unified model.

4. How socially acceptable and workable would this framework be?

Even well designed and effective policy instruments may not persist if they lack social acceptability. I tested the framework for a duty of care to gain some insight into how socially acceptable it might be among selected stakeholders. Testing was carried out in three separate events. Mail surveys to randomly selected rural landholders provided an initial perspective on the social acceptability of four key aspects of the duty of care framework. A case study with purposively chosen stakeholders provided a more detailed examination of social acceptability of the framework. A desk-top evaluation of the framework against two sets of policy principles provided a third perspective on the social acceptability of the framework.

Testing of the framework for social acceptability has uncovered important insights about duty of care not expressed before in the literature. The research findings suggest that although a duty of care for biodiversity is acceptable at a broad, conceptual level, specific aspects of a duty of care, as constructed in the framework, would require refinement and testing to improve their acceptability.

Although support for an articulated standard of biodiversity management was moderately strong, the idea of having a legislated standard was the least acceptable aspect of the framework. The data suggested the major underlying reasons for the unacceptability of the framework can be characterised as governance issues. A desk-top evaluation against policy principles confirmed that the framework conformed poorly to the governance principles in the areas of legitimacy, transparency, accountability and fairness.

My contribution

My research has made a number of important contributions to knowledge about a duty of care for biodiversity.

1. I have created a set of characteristics that can be used to reduce linguistic ambiguity in discourses about duty of care and stewardship in natural resource management. These data have been published in an international journal (Earl, et al., 2010a).
2. I have created a framework that outlines how a duty of care could be made operational in a regional setting. Details of the framework were also published in Earl et al. (2010a).
3. I have tested the framework for social acceptability, in the process providing new

insights into the underlying reasons for the lack of support for a duty of care. Results of the mail surveys have been published (Earl, et al., 2010b). Other publications reporting on social acceptability of the framework from the case study will follow.

4. I have highlighted the possible relationship between strong social acceptability and adherence to good governance principles in the framework. A publication reporting on the evaluation of the framework against policy principles will follow.

These contributions have been discussed in greater detail in Chapter 8.

Social acceptability changes as peoples' knowledge and understanding, attitudes and beliefs, risk tolerance, and trust in decision-makers changes. The results found in this study represent a snapshot of social acceptability of the duty of care framework, among particular stakeholders, and at particular times and places. Evidence from the mail surveys and case study interviews in particular, suggests that while a standard for biodiversity management would be a potentially acceptable policy instrument, a legally defined one would encounter substantial resistance at this time.

In addition to the objectives defined by the research questions, I hoped to stimulate discussion and interest in a statutory duty of care. The framework has served as a vehicle for stimulating interest and discussion about a duty of care for biodiversity. This was perhaps exemplified most when I was invited to present my research findings to the DSE White Paper scientific panel, as part of the Land and Biodiversity White Paper development process.

Reflections on methods

I have employed a range of methods to address the research questions. This diversity of approaches is entirely suited to the pragmatic approach adopted for the research. The use of multiple methods to address research questions has assisted with conferring validity on the results. For instance, the weak level of social acceptability of a legally defined duty of care standard found in the mail surveys was also reflected in the case study findings. The use of multiple methods has also given me a good grounding in approaches to qualitative research.

...on literature review

Literature reviews have been a major component of this research, providing much more

than just the contextual setting for the research. The key research questions emerged from the literature review, but for questions 1 and 2, literature also provided partial answers. In developing the framework (research question 3), I have been able to draw on the multi-disciplinary suite of references to address specific issues with the framework. For instance, the idea of a committee of reasonable people, which was based initially on the legal concept of the reasonable persons, was later infused with concepts from the literature on deliberative democracy addressing community participation.

...on interviewing

Although I had undertaken semi-structured interviews previously, I have learnt much about how to conduct such procedures, and I think I am a better interviewer as a result. The case study interviews were the most difficult I have ever done, I think, because the topic for discussion (the framework) required so much explanation. I conducted these interviews with a brief set of points to guide the discussion, and the framework diagram. My supervisors had advised me to relax, and not be too concerned about covering every question. At first I was very nervous, and the flow of the interviews was interrupted as I struggled to follow the process in an orderly fashion. Later, as I became more confident, and more familiar with my interview outline, I could conduct the interview in a more relaxed way. Although opinions on some specific areas have not been coded, the volume of useful information contained in the interview transcripts, indicates to me that the approach has yielded a rich trove of data.

...on the case study

The case study has produced the most revealing data about social acceptability, building on the earlier data obtained from the mail surveys. The case study was strengthened by the active support I had from the Bass Coast Landcare Network staff. Without their efforts, I would not have been able to carry out the study, at least not within a suitable timeframe. The case study also had its limitations. The sample size was too small to enable discriminating characteristics of landholders to be identified. This was not a liability for the case study as a whole, but indicates that more studies would need to be carried out to gain more detailed insights into landholder characteristics and their link to landholder preferences for the elements of a duty of care. It also limited opportunities for statistical testing. The selection process for interviewees was also problematic at

times, especially with landholders. Although clear selection criteria were identified, it was not always possible to find the right number, of the right type of landholder. The most serious consequence of this was in the under-representation of absentee landholders, and non-Landcare members. An inference from the mail survey results is that absentee landholders are likely to be an important stakeholder group who may have found the framework more acceptable than resident landholders. It was not possible to make any inferences about absentee landholders from the case study results. The difficulty in locating absentee landholders is a frequent problem for researchers. Solutions to the problem require resources beyond what was available to me.

...on analysis

My ability with analysis techniques has been extended significantly during the research project. For instance, I have learnt to harness the querying capacity of NVivo8 to interrogate my data in a number of complex ways. Querying the case study data allowed me to analyse the collective responses of interviewees based on cohort groups, coded at individual or grouped themes. Data tables used in Chapter 7 were based on these queries. The mail surveys enabled me to learn some basic quantitative analysis skills that I had not previously used, for instance with the use of the Kruskal-Wallis rank sum test to test for significant differences between different cohorts of landholders. The use of topical document review and scaling of qualitative data were other new methods that I employed in the research.

Implications of the research

The framework has taken discussion of duty of care to depths not previously reported in the literature, providing a framework that could be used to guide implementation at a regional scale. In addition, my research has highlighted that the duty of care framework is acceptable at a conceptual level among landholders, policy developers, and program implementation staff. However, individual elements have varying degrees of social acceptability. The challenge now is to improve acceptability of the elements which currently attract low or conditional support. The framework is already out in the public domain (Earl, et al., 2010a), and is available for practitioners to trial, use, and adapt to suit local needs.

As suggested earlier in this thesis, an indicator of validity for this research will be the usefulness it has for the intended audience. The validity of the framework will be

established if stakeholders, including policy developers, program managers, landholders, and other stakeholders in biodiversity conservation find it useful.

Testing and trialling the framework

If the framework is found to be useful and there is a desire to make it operational, it would need to undergo further development, not only to make it more socially acceptable, but also to address other issues such as efficiency and effectiveness. Much of this testing would need to be conducted at local scales, through trialling and testing of individual elements, in a range of social, economic and biophysical settings.

These are the areas where further research could be usefully undertaken. Trials designed and sponsored by state government and regional agencies could be conducted, and followed by social research to gauge social acceptability outcomes. My recommendation is that future research should initially focus on improving the way the framework conforms to the governance principles, trialling community reference committees in a range of settings and scales. An alternate approach could be to trial the framework in response to a specific issue of concern.

Links between practices and outcomes – adaptive management and the need for proof

Among landholders interviewed, social acceptability of supporting practices in the framework was conditional on the availability of sound science showing causal links to outcomes at a landscape scale. Farmers operate in a business environment that is characterised by high levels of uncertainty associated with, for instance, climatic conditions, market values and international terms of trade (Barr & Cary, 2000; Lawrence & Gray, 2000; Lockie, 2000). So it is not surprising that they would demand proof of the effectiveness of practices before adopting them. This demand has been compounded by past instances where governments have declared and insisted on best practices that were later found to be wanting, e.g. the impacts of willow control on stream biota (Davies, et al., 2012).

The weak links between practices and outcomes is an enduring problem with biodiversity management, and not limited to this study alone. Limited capacity to validate causal links between practices and outcomes creates particular problems, for example with compliance and enforcement (Aronson, et al., 2007; Hatfield-Dodds, 2006; Marshall, 1998). The characteristics of biodiversity (see p.2) (Gunningham &

Grabosky, 1998) exacerbate this problem, making it difficult to ascribe with certainty the effects of management practices on outcomes.

It is a critical task however, and one that governments at both federal and state level are pursuing. At the state and national levels, State of the Environment reporting (e.g. Beeton, et al., 2006; Department of Environment and Conservation, 2006) goes some way to resolving the issue. Five-yearly reporting on catchment condition is now a statutory requirement in Victoria (VCMC, 2007), and in NSW a three-yearly review of catchment action plans has been proposed (Natural Resources Commission, 2007).

At a sub-catchment scale the problem remains unresolved. My view is that a part of the challenge lies in setting expectations of outcomes and causal links with practices at more realistic levels. In the framework this is implicit in the adaptive management cycle. It envisages a process where practice A could be described as being better compared with practice B, rather than just a decision about whether practice A is the best practice. Processes need to be able to recognise and accommodate small improvements, measured over appropriate timeframes and biophysical scales. The use of all three types of adaptive management (Allan & Jacobson, 2009) is foreshadowed, with roles for land managers as well as government and third party researchers. A procedure for legitimising innovative practices is also called for in the framework. The EnSym model (Eigenraam et al., 2005), employed in the Victorian Eco-Tender program, and the Bass Coast Land Stewardship Trial, has the potential to strengthen explanations of causal links between practices and outcomes at a landscape scale and provide some measure of benefits.

Further research into causal linkages between outcomes and management practices for biodiversity is needed. Clearly a leading role for government is indicated here. From a social research perspective, further research to explore the potential for participatory adaptive management processes to be applied at a sub-catchment scale would be useful.

A social norm as a prerequisite for a statutory duty of care for biodiversity

The findings from my research suggest the time is not yet right for the introduction of a statutory duty of care for biodiversity. Opposition to a legislated duty of care was strongly expressed in both the mail surveys, and the case study interviews. However, a duty of care based on moral value alone is unlikely to halt the ongoing decline in biodiversity, and provide the safety net for biodiversity that I envisaged. In the short-term at least, it seems that biodiversity will not have the “voice” and the legislative

backing it so needs. My research suggests that an articulated social norm that defines standards for biodiversity management across landscapes and tenures is a necessary prerequisite before the introduction of a statutory instrument could be contemplated.

Gardner (1998, p. 23), in writing about a statutory duty of care to the environment, expressed the wish that “a new duty of care will help to create a new ethic for natural resource users and managers...” His comment begs the question of whether a legal instrument could precede a social norm in the area of biodiversity conservation or natural resource management generally. My results suggest the introduction of a statutory duty of care for biodiversity instrument was the least acceptable aspect of the duty of care framework. In contrast, the idea of articulating a non-legislated standard of care for biodiversity was moderately acceptable. The research suggests that an injunctive social norm embodying a moral duty, may need to be developed before a duty of care for biodiversity enshrined in legislation could be considered.

Minato et al. (2010) discussed the role of norms in natural resource management noting the potential for social norms to promote cooperative and desirable behaviour in ways that are more cost effective than regulatory or financial approaches.

The dilemma with biodiversity is that the social norm for biodiversity conservation is relatively new, and as Minato et al. (2010) note, the sense of obligation associated with new norms is likely to be less compelling. Without a strong social norm, and without a statutory duty of care, there is little to suggest that the decline in biodiversity will cease. With biodiversity, the need for a strong regulatory framework underpinned by legislation is recognised (Gunningham & Grabosky, 1998), because the social norms are not strong, and market drivers for biodiversity are not well developed. Ecosystem services (Daily, 1997) go some of the way, but fall short of developing markets for all biodiversity (Chan, et al., 2007; McCauley, 2006). A contrasting opinion suggests that regulatory intervention by government can diminish the potential for norm formation (Horne, 2001). Shepherd and Martin (2009) support this view to some extent. They suggest that a statutory duty of care designed without provision for resolution of breaches through court processes, could reduce the opportunity for norm formation.

My suggested solution to this apparent impasse is to build the social norm as quickly as possible, on the assumption that stronger social acceptability for a legislated duty of care will accompany norm formation. The introduction of a statutory duty of care instrument should be deferred until a later date. The framework presented in this

thesis could be used to guide and develop a social norm based around an articulated standard for biodiversity management. The use of the framework without legal status would lead to limited statutory enforcement capability, but other elements could be trialled, and potentially assist with the development of a social norm.

Future research directions

Future research could usefully address the following topics:

- Investigate the social acceptability of a statutory duty of care for biodiversity in other areas of Victoria or Australia, and across larger sample sizes. The mail surveys reported in this thesis revealed limited but valuable insights into the social acceptability of a duty of care among rural landholders in two regions of Victoria. Additional mail surveys to detect how representative the findings reported in this thesis are, would provide useful information for policy makers. Periodic surveys of social acceptability would provide important insights for policy developers considering implementing a statutory duty of care for biodiversity.
- Understand and identify the relationship between legal norms and social norms in biodiversity management. The aim of this research would be to discover whether legal norms have the potential to generate social norms for biodiversity management and natural resource management generally, or *vice versa*. The findings from my research suggest that without the prior establishment of an injunctive norm for biodiversity management, the introduction of a legal duty of care would be likely to have weak social acceptability. An alternative hypothesis (Horne, 2001; Shephard & Martin, 2009) suggests there is an inverse relationship between the strength of social norms and legal norms. Under this scenario, a legal norm such as a statutory duty of care for biodiversity, might lead to a diminution of a corresponding social norm. This is an important area for biodiversity policy because, as I have stated earlier in the thesis, and as the findings from this research have suggested, effective conservation of biodiversity on private land needs the support of willing and cooperative landholders. Research to investigate the relative strength of the social acceptability of a developing norm for biodiversity management compared to a legally defined instrument, based on personal and social factors, and measured over time, would be a useful starting point.

Concluding remarks

This thesis has explored the potential for a statutory duty of care to improve biodiversity outcomes at a regional scale. The main focus of this exploration has been on developing a framework to illustrate how a duty of care could be made operational in an Australian regional catchment setting. The research identified a number of impediments to the implementation of a statutory duty of care, and specifically addressed the problem of linguistic ambiguity between duty of care and stewardship in natural resource management discourses. The major contribution from the research has been the development of a framework that could be used to guide the implementation of a duty of care for biodiversity. The framework was developed after extensive literature review, as well as feedback gained through discussions with my supervisors, key informant interviews, a workshop with DSE policy staff, and various presentations made during the course of my candidature. The framework provides clear pathways for policy action that has a statutory duty of care embedded within a system of policy approaches, thus illustrating how regulatory pluralism could be enacted. Testing of the framework through mail surveys, a case study, and a desk-based evaluation have highlighted aspects of the framework that are more or less socially acceptable. The idea of a legislated duty of care stood out as the one aspect of a duty of care that drew minimal support from both mail survey recipients and case study interviewees. Many elements of the framework examined during the case study interviews drew only conditional support, with governance issues such as legitimacy, accountability, transparency and fairness mentioned frequently. A desk-based evaluation of the framework confirmed that principles addressing these governance issues were not addressed well in the framework. Overall, the research has contributed new insights into how a duty of care for biodiversity could be implemented at a regional catchment scale, as well as some underlying reasons for the lack of social acceptability of the framework in its current format.

My research marks an important step forward in discussions about duty of care in a natural resource management context. My conclusion is that in the future we may be able to apply a statutory duty of care to improve biodiversity outcomes at a regional scale, but not yet.

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APPENDICES

Appendix 1. Information sheet for interviewees

INFORMATION SHEET FOR INTERVIEWEES

Can we apply a Duty of care to improve biodiversity outcomes at a regional scale?

My name is Gillian Earl and I am from the School of Environmental Sciences at Charles Sturt University, Albury. I am currently undertaking doctoral studies, supported by a scholarship from the Co-operative Research Centre for Future Farm Industries. Thank-you for agreeing to be interviewed. Your opinions and suggestions will make an important contribution to this study. My research aims to improve the long-term outcomes for biodiversity at a regional scale, in a way that is fair and reasonable.

Background to this research

Natural resource management in Australia is now the primary responsibility of Catchment Management Authorities (CMAs). Their tasks include determining priorities for their catchment and allocating resources fairly and appropriately. Currently CMAs are struggling to decide who benefits from public investment in biodiversity management on private land, and who is responsible for the ongoing management of biodiversity on private land. They are without adequate tools to help in making these decisions.

The concept of 'duty of care' underlies much of this debate, and at present there is no common understanding of how it could 'play out' at a property/catchment scale. The purpose of my research is to develop a framework that will allow decisions about biodiversity conservation programs to be made in a transparent way at these scales. Catchment Management Authorities will benefit from having a framework that offers them consistency and transparency in the allocation of public funds. Land managers will benefit from knowing and understanding there is a transparent framework on which decisions are based.

There has been ongoing discussion about the potential value of an environmental duty of care, but in my research I am focused on a duty of care for biodiversity, for reasons that I will explain to you.

A major concern about duty of care, expressed among others by the VFF, is that is a way for government to shift an unfair cost burden onto to landholders. The framework I am developing establishes mechanisms that ensure that the economic and social costs associated with not harming biodiversity are reasonable.

The interview

The interview will involve you and I having a discussion about the duty of care framework, focusing on your opinions about its potential value and acceptability in its current form, and ideas for improving it. The interview will take 1-2 hours. With your permission I would like to audio tape the interview so that I do not accidentally misquote you, or miss important points that you make.

How the information will be used

Information gained from the interview will be transcribed and collated with material from other similar interviews. Transcriptions will be categorized and coded to highlight similar/dissimilar comments and concepts that are mentioned across the range of interviews. This will enable key themes to be identified.

Information from this and other interviews will provide data for my doctoral thesis and other publications arising from it. You will not be identified in any of these publications. All information and data will be stored in a locked filing cabinet at Charles Sturt University, and will only be seen by myself and my supervisors.

Publications

Direct quotes from this interview may be included in journal articles or other publications arising from my research, as well as in my thesis. No individuals will be identified in any of these reports.

Feedback

Your participation in this process is highly valued as it will contribute to an improved understanding of approaches to long-term biodiversity conservation and land stewardship in regional catchments. This research is expected to continue until March 2010. At the conclusion of the project you will be sent a summary about the research including information about your interview. I will provide a transcript of your interview upon request.

Confidentiality

No names or other identifying information will accompany quotes or information in any publications or their drafts, or presentations about this interview.

Participation

If you are happy to participate in this research would you please sign the accompanying consent form to acknowledge your agreement. Your involvement in the research is in no way linked to other involvement you may have with natural resource management programs of the CMA or other organisations. Please understand that you are free to withdraw your participation from the research at any time.

NOTE: Charles Sturt University's Ethics in Human Research Committee has approved this project. If you have any complaints or reservations about the ethical conduct of this project, you may contact the Committee through the Executive Officer:

The Executive Officer
Ethics in Human Research Committee
The Grange
Charles Sturt University
Bathurst NSW 2795

Tel: (02) 6338 4628
Fax: (02) 6338 4194

Any issues you raise will be treated in confidence and investigated fully and you will be informed of the outcome.

Further Information

If anything is unclear, or you wish to discuss this matter further, don't hesitate to do so now, or at any time during the interview.

Gill Earl
Charles Sturt University
PO Box 789
Albury NSW 2640

Tel: 02 6051 9839
Mobile: 0429 431 590
Email: giearl@csu.edu.au

Alternatively you can contact my supervisors Professor Allan Curtis (02 6051 9730) or Dr Catherine Allan (02 6051 9781).

Thank you for your time and your contribution to this study.

Appendix 2. Interviewee consent form

CONSENT FORM

Name of Research Project Applying a Duty of Care to improve biodiversity outcomes at a regional scale

Contact details Gillian Earl
SES
Charles Sturt University
PO Box 789
Albury NSW 2640

The purpose of the research has been explained to me and I have been given the opportunity to ask questions about the research and received satisfactory answers.

I give Gillian Earl permission to audio tape this interview.

I understand that I am free to withdraw my participation in the research at any time without any negative consequences.

I understand that any information or personal details gathered in the course of this research about me are confidential and that neither my name nor any other identifying information will be used without my written permission.

Charles Sturt University's Ethics in Human Research Committee has approved this study.

I understand that if I have any complaints or concerns about this research I can contact:

Executive Officer
Ethics in Human Research Committee
Academic Secretariat
Charles Sturt University
Private Mail Bag 29
Bathurst NSW 2795

Phone: (02) 6338 4628

Fax: (02) 6338 4194

Signed by:

.....

Date