Enhancing Horizontal Integration in Integrated Coastal Zone Management.

by

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Submitted in fulfilment of the requirements for the degree of
Doctor of Philosophy

Deakin University
September 2010
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submitted for the degree of Doctor of Philosophy.

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I also certify that this thesis in whole or in part has not been submitted for a degree or diploma by any university or institution.

Amanda Suzanne Cornish

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Date: 5th October 2010
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A special acknowledgment goes to all respondents who took part in this research project, without your participation this thesis would not have been possible.
Dedication:

To my father, Peter Anthony Cornish.

And my mother, Angela Helen Katherine Cornish.

I dedicate this thesis to you both. Although you have not seen its completion you both provided me with enduring love, support and encouragement, for which I am eternally grateful. You are forever in my heart.
Abstract:

The coastal zone is a highly valued asset which is experiencing significant pressure from high population density, pollution from land-based sources and climate change. The internationally accepted concept of Integrated Coastal Zone Management (ICZM) was introduced to manage the coastal zone in a sustainable manner in both developed and developing nations. ICZM has been developing over the last forty years and in the late 1990’s the two most significant characteristics were identified to be vertical and horizontal integration. In the mid to late 1990’s these two characteristics were divided into five dimensions of integration. These dimensions are international, intergovernmental, science-management, intersectoral and spatial. This division suggested that vertical integration has two dimensions (international and intergovernmental integration) and that horizontal integration has two dimensions (spatial and intersectoral integration). The science-management dimension is applied across all dimensions.

Vertical integration has been well documented and researched; therefore this research project focused on horizontal integration. The intersectoral dimension brings together the management sectors and the agencies responsible, and the spatial dimension brings together the management issues and the biophysical environment in which they occur. Due to the significant impact on coastal zones from land-based uses, and the human habitation of coastal zones this research project focussed on the land-based side of the coastal zone and its horizontal integration with catchments.
ICZM is an internationally accepted concept, and this research project demonstrated its application in both developed and developing nations across the globe. The research project discovered what influences the on-ground implementation of horizontal integration. Australia was once considered a pioneer in coastal zone management and has adopted the principles of ICZM in its management strategies and was used as a national case study. The state of Victoria has a strong existing framework for both catchment and coastal zone management and was used to explore the implementation of horizontal integration at the state management level. The Gippsland Lakes Region (a large mixed water body in eastern Victoria) was used as a regional case study.

This research project demonstrated that there are five crucial factors which influence the on-ground implementation of horizontal integration. These five factors are capacity building, professional territory, political motivation, funding/resources and institutional arrangements. Each factor influences the implementation of horizontal integration in a positive or negative manner. This thesis proposes a Horizontal Integration Framework which will address the interrelationship between these five factors. The project offers four implementation phases for overcoming the negative influences. These implementation phases are the creation of equal partnerships, alignment of objectives, attainment of leadership and the introduction of adaptive management. The project also suggests a working definition for spatial integration to more accurately represent the important interrelationship required between the intersectoral and spatial dimensions of horizontal integration.
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<td>ACAP</td>
<td>Atlantic Coastal Action Program</td>
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<td>AM</td>
<td>Adaptive Management</td>
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<td>AOP</td>
<td>Australian Oceans Policy</td>
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<td>CAP</td>
<td>Coastal Action Plan</td>
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<td>CCI</td>
<td>Catchment Coast Initiative</td>
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<td>CCP</td>
<td>Commonwealth Coastal Policy</td>
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<td>CEMP</td>
<td>Comprehensive Environmental Management Plan</td>
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<td>CMA</td>
<td>Catchment Management Authority</td>
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<td>CRC</td>
<td>Cooperative Research Centre</td>
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<tr>
<td>CSIRO</td>
<td>Commonwealth Scientific and Industrial Research Organisation</td>
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<td>CZCA</td>
<td>Coastal Zone Canada Association</td>
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<td>CZMA</td>
<td>Coastal Zone Management Act (USA)</td>
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<td>CZMP</td>
<td>Coastal Zone Management Program</td>
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<tr>
<td>DNRE</td>
<td>Department of Natural Resources and Environment</td>
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<td>DSE</td>
<td>Department of Sustainability and Environment</td>
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<td>DPI</td>
<td>Department of Primary Industries</td>
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<tr>
<td>EC</td>
<td>European Commission</td>
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<tr>
<td>ESD</td>
<td>Ecologically Sustainable Development</td>
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<td>EEZ</td>
<td>Exclusive Economic Zone</td>
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<td>EPA</td>
<td>Environmental Protection Authority/Agency</td>
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<tr>
<td>ESSIM</td>
<td>Eastern Scotian Shelf Integrated Management</td>
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<td>EU</td>
<td>European Union</td>
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<td>GCB</td>
<td>Gippsland Coastal Board</td>
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<td>GBRMPA</td>
<td>Great Barrier Reef Marine Park Authority</td>
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<td>HOR</td>
<td>House of Representatives</td>
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<td>ICM</td>
<td>Integrated Catchment Management</td>
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<td>ICOM</td>
<td>Integrated Coastal and Oceans Management</td>
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<td>ICZM</td>
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<td>IJC</td>
<td>International Joint Commission</td>
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<td>MCCN</td>
<td>Marine and Coastal Community Network</td>
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<td>MDB</td>
<td>Murray Darling Basin</td>
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<td>MoU</td>
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<td>NGO</td>
<td>Non-Government Organisation</td>
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<td>NHT</td>
<td>Natural Heritage Trust</td>
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<td>Nautical Miles</td>
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<td>National Oceanic and Atmospheric Administration</td>
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<td>RAP</td>
<td>Remedial Action Plan</td>
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<td>RCB</td>
<td>Regional Coastal Board</td>
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<td>RCS</td>
<td>Regional Catchment Strategy</td>
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<tr>
<td>TCM</td>
<td>Total Catchment Management</td>
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<td>Abbreviation</td>
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<tr>
<td>UNCED</td>
<td>United Nations Conference on Environment and Development (‘Earth Summit’)</td>
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<td>USA</td>
<td>United States of America</td>
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<tr>
<td>VCC</td>
<td>Victorian Coastal Council</td>
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<td>VCMC</td>
<td>Victorian Catchment Management Council</td>
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Chapter 1: Introduction.

1.0 – Introduction.

The coastal zone is of significant economic, environmental and social importance. The coastal zone is defined as “the area at the interface between land and sea, where the sea influences the land and vice versa” (Cicin-Sain & Knecht 1998 p. 459). It is home to some of the world’s most ecologically productive ecosystems including estuaries, mangroves, wetlands and offshore reefs.

The coastal zone provides for unique recreational activities and residential development with between 60 and 70% of the world’s population living near, or within, the coastal zone (Huntley et al. 2001, Cicin-Sain & Belfiore 2005, Klir & Wierman cited in Krelling et al. 2008). Ports and harbours are also located in the coastal zone and provide a means of transportation for the import and export of products. Industries such as fishing and oil exploration also utilise resources in the coastal zone (Kay & Alder 2000).

Globally the coastal zone is experiencing significant pressure resulting from natural processes and human uses. To manage the various uses, and address pressures on the natural environment from high population density, pollution from land-based sources, and climate change, the concept of Integrated Coastal Zone Management (ICZM) has evolved. ICZM was developed to manage the coastal zone in a manner that meets the objectives of sustainable development (discussed in Chapter 2).
1.1 – Integrated Coastal Zone Management (ICZM).

In Sorenson’s (1997 p. 9) review of national and international efforts at implementing ICZM, it is defined as “the integrated planning and management of coastal resources and environments in a manner that is based on the physical, socioeconomic, and political interconnections both within and among the dynamic coastal systems, which when aggregated together, define a coastal zone.”

This internationally recognised concept has been developing over the past forty years. It originated from discussions at two significant environmental gatherings – the 1973 United Nations Convention on the Law of the Sea (UNCLOS) and the 1992 United Nations Conference on Environment and Development (UNCED). All the major international agreements emanating from the UNCED have endorsed the application of ICZM for achieving sustainable use and management of the coastal zone (Olsen et al. 1997, Cicin-Sain & Belfiore 2005).

Cicin-Sain, Knecht and Fisk (1995) noted that ICZM encompasses all areas from upland regions (catchments/watersheds), across the coastal zone and into the ocean. Cicin-Sain and Belfiore (2005) later added that ICZM links the sectoral activities across the coastal zone and ocean. ICZM provides the holistic approach necessary to manage environmental, social and economic issues in the coastal zone, such as, the depletion of coastal resources, increased population density and threats to water-based industries (Ducrotoy & Pullen 1999).
Prior to the introduction of ICZM there had only been three examples of integration in coastal zone management. These were in the United States of America, Australia and the United Nations Regional Seas Programme (Sorenson 1997). During the 1990s there was a significant rise in ICZM efforts and it is now practised all over the world with efforts growing from 90 countries and 180 programs in 1997, to 145 countries and 698 programs being identified in 2002 (Sorenson 1997, 2002).

The Partnerships in Environmental Management for the Seas of East Asia (PEMSEA) program has been running since 1994 applying ICZM theory to coastal zone management practices (Chua et al. 2006). In addition, ICZM increased in popularity across Europe in 2002 with a ‘Demonstration Programme’ spreading the concept of integration and the adoption of a ‘Communication of ICZM Strategy’ (Burbridge & Humphrey 2003, Doody 2003, Williams et al. 2006). However, there have been limited new contributions on the international arena since these efforts.

1.2 – Integration in ICZM.

The ‘integration’ component of ICZM is defined as implementing and monitoring policies, investment strategies, administrative arrangements, and harmonised standards as part of a unified program (Chua 1993, Kenchington & Crawford 1993, Cicin-Sain & Knecht 1998). Integration is a complex component of coastal zone management and can be applied at many different management levels and approached from several perspectives. As Coffey and Major (2005) state, there are no simple answers to achieving successful integration and it has also been suggested that ‘what must be done cannot be
done’ (Barlett 1990, cited in Born & Sonzogni 1995). These observations demonstrate the agreed necessity for integration whilst acknowledging the extreme difficulty in achieving it.

It was not until the late 1990s that comprehensive reviews by Cicin-Sain et al. (1995) and Sorenson (1997) identified vertical and horizontal integration as the most significant characteristics of ICZM for managing the coastal zone. Vertical integration is defined as the “integration of all levels of government (national/state/regional) and non-government organisations which significantly influence the planning and management of coastal resources and environments” (Sorenson 1997 p. 5-6). Horizontal integration is defined as being “of separate economic sectors (such as fisheries, tourism, transportation) and the associated units of government which significantly influence the planning and management of coastal resources and environments” (Sorenson 1997 p. 5).

Following the initial identification of vertical and horizontal integration being the two key characteristics of ICZM, Cicin-Sain and Knecht (1998), Cicin-Sain et al. (2000) and Cicin-Sain and Belfiore (2005) divided integration into five dimensions. The five dimensions are:

- Intergovernmental Integration (vertical);
- International Integration (between nations);
- Spatial Integration (land-ocean, horizontal);
- Intersectoral Integration (horizontal); and
- Science-Management Integration (different disciplines).
‘International integration’ is where nations border enclosed, or semi-enclosed, seas and the open ocean (for example the European coast) and addresses transboundary management issues (Cicin-Sain & Knecht 1998 p. 45, Cicin-Sain et al. 2000 p. 292, Cicin-Sain & Belfiore 2005 p. 855, Cheong 2008 p. 1091). ‘Intergovernmental integration’ (often referred to as vertical integration) is defined above. ‘Spatial integration’ is “bringing together management issues concerning the land-side (including up-river issues related to watersheds and river basins) and the ocean-side of the coastal zone” (Cicin-Sain & Knecht 1998 p. 45, Cicin-Sain & Belfiore 2005 p. 855). ‘Intersectoral integration’ (often referred to as horizontal integration) is defined above. ‘Science-management integration’ is “among the different disciplines important in coastal and ocean management and the management entities” (Cicin-Sain & Knecht 1998 p. 45) and should be applied in the identification of management issues and the preparation of policy documents. Science-management integration is an integral part of the other four dimensions and is concerned with integrating social and natural sciences into the management decisions (Cheong 2008 p. 1091).

The division of integration into five dimensions suggests that vertical integration consists of two dimensions (international and intergovernmental integration) and that horizontal integration also consists of two dimensions (spatial and intersectoral integration). Whilst international integration is represented as a dimension under the vertical integration (as it is a level of government) it can also be a dimension of horizontal integration. For example, coastal zone management in continents with several nations (e.g.
Europe) require horizontal integration as management issues cross national borders.

The interaction between the characteristics and dimensions of integration in ICZM can be illustrated as in Figure 1.1.

![Figure 1.1: Dimensions of Integration in ICZM.](image)

The focus of most ICZM programs has been on achieving vertical and horizontal integration. These have been acknowledged as the major challenges of ICZM. Throughout the development of ICZM theory, research has focused more on the vertical integration (including Kay & Lester 1997, Belfiore 2000, 2003, Olsen 2003, Cicin-Sain & Belfiore 2005, Wescott 2009). This has most likely occurred because institutional arrangements are required to be in place for the development of policies, plans and programs to implement ICZM.
Cicin-Sain and Belfiore (2005) identify that achieving integration in the coastal zone is complex due to the number of actors, and the different cultures, ministries, goals and motivations. Due to the large number of variables involved in integration and the comparative emphasis which has been placed on vertical integration, this research will focus on the largely unexplored challenges of horizontal integration and its two key dimensions. International integration will not be incorporated as a dimension of horizontal integration in this research as the case studies are at national/state/regional levels (discussed in Section 1.4).

Literature suggests the two key dimensions of horizontal integration (spatial and intersectoral) in turn have two components. Spatial integration has one component covering the physical interaction between the coastal zone and land (catchment), and the coastal zone and ocean (Thom & Harvey 2000, Cheong 2008). The other component is the interaction between management issues concerning the land side of the coastal zone (catchments) and management issues concerning the ocean side (Cicin-Sain & Belfiore 2005). Intersectoral integration has one component addressing the management sectors (or uses) and another component addressing the agencies (managers) responsible (Cicin-Sain & Belfiore 2005).

There are many terms used to describe the parts that interact to compose an ICZM program, as demonstrated in Figure 1.2. This figure shows that horizontal integration is a ‘characteristic’ of ICZM, and that spatial integration and intersectoral integration are ‘dimensions’ of horizontal integration. The
biophysical environment¹ (catchment-coastal zone-ocean), management and planning issues, uses and agencies (managers) are ‘components’ of the spatial and intersectoral dimensions.

![Diagram of Horizontal Integration](image)

**Figure 1.2: Components of Horizontal Integration.**

Being a dimension of horizontal integration the intersectoral integration among various sectors must occur at the same administrative level (i.e. international, national, state, local) (Bennett 2001). The application of intersectoral integration has been researched in depth (including by Ballinger 1999, Belfiore 2000, Billé & Mermet 2002, Burbridge & Humphrey 2003) however, it still remains uncoordinated. Spatial and intersectoral dimensions need to work in partnership for the on-ground implementation of horizontal integration to be successful (Claudet et al. 2006), therefore they will both be considered in this research.

¹ The term biophysical environment is used to encompass both the natural and built environment in a catchment, coastal zone or ocean. It refers to the geographical area which is to be managed. This terminology isolates this component from the other three which represent management and planning components.
Intersectoral integration relies on the cooperation between agencies to address the management of multiple uses of the coastal zone in an integrated manner (Cicin-Sain & Belfiore 2005). Aspects which are important to the success of intersectoral integration include the coordination between sectors of administration and sharing information and agreed management objectives (Burbridge & Humphrey 2003). The coordination between sectors has been designed to overcome inherent fragmentation which has plagued coastal zone management.

The application of spatial integration remains relatively unexplored. The literature demonstrates differing opinions over the precise meaning of the term “spatial”. In early discussions of ICZM Cicin-Sain, Knecht & Fisk (1995) used the term spatial to refer to an ICZM program which embraces all coastal and upland areas and extends seaward to include the ocean. Later Sorenson (1997) suggested that it incorporated the planning and management perspective which combines land-use and sea-use processes. Cicin-Sain and Knecht’s (1998) comprehensive guide to ICZM brings together both the biophysical consideration of impacts on the coastal zone from land-based activities, and the administration between public and private land managers. Other literature refers solely to the biophysical connection (Cicin-Sain et al. 2000, Thom & Harvey 2000, Cheong 2008). The meaning used by Cicin-Sain and Belfiore (2005) – bringing together management issues concerning the land-side of the coastal zone (including up-river issues related to watersheds and river basins) and issues related to the ocean side - will be adopted for this research.
As one component of spatial integration incorporates management issues, it plays a pivotal role in addressing the significant coastal zone management issue of pollution from land-based sources, which account for more than 75-80% of marine pollution (Belfiore 2003). It is widely acknowledged that the other component of spatial integration, the biophysical environments, (catchments, coastal zones and oceans) are interwoven (Ducrotay & Pullen 1999, Vernberg & Vernberg 2001, Belfiore 2003, Coccossis 2004, Klinger 2004, Cicin-Sain & Belfiore 2005). Therefore, this research will focus on the component of spatial integration relating to planning and management issues concerned with catchment-coastal zone interactions (as outlined below).

1.3 – Geographical range of research.

This research will focus only on the link between catchments and the coastal zone. This range has been chosen in order to address the significant impact on the coastal zone resulting from land-based sources of pollution. Also the land-based side of the coastal zone is where a large portion of human habitation occurs. Two-thirds of the world’s largest cities are located in the coastal zone and this population is growing faster than inland populations (Cicin-Sain & Belfiore 2005, Claudet et al. 2006). The interaction between the coastal zone and catchments (land-based) is also important because human-induced changes occur on the land, and the land-based activities use water and other resources which impact on the coastal zone (Kearney et al. 2007).
1.4 – Research aim.

As Australia was one of the pioneers in implementing integration into its management of the coastal zone (Sorenson 1997), it will be used as a case study for this research. Australia is an island nation so the complexity of international integration with other political settings and cultural aspects will be eliminated. Australian governance arrangements are also well developed, providing a good framework for achieving both vertical and horizontal integration, as discussed by Kay and Lester (1997), Thom and Harvey (2000), Wescott (2002a), Harvey and Caton (2003) and Wescott (2009). However, the on-ground implementation of horizontal integration is underdeveloped (Billé & Mermet 2002, Belfiore 2003, Burbridge & Humphrey 2003, Abrahams 2005, Lockwood et al. 2009) and will be the focus of this research. As Australia is composed of various states this allows analysis of case studies at national, state and regional levels.

The aim of this research is:

To devise a framework for enhancing horizontal integration across catchments and the coastal zone.

In order to answer this research aim Chapter 2 will build on information presented in Chapter 1 and discuss the biophysical components of catchments and the coastal zone which represent the geographical range of this research. It will also outline the evolution of ICZM and major contributions to its development. Chapter 2 concludes with suite of refined research objectives.
To review the current status of horizontal integration across the globe Chapter 3 will explore the frameworks for ICZM and catchment management in developed and developing nations. Chapter 4 presents the current framework for ICZM and catchment management in Australia at the national management level, and offers examples of the implementation of horizontal integration at the state and regional management levels. The results and analysis of the regional and state case studies will be presented in Chapters 5 and 6 respectively. The outcomes from Chapter 3 to 6 will be collated and presented at the end of Chapter 6 illustrating implications from this research and literature review for achieving horizontal integration. Chapter 7 will present a framework for enhancing horizontal integration across catchments and the coastal zone, and four implementation phases to reinforce this framework. This will be followed by a discussion of implications from this research for the theory of ICZM and suggest directions for further research.
Chapter 2: The evolution of ICZM and the biophysical components of horizontal integration.

2.0 – Introduction.

The preceding chapter introduced the research topic and outlined the concept of ICZM. Chapter 2 expands on information presented in Chapter 1 providing an outline of the evolution of ICZM and definitions of the two biophysical environments (i.e. the coastal zone and catchments) of horizontal integration which represent the geographical range covered in this research. It also identifies global environmental principles which contribute to the success of horizontal integration and presents a suite of refined research objectives.

2.1 – Coastal Zone.

The coastal zone provides for unique recreational activities and permanent and holiday residential developments. The coastal zone covers roughly 20% of land surface (Belfiore 2003) and its resources have been estimated to have a value of $21 (US) trillion annually, which is 70% above inland systems (Klir & Wierman cited in Krelling et al. 2008) making the coastal zone a critically valuable geographic feature (Godschalk 1992, Olsen & Christie 2000). The importance of efficient coastal zone management is increasing with 2.8 billion people living within 100 kilometres of the coast (Krelling et al. 2008). Such population density places significant pressure on coastal resources. This pressure is further compounded by impacts of climate change, rising sea levels and demands for finite resources in the coastal zone (Huntley et al. 2001, Vernberg & Vernberg 2001, Norman 2009).
Traditionally a high proportion of the coastal zone has been publicly owned and managed by governments. This has stemmed from coastal zones being used by defence forces to protect nations from invasion, access for shipping and transport, and for the national government to manage territorial seas as determined under United Nations Convention on the Law Of the Sea (Crawford 1992, Ballinger 1999).

2.1.1 – Definition of the coastal zone.

There are many definitions for the coastal zone and because the line that occurs between land and ocean is constantly moving with changes in tides, the definition depends on the purpose for defining this area, whether it be to determine jurisdictional boundaries or to address a particular management issue (Resource Assessment Commission 1993, Kay & Alder 2000). As there is not one universally accepted definition, the development of coherent definitions remains a priority of ICZM research and management (Williams et al. 2006).

In very broad terms the coastal zone represents the area where the land meets the sea. Australia’s Resource Assessment Commission’s Coastal Zone Inquiry Final Report suggests definitions for the coastal zone based on two purposes. The first relates to administrative resources – such as “existing local government administrative areas abutting the coast”, and the second to physical/biological resources – such as “natural drainage basins abutting the coast” (Resource Assessment Commission 1993 p. 7).
Kay and Alder (2000) discuss definitions based around science and policy. The scientific definition of the coastal zone is “the band of dry land and adjacent ocean space (water and submerged land) in which terrestrial processes and land uses directly affect oceanic processes and uses, and vice versa” (Ketchum 1972 cited in Kay & Alder 2000 p. 2). The policy-oriented definition of the coastal zone is “a narrowly defined area about the land-sea interface of the order of a few hundred metres to a few kilometres, or extending from the inland reaches of coastal watersheds to the limits of national jurisdiction in the offshore” (Hildebrand & Norrena 1992 p. 94, Kay & Alder 2000 p. 4).

In Australia, the Commonwealth Government suggests the “boundaries of the coastal zone extend as far inland and as far seaward as necessary to achieve the policy objectives, with a primary focus on the land/sea interface” (Commonwealth of Australia 1992). In the State of Victoria, Australia the definition refers to waters out to the state limit of 3 nautical miles from the high water mark (Victorian Coastal Council Victorian Government 1995, 2002b).

As the focus of this research is centred around the horizontal integration across catchments and the coastal zone, the following broad definition for the coastal zone is applied – “the area at the interface between land and sea, where the sea influences the land and vice versa” (Cicin-Sain & Knecht 1998 p. 459).
2.1.2 – Definition of coastal zone management and planning.

Coastal zone management and planning span across different government portfolios (such as environment, planning etc) and different levels of management (Norman 2008). Management of the coastal zone therefore involves responsibilities from all levels of government (from international to regional) and needs to incorporate many stakeholder groups in policy development (such as coastal users, residents, private sector, local communities, NGOs and conservation groups). Such a partnership approach is seen as the future direction for coastal zone management and as Kay and Alder (2000 p. 339) identify is “rapidly evolving from just a ‘good idea’ into a cornerstone of many coastal initiatives around the world.”

Harvey and Caton (2003) discuss definitions of coastal management and planning. Coastal management is “the management of human activities and sustainable use of Australia’s coastal resources in order to minimise adverse impacts on coastal environments now and in the future” (Harvey & Caton 2003 p. 195). Coastal planning is “the formulation of coastal policies, plans and programs that promote the sustainable use of Australia’s coastal resources” (Harvey & Caton 2003 p. 231). As the focus of this research incorporates the intersectoral dimension of horizontal integration (and its components of uses and agencies) these definitions will be applied.

As the coastal zone also has many uses and management requirements which involve a number of different sectors, the concept of ICZM was introduced in an attempt to overcome fragmentation inherent in single-sector management approaches (Cicin-Sain & Knecht 1998).


2.2 – Evolution of ICZM.

The evolution of coastal management in the USA originated from a focus on coastal resource management (Burbridge 1997, Olsen et al. 1997). Projects were designed to address the primary issue of achieving “sustainable use of renewable natural resources in the coastal zone” (Burbridge 1997 p. 180) along with issues of water quality, sustainable fisheries and biodiversity. This focus then evolved to coastal zone management to overcome traditional sector-by-sector based approaches (Olsen & Christie 2000, Olsen 2003).

Following the Rio UNCED meeting in 1992 the focus of coastal zone management evolved to ICZM (Cicin-Sain et al. 1995, Cicin-Sain et al. 2000). The introduction of ICZM raised the question of how to achieve integration. This concern was ultimately resolved with the Johannesburg World Summit on Sustainable Development where the focus of ICZM programs shifted to incorporate coastal governance (Olsen 2000, Olsen & Christie 2000, Cicin-Sain & Belfiore 2005, Christie & White 2007). Governance was described by Juda (1999 p. 89) to incorporate “the formal and informal arrangements, institutions, and mores which determine how resources or an environment are utilised.”

More recently as a result of increasing transboundary studies ICZM programs have focused on addressing issues with the concept of ecosystem-based management (Juda 2003, 2006, 2007, Pollnac & Christie 2009). As Juda (2007) notes coastal issues are transboundary in nature and an approach based on national or jurisdictional boundaries will fail. Ecosystem-based
management is an “integrated approach to management that considers the entire ecosystem, including humans” (McLeod & Leslie 2009 p. 4).

The continuing evolution of ICZM has led to the incorporation of ecosystem-based management using the concept of coastal governance to address the management of coastal resources (the original focus of projects) (Juda 2006).

Much of the existing literature for coastal zone management uses alternative terms, such as Integrated Coastal Management (ICM), Integrated Coastal Area Management (ICAM) and Integrated Coastal and Oceans Management (ICOM). This research adopts the term and acronym Integrated Coastal Zone Management (ICZM) to avoid confusion with the catchment-based approach of Integrated Catchment Management (ICM) which is used widely in Australia (discussed in Section 2.3).

ICZM is required for two significant reasons: (1) the effects ocean and coastal uses, as well as activities further inland, can have on ocean and coastal environments, and (2) the effects ocean and coastal users can have on one another (Cicin-Sain & Knecht 1998 p. 18, Cicin-Sain et al. 2000 p. 292). A goal of ICZM is to manage the coastal zone in a way that meets the objectives of sustainable development by focusing management around three areas: social progress, economic growth and environmental protection (UNEP cited in Krelling et al. 2008).
The two main international gatherings which ultimately led to the creation of ICZM were the United Nations Convention on the Law of the Sea (1973) (UNCLOS) and the United Nations Conference on Environmental Development (1992) (UNCED). Table 2.1 shows a sample of some significant contributions to the development of the theory and practice of ICZM. These include meetings, reports, text books and academic literature.

Outcomes from these meetings identified the importance of integrated management to address the wide variety of management issues and the vast array of stakeholder interests in the coastal zone. The evolution of ICZM has focused on maximising the benefits of the coastal zone to humans whilst minimising the harmful effects of activities on each other and the environment (Post & Lundin 1996). The major contributions are briefly described below.

**United Nations Convention on the Law of the Sea (UNCLOS).**

The UNCLOS evolved from 1973 and was signed in Jamaica on the 10th of December 1982. Two significant outcomes of the Convention were the 200 nautical mile Exclusive Economic Zone (EEZ) being placed under national jurisdiction and the establishment of territorial seas to 12 nautical miles (Cicin-Sain & Knecht 1998). The Convention represents the establishment of a statute for the world’s oceans and after a sufficient number of countries had signed, it came into force on 16th November 1994 (Cicin-Sain & Knecht 1998).
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Table 2.1: A sample of significant contributions to ICZM.
The Convention is important for ICZM as it establishes the boundaries for ocean and coastal zone management. These boundaries are important for the dimensions of ICZM - international and intergovernmental integration (as identified in Chapter 1). The Convention sets the standards for ocean and coastal areas to be managed by nations, however, detailed guidelines on how to approach management issues were not provided until the UNCED in 1992.

**United Nations Conference on Environment and Development (UNCED).**

The UNCED (‘Earth Summit’) convened in Rio de Janeiro on June 3-14th in 1992. A clear message from the Earth Summit was that integration was essential to achieve sustainability (Morrison et al. 2004). The Earth Summit demonstrated the growing recognition of the importance of environmental management with the attendance of 178 nations, 114 heads of state, more than 1,000 official delegates, 9,000 media people, and representatives of 1,400 nongovernmental organisations (Cicin-Sain & Knecht 1998).

Two significant outcomes from the Earth Summit for the development of ICZM were the Agenda 21 – Chapter 17 ‘Protection of the Oceans’ and the Convention on Biological Diversity 1994.

**Agenda 21, Chapter 17.**

Agenda 21, Chapter 17 provides the international basis for the protection and sustainable development of the marine and coastal environments and their resources (United Nations Division for Sustainable Development 1992). Chapter 17 “addresses ocean and coastal areas and emphasises the view that
the marine environment – including the oceans and all seas and adjacent coastal areas – forms an integrated whole” (Juda 2003 p. 163).

Chapter 17 has seven programme areas two of which are particularly important for ICZM. Programme Area (A) refers to the integrated management and sustainable development of coastal areas, and Programme Area (F) is important for vertical and horizontal integration as it address international, including regional, cooperation and coordination (Cicin-Sain et al. 1995).

The significant interplay of activities on land and offshore, later emphasised by the adoption by the international community in 1995 of the Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities, is stressed in Agenda 21 (Juda 2003).

**Convention on Biological Diversity.**

The Convention on Biological Diversity provides measures for protecting marine biodiversity and is an important instrument for sustainable development (refer to Section 2.4). The Convention was opened for signature at the Earth Summit in 1992 and the first meeting took place in 1994 (United Nations Environment Programme 1992, Cicin-Sain & Knecht 1998). The three main objectives of the Convention are the conservation of biodiversity; sustainable use of biodiversity; fair and equitable sharing of the benefits arising from the use of genetic resources (United Nations Environment Programme 1992, Harvey & Caton 2003). The Convention recommends
ICZM as the approach to address impacts from land-based activities (Cicin-Sain & Belfiore 2005).

Other international agreements which have significantly contributed to the development of ICZM include:

- United Nations Framework Convention on Climate Change (March 1994), complemented by 1997 Kyoto Protocol as a global response to climate change and rising sea levels (United Nations 2010);

- Global Programme of Action on Protection of the Marine Environment from Land-Based Activities (October-November 1995);
  - The first action resulting from this Conference states that
    “states should focus on sustainable, pragmatic and integrated environmental management approaches and processes such as integrated coastal area management, harmonised, as appropriate, with river basin management and land use plans” (UNEP cited in Cicin-Sain & Knecht 1998 p. 100); and

- Global Conference on Oceans, Coasts, and Islands 2003 (Chua et al. 2006). The Conference was developed to place ocean and coastal issues on the agenda of the 2002 World Summit on sustainable development. Also held in 2006, 2008, and 2010.

ICZM assists management of conflicts between uses and between government agencies that administer programs. In conjunction with ICZM, natural resource planning and management incorporate Integrated Catchment
Management (ICM) which aims to manage catchments also in a sustainable and integrated manner.

2.3 – Catchments and Integrated Catchment Management.

Catchments are also referred to as watersheds or river basins. As with management of the coastal zone, catchment management faces similar institutional issues as catchments also have many stakeholders which are interconnected by uses which cross boundaries (Ewing et al. 2000, Dawei & Jingsheng 2001). Catchment management involves issues centred on water quality and environmental flows, soil erosion, land degradation, vegetation coverage and run-off from land uses (Lal 2000, Dovers & Wild River 2003). The involvement of community members is significant in catchment management as many catchments encompass private land.

Both catchment and coastal zone management adopt the universal environmental management approaches of Natural Resource Management (NRM) and sustainable development (discussed in Section 2.4). However, the primary focus for catchment management differs from coastal zone management. Catchment management is mainly based on primary production and agricultural issues and incorporates private and public land ownership. The focus of catchment management is mostly inland and recognition of its impacts on coastal environments is limited (Bouilly 2000, Ewing et al. 2000, Blomquist & Schlager 2005).
2.3.1 – Definition of a catchment.

As with the coastal zone, there are many different definitions for a catchment which depend on the purpose for defining it. Catchments can be defined around natural, political or administrative boundaries which may cross state and national borders (Blomquist & Schlager 2005). A catchment can be defined as “a delineated area with a well-defined topographic boundary and water outlet” (Lal 2000 p. 4).

For this research the following definition will be adopted: “a discrete geographical area of land, comprising one or more hydrometric sub-catchments, whose boundaries are derived primarily from natural features such that surface water drains and flows to a river, stream, lake, wetland or estuary” (House of Representatives 2000 p. 25).

Estuaries provide a link between inland water bodies (i.e. catchments) and the ocean. Estuaries will not be addressed separately, but will be incorporated under the management of catchments in this thesis. An estuary is defined as “a semi-enclosed coastal water body that represents the mixing zone between marine-derived saltwater and terrestrially-derived freshwater” (Smith et al. 2001 p. 3) and may provide the connecting link between catchments and the coastal zone.

2.3.2 – Definition of catchment management.

Catchment management is defined as “the holistic management of natural resources within a catchment unit encompassing interrelated elements of land
and water management on an ecological and economic basis and incorporating social systems. It is a system that favours the integration of environmental policy across government, community, and industry sectors through partnerships and extensive stakeholder inclusions” (House of Representatives 2000 p. 26).

There is currently no internationally accepted concept, equivalent to ICZM, for the management of catchments. There is however, a significant international agreement for the protection of a portion of catchments, entitled the Ramsar Convention for the Protection of Wetlands (Conacher & Conacher 2000). This Convention provides a framework for management from the national to regional level of catchments. There are 159 Contracting Parties to the Convention, with 1883 wetland sites, totalling 185 million hectares, designed for inclusion in the Ramsar List of Wetlands of International Importance (Ramsar 2010).

Although catchment management does not have a well developed internationally accepted concept there is the concept of Integrated Catchment Management (ICM) also known as Total Catchment Management (TCM). In Australia, ICM is adopted in management programs nation-wide. ICM is defined 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 Council 2001 p. 1).

The concept of ICM demonstrates the interrelationship with other stakeholders in the catchment area, addressing the intersectoral dimension of horizontal integration. Although resulting from different objectives, the management of catchments and the coastal zone have similar management frameworks, established to manage uses by multiple stakeholders in a sustainable manner. Some common concepts which are shared in the management of catchments and coastal zones will now be discussed.

2.4 –Global environmental concepts.

Having ICZM and ICM frameworks in place helps nations to achieve the internationally accepted principles of Natural Resource Management (NRM) and sustainable development. The concept of Adaptive Management (AM) can be utilised to constantly evolve frameworks in accordance with latest scientific information and management practices.

Natural Resource Management (NRM).

NRM is a way of incorporating triple bottom line aspects (economic, environmental, social) into the management of biophysical environments (including catchments and the coastal zone). NRM brings together the key players (such as community, government and industry) to establish strong partnerships in environmental management and planning as identified by Nobel and Rodgers (2004) at the Australian Coast to Coast Conference in
2004. In the practice of NRM, planning and management are dictated by natural boundaries, rather than political or administrative boundaries (Hildebrand et al. 2002). This differs from many other issues which are dictated by political or administrative boundaries.

The Australian Government released a ‘Framework for future NRM Programmes’ (2006) which outlined NRM objectives for the nation. These objectives were biodiversity conservation, sustainable use of natural resources and community capacity building and institutional change (Commonwealth of Australia 2006). New Zealand introduced a Resource Management Act in 1989 in an attempt to integrate and coordinate the management of natural resources (Dovers & Wild River 2003).

As with ICZM, the concept of NRM identifies the need for a holistic ‘whole of government’ approach to the management of resources in a sustainable manner and has been referred to by some coastal experts as the best approach for management of coastal zone resources (Born & Sonzogni 1995, Harvey & Caton 2003, Cheong 2008).

**Sustainable Development.**

Sustainable development is defined by the ‘Bruntland Report’ entitled ‘Our Common Future’ as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (WCED 1987). The concept of sustainable development was put on the international environmental agenda during the 1990’s as a result of
discussions at the World Commission on Environment and Development and as an outcome from Agenda 21 resulting from UNCED in 1992 (Harding & Traynor in Dovers & Wild River 2003).

In Australia, it is referred to as ecologically sustainable development (ESD) and is defined as “using, conserving and enhancing the community’s resources so that ecological process, on which life depends, are maintained and the total quality of life, now and in the future can be increased” (Commonwealth of Australia 1992 p. 1, Beder 1996 p. 3).

**Adaptive Management (AM).**

As part of NRM processes, a practice which attempts to improve management success has been incorporated, this is known as adaptive management (AM). AM has become an important part of NRM frameworks and is still evolving. It has been developing for over 30 years and uses lessons from policy experiments to improve future practice (Allan et al. 2008, Medema et al. 2008). AM can be described as ‘policy as experiment’ or ‘learning by doing’ (Dovers & Wild River 2003, Cheong 2008).

AM has traditionally been used in the practice of catchment management. However, it has also more recently been suggested for adoption in management of coastal zones (Kay & Alder 2000, Townend 2004, McKenna et al. 2008). AM in the practice of ICM has changed the view of catchment management from a static prescription to a ‘living’ framework which can be built upon as knowledge grows (Ewing et al. 2000). The process of AM aims
to manage and learn from outcomes (both positive and negative) providing continuous improvement of management policies and practices whilst constantly increasing the knowledge base (McKenna et al. 2008, Medema et al. 2008).

Habron (2003) identifies the steps of AM as being problem identification, collaborative brainstorming, model development, hypothesis testing, planning, experimentation, monitoring, evaluation, and behavioural change. It has been described as “an integrated, multidisciplinary and systematic approach to improving management and accommodating change by learning from the outcomes of management policies and practices” (Holling 1978 cited in Medema et al. 2008 p. 6).

The practice of AM allows for the incorporation of new scientific methods in order to continually improve policies without the need to constantly update and reform legislation (Ewing et al. 2000, Duda 2004, Paisley et al. 2004a). AM will prove invaluable in the improvement and evolution of ICZM practices which is considered to be a life-long, continually evolving process about regional, state, national and international issues which has not always incorporated scientific information effectively (Bower & Turner 1998, Chua et al. 2006, Cheong 2008, Krelling et al. 2008). AM enables widespread stakeholder involvement which is imperative for the diverse range of catchment and coastal zone stakeholders.
2.5 – *Horizontal integration across catchments and the coastal zone.*

As this chapter has demonstrated, catchments and the coastal zone share a number of common management issues, which have evolved from different backgrounds and management requirements. The possibility for horizontal integration between catchments and the coastal zone exists and there are a number of internationally agreed principles which offer scope for this. However, current management practices continue to adopt a sector by sector approach to NRM which disregards the mutual benefits which would arise from intersectoral integration (Juda 2003).

Horizontal integration addresses the link between the two biophysical environments – catchments and the coastal zone – through its dimension of spatial integration. This biophysical link has been consistently identified in reports and conferences such as the World Commission on Environment and Development (1987), the Commonwealth of Australia’s Coastal Zone Inquiry (RAC 1993), and the Commonwealth of Australia’s State of the Environment Report (2002a). More recently, Cicin-Sain and Belfiore (2005 p. 851) state that there has been a “realisation that ICZM efforts must be tied to watershed planning and management efforts and to river basin management”. Olsen (2003) and Memon et al. (2010) highlight that concepts such as ICZM and ICM can be used to integrate management within geographical contexts.

The need for spatial integration has also been identified in Australia’s Framework for a National Cooperative Approach to Integrated Coastal Zone Management (NRMMC 2006). The Framework has a priority theme for
action called ‘The Catchment-Coast-Ocean-Continuum: An Integrated Approach’ (as discussed in Chapter 4). Most recently in Australia, the release of a report by the House of Representatives Standing Committee on Climate Change, Water, Environment and the Arts (HoR 2009) dedicates a chapter to governance arrangements and the coastal zone (as discussed in Chapter 4).

The need for intersectoral integration was identified in Sorenson’s (2002) review of ICZM efforts, where the common challenges to achieving effective ICZM were identified. The review found that one of the challenges is the ‘weak cross-sectoral institutional arrangements’ (Sorenson 2002 p. 8-3). Therefore, the success of ICZM programmes in meeting sustainable development and NRM objectives across catchments and the coastal zone clearly depends on its success in applying the spatial and intersectoral dimensions of horizontal integration (refer to Figure 1.2). This requirement has been apparent throughout the evolution and development of ICZM, however, with 75-80% of total marine pollution still occurring from land-based sources (Belfiore 2003) it is clear that current management practices are unsuccessful.
2.6 – Refined research objectives.

As stated in Chapter 1, the aim of this research is to devise a framework for enhancing horizontal integration across catchments and the coastal zone. Although there have been significant global advances in the practice of ICZM, nations share a common obstacle of how to implement horizontal integration (and its two dimensions of spatial and intersectoral) across catchments and the coastal zone. As Dovers (2005a) and Ehler (2003) note there is little consensus over how to overcome fragmentation and achieve integration. Considering the lack of progress in achieving horizontal integration, the numerous benefits which would be obtained from its implementation and the current absence of an accepted framework for achieving its application, the approach adopted for this research will be:

- To review literature covering the international examples of ICZM and horizontal integration.
- To conduct an analysis of the current status of ICZM and horizontal integration in Australia.
- To conduct a case study within Australia to explore the current on-ground implementation of horizontal integration at the regional and state management levels.
- From case studies and literature reviews identify factors influencing the on-ground implementation of horizontal integration across catchments and the coastal zone.
- Devise a framework for ICZM which can be adopted internationally to enhance the implementation of horizontal integration.
The next Chapter reviews the current status of horizontal integration across catchments and the coastal zone in developed and developing nations.

Chapter 3 explores frameworks for ICZM and catchment management in the United States of America, Canada, the European Union, Partnerships in Environmental Management of the Seas of East Asia, Brazil (South America) and South Africa.
Chapter 3 – ICZM and horizontal integration in developed and developing nations.

3.0 – Introduction.

Chapters 1 and 2 explored how the concept of ICZM has evolved, its universally accepted definition, identified the dimensions and components of horizontal integration and the geographical range for this research. This Chapter reviews the literature to illustrate how ICZM programs have been implemented in developed and developing nations.

The design of an ICZM program is defined by the physical, socio-economic, cultural and political context in which it is to operate (Cicin-Sain & Knecht 1998, Cheong 2008). As Mitzberg (cited in Cicin-Sain & Knecht 1998 p. 9) noted, there is not a ‘one size fits all’ solution for implementing ICZM, but its framework is adaptable to meet different political systems, cultural traditions and coastal zone management needs. When discussing the application of ICZM in Europe’s Demonstration Programme (discussed in Section 3.4) King (2003) suggests that ICZM is appropriate for world-wide adoption due to its holistic approach to managing the impacts on the coastal zone from climate change and human influences.

ICZM can be adapted to coastal zone management plans at different levels of implementation (including national, state and regional levels). Different nations use different terms for identifying their management levels. Such as, provincial or sub-national or state/territorial for below national level, and
local, regional or sub-state for the lower level. For this research the terms national, state and regional will be used (Refer to Figure 3.1: bold text represents terms adopted in this research).

![Figure 3.1: Management Levels.](image)

As all nations have different coastal zone management objectives, frameworks, cultural and political settings, and budgets to work within, the development and implementation of ICZM programs will vary between nations (Stojanovic et al. 2004). Olsen (2003) notes that ICZM programs must be tailored to the requirements and capacity of the location in which it is to be implemented. Despite each ICZM program needing to be individually designed, some guidelines were presented at the World Coast Conference held in the Netherlands in 1993. The present guidelines are an expansion and update on these guidelines. These guidelines are summarised below:

1. Define geographical boundaries.
2. Resource and information inventory and assessment.
3. Identification of key issues and areas of concern.
4. Procedures and public/stakeholders participation.
7. Development of management measures.
8. Review institutional capacities.
9. Design monitoring and evaluation systems; and
10. Recommendations for policies, goals and programs.

(Adapted from Post & Lundin 1996, Lawrence 1997).

The adaptability of ICZM to the requirements of different nations means it is a concept which has been applied in both developed and developing nations. This Chapter reviews some different approaches to implementing ICZM under different government structures, and their implementation (if any) of horizontal integration across catchments and the coastal zone.

Three case studies will be used to demonstrate the national approach to ICZM adopted in developed nations. These are the United States of America (USA), and Canada (separately and together) as well as the transnational approach adopted by the European Union (EU). These three case studies were chosen as their coastal zone management issues revolve around vertical and horizontal integration, which are the key characteristics of ICZM. Their experiences demonstrate that ICZM is adaptable to different institutional arrangements and for coordinated management between two or more nations. Whilst it is not possible to make direct comparisons between nations (due to their different cultural, historical and political circumstances) it is possible to
discuss similarities in management issues and approaches (Jablonski & Filet 2008).

These case studies will be followed by a brief description of the national approaches adopted in developing nations. The developing nations discussed will be those involved in the Partnerships in Environmental Management of the Seas of East Asia (PEMSEA), Brazil (South America) and South Africa. These three case studies where chosen to demonstrate the application of coastal zone management in developing nations which have similar aspects to the developed nation case studies. These aspects are the transnational approach (PEMSEA), an expansive coastal zone with large population density, similar government arrangements to other case studies (Brazil), and have a rapidly growing coastal population (South Africa).

3.1 – The United States of America (USA).

The United States of America (USA) was chosen as it was the first nation to pass a comprehensive act specifically for the management and protection of the coastal zone. Coastal management in the USA originated from a focus on coastal resource management (as discussed in Section 2.2) and later demonstrated one of the first attempts at integration with the creation of the San Francisco Bay Conservation and Development Commission in 1965 (Sorenson 1997).

The USA has nearly forty years experience with ICZM (Duda 2004) and is well placed to illustrate how programs can occur across nations (both
developed and developing) that share borders. The USA shares responsibilities with Canada, for the management of water bodies such as the Great Lakes, which is an example of cross-border management (discussed in Section 3.3).

The USA is a federal republic with 50 states, one federal district, a number of independent territories, and approximately 80,000 local level governments (Cicin-Sain & Knecht 1998). It has a population of 309 million (U.S. Census Bureau 2010) and a coastline which stretches for 19,800 kilometres (Cicin-Sain & Knecht 1998). Coastal zone management in the USA has historically been centred around maritime activities and fishing (Duff 2004). This focus has now changed with the percentage of population living in the coastal zone rapidly increasing from 43.5% in 1990 (Leon et al. 2004), to around 60% in 2001, and expectations this will reach over 70% in the early part of the 21st century (Vernberg & Vernberg 2001). The coastal areas of the USA account for less than 10% of the land area (Vernberg & Vernberg 2001), highlighting that such a concentrated population requires the adoption of an effective ICZM program to address management issues resulting from human impact on the coastal zone.

**ICZM in the USA.**

President Reagan claimed 12 NM territorial seas for the USA in 1988 (Duff 2004). The USA has been practising ICZM for four decades as discussed by Duda (2004) when suggesting that other nations could learn from its experiences. Like Australia (discussed in Section 4.0) the USA has a three
tiered government (national/state/regional) requiring intergovernmental (vertical) integration.

In the USA the state government is responsible for the day-to-day management of the coastal zone and uses the principles of ICZM to structure programs suitable for their specific management objectives and issues. Coastal zone management in the USA gives power to the states and the funding is shared between two levels of government with the national government contributing two-thirds and the state one-third to the operation of coastal zone management programs (Lawrence 1997, Cicin-Sain & Knecht 1998, Paisley et al. 2004a). The regional governments implement state coastal policies and programs (Hershman et al. 1999).

**Our Nation and the Sea 1969.**

In 1969 the Stratton Commission released a report entitled ‘Our Nation and the Sea.’ The report highlighted the importance of the USA’s coastal zone and the management required, focussing attention on the coastal zone to scientists, citizens and political leaders (Vernberg & Vernberg 2001). The report concluded that governmental efforts had a number of basic defects (Juda 2003). Responsibilities for ocean management spread across a number of departments and agencies which resulted in management overlap and conflicts. The report also noted that management addressed issues in isolation – suggesting the need for management efforts to be integrated (Juda 2003).
Until the introduction of UNCED and Agenda 21 to the international stage this report placed the USA at the forefront of coastal zone management. The report led to the establishment of the National Oceanic and Atmospheric Administration (NOAA) and the Coastal Zone Management Act (CZMA).


The NOAA has national and state programs designed to promote marine and inland education and address management issues. Two such programs are the National Estuarine Research Reserve Program and the National Marine Sanctuary Program (Vernberg & Vernberg 2001). Part of the NOAA is the Office of Ocean and Coastal Resource Management which works with state governments and consists of six divisions, these being Coastal Programs, Estuarine Reserves, National Policy and Evaluation, Business Management, a Marine Protected Areas Centre, and the Coral Program (NOAA 2009). The National Marine Sanctuary Program was designed to protect marine areas of national significance.

In 2007, NOAA produced a Coastal Zone Management Program Strategic Plan 2007-2012 which adopts the federal/state partnership created under the Coastal Zone Management Act. The Coastal Zone Management Program (CZMP) is a voluntary program which provides a basis for the protection and sustainable development of coastal communities and resources (NOAA 2007).
Coastal Zone Management Act 1972.

The national Coastal Zone Management Act (CZMA) adopted by the US Congress in October 1972 established a voluntary program with national assistance to states to develop management programs for their coastal zones (Vernberg & Vernberg 2001, Davis 2004). As noted, the CZMA represents the earliest example of national legislation in coastal zone management (Humphrey et al. 2000, Duda 2004).

The CZMA provides for intergovernmental (vertical) integration between all three levels of government in the USA – national, state and regional (Gibson 2003, Juda 2006, Boyd et al. 2007). This is demonstrated by Godschalk (1992 p. 93) who states that “the history of the program carried out under the CZMA of 1972, from the early stirrings of the ‘coastal management’ idea in the 1960s to its mature stage in 1990, presents a paradigm of intergovernmental policy implementation”. The national government provides funding and guidelines, the state government determines the boundaries of the coastal zone and the key coastal problems and the state and regional organisations are involved in the implementation of the coastal zone management programs (Godschalk 1992, Hershman et al. 1999, Davis 2004).

The CZMA provides also for horizontal integration moving the practice of coastal zone management from a ‘sectoral’ approach to a ‘systems’ approach as identified by Juda (2003) and Hershman et al. (1999). Juda (2003) suggests that the CZMA moves the management of coastal areas from uses being considered in isolation, to uses being considered in terms of their impact on
other uses and the broader environment. Hershann et al. (1999) note that under Section 303 of the CZMA management objectives are to achieve sustainable development principles in an integrative manner, giving consideration to ecological, cultural, historic, aesthetic values and the need for economic development.

The twenty years following the introduction of the CZMA saw management progress to the point where in 1992 twenty nine states were operating government approved coastal zone management programs covering approximately 94% of the USA coastal zone (Knecht et al. 1996). By 2004 this had risen to thirty four out of thirty five eligible states adopting approved coastal management programs (Davis 2004).

States also develop Special Area Management Plans which are defined in the CZMA as ‘a comprehensive plan providing for natural resource protection and reasonable coastal-dependent economic growth containing a detailed and comprehensive statement of policies; standards and criteria to guide public and private uses of lands and waters; and mechanisms for timely implementation in specific geographic areas within the coastal zone’ (cited in Davis 2004 p. 81). A Coastal Zone Enhancement Program (Section 309) was added under the CZMA in 1990 providing additional funding for states to improve their Special Area Management Plans to incorporate nine areas of national significance (Davis 2004).
Reviews of the CZMA by Humphrey and Burbridge (2003) and Humphrey et al. (2000) suggest that the model provided by the USA offers valuable lessons for development of ICZM. Specifically, the institutional framework that the Act provides allowing states to tailor their ICZM programs to meet their specific management requirements. The CZMA was reauthorised by the Coastal Zone Protection Act in 1996.

Non-Government Organisations (NGOs) can offer pertinent and current scientific information to policy development and are gaining influence and power in the policy making arena (Vernberg & Vernberg 2001). Some key Non-Government Organisation’s (NGO) involved in USA coastal zone management include the Centre for Coastal Studies, Coastal Alliance, National Resources Defence Council, the Sierra Club, the Conservation Foundation, the Nature Conservancy, the National Wildlife Federation and the Coastal State of America Organisation (Humphrey et al. 2000).

**Catchment management in the USA.**

In the USA catchment management is commonly referred to as ‘watershed’ management. The idea of using a catchment as a unit for planning and management dates back to the 1800s (Worster cited in Blomquist & Schlager 2005). Despite this long history, catchment management in the USA is underdeveloped and agreement between policymakers on how to develop and implement catchment-based policies and programs has not been reached (McGinnis cited in Blomquist & Schlager 2005). However, catchment organisations have been established under government initiatives to address
the current focus of catchment management as a means to achieve integrated NRM (Allan et al. 2008).

Cross-boundary catchment management is very complex in the USA as it needs to coordinate management between the USA (a highly resourced nation), Mexico (a poorly resourced nation) and Canada (a nation with a strong focus on the fishing industry – discussed in section 3.2). These three nations all have a different natural resource management focus, and available funding and resources. The Estuary Protection Act was introduced in 1968, the Clean Water Act was introduced in 1972 and the National Estuary Sanctuary Program was created in 1987 (Godschalk 1992).

**Clean Water Act 1972.**

The Clean Water Act was implemented in 1972 to address several issues including point-source pollution control, ocean discharges of effluent, non-point pollution control, water quality standards, and dredge-and-fill operations (Vernberg & Vernberg 2001). The Act offers an opportunity for horizontal integration across catchments and the coastal zone.

**National Estuary Program 1987**

The National Estuary Program started in 1987 and was included as part of the Clean Water Act (Section 320). The Program was designed by the national government in an endeavour to address water pollution problems on a more regional basis (Vernberg & Vernberg 2001). There are 28 National Estuary Programs which are led by the Environment Protection Agency and produce
Comprehensive Conservation and Management Plans. As Juda (2003) illustrates, the National Estuary Program represents a change in approach to management through recognising the ecological importance of the coastal zone and adopting a catchment-based approach to management.

The Programs are voluntary and provide for intergovernmental (vertical) integration between national and state governments and intersectoral (horizontal) integration across NGOs, industry, academics, environmental groups and members of the community.

**Summary of key points.**

Although the USA showed one of the earliest examples of integration in coastal zone management (in 1965) and was at the forefront of coastal zone management in the 1970s it still has not achieved the successful on-ground implementation of horizontal integration as indicated in reports by Humphrey et al. (2000), Cicin-Sain et al. (2000) and Blomquist and Schlager (2005).

The USA has the necessary legislation and programs in place to achieve horizontal integration across catchments and the coastal zone. ICZM and ICM policies are adequate, however, practical implementation has not been successful (McGinnis cited in Blomquist & Schlager 2005). The lack of success in achieving on-ground implementation, identified by assessments, could be due to the fragmentation of management institutions (Duda 2004).
A study undertaken by Hershman et al. (1999) reviewed the effectiveness of coastal zone management in the USA. The study found that program managers identified governance arrangements, public participation, funding and resources, adequate policies, coordinated guidelines and the upgrading of management capacity as key factors required for successful coastal zone management. The study also revealed that senior program managers believed that some of the failures in coastal zone management resulted from inadequately addressing issues such as water quality protection, watershed management, and non-point-source pollution control (Hershman et al. 1999).

Effective coastal zone management in the USA is extremely important as half of the states of the USA are located in the coastal zone. This importance was reinforced in reports for the Ocean and Pew Ocean Commissions which concluded that the ‘coasts are in serious trouble’ (Steel et al. 2005a). Assessments undertaken by the Food and Agriculture Organisation for fisheries, found depletion of living resources, conversion of coastal habitat and accelerated pollution of coastal waters (Duda 2004).

Coastal zone management in the USA is considered to be sector based, not providing for the intersectoral dimension of horizontal integration (Cicin-Sain & Knecht 1998, Cicin-Sain et al. 2000, Beatley et al. cited in Humphrey et al. 2000). Coastal fragmentation is occurring as plans are based around administrative boundaries, rather than natural ecosystems. The US Commission on Oceans Policy mid-term report in 2002 supports a systems approach to coastal zone management and its need to be integrated with
catchment management (US Commission cited in Juda 2003). This report reinforces the importance of both spatial and intersectoral integration in achieving successful coastal zone management.

The characteristic vertical integration is apparent in the USA through the strong national-state partnership offered by the CZMA. Coastal zone management has voluntary and flexible approaches which allow for different program objectives to reflect regional priorities (Humphrey et al. 2000). This voluntary approach has contributed to the on-ground success of regional coastal zone management plans (Beatley et al. cited in Humphrey et al. 2000). A significant gap in coastal zone management in the USA is the absence of a national coastal zone program. This has resulted in a lack of overall national perspective, vision and leadership for state coastal zone programs (Humphrey et al. 2000).

On-ground achievements in catchment management in the USA are limited. This failure has been attributed to the insufficient institutional arrangements and the prevalence of the upstream-downstream division (Blomquist & Schlager 2005). In contrast to coastal zone management, the National Estuary Program bases catchment management around natural ecosystems (Humphrey et al. 2000). However, catchment management in the USA also remains fragmented and sectoral-based with its focus more on development than the environment (Blomquist & Schlager 2005). Duda (2004) discusses that the cause of degraded estuaries is a result of failures in the public policy.
The national CZMA identified the need for horizontal integration with catchments recognising that the protection of coastal waters was reliant on governments managing inland coastal ecosystems, notably catchments (Sorenson 1997).

NRM in the USA also requires coordination between governments and the private sector. The private sector has a strong influence in catchment and coastal zone management with most major corporations having full-time environmental and governmental relations staff (Vernberg & Vernberg 2001).

Capacity building, education and the influence of NGOs is extensive in the USA with fourteen institutions teaching ICZM and eleven research centres focused on NRM (Cicin-Sain et al. 2000, Steel et al. 2005a). This capacity will place the USA in a strong position for overcoming some of the current inhibitors to achieving horizontal integration across catchments and the coastal zone.

3.2 – Canada.

Canada was chosen as an example of coastal zone management in a developed country with different cultural interests and uses in the coastal zone (compared to the USA and EU). It was also chosen to demonstrate the interaction between two nations with different political systems and resources whose catchments cross national borders and for which joint management policies are currently in place (discussed in section 3.3).
Canada has a population of 31 million (Leon et al. 2004) and the longest coastline of any nation in the world, which is 243,797 kilometres long (Juda 2003, Ricketts & Harrison 2007). The Canadian government consists of federal, state (10 self-governed) and territories (2) and local governments (Paisley et al. 2004a, Hill et al. 2008). It does not have a national coastal zone management policy in place (Juda 2003, Paisley et al. 2004a), which significantly impedes the occurrence of intergovernmental integration and national leadership. The national government owns the seabed below the mean low tide mark and the state government owns the seabed between the low and high tide mark (Paisley et al. 2004a).

Unlike the USA, Canada is a signatory to the UNCLOS ratifying it in November 2003, with it coming into force in December that year (McDorman 2004). Prior to signing the UNCLOS, Canada had an Exclusive Fisheries Zone in 1983 (McDorman 2004, Ricketts & Harrison 2007) which demonstrates the economic importance of this industry. Canada borders three oceans (the Arctic, Atlantic and Pacific), has a 12 NM territorial sea and a 200 NM EEZ (Cicin-Sain & Knecht 1998, Juda 2003). Due to the large responsibility Canada has under the UNCLOS and its large fishing industry, coastal zone management has focused primarily on its interaction with the ocean-side of the coastal zone.

Coastal habitation is not as prevalent in Canada as in the USA with less than one quarter of the population (or 7.5 million) living within 60 kilometres of the shore (Leon et al. 2004, Ricketts & Harrison 2007). In 2001 there were
11.5 million people or 38.3% of the population living within 20 kilometres of the coast and this is projected to reach 16.75 million by 2015 (Manson cited in Ricketts & Harrison 2007). Coastal habitation is concentrated in the southern part of Canada, alongside its border with the USA (Leon et al. 2004). The population on the border with the Atlantic Ocean is almost double the population on the border with the Pacific Ocean (Leon et al. 2004).

**ICZM in Canada.**

Canada uses the concept of Integrated Coastal and Oceans Management (ICOM) and its management is centred on oceans rather than the coastal zone (Ricketts & Harrison 2007). This has meant that Canada’s approach has been different to other nations, such as the USA where coastal development motivated the formation of public policy (Ricketts & Harrison 2007). Canada is therefore a good case study to show the development of horizontal integration from an ocean to coastal zone perspective. Although the perspective for horizontal integration in Canada is the reverse of the USA, some of the inhibitors are common, and will be discussed below.

**Canadian Shore Management Symposium.**

In 1978, the Canadian Shore Management Symposium was organized by the Canadian Council of Resource and Environment Ministers and focused on Shore Zone Management in order to incorporate those inland states which did not have ocean coasts, but had lake shorelines and watersheds to manage (Ricketts & Harrison 2007). An outcome of the Symposium was the establishment of the ten principles known as the ‘Victoria Principles’ which
include the “need to adopt a co-operative approach to management, co-
ordination of policies and programs across all levels and departments of
government, recognition of the interrelatedness of all coastal activities, the
role of information systems to support decision making, and the importance of
public access and awareness” (Ricketts & Harrison 2007 p. 7).

**Biennial Coastal Conference.**

The Canadian Coastal Conference takes place every two years, beginning in
1980 and is run under the auspices of the Canadian Coastal Science and
Engineering Association (Ricketts & Harrison 2007). The Conference was
designed to bring together scientists, engineers, and managers to discuss
environmental management issues and structural hazards surrounding
Canada’s coastal zones (Ricketts & Harrison 2007). The information and data
shared at these conferences provides valuable support for implementing
intersectoral integration.

**Atlantic Coastal Action Program (ACAP).**

The Atlantic Coastal Action Program (ACAP), which began in 1991, is an
example of a community-based coastal program which develops and
implements a Comprehensive Environmental Management Plan (CEMP).
The ACAP was established by Environment Canada as a community-based
initiative to manage catchments and their adjacent coastal areas (Harvey et al.
2001, Kearney et al. 2007). The ACAP is an ICZM program at fourteen sites
in Atlantic Canada, each defined by a watershed area and with environmental
issues, population base, industrial base, land uses, urban/rural split and resources unique to the area (McCleave et al. 2003).

Some authors argue that the Canadian ICZM programs are strongly community-based, despite the lack of government backing (Ellsworth et al. 1997, McCleave et al. 2003, Kearney et al. 2007). This demonstrates that despite the limited political support the community recognises the importance of addressing coastal zone management issues, and has a high level of goodwill to be involved in on-ground implementation of programs.

Coastal Zone Canada Association (CZCA).
The Coastal Zone Canada Association (CZCA) was formed in 1993 with the stated objectives of “promoting the appreciation, awareness, and understanding of the uniqueness and value of the coastal areas of Canada; and providing a forum for the exchange of ideas and information concerning the sustainable use and development of coastal areas of Canada through meetings, conferences, documentation, and other means” (Ricketts et al. 2005 cited in Ricketts & Harrison 2007 p. 8).

Two of the fundamental objectives of the CZCA and its Coastal Zone Canada Conference Series, are that “its meetings must build both on previous events and on multi-sectoral, multi-disciplinary, international gatherings that discuss and debate key challenges to integrated coastal management. The goal is to derive new guidance, tools and motivations to advance its practice” (Sorenson 2002 p. 1-1).
In 1993 a draft policy document entitled ‘Coastal Zone Management: A Framework for Action’ was released, some 20 years after the USA had a Federal Act in place (Paisley et al. 2004b). As reported in Lawrence (1997), Hildebrand identified some aspects which may be hindering progress in Canada including a lack of political and public awareness, administrative fragmentation, inadequate information, no clear motivation and the dominance of short-term versus long-term management.

In 1996 a report on the role of the national government in the ocean sector noted the need for national leadership and the implementation of an ecosystem-based approach to management which recognizes the links between land-based activities and the near-shore coastal zone (Parkes & Manning cited in Juda 2003). The response to this report resulted in the introduction of the Oceans Act and Strategy. As Foster et al. (2005) point out the progress of ocean management has been slow with the Act and Strategy taking over ten years to develop since they were first proposed in the ‘Oceans Policy for Canada’ released in 1987.

**Canada’s Oceans Act 1997 and Oceans Strategy 2002.**

In 1997 Canada’s Oceans Act was established and this later lead to the Oceans Strategy in 2002. The Act is the first piece of Canadian legislation which focuses on the whole ocean ecosystem rather than on a particular issue or species (Juda 2003), providing for intersectoral integration. These two policies support sustainable economic opportunities and offer protection to marine resources (Yao 2008). The Oceans Act also establishes an Integrated

Kearney et al. (2007) suggest that the Oceans Act is designed to improve coastal zone management by mediating between potentially competing uses, whilst protecting natural resources and enabling economic development. Juda (2003) identifies that the Oceans Act is a move in the direction from a sectoral to a systemic approach to ocean management.

Canada’s Oceans Strategy was released in 2002 with three main policy objectives. These were ‘the understanding and protection of the marine environment; to support sustainable economic opportunities; and to show international leadership in oceans management’ (Foster et al. 2005). The Strategy is designed to overcome the fragmentation inherent in a sectoral management approach, analyses the implications of development, conflicting uses and promotes linkages and harmonization among various activities (Kearney et al. 2007). The national Strategy provides for spatial integration as it is designed to manage estuarine, coastal and marine ecosystems in Canadian waters (Foster et al. 2005). This integration is also made possible with the companion document to the Strategy entitled Policy and Operational Framework for Integrated Management of Estuarine, Coastal and Marine Environments in Canada. This document provides the national structure and
guidance for the development of regional ocean management and planning processes, such as the Eastern Scotian Shelf Integrated Management (ESSIM) Initiative (Foster et al. 2005).

**Eastern Scotian Shelf Integrated Management Initiative (ESSIM).**

The ESSIM was proposed by the Department of Fisheries and Oceans Canada one year after the Oceans Act. There are four key components to the Initiative’s structure, these include the ESSIM Forum, the Stakeholder Advisory Council, the Government Sector Structure, and the ESSIM Planning Office (Yao 2008).

The ESSIM was the first pilot for Integrated Oceans Management under the Oceans Act (Foster et al. 2005). The objectives of the ESSIM are ‘to integrate the management of all activities in the ESSIM area through effective and collaborative processes, to manage for the conservation, sustainability and responsible use of marine resources and ocean space, to restore and maintain natural biological diversity, and to provide opportunities for economic diversification and sustainable wealth generation, and to foster social well-being for coastal communities and stakeholders’ (Ocean and Coastal Management Division cited in Foster et al. 2005 p. 398). In accordance with the Canadian approach to coastal zone management, the ESSIM provides for community stewardship (Yao 2008). In order to integrate federal and provincial government policy a Federal-Provincial ESSIM Working Group was established in 2001 (Foster et al. 2005).
The Policy and Operational Framework for Integrated Management of Estuarine, Coastal and Marine Environment in Canada is a document, prepared in 2002, which offers an operational framework for the integrated management of Canada’s Oceans (Government of Canada 2002).

**Catchment management in Canada.**

Catchment management is also referred to as ‘watershed’ management in Canada. A significant deficiency in Canada’s catchment management is the absence of a national strategy. As de Loë (2008) discusses, potential benefits from a nation-wide strategy would include clarification of responsibilities, reduction of institutional fragmentation, greater integration within water management and between water and other sectors, among several other environmental, social and economic benefits.

A nation-wide strategy would help to overcome jurisdictional fragmentation, (between federal and provincial governments) which was also identified by Hill et al. (2008) and de Loë (de Loë 2008). Hill et al. (2008) also note fragmentation across the states both cross- and inter-departmentally. Their analysis of catchment management showed that “a majority of jurisdictions do not engage in comprehensive watershed regulation” (Hill et al. 2008 p. 323). The State of Ontario is developing coordinated water policies such as Great Lakes Water Quality Agreement and the Clean Water Act 2006 (Hill et al. 2008).
Summary.
The focus of coastal zone management in Canada is different to USA as it has almost two-thirds of its coastline in the Arctic Ocean and management is from an ocean to shore perspective (Ricketts & Harrison 2007). Canada has a strong ocean management focus as it borders three oceans (Arctic, Atlantic and Pacific) and only small parts of its coastal zone are inhabited (Juda 2003). Ocean resources dominate over coastal, and sectoral interests are centred around fishing and transport (Ellsworth et al. 1997, Hildebrand cited in Ricketts & Harrison 2007). This ocean domination arises from the economic importance of the fishing industry and the coastal zone being less populated, compared to other coastal nations, due to its colder climate.

The Canadian approach to ICZM adopts community-based, bottom-up management (Ricketts & Harrison 2007). Community-based programs, such as the Atlantic Coastal Action Program, have created community ownership and resulted in shared responsibilities (Ellsworth et al. 1997).

As with the USA, the state government has the power in coastal zone management (Yao 2008). The state government has control to the 3NM and the national government has control offshore. A sectoral approach to NRM in Canada is now realising the influences of land-based activities on the coastal zone (Ellsworth et al. 1997, Juda 2003)

Canada is one of the few major coastal nations that does not have a national coastal zone management policy or program in place (Lawrence 1997, Juda}
2003, Ricketts & Harrison 2007). The inadequate national effort in coastal zone management is a result of a lack of political awareness and support, jurisdictional disputes, departmental rivalries and fragmentation between national and state governments (Lawrence 1997, Juda 2003, Hildebrand cited in Ricketts & Harrison 2007).

ICZM education is limited, however there are courses at the Dalhousie University, the Victorian and Memorial University of Newfoundland, and Simon Frayer University and four research centres which contribute to knowledge and research base (Cicin-Sain et al. 2000, Ricketts & Harrison 2007).

Catchment management is also lacking national leadership which, as Hill et al. (2008) suggest, could assist in overcoming fragmentation through cross-sectoral and cross-jurisdictional working groups and funding. Canada’s lack of a consistent approach to catchment management makes management across state borders extremely challenging. In Canada most catchment related activities are the responsibility of the states, excepting fisheries that cross borders which are managed under the national jurisdiction (Hill et al. 2008).

Although Canada’s NRM has a strong ocean focus and its coastal zone management is from oceans to the coastal zone, there are some common factors to its horizontal integration. The management approaches are significantly dependent on administrative, cultural, social, economic and institutional circumstances (Yao 2008). The size and remoteness of Canada’s
coastline is a significant barrier to intergovernmental integration (Cicin-Sain & Knecht 1998).

3.3 – **Horizontal integration between the USA and Canada.**

Canada and the USA share water bodies along their adjoining national borders. The Great Lakes will be used as an example of transboundary management. The Great Lakes are of ecological, economic and social importance to both Canada and the USA. As water is not ‘owned’ solely by Canada or the United State, the use of the water needs to be managed. Therefore, transboundary management initiatives have been devised between the two nations including the International Joint Commission (IJC), Boundary Waters Treaty, Great Lakes Fishery Commission and the US-Canada Great Lakes Water Quality Agreement (Hildebrand et al. 2002).

The Great Lakes basin covers 766,000 square kilometres and is home to 30% of Canadians and 10% of Americans (Keating 2005). The five lakes contain approximately 18% of the worlds’ fresh water supply and are home to a population of 3.3 million people of which 77% is located in coastal communities (Hildebrand et al. 2002). This population is made up of one-tenth of the USA population and one-quarter of the Canadian population (Hildebrand et al. 2002). Main uses for the lakes include shipping, fishing, water supply and waste disposal (Sproule-Jones 1999).

The institutional structure surrounding the Great Lakes Basin includes two national governments, eight USA states, two Canadian states, four region-
wide institutions, approximately 120 Native American/First National authorities, and thousands of local government jurisdictions (Hildebrand et al. 2002). There is a Council of Great Lakes Governors (formed in 1983) and a Great Lakes Commission (formed in 1955) (Hildebrand et al. 2002).

In the late 1990’s Lawrence (1997) identified that coastal zone management plans for the Great Lakes failed to address management issues and procedures considered essential components of ICZM. Originally the management of the Great Lakes in Canada focused on flooding and erosion control and less on environmental issues. The USA CZMA brought into focus environmental issues and integration of management which lead to management being centred on the ICZM components. The driving force for cooperation between the USA and Canada continues to be the issue of water quality (Hildebrand et al. 2002).

The International Joint Commission (IJC) has played the role of providing vertical (intergovernmental) governmental connections within Canada, and horizontal (intersectoral) links between the two (USA & Canada) national governments and among the several state governments (Franciese & Regier cited in Kearney et al. 2007). Established in 1909 the IJC had led to the development of the Great Lakes Water Quality Board and a Science Advisory Board. A Boundary Waters Treaty was also established in 1909 between the USA and Canada to resolve disputes over water.
The Great Lakes Water Quality Agreement was signed by Canada and the United States in 1972 (Paisley et al. 2004a) an outcome of which has been the biennial State of the Great Lakes Ecosystem Conference which produces a ‘State of the Great Lakes’ report. The first conference was held in 1994 (Hildebrand et al. 2002). Passed in 1990 the U.S Great Lakes Critical Program Act requires that each state include a Remedial Action Plan (RAP) in its Water Quality Management Plan (Sproule-Jones 1999).

**Summary of key points.**

Cooperation between the two nations is built on agreements that appear to focus on the quality and availability of water and its economic benefits with little focus on the ecosystem health as a whole. Such agreements were described by Hildebrand et al. (2002) as ‘soft management’ as they generally lack regulatory and enforcement authority, focussing instead on coordination, information sharing, joint policy development and mutual advocacy.

Obviously it is a challenge to coordinate different nations which is pointed out by Paisley et al. (2004a) who state that some of these challenges include the lack of a shared vision as to what ICZM should be striving to achieve, poor communication processes, and complex institutional arrangements for ICZM in countries.

Management should be based on natural borders, not political boundaries and is coordinated through voluntary management, shared information and a good faith agreement (Hildebrand et al. 2002). Funding for the Great Lakes
Commission demonstration programs is short-term and provided by the national governments, which is dependent on political leadership and may change with government change as there is no long-term financial support (Hildebrand et al. 2002).

Cross-border research partnerships have been established which will lead to cooperative research objectives and shared resources (Hildebrand et al. 2002).

3.4 – European Union (EU).

The European Union (EU) was chosen as a case study as it is a unique organisation which coordinates numerous different nations. The EU consists of many nations with different legal systems, and legislation in a complex situation where the management of catchments and coastal zones can cross multiple jurisdictions.

The European Union (EU) is “a unique economic and political partnership between 27 democratic European countries” (Europa 2010). Country members set up bodies to run the EU and adopt its legislation. The main bodies are:

- The European Parliament (representing the people of Europe);
- The Council of the EU (representing national governments);
- The European Commission (EC) (representing the common EU interest) (Europa 2010).
The European Council consists of the Heads of State or Government of the member states and the President of the EC. The role of the Council is to ‘determine the general direction of the EU, making strategic decisions, and keeping a general overview of the situation’ (Nugent 2001). The EU began in 1954 with six members (United Nations Environment Programme 2000) and now consists of 27 Member States of which 20 have coastlines covering 65,000km (Juda 2007). The development of coastal zone management across Europe has lagged behind other developed nations, however, this has changed with the evolution of ICZM, and now a comprehensive approach to management has become prevalent in EU decision-making (Juda 2007, Shipman & Stojanovic 2007).

With an estimated 70% of the European coastline considered to be highly threatened as a result of direct and indirect human impact the importance of coastal zone management has gained attention (Brynt et al. cited in Burbridge & Humphrey 2003). This growing attention is widespread and has gained recognition among researchers, NGOs, and policy communities (Davos et al. 2002).

**ICZM in the EU.**

Launched by the EC, the Demonstration Programme on ICMZ is ‘a joint initiative of three directorates-general (Environment, Fisheries, and Regional Policies), and was based on local and regional ICZM pilot projects, a series of thematic analyses and regular meetings among experts, administrators and outside organisations’ (Belfiore 2000). The Programme’s funding was in
excess of 22 million Euro (Burbridge & Humphrey 2003), ran between 1996 and 1999 and involved 35 different projects centred around ICZM (Gibson 2003, Pickaver et al. 2004, Williams et al. 2006). The Demonstration Programme offers principles and characteristics of ICZM projects for adoption by various nations.

The hypothesis of the Demonstration Programme was that “the continued degradation and mismanagement of many of Europe’s coastal areas can be traced to problems related to:

- Insufficient coordination between different levels and sectors of administration;
- Insufficient participation and consultation of all the relevant actors;
- Insufficient or inappropriate information, both about the state of the coastal zones and also about the impact of human activities (economic and noneconomic)” (CEC cited in Burbridge & Humphrey 2003).

An outcome from the Demonstration Programme included a ‘ICZM Strategy for Europe.’ The Strategy defines eight principles for successful coastal zone management as being:

1. A broad ‘holistic’ perspective.
2. A long-term perspective.
3. Adaptive management during a gradual process.
4. Reflection of local specificity.
5. Work with natural processes.
6. Participatory planning.
7. Support and involvement of all relevant administrative bodies; and
8. Use of a combination of instruments (Gibson 2003).

A study on the Demonstration Programme by Humphrey and Burbridge (2003) revealed that many European countries lack an overall coordinating body for coastal zone management at the national level. The environmental and human causes of coastal issues can be traced to underlying problems related to a lack of knowledge, inappropriate and uncoordinated laws, a failure to involve stakeholders, and a lack of coordination between the relevant administrative bodies (Commission of the European Communities 2000).

As there are many nations involved in the EU’s ICZM programme, consideration needs to be given to the bio-physical, economic, and institutional arrangements of each nation. This means that an integrated, participative territorial approach is therefore required to ensure that the management of Europe’s coastal zones is environmentally and economically sustainable, as well as socially equitable and cohesive (Commission of the European Communities 2000). Gibson (2003) points out that the variety and complexity of the existing national laws affecting the coastal zones of the EU member states means that it would be both politically and practically impossible to impose a uniform structure for ICZM within each jurisdiction.

Two broad lessons from the Programme relating to integration and education are firstly the need for better spatial integration and vertical integration in the EU; and secondly, the importance of agreed management issues and
objectives (Doody 2003). As ICZM is relatively new in the EU there is an absence of available data to analyse the on-ground success of projects. This is an important priority of the EU in “further development of ICZM, and for the attempts to compare ICZM benefits and impacts at the global level” (Williams et al. 2006 p. 68).

The two significant outputs from the Demonstration Programme are:

- A Communication from the Commission to the Council and European Parliament on ICZM Strategy for Europe (17 Sept 2000); and

**European Marine Strategy.**

The European Marine Strategy was released in 2003 and followed by the Marine Strategy Directive in 2005. The EU Commission thought the then current arrangements to be ‘sectoral’, therefore limiting the implementation of intersectoral integration. The objective for the EU Marine Strategy is to “protect and restore Europe’s oceans and seas and ensure that human activities are carried out in a sustainable manner so that current and future generations enjoy and benefit from biologically diverse and dynamic oceans and seas that are safe, clean, healthy and productive” (Juda 2007 p. 265).

A Directive was chosen by the Commission in preference to regulation or a ‘one size fits all’ approach, which was deemed to be inappropriate for addressing the variety of management issues in each region (Juda 2007). Under the Directive each member state needs to conduct a ‘comprehensive assessment of the environmental condition of its waters, the impacts of human use, and an economic and social analysis of the use of those waters together with an evaluation of the consequent costs of damage to the marine environment’ (Juda 2007 p. 267).

**Coastal capacity building in the EU.**

Some capacity building tools in Europe include EUROCAT and CoastLearn. EUROCAT is a research project with aims to “achieve integrated catchment and coastal zone management by analysing the response of the coastal sea to changes in fluxes of nutrients and contaminants from the catchments” (Ledoux et al. 2005 p. 1). CoastLearn is a short course to introduce managers
to ICZM with five modules which allows participants to get acquainted with natural processes and management options (Krelling et al. 2008). The course runs at an international level to European regions.

Adopted by the EU Commission in 2006 the Green Paper on Maritime Policy observes that “sustainable development is at the heart of the EU agenda, and emphasises that economic growth, social welfare, and environmental protection are intertwined and mutually dependent” (Juda 2007 p. 272). As Juda (2007 p. 273) identifies, the Green Paper “strongly underscores the need for a coordinated, integrated, systems approach to replace the current, disconnected, sectoral approach to the management of ocean activities”.

**Catchment management in the EU.**

In Europe, catchment management is referred to as ‘river basin management’ (Coccossis 2004). The integration between catchments and the coastal zone is extremely important across Europe as water bodies may cross two or more national borders, involving many different countries, societies and national policies. River Basin Management Plans are prepared under the European Water Framework Directive which was adopted in 2002 (Moss 2004, Frederiksen et al. 2008). The Directive requires EU Member States to introduce water quality objectives for all water bodies, including coastal waters (Ledoux et al. 2005). The Directive provides for a holistic approach to water management using the catchment as a unit of management (Frederiksen et al. 2008).
The Framework allows for the incorporation of catchment management into the ICZM programs as it also requires the adoption of catchment management plans including adjacent coastal areas (Belfiore 2000). It formalises catchment management across Europe as it requires water management plans, programmes of measures and environmental quality objectives to be pursued on a catchment basis (Moss 2004).

The Directive provides for spatial integration as it identifies the importance of upstream/downstream relationships. This is achieved by requiring the catchment management plans to estimate fluxes of contaminants in the catchments, and evaluate policies to improve water quality in the coastal zones (Ledoux et al. 2005).

Summary.

The focus of coastal zone management in the EU has been based around shipping and fisheries (which account for 90% of external trade), not tourism and recreation, however, this is shifting (Humphrey et al. 2000, Juda 2007). ICZM and its characteristic of horizontal integration is an important tool to adopt in the EU as catchments and the coastal zones cross many national borders with different political and financial circumstances. Therefore, management must be considered around natural borders rather than political borders (Juda 2007). As well as intergovernmental and horizontal integration, coastal zone management efforts in Europe must include international integration. Coordinated efforts in ICZM are important with 70% of the
European coastline in a threatened state from direct and indirect human impact (Humphrey et al. 2000).

Coastal zone management occurs mostly at the state level (Humphrey et al. 2000) as no EU nation has produced legislation specific to ICZM, and most countries lack a coordinating body at the national level (Gibson 2003, Humphrey & Burbridge 2003, Chaniotis & Stead 2007, Shipman & Stojanovic 2007). However, as Shipman and Stanjovic (2007) suggest, ICZM is growing in Europe with positive outputs in practice. McKenna et al. (2008 p. 954) suggest this through stating that “every recent EC and international environmental management initiative advocates integration, and there is a strong sense that statutory ICZM is on its way, even if there is no ICZM Directive”. Also suggesting the outlook is positive Shipman and Stojanovic (2007 p. 385) observe that “many European ICZM initiatives are producing good quality outputs, including coastal strategies, but problems with funding, instability, and lack of commitment from statutory agencies (due to low prioritisation of projects compared to statutory drivers), are affecting the perceived value and adoption of these outputs”.

The legislation in place is sufficient for meeting ICZM however, on-ground implementation is failing due to the lack of horizontal integration across sectors and vertical integration between authorities (EC cited in Humphrey et al. 2000, King 2003).
As with the USA, change in EU governance is dependent on political will and administrative support (Ducrotoy & Pullen 1999, Moss 2004). The EU has recently made developments in coastal zone management but it took thirty years from the introduction of ICZM to get it on the political agenda (Pickaver et al. 2004). The political motivation for ICZM is now present as highlighted by the Demonstration Program which showed substantial political and public support for conservation of the coastal zone and sustainable development (Humphrey et al. 2000). The value of gathering information and the need for raising awareness and participation in the community was noted in a review of the Demonstration Program (Doody 2003). Whether the instrument used to implement ICZM is voluntary or legislative, Gibson (2003) suggests that its success will ultimately depend on political will.

The Demonstration Program and EU Water Framework Directive did help raise the importance of spatial integration across the catchment and coastal zone and the need for intersectoral integration (Doody 2003, Juda 2007, Frederiksen et al. 2008). As with USA and Canada, coastal zone management in the EU remains sectoral (Burbridge & Humphrey 2003). The Programme of Measures produced for each River Basin District under the Water Framework Directive provides for integration with other legislation (Frederiksen et al. 2008).

There is a lack of national leadership and vertical integration in the EU (Ducrotoy & Pullen 1999, Belfiore 2000, Burbridge & Humphrey 2003, Juda 2007). As in the USA and Canada, the implementation of ICZM programs in
the EU has been voluntary based, with high levels of community involvement giving a sense of ownership (King 2003, Treby & Clark 2004, Juda 2007, McKenna et al. 2008). The voluntary approach was seen as being more politically acceptable, and led to significant advances at the regional level (Burbridge & Humphrey 2003). However, there is still coastal degradation, suggesting that voluntary approaches do not have enough power to achieve real change rapidly (McKenna et al. 2008).

For ICZM projects to be successful in the EU a universally accepted definition for the coastal zone is required. This is suggested by Belfiore (2000) who notes ‘there are no homogeneous definitions of the coastal zone’.

The lack of secure funding arrangements was identified as a failure of the EU Demonstration Program on ICZM (Ducrotoy & Pullen 1999, Humphrey & Burbridge 2003, McFadden cited in Shipman & Stojanovic 2007). Other problems encountered in the Demonstration Program as identified by King (2003) and Moss (2004) include the intrusion of political or personal agendas (territories), insufficient resources, complexity of the organisation, inflexible sectoral interests, bureaucratic intransigence and unhelpful legislative powers and policies.

Belfiore (2000) concluded that the lack of coordination in coastal zone management in Europe was a result of the sectoral nature, lack of funding and support, limited education and insufficient communication between scientists and policy makers. Member states have experienced a rapid turn-over in staff
(Williams et al. 2006, Morris 2008) making it difficult to assess progress in coastal zone management programs.

Capacity building efforts in the UK are extensive in relation to education and research. There are thirteen research centres, and university courses at Bournemouth University, University of Newcastle Upon Tyne, University of Portsmouth and University of Wales, Cardiff (Cicin-Sain et al. 2000).

NGOs have been established to allow for public participation by local communities, for influencing public opinion and translating scientific information into policies (Ducrotoy & Pullen 1999, Steel et al. 2005a). The regional level is considered best for implementation of ICZM, and this aids community ownership of projects (Humphrey & Burbridge 2003, Moss 2004).

3.5 – Implications for horizontal integration in developed nations.

As discussed ICZM programs differ depending on the nations’ level of development, concentration of population in coastal zones, the type of coastal ecosystem, the coastal zone management issues, the cultural traditions and the political settings (Cicin-Sain & Knecht 1998). For example, the USA is a presidential government and Canada is a parliamentary government (Juda 2003). Despite these variations, the review of literature for developed nations has shown some key influences which are common in the implementation of ICZM and horizontal integration. Such influences which are inhibiting horizontal integration in developed nations include the lack of national leadership, a sectoral, fragmented management approach, the need for funding
incentives, the need for research and policy development, inadequate institutional arrangements, the need for political will and the absence of a monitoring and review system.

The identification of national environmental standards and priorities helps set policy objectives for subordinate governments; this national leadership is lacking in many developed nations (Humphrey et al. 2000, Memon et al. 2010). The absence of national leadership will result in a lack of shared vision across states and therefore a lack of agreed management objectives (Paisley et al. 2004b, Cicin-Sain & Belfiore 2005). Without agreed management objectives across states horizontal integration will be significantly impeded. The lack of consistent management objectives and approaches is especially concerning in catchment management where coordination can be required between two or more states. Without national leadership there is also limited opportunity to achieve vertical integration and to gain political awareness. A top-down governance approach to management is especially required to secure arrangements and allocation of funding (Humphrey et al. 2000).

The fragmentation of government agencies is apparent in both vertical and horizontal integration (Ehler 2003). The need for intergovernmental (non-fragmented) approach, is especially relevant between national and state management levels as the national government provides funding and the states the implementation of ICZM programs (Lawrence 1997, Cheong 2008). As has been demonstrated coastal zone management is sector based. For
horizontal integration to succeed catchment and coastal zone management need to shift to an intersectoral approach (Ehler 2003, Juda 2003, Cheong 2008, Yao 2008). Such integration in ICZM is dependent on institutional arrangements (Burbridge & Humphrey 2003, Frederiksen et al. 2008, Memon et al. 2010). As this review has revealed the required institutional arrangements are absent, or insufficient, to achieve horizontal integration.

The insufficient allocation of funding and resources to coastal zone management is observed across the globe (Ducrotoy & Pullen 1999, Cicin-Sain et al. 2000, Humphrey & Burbridge 2003, Cicin-Sain & Belfiore 2005). As Hajkowicz (2009) notes the increase in expenditure of NRM practices in the EU and USA has resulted in a lack of available funds for coastal zone management. ICZM programs in the EU have experienced a rapid turnover in staff, which could be overcome with a commitment to secure funding (McFadden 2007, Morris 2008). Gaining national leadership and placing catchment and coastal zone management higher on the political agenda of developed nations will improve the allocation of funding and resources. This is also highlighted by McKenna et al. (2008) who observe that funding allocation and priorities are ultimately politically driven.

Another means for gaining political attention is having a well informed and educated public. The education of managers to the effects of poor catchment management on coastal processes and resources is an important aspect for achieving successful horizontal integration (i.e. education on upstream/downstream relationship) (Cicin-Sain & Belfiore 2005, Steel et al.)
There is currently a lack of available courses for tertiary education in ICZM (Krelling et al. 2008). This limits the availability of appropriately educated and skilled managers in implementing horizontal integration across catchments and the coastal zone. Education and training will help to overcome the lack of trained professionals which could improve national capacity in the implementation of ICZM programs (Harvey et al. 2002, Olsen 2003).

NRM in the USA and EU requires a change in attitude and raising awareness (Hajkowicz 2009) among managers to the impacts of their management practices on other biophysical environments. NGOs are useful in bridging the gap between science and management as they identify problems, and offer options for solving them (Steel et al. 2005b) without being influenced by political priorities or limited to governmental arrangements.

To aid the introduction of new institutional arrangements, ICZM programs need to prioritise objectives to deal with competition for funding and resources among stakeholders (McKenna et al. 2008). The horizontal integration across catchments and the coastal zone has not been an objective in international law (Gibson 2003) which may account for the lack of attention on national political agendas. The national leadership (discussed above) will be required to assist in prioritising management objectives.

From the transboundary partnerships (for example between the USA and Canada), Paisley et al. (2004b) point out some of the challenges (as with
individual nations) include the lack of shared vision as to what ICZM should be striving to achieve, poor communication processes, and complex institutional arrangements for ICZM in countries. Although natural ecosystems cross political borders, transboundary issues are often perceived as exclusively political and legal matters (Cheong 2008). This highlights the importance of nations having national priorities and sound institutional arrangements in place before approaching transboundary partnerships.

An incremental and adaptive approach to NRM is sought (Lawrence 1997, Olsen 2003, Davis 2004, Juda 2007, McKenna et al. 2008, Yao 2008). This approach will allow for plans and programs to incorporate latest scientific information and management approaches, resulting in improved and strengthened institutional arrangements. Adaptive management enables experiences from other nations to be adapted to match the capacity of different nations.

The local perspective is the focus of many stakeholders and self-interest dominates their involvement in the implementation of NRM programs. With funding allocation and priorities being ultimately politically driven, the partnerships in NRM depend on the cooperation of politicians, government bodies and private industry (Burbidge & Humphrey 2003, McKenna et al. 2008).

The management level at which horizontal integration is desired will dictate the detail required in policies and plans. For example, as Coccossis (2004)
discusses, at the national level environmental standards are set and the
government provides leadership. At the state level the plans are based on the
guidelines set by the national government, and at the regional level the plans
are specific to the local needs. In contrast, the degree of intersectoral
integration at the regional level is higher than at the national level. This
suggests that to achieve horizontal integration at the national level
intersectoral integration needs to be improved.

3.6 – Developing nations.

ICZM has been applied in different political settings, with different cultural,
environmental and economic situations. This section will briefly look at its
application in developing countries using PEMSEA, Brazil and South Africa
as desk studies.

As has been stated, ICZM is a concept which can be adapted globally to all
nations. Therefore, it is practically impossible within the scope of this thesis
to provide a detailed country-by-country analysis. It is also not feasible to
offer a comprehensive and precise examination of every country and their
specific applications of coastal zone management. Consequently, this section
offers a brief overview of the application of ICZM in a few developing
countries. These case studies were chosen because of their similarities to the
developed nations (see Section 3.0). The developing nations were chosen as
they have many of the same key elements as the developed nations in shaping
horizontal integration (refer to Figure 3.2).
<table>
<thead>
<tr>
<th>Country</th>
<th>Lead Agency</th>
<th>National strategy/legislation</th>
<th>Identification of key coastal zone management issues</th>
<th>Management priorities &amp; objectives in line with ICZM principles</th>
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Figure 3.2: Key elements shaping Horizontal Integration.

Xiamen and Partnerships in Environmental Management of the Seas of East Asia (PEMSEA).

The experience of ICZM began over a decade ago in the Seas of East Asia (Chua et al. 2006). Coastal zone management in East Asia is focused on population density, political, organisation and sectoral interests (Chua et al. 2006). There are 1.5 million people living within 100 kilometres of the region’s coast (PEMSEA cited in Norman 2009).

PEMSEA has 13 demonstration sites, one of which is the Xiamen Demonstration Project. Many sites have already developed coastal zone strategies based on the standard ICZM format provided by PEMSEA. These have included strategies for Bali, Indonesia, Bataan, Philippines, Danang, Vietnam, Nampho, Democratic People’s Republic of Korea, Port Klang, Malaysia and Sihanoukville, Cambodia, whilst Batangas (Philippines) and Xiamen (People’s Republic of China) have developed and implemented Strategic Environmental Plans (Chua et al. 2006). When discussing PEMSEA’s application of ICZM Chua et al. (2006) demonstrate its
adaptability to different circumstances by highlighting its effectiveness in integrating environmental concerns into economic development as an approach for achieving sustainable development.

In 1994 a 5-year Regional Programme for the Prevention and Management of Marine Pollution in the East Asian Seas was undertaken by the International Maritime Organisation (McCleave et al. 2003). PEMSEA’s objective is “to protect the life support systems, and enable sustainable use and management of coastal and marine resources through intergovernmental, interagency and intersectoral partnerships, for improved quality of life in the East Asian Sea Region” (PEMSEA cited in Wescott 2002b p. 558).

China has a Sea-Use Management Law which was introduced in 2001. Xiamen in China was one of the sites with a population of 2 million and a coastline that stretches for 184km (Chua et al. 2006). The 1996 report on the Xiamen Demonstration Project highlighted the lack of horizontal integration as a management problem. The Report showed that there were conflicts between those engaged in port construction, mariculture, land reclamation, maintenance of scenic tourism resources and marine environmental protection (Integrated Task Team of the Xiamen Demonstration Project cited in McCleave et al. 2003). Chua et al. (2006) note that experiences in Xiamen and Batangas Bay have identified that the incorporation of mechanisms which enable coordination is essential for achieving the objectives of ICZM.
Summary.
The poverty present in Asia and the Pacific region contributes significantly to the on-going deterioration of coastal zone ecosystems as a large portion of this population inhabit the coastal zone (Chua et al. 2006). There is a lack of public education and awareness in catchment and coastal zone processes, which results in coastal pollution (Dawei & Jingsheng 2001, Yao 2008). The key objective of management is economic growth, there is fragmentation in management, and with coastal zones being managed by local government national leadership is absent (McCleave et al. 2003).

Brazil, South America.
Out of the 11 coastal states in South America only 5 have a coastal zone management program (Barragan Munoz 2001). The country of Brazil will be focussed on here due to its expansive coastline, large economic significance of coastal resources, and its population density in the coastal zone. The Brazilian coastal zone is 8,500 kilometres long and consists of coastal reefs, mangroves, lagoons, sandbanks, wetlands, beaches and dunes (Jablonski & Filet 2008). Like the USA and Australia, Brazil has three administrative levels (Federal Union, states, and municipalities). Brazil has a National Coastal Zone Management Plan developed in 1998 as a response to the Earth Summit in 1992. There are 462 municipalities and a population density of 38 million people (24% of the country’s population) in the coastal zone, which has territorial seas out to 12 NM (Barragan Munoz 2001, Jablonski & Filet 2008).
Brazil’s response to Agenda 21 was the TRAIN-SEA-COAST Programme created in 1993 by the United Nations Division of Ocean Affairs and the Law of the Sea (Reis et al. 2002). The overall goal of the Programme is capacity building at the local level and it emphasises: (a) building up of permanent national capabilities; (b) sustainability of efforts; (c) cost-effectiveness; (d) responsiveness to the specific needs of the countries involved; (f) long-term impact (UN cited in Reis et al. 2002).

The TRAIN-SEA-COAST programme has resulted in the development of two training courses, International Global Ballast Water Management Programme and Port Environmental Agenda and the National Port Environmental Training Programme. When discussing the new course to be undertaken as part of the Programme Reis et al. (2002) identify that coastal and marine problems are related to technical, institutional, social, economic, financial or political issues. Effective coastal zone management is therefore essential as the economic coastal activities are responsible for 73% of Brazil’s gross domestic product (Jablonski & Filet 2008). As Reis et al. (2002) suggest the success of the TRAIN-SEA-COAST programme depends on political, financial and individual commitment.

The Ministry of Environment identifies some of the political, capacity and institutional problems observed along the Brazilian coast. These contribute significantly to poor success in on-ground implementation of horizontal integration and ICZM. These problems are:

- No policy of land use and land occupation.
• No integration between regional plans and policies.
• Funding of impacting development projects.
• Lack of enforcement.
• No social mobilisation.
• Conflict between government agencies.
• No Master Plan at municipal level.
• Economic activities developed apart from local population traditions.
• Lack of infrastructure (sanitation); and
• Personnel involved with ICZM inadequately trained (Ministry of Environment cited in Reis et al. 2002).

Summary.
Capacity building in Brazil focuses on the regional management level and is centred around the TRAIN-SEA-COAST training course, however, the success of this depends on political, financial and individual commitment (Barragan Munoz 2001, Reis et al. 2002). Sanitation is still a key management issue in Brazil with 80% of the urban population not having a sewage system (Jablonski & Filet 2008).

South Africa.
South Africa’s coastal zone extends for 3,000 kilometres with ecosystems including sandy beaches, rocky shores, estuaries, coastal wetlands and islands with few embayments and large rivers (Glavovic 2000). South Africa has a population of 40 million of which 30% live within 60 kilometres of the coast, and the population of coastal cities is predicted to double in the next 25-30
years (Glavovic 2000, Glazewski & Haward 2005). A new democracy in 1994 has meant that South Africa now has a quasi-federal state system of government and nine new provinces (four of which are coastal) as well as local authorities.

Coastal zone management in South Africa was sector-based in the 1970s and the 1980’s saw significant growth in coastal focus with the Department of Environmental Affairs and Tourism appointing coastal staff, the establishment of a Committee for Coastal and Marine Systems and the South African Council for Scientific and Industrial Research expanding coastal expertise (Glavovic 2006b). The Committee made recommendations for a Coastal Management Policy Programme which took five years and was delayed by administrative and logistical obstacles related to the political negotiations and transition to a new Government (Glavovic 2006b). Research efforts and a rise in public awareness began in the 1980’s with the South African Council for Scientific and Industrial Research and the Coastal Management Advisory Program (Glavovic 2006b).

In the early 1990’s the focus of coastal zone management shifted from nature conservation to a more holistic approach of sustainable development (Glavovic 2006b). The Coastal Management Policy Programme took five years to establish and the National Environmental Management: Integrated Coastal Management Act took eight years from submission in 2001 to gaining parliamentary approval in 2008, and then was assented to by the President in

Intersectoral and spatial integration are provided for with the National Water Act 1998 which is significant for controlling land-based sources of pollution of marine and coastal waters (Glazewski & Haward 2005). Catchment management agencies have been introduced under this Act which have produced catchment management strategies for 19 of the water management areas (Walmsley 2002).

The Department of Environmental Affairs and Tourism released a White Paper for Sustainable Coastal Development in 2000 which aims to promote sustainable coastal development through ICZM (Glavovic 2006a, 2006b). The White Paper provides a national vision and on-ground application at the local level with thirteen regional programs and points out that “realising the coast’s potential will require unprecedented investment in ICZM, including political commitment, finances, public awareness, education and training, and new partnerships between key role-players” (CMMP cited in Glavovic 2006b p. 897).

South Africa has a national community-based coastal management program, Coastcare, the main focus of which is “creating wider public awareness of the coast as a national asset with special management needs” (Glavovic cited in Harvey et al. 2001 p. 164). Coastcare is a partnership program which involves
public and private sectors and whose funding relies on donations (Glavovic 2006b).

**Summary.**

Funding for the Coastal Management Policy Programme was acquired through donor funds from the British Government. Although progress has been hampered through ‘red tape’ and ‘turf battles’ the political commitment to coastal zone management in South Africa has dramatically increased (Glavovic 2006b). There are inadequate local resources and capacity in South Africa, however the University of Western Cape has an International Ocean Institute research centre which could offer good capacity building prospects in policy research and development (Cicin-Sain et al. 2000, Glavovic 2006b).

**3.7 – Implications for horizontal integration in developing nations.**

This section has demonstrated that ICZM can and has been applied in different political settings, with different cultural, environmental and economic situations. The implementation of horizontal integration in developing nations has experienced some barriers. These barriers include the inadequacy of local resources (Glavovic 2006a), the focus on economic growth (McCleave et al. 2003), and an absence of trained managers and education programs (Glavovic 2006b).

Change and progress towards ICZM in developing countries is slow and this could be improved with an increase in institutional capacity, more enforcement and more examples of successful programs for them to model
their attempts on. Whilst some national leadership is present in developing countries the involvement of communities is dependent on political, cultural and socioeconomic conditions (Chua et al. 2006).

The management priorities are different in developing nations to those in developed nations. Developing nations are concerned with sanitation, provision of food and employment (Xue et al. 2004, Chua et al. 2006). This means that the funding for development takes precedence over protection of the environment. Developing nations have less coastal infrastructure, but more people in the coastal zone, which means there is more pollution of coastal waters and higher pressure on natural resources (especially the exploitation of fisheries) (Cicin-Sain & Belfiore 2005). Projects with better economic incentives are more successful in funding bids and environmental infrastructure relies on raising revenue from user fees (Chua et al. 2006). These projects are not considering the principles of sustainable development – which are essential to the success of coastal zone management. Management decisions are favouring political or economic interest over environmental benefits (Cheong 2008).

The availability of education and management solutions is limited and there are few established degree programs in developing nations (Cicin-Sain et al. 2000, Chua et al. 2006). There is an urgent need to build in-country capacity in ICZM in developing nations, as experienced coastal managers are often recruited externally (Cicin-Sain et al. 2000, Harvey et al. 2002). Capacity building efforts are focussed on building government capacities rather than on
education and training (Wescott 2002b). Funding in developing nations is often received from ‘donor countries’ to establish training programs (Harvey et al. 2002).

3.8 – Conclusion.

As identified in Chapter 1, ICZM is an internationally recognised concept which has been adopted globally by 145 countries (Sorenson 2002). This Chapter has explored the direction some leading nations in coastal zone management have taken to adopt and implement ICZM. Due to the nature of ICZM and its four dimensions of integration, the application of the concept differs from nation to nation due to their different institutional arrangements and management priorities.

Countries need a framework which allows for intergovernmental (vertical) and intersectoral (horizontal) integration to successfully apply spatial integration across catchments and the coastal zone. This Chapter has identified some inhibiting factors to the on-ground implementation of horizontal integration in developed and developing nations. Some of the key inhibitors in developed nations were the cooperation between national and state governments, the lack of national leadership and political motivation, the lack of allocated funding and resources, a need for increased capacity building to educate managers and community members, and the need for development of institutional arrangements to overcome sector based management.
Some of the key inhibitors in developing nations were the lack of available education and training for managers, the focus on economic development over environmental sustainability and the limited coastal infrastructure to cope with high population density. The next Chapter will study the island nation of Australia, once considered a pioneer in coastal zone management.
Chapter 4 – ICZM and horizontal integration in Australia.

4.0 – Introduction.

Chapter 3 showed how some of the developed and developing nations across the globe have proceeded with their coastal zone management and planning frameworks following the introduction of ICZM. It also highlighted some of the barriers to implementing horizontal integration across catchments and the coastal zone. This Chapter explores how coastal zone management has evolved in Australia and the provision for horizontal integration across catchments and the coastal zone at the national, state and regional management levels.

Australia has been chosen as a case study as it is an island nation, with the world’s longest ice-free coastline stretching for 36,700 km, whose management is not complicated by interactions with other nations (Kay & Lester 1997, Wescott 2000b). The importance of coastal zone management in Australia was discussed by Drew (1994), who noted that the population has been densely concentrated along the south-east coast since the 1850’s. Australia has a population of 22 million (ABS 2009) with 80% of its population living within 80 kilometres of the coastline (Glazewski & Haward 2005, Wescott 2009). This portion of the population located in the coastal zone is one of the largest in the world and all major population centres are located there (Kay & Lester 1997, Wescott 2002a), illustrating the importance of the coastal zone to Australia’s culture.
Early coastal zone management efforts in Australia focussed on ports and harbours and single management issues such as marine pollution and dune erosion. In the mid 1960’s the need for integrated efforts in coastal zone management was recognised with the introduction of the Port Phillip Bay Authority by the Victorian government in 1966, the Authority being among the first international efforts at integration in coastal zone management. The Authority was designed to address the pressures resulting from multiple uses such as recreation, development and conservation but was abolished in 1984 (Kay & Lester 1997, Sorenson 1997). Following international influences such as the UNCLOS, Agenda 21 and the introduction of concepts such as ICZM and sustainable development, the focus of coastal zone management in Australia shifted to address management issues resulting from its multiple uses and to promote environmental conservation.

Under the UNCLOS Australia has jurisdictional claim over its oceans out to 200 nautical miles Exclusive Economic Zone (EEZ). This EEZ is an area which is larger than the nations’ land-mass (Juda 2003). Although Australia was not one of the first 60 countries to ratify the treaty, when it finally did in October 1994, it took responsibility for one of the world’s largest marine areas spanning 11 million square kilometres (Wescott 2000b).

The Commonwealth oversees the governance of six states (Victoria, New South Wales, Queensland, South Australia, Western Australia and Tasmania) and two territories (Australian Capital Territory and Northern Territory) and 722 local governments (Bammer et al. 2005c, Clarke 2006). The
Commonwealth Government is responsible for the management of national waters out to 12 NM, and the states and territories have responsibility for management of the coastal zone out to 3 NM (Toyne 1994, Thom & Harvey 2000, Harvey et al. 2002, Juda 2003, Wescott 2006, Haward & Vince 2009). Local Government Councils are responsible for a defined geographical region. It is widely acknowledged that in practice the Commonwealth government provides for funding, the state government the (legislative) power, and the local government delivers the day-to-day management (Haward 1995, Kay & Lester 1997, Cicin-Sain & Knecht 1998, Thom & Harvey 2000, Harvey et al. 2002, Harvey & Caton 2003, Hajkowicz 2009). Coastal zone management in Australia is complex with these three levels of government (national, state, and regional) all having interests and responsibilities in the coastal zone.

The national financial assistance to the states accounted for 95% of all expenditure on coastal zone management in the early 1990s (Thom & Harvey 2000, Harvey et al. 2002). The Australian government increased its general environmental expenditure by 240% from A$1.7 billion in 2001/02 to A$4 billion in 2006/07 (cited in Hajkowicz 2009). Hajkowicz (2009) reported that expenditure on natural resources had also increased significantly at the local government level from A$268 million in 1998/99 to A$422 million in 2002/03.

A key objective of coastal zone management in Australia is sustainability. The concept of ‘sustainable development’ originated from the 1987 World Commission on Environment and Development (discussed in Section 2.4). In
Australia, this has been extended to ‘ecologically sustainable development’ (ESD). The National Strategy for Ecologically Sustainable Development 1992 defines ESD as “using, conserving and enhancing the community’s resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased” (Commonwealth of Australia 1992 p. 1). The Strategy requires an ecologically sustainable approach to development to incorporate two main characteristics:

- The “need to consider, in an integrated way, the wider economic, social and environmental implications of our decisions and actions for Australia, the international community and the biosphere.
- We need to take a long-term rather than short-term view when taking those decisions and actions” (Commonwealth of Australia 1992).

As Kenchington and Crawford (1993) note, Chapter 17 of the Strategy refers to ESD in coastal zone management establishing consistent objectives for coastal policies across all jurisdictions in Australia. The Report strongly maintained the need for an ecosystem based approach for oceans and coastal zones and called for states to review their legal and institutional arrangements accordingly (Juda 2003).

The following section discusses the national framework for coastal zone management and catchment management developed in Australia since the introduction of the internationally accepted concept of ICZM and the objectives of Chapter 17, Agenda 21 and ESD.
4.1 – ICZM at the national level.

Australia’s coastal zone consists of terrestrial, estuarine and marine ecosystems and the largest area of coral reefs in any nation (Commonwealth of Australia 1995). Following international influences and the introduction of ICZM it has been realised that the management of such a broad range of coastal zone issues requires a holistic approach. Being an island nation, with a high density coastal zone population, the practice of coastal zone management is of national importance (Thom & Harvey 2000). Haward (1995) and Wescott (2002a) identify that the early 1990s have been described as a ‘watershed’ for coastal zone management in Australia due to the increased interest by national and state governments in coastal zone management (refer to Table 4.1).

The increased government interest resulted in major national and state reviews leading to the creation or updating of coastal programs across the nation. There were twenty-nine inquiries into coastal zone management prior to 1993 producing reports on the state of the coast and recommendations for management (Harvey & Caton 2003). Significant reports include the 1991 Injured Coastline and the 1993 Resource Assessment Commission’s Coastal Zone Inquiry.
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Table 4.1: Significant contributions to ICZM in Australia.

In October 1991 the Commonwealth Government requested the Resource Assessment Commission (RAC) to conduct an inquiry into the management and development of Australia’s coastal zone. After an extensive review the RAC released its comprehensive report to the Prime Minister in November 1993.

The RAC Final recommendations help to promote ICZM components. Some of the environmental problems facing the Australian coastline identified in the RAC report were the degradation and loss of natural coastal and marine environments; the impacts of point and non-point source land-based pollutants; and uncontrolled urban development (RAC cited in Glazewski & Haward 2005). The lack of horizontal integration was recognised in the
Inquiry as a major shortcoming of coastal zone management in Australia and the Report stressed that environments should be treated holistically (Thom & Harvey 2000). It identified that the management and use of coastal and inland resources is particularly impeded by a lack of integration and coordination of management systems (Harvey & Caton 2003). Due to the increasing coastal population and development the Report called for a national approach to coastal zone management (Thom & Harvey 2000).

The Report recommended a National Coastal Action Plan to improve coastal management by (1) a set of national agreed objectives; (2) arrangements for management of the plan; (3) greater community involvement; and (4) innovation in coastal zone management mechanisms (RAC 1993). Greater community involvement was aided with the establishment of a volunteer Coastcare program (discussed below) which was designed to complement initiatives in ICM (RAC 1993).

The Marine and Coastal Community Network (MCCN) was also formed in 1993 with the aim to raise public awareness on coastal matters (Wescott 2000a). The MCCN had a representative in each state and the Northern Territory promoting a cooperative and coordinated approach to coastal zone planning. The Network was a NGO community-based organisation providing a link between community interests, industries and governments for managing the coastal zone in a sustainable manner.
Some 23 years after the USA introduced its national CZMA, Australia released its national coastal policy providing national leadership and coordination in coastal zone management (Thom & Harvey 2000, Wescott 2002a). The Commonwealth Government released a Commonwealth Coastal Policy (CCP) ‘Living on the coast’ in May 1995 in response to recommendations made in the 1993 RAC Final Report. The CCP was designed to provide a “framework within which Commonwealth activities that may have an impact on the coastal zone will be developed and implemented” (Commonwealth of Australia 1995 p. 4). The CCP has since been superseded by the National Co-operative Approach to ICZM in 2006 (discussed below).

A National Coastal Action Program was a key element of the CCP, and Coastcare, a product of this program, provided intergovernmental integration through national-state partnership coordinated under a Memorandum of Understanding (MoU) signed in 1995 (Thom & Harvey 2000, Harvey et al. 2001, Wescott 2002a, Clarke 2006). The MoU between the national and state governments involved a grant system where the states would match the funding offered by the national government (Wescott 2002a). Between 1995 and 2000 the Commonwealth contributed A$23.4 million, and under Natural Heritage Trust (NHT) (discussed below) when Coastcare was repackaged it slightly increased its allocation to A$27.3 million from 1996 to 2001 (Harvey et al. 2001). Coastcare projects were generally undertaken on public land, in contrast to Landcare (discussed in Section 4.2) where members are the land owners and therefore have a vested interest in their projects (Clarke 2006).
Coastcare was run under the NHT from 1996 until 2003 when it ceased to function (Clarke 2006).

**State of Environment Report (1996).**

The State of the Environment Advisory Council presented their Report on the State of the Environment to the Commonwealth Minister for the Environment in 1996. The Report dedicated a section to estuaries and the sea. This section points out that, as the 1993 RAC concluded, coordination and integration between institutions responsible for managing the coast was inadequate (State of the Environment Advisory Council 1996). The Report also concluded that ‘we do not yet have an integrated, system-based approach to the management of natural resources’ (Gardner 1999 p. 216). As Gardner (1999) suggests one of the reasons for this lack of integration is the design of the administrative frameworks for NRM.

**Coasts and Clean Seas Program (1997).**

The Coasts and Clean Seas Program is one of five major components of the NHT (discussed below) (Thom & Harvey 2000, Harvey et al. 2002). The Program was jointly funded between national and state governments to ‘support sustainable wastewater management in coastal areas encouraging wastewater reuse and promoting ESD’ (DNRE 2002a). The Coasts and Clean Seas Program was superseded by one of the national level NHT programs – the Catchment Coast Initiative (CCI). The funding framework of the CCI was developed as a nationally consistent approach to protecting the marine environment from the effects of land-based pollution (Broderick 2008)
providing for more successful horizontal integration. The CCI seeks to deliver significant reductions in the discharge of pollutants to agreed coastal ‘hotspots’, where those hotspots have been identified through agreement with relevant jurisdictions (Environment Australia 2003).

**State of Environment Report (Coasts & Oceans) (2001).**

In 2001 the Australian State of the Environment Committee produced Australia’s State of the Environment Report (Coasts and Oceans). The report highlights the important link between catchments and the coastal zone by stating that ‘the effect of poor catchment management is to lower coastal biodiversity through pollution and sediment’ (Commonwealth of Australia 2002a p. 7). The Report identifies the essential link between land and coastal resources and suggests a ‘whole-of-catchment’ approach to NRM (Commonwealth of Australia 2002a).

**National Framework for ICZM (2006).**

Although it was recommended by the RAC a national coastal policy did not eventuate, however, a framework was established (Wescott 2009). In October 2003 the Commonwealth’s Natural Resource Management Ministerial Council endorsed the Framework for a National Cooperative Approach to Integrated Coastal Zone Management, and it was released in 2006. This Framework replaced the 1995 CCP. The Framework provides for national cooperation in managing coastal issues and achieving ESD outcomes in the coastal zone (NRMMC 2006). A priority of this Framework is to integrate policies and actions across the catchment-coast-ocean continuum. The
Framework is also linked with Australia’s catchment management framework through its integration with regional planning under the NHT (now ‘Caring for Our Country’) forming a comprehensive NRM approach across the catchment-coast-ocean continuum (Slatyer 2004).

The Framework uses six themes for action, including the key theme of ‘The Catchment-Coast-Ocean Continuum: An Integrated Approach.’ The theme states that:

- “The catchment-coast-ocean continuum captures the essence of integrated coastal zone management. The coastal zone is both the physical and administrative interface between the catchments and the ocean. It is under the greatest pressure from resource use in the catchments and in the ocean and requires special focus to ensure ESD through securing adequate flows of freshwater to the coastal zone and by minimising land-based pollution.

- Such integration will also encourage greater opportunity to maximise returns on investment from existing NRM initiatives, particularly NHT and National Action Plan for Salinity and Water Quality (NAP) initiatives. In some jurisdictions, institutional arrangements are now reflecting an integrated NRM approach to take a whole of catchment perspective, which includes the coastal zone and marine waters.

- Integration between Australia, State, Regional and local levels of government creates efficiencies and allows for effective linkages between national and local issues. Such cooperative arrangements to address key natural resource management issues in catchments and on
the coast provide a mechanism to address management priorities at the national, regional and local scales. Arrangements between the Australian and State governments such as complementary legislation, policies and programs facilitate the implementation of national and local priorities. This approach is now enshrined in the NRM regional delivery model” (NRMMC 2006 p. 14-15).

The Framework aims to achieve two key themes relevant for horizontal integration. These are ‘the catchment-coast-ocean continuum: an integrated approach’ and ‘coastal issues for national collaboration.’ The catchment-coast-ocean continuum is linked to two of the six priority areas, ‘integration across the catchment-coast-ocean continuum’ and ‘land and marine based sources of pollution.’

House of Representatives on Climate Change, Water, Environment, and the Arts Report: Managing our coastal zone in a changing climate (2009). In October 2009 the HoR released its report entitled ‘Managing our coastal zone in a changing climate, the time to act is now.’ The Report endeavours to build vertical integration relationships between state and local governments and to further engage the community. It makes forty seven recommendations and identifies a lack of funding, national leadership and identification of responsibilities as significant barriers to successful implementation of ICZM (HoR 2009). The most significant pressures on the Australian coastal zone are identified to be coastal population growth and climate change. Chapter 6 of the Report analyses the governance arrangements and coastal zone
management. To address the lack of national leadership in coastal zone management in Australia the Committee proposes an Intergovernmental Agreement on the Coastal Zone along with the introduction of a National Coastal Zone Policy; National Catchment-Coast-Marine Management Program; a Coastal Sustainability Charter; and a National Coastal Advisory Council (HoR 2009 p. 243). The Report commends the State of Victoria for its governance structure under the Coastal Management Act 1995 and for the Victorian Coastal Strategy 2008 for its integrated nature (discussed in Section 4.6) (HoR 2009 p. 256).

4.2 – Catchment management at the national level.

Catchment planning and management is primarily the responsibility of state governments (Wescott 2002a). Catchment management at the national level, in Australia, is focused on one particular in-land catchment – the Murray Darling Basin, covering an area of one million km² and involving the Commonwealth government, New South Wales, Victoria, South Australia, Queensland and the Australian Capital Territory governments (MDBC 1997). This focus has meant that the theory on ICM has been developed around a dry, inland draining catchment system. Coastal catchments and the impacts on coastal ecosystems from in land catchments have been significantly understudied. The development of catchment management in Australia has been hindered by institutional complexity, fragmentation and duplication (Lane & Robinson 2009).
Studies have concluded that Australia’s catchments are facing large and continuous threats from human activity and it is the ‘most pressing contemporary public policy issue facing the community’ (HoR 2000 p. 22, Allan et al. 2008). Australia’s State of the Environment Report noted that significant areas of major inland and coastal catchments are degraded (Harris cited in Allan et al. 2008). Although there is currently no national policy for catchment management, recent reports have made recommendations for the development of a National Catchment Management Authority, national targets and legislation.

The coordinated management of catchments is important due to their environmental, social and economic value. The concept of Integrated Catchment Management (ICM) now forms the basis of sustainable land and water management in Australia (Ewing et al. 2000, Grayson et al. 2000, Bammer et al. 2005c).

**Cooperative Research Centre (CRC) for Catchment Hydrology (1992).**
The CRC for Catchment Hydrology was established in 1992 to ‘deliver to resource managers the capability to assess the hydrologic impact of land-use and water management decisions at a whole of catchment scale’ (CRC 2002a). The CRC aimed to use its research knowledge to establish a link between the ‘land management actions on a whole of catchment basis and the impacts these actions have on the water quality and quantity in streams’ (Grayson et al. 2000, CRC2002a). The CRC ceased to exist in 2005 and is now represented by the eWater CRC.

The National Action Plan for Salinity and Water Quality (NAP), released in 2000, was established to ‘identify high priority, immediate actions to address salinity, particularly dry-land salinity, and deteriorating water quality in key catchments and regions across Australia’ (Council of Australian Governments 2000). The NAP has created bilateral agreements between the national and state governments and uses adaptive management principles in catchment management and planning (Allan et al. 2008). Under the NAP the national and state governments contribute ‘matched case investment’ this was A$700 million (Abrahams 2005, Hajkowicz 2009). In 2001 the NAP received A$1.4 billion over seven years, channelling funds to regional plans to address priority issues (Hajkowicz 2009, Lockwood et al. 2009). As Wescott (2002a) states the NAP provides a possible model for improving integration in NRM and an opportunity to coordinate with coastal zone management practices through its intergovernmental connections and emphasis on water quality. However, this possibility is not being realised as the NAP is focussing on inland catchment management and salinity, as opposed their interaction with coastal regions (Lockwood et al. 2009).


In 2002 the Commonwealth Government released the Co-ordinating Catchment Management report by the House of Representatives Standing Committee on Environment and Heritage. Some of the recommendations from this report include integrating laws at all levels, the establishment of an
independent statutory authority (i.e. the National Catchment Management Authority), the development of a set of national catchment management principles and formal recognition to be given to ‘partner organisations’ (HoR 2000). The Committee commends this report to provide a blueprint for the national approach to the ecologically sustainable use of Australia’s catchment systems.

**Australia Catchment, River and Estuary Assessment (2002).**

In March 2002 the National Land and Water Resource Audit Advisory Council presented the Report on the Australian Catchment, River and Estuary Assessment. This Report is the first comprehensive assessment of Australia’s catchments, rivers and estuaries. The assessment identifies the need for both productive use and conservation of environments, and contributes to the understanding of this need by assessing the status of these systems and how to best manage them in an integrated way (National Land and Water Resources Audit 2002).

**Landcare.**

The national Landcare program was initiated in the 1980s in response to deterioration in land and water quality (Gooch 2004). Landcare incorporates community volunteers, government and businesses to protect and manage the environment (Ewing et al. 2000). Under the Landcare umbrella are other community groups such as Bushcare, Urban Landcare, Rivercare and Coastcare (Clarke 2006). In 1989 the national Landcare program received a funding package of A$340 million (Hajkowicz 2009).
Summary.

Once considered a pioneer in coastal zone management, Australia has continued to contribute significantly to the concept of ICZM. Sections 4.1 and 4.2 have presented the current management arrangements for catchment and coastal zone management at the national level.

Attempts at integration in NRM first began in the mid-1980s (Morrison et al. 2004) however, successful on-ground achievements are still eluding environmental managers. The potential for achieving horizontal integration across catchments and the coastal zone in Australia is realistic given that most states and territories have a reasonably clear coastal policy and coastal lead agency (refer to Table 4.2) and the NRM framework offers a coordinated approach to ICM. This potential will now be discussed.

The overarching principles of ESD and NRM provide for a holistic view in catchment and coastal zone management. Whist there is no nationally specific legislation for horizontal integration there is the Commonwealth’s Environmental Protection and Biodiversity Conservation Act (1999) which provides a central environmental legislation for the protection and management of nationally and internationally significant fauna, flora and ecological communities (Wescott 2009). The Act includes seven matters of national significance, one being the RAMSAR wetlands of international importance and another being the Commonwealth marine areas (Commonwealth of Australia 1999).
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<td>Catchment Management Authorities Act 2003</td>
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<td>Queensland</td>
<td>Coastal Protection and Management Act (1995)</td>
<td>QLD’s Coastal Policy Coastal Protection Advisory Council</td>
<td>No specific catchment legislation</td>
<td>Department of Natural Resources, Mines and Water</td>
</tr>
<tr>
<td>South Australia</td>
<td>Coastal Protection Act (1972)</td>
<td>Marine and Estuarine Strategy 1998 Coast Protection Board</td>
<td>No specific catchment legislation Water Resources Act</td>
<td>Department of Water Land and Biodiversity Conservation</td>
</tr>
<tr>
<td>Western Australia</td>
<td>No specific coastal state legislation</td>
<td>Coastal Zone Management Policy Coastal Zone Council</td>
<td>No specific catchment legislation</td>
<td>No one specific authority responsible</td>
</tr>
<tr>
<td>Tasmania</td>
<td>State Coastal Policy Validation Act 2003</td>
<td>Tasmanian State Coastal Policy 1996 State Coastal Advisory Committee</td>
<td>State policy currently being developed</td>
<td>Land and Water Management Council</td>
</tr>
<tr>
<td>Northern Territory</td>
<td>No specific coastal state legislation</td>
<td>Northern Territory Coastal Management Policy 1999 Northern Territory Coastal and Marine Coordination Group.</td>
<td>No specific catchment legislation</td>
<td>Department of Natural Resources and Environment and the Arts.</td>
</tr>
</tbody>
</table>

Table 4.2: State/Territory catchment and coastal zone legislation (Australia).
Source: adapted from Harvey & Caton (2003), Robins & Dovers (2007) and Australian Catchment River and Estuary Assessment (2002).
NRM bodies are responsible for the delivery of Natural Heritage Trust (NHT) and National Action Plan for Salinity and Water Quality (NAP) (Robins & Dovers 2007).

**Natural Heritage Trust (NHT).**

The Natural Heritage Trust (NHT) is a funding arrangement which allows for horizontal integration across catchments and the coastal zone. The NHT Act 1997 enabled the establishment of the NHT and its programs. NHT is a “major funding initiative which supports integrated management of natural resources in order to preserve Australia’s Natural resource capital for the benefit of current and future generations” (Commonwealth of Australia 2008). NHT III was re-established with five main themes – land, water, vegetation, coasts and marine, and biodiversity (Commonwealth of Australia 2008). The Trust can allocate funds at the national, state or regional management levels and address its main objectives of biodiversity, conservation, sustainable use of natural resources and community capacity building and institutional change (Commonwealth of Australia 2008, Lockwood et al. 2009).

NHT could provide a framework for integration in NRM with its allocation of funds, as it is the major source of funding along with the NAP (Gardner 1999, Morrison et al. 2004, Hajkowicz 2009). NHT Phase I in 1996 had a funding package of A$1.6 billion over five years, NHT Phase II in 2001 A$1.2 billion over six years and NHT Phase III in 2007 of A$2 billion (Robins & Dovers 2007, Hajkowicz 2009). NHT Phase II received a further A$300 million in the 2004 (Lockwood et al. 2009).
There are fifty-six regional NRM bodies which develop and implement regional plans governed by committees of management, whose membership is based on the farming community. These NRM bodies are principally funded through NHT and NAP (Robins & Dovers 2007, Hajkowicz 2009). NRM has been delivered through NHT and NAP focussing primarily on land-based environments, limiting the opportunity for horizontal integration with the coastal zone (Flaherty 2004). Under the NAP and NHT Phase II, each NRM region has developed an integrated NRM Plan to address and prioritise issues (Coastal CRC 2005). Although the NAP focuses on salinity based around catchment management areas, both these programs provide the potential framework under which catchment management can be coordinated with coastal zone management.

There is a Natural Resources Management Ministerial Council whose function is to monitor, evaluate and report on NRM in Australia (Haward & Vince 2009). The NHT ceased existence in June 2008 and is now replaced by ‘Caring for our Country’. Caring for Our Country still allows for horizontal integration as it is a key funding initiative supporting integrated NRM and ESD. Expenditure under this program was A$440 million during 2008-09, a portion of the overall A$2.25 billion allocated until 2013 (Australian Government cited in Hajkowicz 2009).

Capacity building is an integral part of NRM in Australia. There are three universities which offer ICZM related courses (Deakin University, Victoria, University of Technology in New South Wales, and James Cook university in
Queensland) (Cicin-Sain et al. 2000). There are also two research centres, the Centre for Maritime Policy at the University of Wollongong and the Institute for Coastal Resource Management at the University of Technology (Cicin-Sain et al. 2000). The need for networking and information sharing across the nation was identified at the Coast-to-Coast Conference in Tasmania in 2004. This need resulted in the development of an Australian Coastal Society. There is also a National Sea Change Taskforce which is composed of local governments and aims to get coastal management issues the political attention they require (Wescott 2009).

4.3 – Implications for horizontal integration at the national level.

A review on literature of catchment and coastal zone management in Australia reveals there are some factors which enhance the implementation of horizontal integration as well as a number of inhibiting factors. Factors which enhance Australia’s ability to implement horizontal integration include that it is a world leader in coastal zone management, that it is an island nation (and therefore does not have to address cross-boundary management), that the coastal zone is important and valued culturally, and that there are good NGOs and research institutes (such as CSIRO) to carry out capacity building efforts.

Some of the inhibitors to horizontal integration include the absence of national legislation, the lack of funding and resources, the fragmentation of management, political influences, the lack of vertical integration, institutional arrangements, education and the identification of joint objectives.
Wescott (2009) believes legislation is essential for the implementation of a national approach to ICZM and to avoid the historical failures of implementation to date. Whilst Australia does have good national coastal leadership, provided initially through the CCP and now through the ICZM Framework there is an absence of overarching legislation to offer agreed national targets and priorities for horizontal integration (Humphrey et al. 2000, Morrison et al. 2004, Lockwood et al. 2009). This gap in implementation of horizontal integration is exacerbated by the lack of national leadership for catchment management. As Thom and Harvey (2000) and Harvey and Caton (2003) identify, the Commonwealth government has not historically played a significant role in coastal zone management, except for areas with Commonwealth responsibility (such as the Great Barrier Reef). National leadership is required to overcome the state-based sectoral administration, identified in the coastal inquiries, which has resulted in uncoordinated and fragmented agency responsibilities (Thom & Harvey 2000, Harvey et al. 2002).

The lack of coordination noted by Wescott (2002a) highlighted that the planning and management processes are in different stages of development for catchments and the coastal zone, which is limiting the possibility for vertical and horizontal integration.

The lack of funding has been a consistent theme throughout the history of coastal zone management in Australia (RAC 1993, Kay & Lester 1997, Wescott 2009). There is often competition for funding and resources which
creates rivalry between catchment and coastal zone agencies instead of coordination and sharing (Morrison et al. 2004, Lockwood et al. 2009). With ICZM programs taking several years from development to implementation there is a trend towards longer programs which will require long-term funding commitments (Hajkowicz 2009). The lack of allocated funding is one issue, but finding new funding is even more challenging as it requires political motivation to redirect funds from other areas of public expenditure (Hajkowicz 2009).

A significant portion of funding (up to half) is directed towards capacity building efforts (Hajkowicz 2009), leaving limited funds for the implementation phase. The difference between funding to catchment management and coastal zone management can be observed in NHT allocation where catchment based Landcare received A$280 million and coastal zone based Coastcare a very modest A$27.3 million (Clarke 2006). Achieving integration would be economically beneficial as it is estimated that the annual cost of land and water degradation is A$3.5 billion (Council of Australian Governments 2000).

Catchment and coastal zone management experience a rapid turn-over of staff. This rapid turn-over was also noted in the EU. In a review by Sloan et al. all the managers involved in a project had moved out of their organisation two years afterwards leaving very little ‘institutional memory’ (Grayson et al. 2000).
Although catchment management and coastal zone management have frameworks which provide for horizontal integration, policy and implementation fragmentation have hindered the successful on-ground implementation. This has occurred through a lack of intergovernmental (vertical) and intersectoral (horizontal) integration principally between the national and state governments (Flaherty 2004, Lane et al. 2004, Morrison et al. 2004). The review of Australia’s implementation of ICZM by Cicin-Sain and Knecht (1998) suggested that spatial integration ‘probably remains the most problematic’.

The State of Environment Report 2001 discusses intersectoral and spatial integration as well as intergovernmental integration. The Report identified two major problems which inhibit the sustainable use of Australia’s coastal zone. These were the fragmented management arrangements based on single issues or sectors; and the ‘tyranny of small decisions’ (this being a number of insignificant decisions which when aggregated result in significant impact on the coastal zone) (Commonwealth of Australia 2002a).

Political support is necessary for achieving institutional change (Broderick 2008). The on-ground success of horizontal integration requires more than just departmental integration, it requires political attention (Wescott 2002a, Morrison et al. 2004). This political will has been lacking for decades in Australia, and it was highlighted by Crawford (1992) as one of the significant outcomes of the 1991 Injured Coastline Report.
Throughout the history of coastal zone management in Australia it has been stated that the process is ‘highly politicised’ (Kay & Lester 1997, Thom & Harvey 2000, Abrahams 2005, Wescott 2006, 2009). Political attention has mainly been around water reform, from the long-standing national drought and the focus of catchment management on the MDB (Wescott 2009).

However, it has more recently been evident that coastal zone management issues are gaining political attention. This was highlighted in the 2007 national election when the Treasurer for the Australia Government stated that Labor “won government on the back of sun-belt seat” (Megalogenis 2007). This demonstrated the effect of voting numbers from the high population density on the south-east coastal fringe of Australia. This observation suggests that the success of coastal zone management is directly related to the success of the government in power at the time, as also noted by Kay and Lester (1997). NGOs are needed to increase political support as getting long-term investment into coastal issues is challenging (Thom & Harvey 2000).

In Wescott’s (2009) discussion of the current state of vertical integration in Australia he comments that although arrangements for achieving vertical integration are in place its failure has occurred due to a ‘lack of political will’ from the national government. The lack of vertical integration was also observed by Kay and Lester (1997) over a decade ago when they noted the resistance of states to having Commonwealth involvement in coastal zone management as a result of the RAC.
The lack of vertical integration between different levels of government in Australia has been referred to as a ‘vertical fiscal imbalance’ (Kenchington & Crawford 1993, Kay & Lester 1997). With three levels of government involved in NRM in Australia vertical and horizontal integration are essential elements to environmental governance in overcoming financial and policy rivalry (Lane et al. 2004, Morrison et al. 2004).

In Australia the management of catchments is principally the responsibility of the state government and catchments often cross state borders. As catchment and coastal zone ecosystems cross political boundaries there is often an overlap of responsibilities. Therefore, the area which institutional arrangements are designed to manage, must be defined by natural or issue based boundaries.

Public policy in Australia takes a long time to develop new legislation, and as Dovers (2005a) and Morrison et al. (2004) note, is constantly changing with the introduction of new ideas and methods and departmental restructuring. Abrahams (2005) suggests that policy development occurs under electoral and budget cycles.

The challenge in on-ground implementation or movement from ‘theory’ to ‘practice’ has been referred to as the ‘implementation gap’ (Clarke 2006). This gap is hindered by bureaucratic ‘red tape’ and the Wentworth Group advocate the return of power to the communities (Wentworth Group cited in Lane et al. 2004). Although policy is being developed, its implementation is
proving to be the challenge (Thom & Harvey 2000). There is however, a lack of guidance in the development of policies and programs (Morrison et al. 2004). The availability of information and data is inadequate for achieving a whole-of-government approach (Morrison et al. 2004). In catchment management the ‘practice’ is ahead of ‘theory’ therefore there is insufficient theory to develop informed policy (Morrison et al. 2004). The opposite of this is occurring in the practice of ICZM.

Catchment management in Australia uses adaptive management strategies (Lane & Robinson 2009) which could be incorporated into coastal zone management to improve legislation in order to meet joint priorities.

As Morrison et al. (2004) conclude, improvements to integration in NRM can only be effective with institutional change. Adequate institutional arrangements are required to ensure a whole of government approach and to enforce NRM (Foster et al. 2005). An institutional framework is also important for the appropriate allocation of funding (Morrison et al. 2004, Hajkowicz 2009). In addition, institutional arrangements can coordinate joint responsibilities and objectives (Broderick 2008) which can lead to combining funding and resources between management bodies.

Despite the funding allocation and framework provided by NRM, horizontal integration is still absent at the national level. There is a need for ICZM specific courses and education across the nation, to provide training and skills as there is a lack of trained professionals (Thom & Harvey 2000, Harvey et al.
The national government Land and Water Australia (a research and development cooperation) ran an Integration Symposium in May 2004 which focussed on capacity building and information sharing in NRM (Bammer et al. 2005b).

As a result of ICM practices being centred around inland catchments, the management objectives focus on issues which do not have a coastal focus (such as salinity) making horizontal integration challenging (Ewing et al. 2000, Park & Alexander 2005).

The different origins of catchment and coastal zone management and land tenure restrict the possibility of agreed objectives. The majority of the coastal zone is publicly owned and management is focused on tourism and recreation, whereas in contrast catchments are often on private land and their management is focused on primary production and agriculture.

In Australia there is a group of scientists who formed the Wentworth Group which is convened by the World Wildlife Fund. The Group have produced two papers with solutions for environmental management – Blueprint for a Living Continent and Blueprint for a National Water Plan. In the Blueprint of a Living Continent, the Group calls for the removal of bureaucratic red-tape and a community-owned regional delivery model for NRM in Australia (The Wentworth Group 2002). This is discussed by Lane et al. (2004) who refer to this as ‘decentralisation’ which commonly transfers state powers to regional management bodies or NGOs. Other examples of a move towards regional
delivery include Landcare, ICM and NHT (Lane et al. 2004). In their paper Lane et al. (2004) argue that improved vertical and horizontal relations across actors is required rather than decentralisation to a regional focus.

The potential for achieving horizontal integration between catchments and the coastal zone is high with most states having a clear coastal policy and lead agency and institutional arrangements which allow for catchment management. The concept of ICM is developing in parallel with ICZM in both approach and importance on community participation, however, coastal zone management remains an isolated activity in Australian states (Wescott 2002a).

This section has demonstrated that despite a national influence in the production of a number of Commonwealth inquiries and recommendations, coastal zone management has primarily been implemented by the state governments. The following section explores three examples of development of ICZM at the state management level. ICM approaches vary throughout Australia, however, they are based around common objectives and community involvement (Bellamy et al. 2002, Park & Alexander 2005). There have been various attempts at horizontal integration by these states. These three states were chosen as they demonstrated progression in ICZM as illustrated in Harvey and Caton (2003) (refer to Table 4.2). Queensland due to its internationally significant Great Barrier Reef. New South Wales as it has claimed progression to total integration leading in NRM by abolishing its coastal council. Victoria as it is a leader in state level coastal zone
management with its state-wide Victorian Coastal Strategy and catchment management with its Regional Catchment Strategies.

4.4 – Queensland.

Queensland is located in the north-eastern section of Australia, is the second largest state by area and is home to 20% of Australia’s population. It is the third most populous state (behind New South Wales and Victoria) with 46% of its population situated in its coastally located capital city - Brisbane. The state of Queensland has a population of approximately 4 million and a coastline that stretches for 9,500 km; 85% of its population live in the coastal zone (EPA 2002). Queensland is home to the internationally significant coastal area, the Great Barrier Reef, which has led to a unique cooperative partnership between the national and state governments, not present in other states of Australia (Harvey cited in Cicin-Sain & Knecht 1998).

ICZM in Queensland.

The potential for the state coastal policy in Queensland has not been realised; this is being attributed to the lack of a review system (Walker et al. 2009). The Environment Protection Authority has primary responsibility for coastal planning and management in Queensland under the state parliamentary Coastal Protection and Management Act 1995. The Great Barrier Reef has legislation for its management dating back to the Great Barrier Reef Marine Park Act of 1975 (Kay & Lester 1997, Noble & Rodgers 2004) under which the Great Barrier Reef Marine Park Authority (GBRMPA) was formed. There
has been provision for management of coastal and marine issues of this region for over 30 years.

The first state-wide legislation for coastal management came into force in 1995 with the Queensland Coastal Protection and Management Act (Queensland State Government. 1995). The Act aims to:-

a) Provide for the protection, conservation, rehabilitation and management of the coast, including its resources and biological diversity.

b) Have regard to the goal, core objectives and guiding principles of the National Strategy for ESD in the use of the coastal zone.

c) Provide, in conjunction with other legislation, a coordinated and integrated management and administrative framework for the ecologically sustainable development of the coastal zone; and

d) Encourage the enhancement of knowledge of coastal resources and the effect of human activities on the coastal zone (Queensland State Government. 1995).

The Act (1995) uses coastal management plans to achieve coordinated and integrated planning and decision making for coastal management. Under Section 30 of the Act, a State Coastal Management Plan is to be prepared.

In 2001, the State Coastal Management Plan: Queensland’s Coastal Policy was released (Walker et al. 2009). The Policy was prepared in response to issues and findings in the 1999 ‘Queensland’s Coast: Managing its Future – a position paper on Coastal Management in Queensland’. The State Coastal
Plan applies to the coastal zone as defined in s. 11 of the Coastal Protection and Management Act: ‘coastal waters and all areas to the landward side of coastal waters in which there are physical features, ecological or natural processes that affect, or potentially affect, the coast or coastal resources’ (cited in Harvey & Caton 2003 p. 221). The coastal zone includes “catchment areas where activities have impacts on coastal resources, as well as the coastal waters of the state” (Harvey & Caton 2003 p. 221).

In 2001, the GBRMPA released its ‘Great Barrier Reef Catchment Water Quality Current Issues Report’ to address water quality issues from agricultural activities which impact on the health of the Reef (Lane & Robinson 2009).

The Fitzroy River provides an example of horizontal integration at the management level in the state of Queensland. The Fitzroy River is located in central Queensland along the Capricorn Coast and is the second largest catchment in Australia at 150,000 square kilometres (CRC 2002). Management of the Fitzroy River demonstrates intergovernmental integration between the three levels of government and intersectoral integration between Department of Natural Resources and Mines, Great Barrier Reef Marine Park, Fitzroy Basin Association, local councils, water authorities and the Environment Protection Authority (responsible for Regional Coastal Management Plans) among other organisations.
The Fitzroy River is a prominent NRM study area with the Coastal and Catchment Hydrology CRCs, the NAP and the Great Barrier Reef Marine Park Authority (Noble cited in CRC 2002a). A list of Community Partners involved in the management of the River include local councils, landcare groups, coastcare groups, government departments, GBRMPA, planning groups, water authorities and many more as sited on the CRC website (CRC 2002).

Management issues which surround the River include suspended sediment, nutrients, flooding and blue-green algae (CRC 2002). These issues are also extending to the Great Barrier Reef lagoon demonstrating the need for a horizontal integration approach covering the ‘range-to-reef’ ecosystems (Noble & Rodgers 2004). In the region land use is predominantly agricultural, whilst approximately 70% of the land is owned by the State (Noble & Rodgers 2004). This predominance of agricultural land use has meant that the Landcare groups are well established whilst the less developed Coastcare groups have arrived later bridging the gap in the ‘range-to-reef’ continuum (Noble & Rodgers 2004). This would suggest that coastal and marine issues being a recent addition to the management agenda will require extra funding and resources for development in order to become equally effective as their Landcare counterparts. Like much of the Australian coastline, the Fitzroy River is experiencing a ‘sea change’ phenomenon, with increasing population density.
Also important to the management of the Fitzroy River is the Great Barrier Reef Marine Part Act 1975 and the Federal Environment Protection Biodiversity Act 1999 (Noble & Rodgers 2004). Some of the processes which have been adopted in the River to improve integration include:

- Workshops between the Catchment Hydrology CRC and the Fitzroy Basin Association to establish a range-to-reef modelling framework (CRC 2002a);
- Strengthening links between agencies including NAP, water allocation and management, Reef Protection Plan, CRC for Catchment Hydrology and Fitzroy Basin Association (CRC 2002a); and
- Evolution of partnerships and collaborative arrangements between community groups, industry and government agencies (Noble & Rodgers 2004).

In October 2000, the community-based Fitzroy Basin Association released its Central Queensland Strategy for Sustainability. The Strategy, which covers an area of 200,000 km², seeks (amongst other matters) to ‘develop water quality and river health targets… and maintain the values of instream, riverine, estuarine and marine ecosystems’ and to ‘improve the management of landscapes and land uses which contribute excessively to nutrient and sediment runoff into streams’ (Commonwealth of Australia 2002a p. 58).

**Catchment management in Queensland.**

The Department of Natural Resources, Mines and Water coordinates management of Queensland’s thirty catchments. An ICM program was
initiated in 1990 and the following year an ICM Strategy was released (Ewing et al. 2000, QLD Government cited in Grayson et al. 2000). The Strategy provides for twenty-six local Catchment Coordinating Committees whose role is to develop catchment management strategies (Grayson et al. 2000).

There is no legislative base for catchment management in Queensland, however there are fourteen regional NRM bodies (established between 1995 and 2005) (Robins & Dovers 2007), the Queensland Murray Darling Association and other environment legislation (such as the Water Act 2000) which provide for protection and management of land and water resources.

4.5 – New South Wales (NSW).

New South Wales is located in the centre of the east coast of Australia, between Queensland and Victoria, and is the most populous state. The state has a population of approximately 6.7 million, of which 90% live along the coast (NSW Coastal Policy 1997, Nheu 2002). Its capital city of Sydney is the largest and most populous capital with a population of 4.5 million (Wikipedia 2010). Between 40-50% of the coastal zone in New South Wales is privately owned (Thom 2003, 2004).

ICZM in New South Wales.

A significant event in coastal zone management in New South Wales was the introduction of the Coastal Protection Act in 1979. The Act aims to protect, enhance, maintain and restore the environment of a coastal region having regard to the principles of ecologically sustainable development (NSW
Government 1979). Under the Act local councils are to prepare coastal zone management plans in accordance with the objectives of the Act and work in conjunction with adjoining councils. The Coastal Protection Amendment Bill (1998 and 2002) was passed in parliament in 2002, introducing provisions for ESD into the legislation (Thom & Harvey 2000, Thom 2003).

In 1997 the NSW Government endorsed the ‘NSW Coastal Policy: A Sustainable Future for the NSW Coast’. The objective of the Policy is “to protect and conserve the coast for future generations” (NSW Government 1997 p. 5). Under the Policy the NSW Coastal Council was appointed to monitor and review its implementation. The Policy is based on ESD principles and has ICZM enshrined in it, providing for integrated planning and management (Thom & Harvey 2000). This Council was later abolished in 2004 and the role of the Council is now under the NRM regional planning system established within the Natural Resources Commission Act 2003– the Natural Resources Commission (NRC) (Thom 2004).

In 2001 the NSW government announced a $11.7 million Coastal Protection Package which included a Comprehensive Coastal Assessment which aims to develop products to support decisions in coastal planning and management. One such product is the Toolkit released in 2007 including mapping and statistics to aid local councils with their plans and regional strategies which they are required to produce under the Coastal Policy.
Catchment management in NSW.

Catchment management in NSW is referred to as Total Catchment Management, which began in 1984 (Grayson et al. 2000, Margerum & Born 2000). The NSW government released the Catchment Management Act in 1989 (reviewed in 1997) which aims to coordinate policies, programs and activities in total catchment management. The 1989 Catchment Management Act defines ‘Total Catchment Management’ as being “the coordinated and sustainable use of land, water, vegetation and other natural resources on a catchment basis so as to balance resource utilisation and conservation” (NSW Govt 1989). The Act allows for catchment management committees to link government and community initiatives.

In 2003 the Catchment Management Authorities Act was introduced (as part of the NRM reform) to provide for the establishment of authorities whose purpose is to devolve operational, investment and decision-making natural resource functions at the catchment level. There are thirteen Catchment Management Authorities (CMA) across the NSW state (established in 2004), five of which are located on the coast (Robins & Dovers 2007). Each CMA has a chairperson and up to six board members. The CMAs work in partnership with the community, local government, state government and industry and produce Catchment Action Plans for their region.

NRM in NSW has historically been sectorally based, with significant hindrances being the ‘red tape’ and protection of ‘turf’ by management agencies (Thom & Harvey 2000, Farrier 2002). However, the late 1990’s and
the 2004 abolition of the Coastal Council and management of catchment and coastal zone issues being addressed under NRM regions suggests a move to overcome this fragmentation (Farrier 2002). As Nheu (2002) noted, there is little cross-sectoral integration to provide for effective catchment-based management.

The principles of ESD are addressed under the NSW Protection of the Environment Administration Act 1991 (Thom 2004), the Water Management Act 2000 provides for sustainable and integrated management of NSW’s water sources (Nheu 2002) and the Environmental Planning and Assessment Act 1979 provides a vehicle for integrated NRM (Conacher & Conacher 2000, Farrier 2002).

The Water Management Act provides for State Water Management Outcome Plans (SWMOP) which provide a strategic framework for water management (Nheu 2002). Water Management Plans (reviewed very five years) are drafted by Water Management Committees which provide for community input with community membership on committees (Nheu 2002).

The Healthy Rivers Commission Report (Thom 2004), is a public enquiry into coastal lakes, of which there are sixty five in NSW. The management structure in NSW is quite different to Victoria where the coastal zone is 95% publicly owned (Kay & Lester 1997).
4.6 – Victoria.

The State of Victoria is located in the south-east of Australia and is geographically the smallest mainland state. It is the second most populous state, and the most densely populated, with a population of approximately 5 million (Wikipedia 2010). Its capital city of Melbourne is located in the south and is where 75% of the population live. In Victoria, 80-85% of the population live within the coastal zone and all major industrial concentrations occur here (Commonwealth of Australia 2002a). The southern coastline of Victoria stretches for approximately 2,000 kilometres (Wescott 1998) and is a popular holiday destination receiving over 70 million recreational visits each year (James 2002). The Victorian coast is 95% publicly owned (Kay & Lester 1997).

The state of Victoria has an advanced coastal zone management strategy which has been reviewed and updated twice since its introduction under the Coastal Management Act 1995. Victoria has a strong catchment management framework running under the Catchment and Land Protection Act 1994.

ICZM in Victoria.

As previously stated, one of the earliest attempts at integration in coastal zone management was in Victoria when the Port Phillip Bay Authority was created in 1966 (Sorenson 1997). The Authority was created to manage a lack of coordination among public agencies in Melbourne (Cicin-Sain & Knecht 1998).
In 1995, the Victorian State Government endorsed the Coastal Management Act (1995). One of the purposes of the Act was to establish the Victorian Coastal Council (VCC) and three Regional Coastal Boards (RCB). The VCC is a ‘peak advisory body established to provide strategic direction and improve coordination of coastal planning and management’ (VCC 2002a). The VCC offers positions on its board to members of the community, local government, planning, tourism and science, opening positions to incorporate many different skills into the decision making process.

Under the Act the VCC is required to produce a Victorian Coastal Strategy (VCS) – a key strategic planning document for the coast (Wescott 2004). The first VCS was passed through Parliament in November 1997, and has been rewritten in January 2002 and December 2008. The 2002 VCS is a significant attempt at horizontal integration and placed Victoria at the forefront of coastal zone management again, being the first plan in Australia to offer a whole-of-coast framework for planning and management (James 2002). Action 2.6 of the 2002 VCS aims to ‘Improve the Integration of catchment and coastal management’ through joint membership on boards, targeted and agreed program priorities and outcomes; and joint meetings, seminars and conferences (VCC 2002b).

In December 2008, the Victorian Government launched the VCS which dedicates an action to catchment management. Action 1.4 aims to establish a reference group with catchment and coastal zone expertise to include coastal issues in regional catchment strategies and develop funding priorities with
catchment management authorities (VCC 2008 p. 31). This action utilizes Regional Catchment Strategies (discussed below) as a vehicle for achieving horizontal integration.

The three RCBs appointed under the Act are the Western Coastal Board, Central Coastal Board, and Gippsland Coastal Board. The RCBs are responsible for producing Coastal Action Plans (CAP) for the coastal zone in their region. These boards further increased the level of community involvement and contributed to the development and implementation of the VCS. The RCBs have a significant role in facilitating the interests of various stakeholders in working towards joint objectives (James 2002). The CAP identifies objectives for use and development of the region or part of the region (Victorian Government 1995). As identified in Cornish and Wescott (2004) CAPs can be ‘issue based’ (such as water quality or boating) or ‘geographically based’ (focussing on issues in a defined region). Cornish (2001) concluded that CAPs provide for vertical integration and are valuable in the implementation of ICZM.

The framework for coastal zone management in Victoria is represented in the Figure 4.1.
In Victoria, there is Coast Action/Coastcare – a national/state jointly funded initiative. Coast Action/Coastcare provides community groups with funding for local projects including revegetation, planning of native species, erosion control etc. (DNRE 2002a).

**Catchment management in Victoria.**

The primary goal for catchment management in Victoria is to “ensure the sustainable development of natural resource-based industries, the protection of land and water resources and the conservation of natural and cultural heritage” (Catchment Management Structures Working Party 1997).

The Catchment and Land Protection Act (1994) is the principal state legislation for catchment management in Victoria (Robins & Dovers 2007). Under the Act the Victorian Catchment Management Council (VCMC) was formed as the overarching body for the State’s Catchment Management
Authorities (CMA). There are currently ten CMAs, of these there are five which are located in the coastal zone; these being Glenelg Hopkins, Corangamite, Port Phillip and Westernport, West Gippsland and East Gippsland. Victoria’s CMAs have been considered the most significant regional NRM institutions in Australia (Gardner 1999).

Under the Act the CMAs are responsible for preparing the statutory documents – Regional Catchment Strategies (RCS). RCSs are an important tool for achieving ICM and vertical integration as they integrate a range of national, state and regional policies to deal with NRM (Park & Alexander 2005). A RCS also incorporates a Special Area Plan to aid its on-ground implementation. These Plans are designed to manage specific issues in a special area (Victorian Government 1994).

Four biodiversity asset classes have been identified as priorities by the Victorian Government, these are – native vegetation, species, wetland and rivers (Park & Alexander 2005).

The framework for catchment management is represented in Figure 4.2.
The long-standing Department of Natural Resources and Environment (DNRE) was split into the Department of Sustainability and Environment (DSE) and the Department of Primary Industries (DPI) following the 2002 state election (Coffey & Major 2005). DSE is responsible for Victoria’s environmental legislation (Robins & Dovers 2007).

**Parks Victoria.**

Parks Victoria plays an important role in both catchment and coastal zone management as it works in close partnership with DSE providing services under the Parks Victoria Act 1998 and the National Parks Act 1975. Parks Victoria manages forty national parks, reserves and public land in a sustainable manner which also promotes sustainable tourism (Parks Victoria 2008).
Victoria is considered a world leader in sustainability (DSE cited in Coffey & Major 2005). Park and Alexander (2005) consider Victoria to have the most advanced level of development with respect to catchment management, than any other state in Australia – therefore a good case study at state level.

Under the Commissioner for Environmental Sustainability Act 2003 (Parliament of Victoria 2003) the Commissioner must prepare a State of the Environment Report. These reports will provide for continuous improvement in NRM practices (Coffey & Major 2005).

In 2003, the two independent bodies responsible for catchment and coastal zone management in Victoria (the VCC and the VCMC) joined in a workshop to ‘identify key coastal and marine issues that should be addressed in the development of regional catchment strategies for accreditation with new national NRM arrangements’ (VCC 2003). Such cooperation offers a possible solution for the sectoral management that has plagued NRM policy history in Victoria (Coffey & Major 2005).

Membership and focus of catchment and coastal zone management authorities differ in Victoria. More than half of the members of CMAs are required to have a primary production background (Robins & Dovers 2007).

4.7 – Implications for horizontal integration at the state level.

Whilst there are some similar approaches to catchment management adopted by the three states discussed, there are also some key differences in their
approach to coastal zone management. These include the employment of a statutory body, the percentage of coastal zone tenure being public and partnerships with the national government.

The coastal zone being under private or public ownership significantly impacts on the implementation of horizontal integration. With 90% of Victorian coastal zone being under public tenure, a coordinated approach to management is more feasible than in NSW where 40-50% of coastal zone is privately owned (Thom 2004). Under the Coastal Protection and Management Act 2001, the Queensland government has a ‘land surrender process’ in an attempt to increase the percentage of land under public ownership (Thom 2004).

In Queensland the GBRMPA and Murray-Darling Basin are examples of national-state partnerships (Morrison et al. 2004). An example of state-regional partnership (vertical integration) is in the management of the Fitzroy River. This partnership has also shown an important development in horizontal integration as the catchment drains into the Great Barrier Reef. The Reef is of international significance and is highly profitable for national and international tourism. This significance has resulted in natural resource managers paying particular attention to the environmental impact on the Reef from inland bodies of water.

Including catchment and coastal zone management issues in regional planning documents is a strategy which will achieve greater horizontal integration.
This has begun in Victoria where the State Governments’ review of the RCS guidelines in 2002 states that ‘the RCS needs to encompass all land, water and biodiversity issues on public and private land (including the coasts) where these should be approached from a whole of catchment perspective’ (DNRE 2002c p. 4). Some members on the panel for the RCS review had coastal backgrounds which ensured that revised versions of the strategies incorporated coastal zone management issues and identified appropriate management solutions.

The two main pieces of legislation in Victoria for achieving horizontal integration are now over ten years old (Coffey & Major 2005). This legislation requires updating with the latest scientific information and changes to NRM theory and practice. Such a review needs to incorporate communication between RCBs and CMA.

The regional coastal zone planning tools, CAPs are, in return, required to incorporate and consider catchment management issues and liaise with local CMAs. Input from other relevant agencies is also encouraged, for example local government councils and water authorities.

Victoria’s Framework for horizontal integration is illustrated in Figure 4.3. As can be seen, this allows for both vertical and horizontal integration – two key characteristics of ICZM.
Factors which enhance horizontal integration in Victoria are the institutional framework, which enables vertical and horizontal, and the goodwill that exists in the community (from regional catchment management, Landcare, Coastcare etc). Things that are inhibiting horizontal integration are the political sensitivity, conservative government, funding and resources, the CMAs being resource-rich, and the RCBs being resource-poor, and rapid change of staff turnover.

The unequal distribution of funding between the resource-rich CMAs and resource-poor RCBs also inhibits horizontal integration. The VCMC received A$770,000, more than three times the funding for VCC, A$242,000 in 2006/07 (VCMC 2007, VCC 2007). The composition of CMAs tends to be weighted towards primary producers (as is required under the CALP Act)

As Coffey and Major (2005) note, Victoria has a wide range of strategies, policies and frameworks for NRM including ones which cover catchment and coastal zone management. Planning and management of catchment and coastal zone management are at different levels of sophistication (Wescott 2002a).

In Australia, as in other nations, it has been proposed that integrated NRM is more effective when management is carried out at a catchment (or regional) level (Grayson et al. 2000). There has been a trend in NRM to ‘devolve’ (or ‘decentralise’) responsibility and delivery of programs to the regional level in the belief that implementation at this level is more effective (Morrison et al. 2004, Abrahams 2005). A regional focus is also required for a long-term holistic approach to coastal zone management (Ducrotoy & Pullen 1999). Although coastal zone management is significantly influenced by state government policy it is more often the local governments who are at the forefront of coastal zone management and planning (HoR 2009).

As Lane et al. (2004) discuss, the regional control provides for local implementation of solutions for specific issues. The regional governments are more aware of local issues, than state or national governments, and can enforce legislation and have the financial resources to implement management programs (Thom & Harvey 2000, McCleave et al. 2003, Memon et al. 2010).
Landcare is an example of a regional community-based program which is considered successful in NRM implementation (Hajkowicz 2009).

A regional focus in Australia has proved to be a good management level for implementation of NRM (Lockwood et al. 2009) with NHT2 and NAP funding focusing on projects at the regional level. The regional level also allows for community involvement and participation which will in turn lead to community input in influencing political will (Wescott 2009).

The following section sets out the existing framework for catchment and coastal zone management in the Gippsland Lakes Region. It also explores the major management issues facing the Lakes, and the relevant management authorities and their respective responsibilities.

4.8 – Gippsland Lakes Region.

The Gippsland Lakes were chosen as a case study as they are managed at a regional management level, which is considered the best level for implementation. This region is in Victoria which has received international recognition for its coastal zone management through the VCS and has the best catchment management arrangements of any state in Australia (Park & Alexander 2005). The Gippsland Lakes have a range of CAPs and RCSs in place, providing a sound structure through which to implement horizontal integration. Therefore, the Gippsland Lakes have a good management framework for the implementation of horizontal integration across catchments and the coastal zone.
Located in the east of the State of Victoria, the Gippsland Lakes cover approximately 340 km² with 350 km of shoreline (Crossco Australia et al. 2002). The Lakes catchment covers 20,600 km² which equates to 9% of Victoria’s total land area (Coastal Engineering Solutions 2003). There are five major river systems which flow into the Gippsland Lakes; these are Latrobe, Avon, Mitchell, Nicholson and Tambo (Refer to Figure 4.4). These rivers contribute 10% of Victoria’s annual stream flow (GCB 1999a). The Lakes system comprises Lake Wellington, Lake Victoria and Lake King (Coastal Engineering Solutions 2003).

The Gippsland Lakes is the largest estuarine lakes system in the Southern Hemisphere, one of Australia’s largest coastal lagoon systems (James 2002, Turner et al. 2004), and is of international significance (James 2002). The system of lakes enters the ocean, giving a good example of a catchment-coastal zone-ocean continuum to horizontal integration.

The Lakes offer many recreational activities such as boating, fishing, camping and swimming. In 1889 a permanent opening to the sea was created changing the largely freshwater ecosystem to an estuarine one (Crossco Australia et al. 2002, Turner et al. 2004). A study carried out by the Commonwealth Scientific and Industrial Research Organisations (CSIRO) in 1998 found that in comparison to other coastal lagoon systems along the east coast of Australia, the Gippsland Lakes System was poised on the edge of significant degradation (Harris et al. 1998).
(Source: Gippsland Coastal Board Website, 2002).

Figure 4.4: Map of Gippsland Lakes.
ICZM in the Gippsland Lakes Region.

The VCS (2008) is the major statutory policy governing the management of the Gippsland Coast. Under the Coastal Management Act (1995) the Gippsland Coastal Board (GCB) was formed and is responsible for management of the coastal zone from Venus Bay in South Gippsland, to the NSW border, and includes the Gippsland Lakes.

The GCB has produced four CAPs, these are the Gippsland Lakes CAP (GCB 1999a), the Gippsland Boating CAP (Vantree Pty Ltd 2002), and the Integrated Coastal Planning for Gippsland CAP (Crossco Engineering and Environmental Consultants et al. 2002).

Catchment management in the Gippsland Lakes Region.

The Gippsland Lakes are listed under the Ramsar Convention Wetlands of International Importance. The Ramsar site is located on the low-lying Gippsland Plains east of the La Trobe Valley and south of the Eastern Highlands (Parks Victoria 2002). The Site has three types of wetlands, these being coastal/brackish/saline lagoons, permanent saline/brackish pools, and permanent freshwater marshes. Approximately one third of the Site is located within the Lakes National Park and the Gippsland Lakes Coastal Park (Parks Victoria 2002).

As noted in section 4.6 there are two CMAs in Gippsland – the East Gippsland CMA and the West Gippsland CMA. Under the Catchment and Land Protection Act the East and West Gippsland RCSs are the principal
statutory documents for catchment management in the Gippsland Lakes. The vision of the East Gippsland CMA to be achieved through its RCS is:

- Efficient and sustainable use of East Gippsland’s natural resources for a prosperous community;
- Improved conservation management of flora and fauna; and
- Improved water quality and improved stream management (EGCMA 2005).

This vision incorporates NRM and ESD principles at the regional management level. The vision of the West Gippsland CMA to be achieved through its RCS is ‘a healthy catchment is one that produces clear air and water, provides sustenance, shelter and quality of life for its people, contains resilient ecosystems with a diversity of native plants and animals, recycles waste generated from within, and supports its communities through sustainable resources’ (WGCMA 2003).

From Gippsland Lakes’ policy documents it is apparent that there are some common management issues facing the catchment and coastal zone managers in the Gippsland Lakes Region. Many of these management issues are universal to horizontal integration across catchments and the coastal zone (Kearney et al. 2007). These issues include erosion (of the Lakes shoreline), flooding, algal blooms, conflict of uses, nutrient loading, salinity, pest plants and animals, dredging, public and private land conflicts, artificial opening, water quality and quantity and pollution from agricultural run-off (Harris et al. 1998, Crossco Australia et al. 2002, Parks Victoria 2002, Norman 2008).
There are several key state and regional authorities involved in the management of the Gippsland Lakes. Some management objectives do overlap suggesting the need for intersectoral integration. In addition to those already mentioned these authorities include: DSE, Parks Victoria, Gippsland Lakes and Catchment Taskforce, Environment Protection Authority, Southern Rural Water Authority, Wellington Shire Council, East Gippsland Shire Council and Gippsland Ports.

4.9 – Conclusion.

This Chapter has presented the frameworks for ICZM and catchment management at the national, state and regional management levels in Australia. As Chapters 3 and 4 have demonstrated there have been many different policies and institutional arrangements adopted in several nations designed to achieve catchment and coastal zone management. However, there still remains no solution to achieving horizontal integration across this geographical region. The following chapters present case studies to explore why this has not been achieved at the regional and state management levels.

As has been demonstrated the State of Victoria and the regional location of the Gippsland Lakes are good case studies for researching horizontal integration between catchments and the coastal zone. The Gippsland Lakes will be adopted as a case study for assessing the implementation of horizontal integration at the regional management level in Chapter 5. The State of Victoria will be adopted as a case study for assessing the implementation of horizontal integration at the state management level in Chapter 6.
Chapter 5: Horizontal Integration at a Regional Level.

5.0 – Introduction.

As discussed in Chapters 1 and 2 the impact of land-based pollution on the coastal zone has been consistently a major management issue for ICZM programs to address. Despite the recognition of the impact from poor catchment management on the coastal zone, a solution for the effective implementation of horizontal integration across catchments and the coastal zone remains absent.

Chapters 3 and 4 have demonstrated that ICZM is a concept which is adaptable to many different political, cultural and environmental settings. Chapter 3 demonstrated that ICZM can be implemented in both developed and developing nations. Chapter 4 demonstrated that ICZM can also be implemented at the national, state and regional management levels. Both Chapter 3 and 4 identified some of the factors which are inhibiting the on-ground implementation of horizontal integration. These factors included the lack of national leadership, fragmented management systems, lack of funding and resources, the need for strong institutional arrangements, the need for establishing joint management objectives, the need for education of managers and capacity building, the absence of political support, and the need for a monitoring and review system.
Section 4.7 showed that the regional management level is the best level for achieving the successful on-ground implementation of ICZM and horizontal integration. Therefore, the Gippsland Lakes have been chosen as a regional case study to discover factors which are inhibiting or enhancing the on-ground implementation of horizontal integration across catchments and the coastal zone.

As was identified, in section 4.8, the Gippsland Lakes is a good regional case study because it has many of the universal management issues relating to horizontal integration with a framework in place for achieving spatial and intersectoral integration. This Chapter provides a description of the methods adopted, then the presentation of results from the Gippsland Lakes case study, followed by the implications from research findings for the implementation of horizontal integration at the regional management level.

5.1 – Methods.

Figure 5.1 illustrates the steps undertaken during the Gippsland Lakes case study. As identified by Robson (2002) a case study involves the collection of information through a range of data collection techniques which is followed by documentary analysis.
Figure 5.1: Flow chart of methods for Gippsland Lakes Questionnaire.

This case study was designed to discover the opinions of on-ground managers in order to obtain knowledge on the success (or failure) of horizontal integration across catchments and the coastal zone within the Gippsland Lakes. The opinions of these on-ground managers were sought as they are involved in the day-to-day management of the region. The managers are therefore in a good position to observe the practical implementation of horizontal integration. Through these observations they can contribute
valuable knowledge on the concepts of spatial and intersectoral integration and their experiences of the relationship between management agencies is first hand.

In order to obtain the opinion of on-ground managers, two key methods were considered. These were a one-on-one interview or a self-completed questionnaire. Due to the large sample size of on-ground managers and the desire to obtain as many responses as possible the self-completed questionnaire was adopted as the method for data collection. Robson (2002) identifies self-completed questionnaires as being very efficient in terms of researcher time and effort. Using a questionnaire as a means to obtain data was also chosen as there is no attempt to manipulate variables, or control conditions (Robson 2002). The questionnaire was chosen for two additional reasons. These being the budget constraints of the research project; and that this type of questionnaire allows the opportunity to ask more questions.

As De Vaus (2002) suggests any questionnaire must be shaped by three broad considerations; these being technical, practical and ethical. The technical considerations involve “ensuring that matters such as sample design, questionnaire construction, scale development and the like are as rigorous as possible; practical considerations mean that the survey design must take account of realities such as budgets, deadlines and the purpose of the research; and ethical considerations must also shape the final design of the survey” (De Vaus 2002 p. 58).
As the purpose of the Gippsland Lakes case study was to determine the opinion of on-ground managers as to the status of horizontal integration across catchments and the coastal zone in the Gippsland Lakes the method of using a questionnaire was particularly relevant as it was suited to ‘descriptive studies’ which are interested in the number of people in a given population who possess a particular attribute or opinion (Robson 2002). A questionnaire was also chosen as quantitative survey research provides “factual, descriptive information – the hard evidence” (De Vaus 2002 p. 5).

As Frazer and Lawley (2000) identify, there are three types of response formats which can be used in questionnaires. These are open-ended (unstructured), close-ended (structured) and scale response. Open-ended questions are suitable where precise information is required. Close-ended questions can be either single (where one response is required), dichotomous (where two response items are provided) or multichotomous (where several alternatives are listed). Scale-response questions require the use of a scale to measure the attributes of the construct. They are commonly used to measure the respondent’s attitudes towards particular issues.

The type of questions used in this case study consisted of mainly close-ended questions which can be used to avoid dishonest or inadequate responses. These are also easier to code and analyse as they avoid different interpretations (Robson 2002). Close-ended questions are also used when a questionnaire is “long or people’s motivation to answer is not high, as they are quick to answer” (De Vaus 2002 p. 100). Care was taken to make sure the
questionnaire was easy to understand and follow in order to improve response rates and success of follow-up of non-respondents (De Vaus 2002).

Postal questionnaires were used as they are considered to be 50% less expensive than questionnaires by telephone, and 75% less expensive than face-to-face interviews (Bourque & Fielder 1995). Postal questionnaires also allow for wide distribution (Czaja & Blair 1996).

5.1.1 – Limitations.

It should be noted that this research method has a few limitations. Two disadvantages are the low response rate which results from a self-completed questionnaire and the low motivation of respondents to participate. Other limitations in research projects include budget constraints and researcher time constraints (Czaja & Blair 1996, Frazer & Lawley 2000, Robson 2002).

There is no control over who completes the questionnaire and if they have assistance from other people when completing the questionnaire (Bourque & Fielder 1995).

The data from self-completed questionnaires can be considered representative of the population (Bourque & Fielder 1995). This research required the respondents to have particular knowledge and background in catchment and coastal zone management; therefore, it is a representation of a given population. However, as the list of participants was drawn from those available in the public domain (due to privacy and ethics considerations) other
respondents with perceptions/opinions on catchment and coastal zone management who were not in the public domain cannot be approached.

It should be noted that the results from questionnaires demonstrate the perceptions/opinions of the respondents.

5.2 – Design of Gippsland Lakes Questionnaire.

As the aim of the Gippsland Lakes Questionnaire was to obtain an overall sense of the status and success of horizontal integration in the Gippsland Lakes, it consisted of a combination of close-ended and scale-response questions (refer to Appendix 1). Some open-ended questions were used to obtain further information or as an extension to a previous question. Some questions offered a residual alternative with an option to choose ‘other’ in order to increase the flexibility in answer categories (Bourque & Fielder 1995).

To assess the status of horizontal integration in the Gippsland Lakes, the questionnaire was designed in six sections. Section 1 was an Assessment of catchment management in the Gippsland Lakes Region (refer to Appendix 1 p. 269). The questions in Section 1 sought to determine the perceived success of relevant state and local policies, strategies, plans and legislation, and authorities and organisations, in addressing catchment management issues. The Section also sought to determine if the current management arrangements were perceived to be successful in meeting catchment management issues and, if not, possible reasons for their lack of success. Participants were asked to
rate how they perceived the ecological state of the catchment area, as well as their opinions and attitudes on the current catchment management framework and funding arrangements.

Section 2 used the same design as Section 1 to determine the identical elements of coastal zone management in the Gippsland Lakes Region (refer to Appendix 1 p. 275). Section 2 however had an additional question which sought to assess the success of coastal zone management in the Gippsland Lakes in meeting the objectives of the Commonwealth Governments’ Coastal Policy at the time. This question was to determine the perceived level of intergovernmental (vertical) integration in the region as an important dimension of integration in ICZM.

Section 3 of the Gippsland Lakes Questionnaire was an Assessment of horizontal integration across catchment and coastal zone management in the Gippsland Lakes Region (refer to Appendix 1 p. 281). This Section sought to discover what is currently happening on-ground to see if managers perceive there to be any incorporation of catchment management into the ICZM framework or vice versa. It went on to discover if not, why not, and if there is scope for this to occur.

Section 4 was about Ideas/Concepts/Principles which may improve (or create) horizontal integration across catchments and the coastal zone in the Gippsland Lakes Region (refer to Appendix 1 p. 286). This Section used the objectives suggested for integration in Action 2.6 of the 2002 Victorian Coastal Strategy
These questions sought the opinion of on-ground managers as to the importance of these objectives in meeting horizontal integration. A final question in this Section offered scope for participants to suggest additional ways they might like to see horizontal integration occur in the Gippsland Lakes Region or any other management level.

Section 5 sought some statistics on the participants such as their age group, level of education, employment sector and years of experience in catchment/coastal zone management (refer to Appendix 1 p.288). These questions on the demographics of participants were placed at the end of the questionnaire as to avoid negating the purpose of the introductory letter, and because many people find these questions boring (Bourque & Fielder 1995).

The final section, Section 6, sought to discover the knowledge participants had of the management frameworks and policies for catchment/coastal zone management from the international, national, state and local/regional levels (refer to Appendix 1 p. 290). Such knowledge is important for achieving vertical and horizontal integration – two major characteristics of ICZM.

As Frazer and Lawley (2000) suggest the design of a questionnaire can be used to motivate respondents, to go from general questions to more specific questions, and to have questions on demographics appearing last. The Sections of the Gippsland Lakes questionnaire were presented in this order to achieve such motivation.
Following the design of the Gippsland Lakes Questionnaire approval for the project was sought from the Deakin University Human Research Ethics Committee. A research proposal was completed detailing the project title, objectives of proposed research, background on the proposed research, a description of the project, any ethical implications and the estimated duration of data collection. This application was lodged on the 15th of September 2003. The research project received approval from the Deakin University Human Research Ethics Committee on 20th of October 2003. The Approval number was EC231-2003.

Ethical consideration was important in this project to ensure that responsibilities to the participants were met. These responsibilities included those outlined by De Vaus (2002) as being voluntary participation, informed consent, ‘no harm,’ confidentiality, anonymity and privacy.

Having drafted the Gippsland Lakes Questionnaire and received ethics approval, a pilot questionnaire was then sent to 22 on-ground managers, a small sample of the population group, in the State of Victoria. The pilot was used to identify “inevitable problems of converting a design into reality” (Robson 2002 p. 383). Pilot testing gives the researcher confidence that the data collection instrument is “effectively and efficiently obtaining the data needed to validly and reliably test the research question” (Bourque & Fielder 1995 p. 89). These participants included managers from organisations such as regional coastal boards, catchment management authorities, Department of Sustainability and Environment, Parks Victoria, water authorities, and local
councils. Participants in the pilot test were sent a Plain Language Statement (PLS) explaining the project and pilot test phase, a consent form, a copy of the questionnaire and a reply paid return envelope (refer to Appendix 2 for copies of PLS and consent form).

Ten responses from the pilot test were received with comments for changes. Suggestions from the pilot test included to show greater clarity of definition of the Gippsland Lakes Region and also to show what is considered to be the ‘catchment.’ A list of definitions for terms used in the Gippsland Lakes Questionnaire was then included as an appendix to the final version. Some of the other suggestions received included further explanation of what conflict of use means, to split funding questions into base and additional, add an option for a combination of management levels, and make it more concise (by using tables etc.). To reflect the suggestion to split funding into base and additional the following terms were used. Base funding will refer to committed funds received from on-going, long-term sources. Additional funding will refer to funds gained through short-term grants or donations. Funding will refer to the allocation of monetary support, whereas, resources will refer to staffing and administrative support. The Gippsland Lakes Questionnaire was re-drafted with these changes and submitted for Ethics Approval. Approval was subsequently received on 17th February 2004.
5.3 – Mail-out Gippsland Lakes Questionnaire (data collection).

From the Gippsland Lakes literature and policy review (refer to section 4.8) it was clear that a number of organisations were involved in the on-ground day-to-day management of the Region. A list of on-ground managers in the Gippsland Lakes Region was compiled from the public domain (such as internet listings, publications, government directories etc.).

The Gippsland Lakes Questionnaire was then mailed out on 19th February 2004 to 171 on-ground managers. Participants received a covering letter (PLS) outlining the research project and instructions for completion, an Ethics Committee consent form, a copy of the Gippsland Lakes Questionnaire and a reply paid return envelope (refer to Appendix 3 for a copy of the PLS and consent form). These were presented on Deakin University letterhead to present the questionnaire in a professional manner, as it helps to “establish the importance of the study, give information about sponsorship, and personalises the contact with the respondent” (Bourque & Fielder 1995 p. 107). This presentation also suggested that the respondent is “being contacted by a recognised, reputable organisation, legitimises the importance of the study and the uniqueness of the respondent’s position as a source of information” (Bourque & Fielder 1995 p. 108). A reply-paid envelope was provided to eliminate direct monetary costs to participants (Frazer & Lawley 2000).

An initial follow up letter was sent out to 133 participants on the 17th March 2004 and a second follow up letter was sent to 107 participants on the 29th of June 2004 (refer to Appendix 3). A follow up letter was sent as this has been
recognised as “the most productive factor in increasing response rates” (Robson 2002 p. 250).

A disadvantage of mail-out questionnaires is the low response rate. The response rate is “the number of eligible respondents who actually respond divided by the total number of eligible respondents approached” (Frazer & Lawley 2000 p. 74). It has been suggested that a single mail-out with no incentives can expect a 20% response rate (Bourque & Fielder 1995). From the sample group 27 questionnaires were returned or unable to be completed and 52 completed responses were received. Therefore, 52 completed questionnaires were received out of a possible 144 making the response rate 36%.

5.4 – Data analysis.

To maintain confidentiality each respondent was given a number which coincided with their completed questionnaire and consent form. Each completed questionnaire was coded with the allocated number and the respondents consent form was stored separately from the questionnaire in a secure manner.

The responses to each question were then coded. Coding was used to create “a classification system that imposes a particular order on the data” (De Vaus 2002 p. 147). The coded data was then entered into SPSS software for statistical analysis. SPSS is used to determine frequencies on questions which have quantitative data.
The questions which produced qualitative data were coded and entered into NVivo software. As Gibbs (2002 p. 16) states NVivo does two things: “it supports the storing and manipulation of texts or documents; and it supports the creation and manipulation of codes, known in NVivo as nodes”. In the NVivo program a node is a “way of bringing together ideas, thoughts and definitions about data, along with selected passages of text. Passages of text from one or more documents are connected to a node because they are examples of the idea or concept it represents” (Gibbs 2002 p. 31).

To show clear patterns in responses to Gippsland Lakes Questionnaire descriptive statistics were used to present data in three ways: tabular, graphical and statistical (De Vaus 2002). Once frequencies of responses had been determined Excel spreadsheets and the ‘chart wizard’ tool were used to create graphs for easy display and clear illustration of trends.

5.5 – Results of Gippsland Lakes Questionnaire.

The majority of respondents were male (75%), between the ages of 36 and 55 years (48%). Respondents had received a high level of education with 40% of them having a post-graduate degree. Participants were from a wide range of the employment sectors with the three main groups being the state government (33%), retired (17%) and the public sector (14%).

Their experience with managing catchment/coastal zone environments was varied and ranged up to 25+ years with the most common period being 0-5 years (37%) and the second most common being 25+ years (17%).
experience of respondents with management of the Gippsland Lakes Region was again varied with 0-5 years (56%) being the most common followed by 6-10 years (19%). There were 58% of respondents involved in a local community group. These community groups included coastal action groups, committees of management, landcare groups, environmental and naturalist groups, fishing groups, waterwatch and ‘friends of’ groups. The profile of respondents is summarised in Table 5.1.

<table>
<thead>
<tr>
<th>Age</th>
<th>Level of education</th>
<th>Employment sector</th>
<th>Experience with catchment/coastal zone management</th>
<th>Experience with Gippsland Lakes</th>
<th>Involvement in a community group</th>
</tr>
</thead>
<tbody>
<tr>
<td>48% (36-55 years)</td>
<td>40% Post-graduate degree</td>
<td>33% State Government</td>
<td>36% (0-5 years)</td>
<td>55% (0-5 years)</td>
<td>58% (yes)</td>
</tr>
<tr>
<td>23% (56-69 years)</td>
<td>23% Bachelor Degree</td>
<td>17% Retired</td>
<td>17% (25+ years)</td>
<td>19% (6-10 years)</td>
<td>40% (no)</td>
</tr>
<tr>
<td>13% (26-35 years)</td>
<td>17% Secondary School</td>
<td>17% Public Sector</td>
<td>15% (6-10 years)</td>
<td>10% (11-15 years)</td>
<td>2% (N/A)</td>
</tr>
<tr>
<td>8% (70+ years)</td>
<td>10% Tertiary</td>
<td>7% Local Government</td>
<td>14% (11-15 years)</td>
<td>6% (25+ years)</td>
<td></td>
</tr>
<tr>
<td>6% (18-25 years)</td>
<td>6% TAFE</td>
<td>6% Professional</td>
<td>10% (16-20 years)</td>
<td>4% (16-20 years)</td>
<td></td>
</tr>
<tr>
<td>2% (N/A)</td>
<td>4% Other</td>
<td>6% Self Employed/Consultant</td>
<td>6% (21-25 years)</td>
<td>4% (21-25 years)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>6% Other</td>
<td>2% (N/A)</td>
<td>2% (N/A)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4% Farmer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4% Federal Government</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2% Private Sector</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2% Unemployed</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 5.1: Profile of Respondents.
Respondents’ had a broad knowledge of relevant local and state organisations, policies and management principles. The organisations and authorities responsible for the implementation of legislation/policies/strategies were well recognised at the local, state and national management levels. The local level was well recognised by all organisations/authorities being recognised by over 89% of respondents. The most recognised was the Gippsland Coastal Board (94%) and the least was the Gippsland Southern Rural Water (89%) (refer to Appendix 4 - Figure A4.1). Nearly all state organisations/authorities were well recognised with the main ones – DPI, DSE, landcare, PV and EPA – all being recognised by 94% of respondents. The least recognised was the River Basin Management Society which only 31% of respondents recognised (refer to Appendix 4 - Figure A4.2).

The national level was recognised less with NHT being recognised by 93% and the CRC for Coastal Zone, Estuary and Waterway Management being recognised by 35% of respondents (refer to Appendix 4 - Figure A4.3). At the international level only 19% had heard of PEMSEA (refer to Appendix 4 - Figure A4.4).

Legislation/policies/strategies were well recognised at the local and state level of management. The Gippsland Lakes CAP was known by 94% of respondents, and the least known was the Gippsland Lakes Shore Erosion and Revegetation Strategy (46%) (refer to Appendix 4 - Figure A4.5). At the state level the Victorian Coastal Strategy was best known (90%) and the least was the Victorian River Health Strategy (65%) (refer to Appendix 4 - Figure
A4.6). The knowledge at the national level was poor with the most known being the National Strategy for ESD, recognised by 54% of respondents. The least was the Coastal and Marine Planning Program at 29% (refer to Appendix 4 - Figure A4.7). At the international level the RAMSAR Convention for the Protection of Wetlands was recognised by 87% of respondents and the least as the UN Convention on the Law of the Sea by 42% (refer to Appendix 4 - Figure A4.8).

The concepts and principles used in catchment and coastal zone management were quite well recognised at all levels of management. At the local level the most recognised was salinity (94%) and shoreline erosion (92%) (refer to Appendix 4 - Figure A4.9). At the state level Integrated Natural Resource Management was recognised by 83% of respondents (refer to Appendix 4 - Figure A4.10). The national level was less known, 85% recognised ESD and 75% the concept of ICM (refer to Appendix 4 - Figure A4.11). The internationally recognised issue of global warming/greenhouse effect was known by 91% of respondents and the concept of ICZM by 67% (refer to Appendix 4 - Figure A4.12).

5.5.1 – Assessment of catchment management in the Gippsland Lakes Region.

Section 1 asked participants to make an assessment of the current status of catchment management in the Gippsland Lakes Region. The ecological state of the Gippsland Lakes was considered to be ‘degraded’ by 54% of
respondents, and an additional 33% believed it to be ‘severely degraded’ (refer to Figure 5.2).

Figure 5.2: Perceived ecological state of the Gippsland Lakes (Q. 5a)

The broader catchment area was also considered to be in a threatened state with 75% of respondents believing it to be ‘degraded’ and a further 17% believing it was ‘severely degraded’ (refer to Figure 5.3).

Figure 5.3: Perceived ecological state of the broader catchment area (Q. 5b).
To explore how well current management arrangements were perceived to be addressing the ecological state of the Gippsland Lakes, the Questionnaire explored the success of the existing framework by assessing the perceived effectiveness of the current policies/strategies/plans/legislation and organisations/authorities by on-ground managers. This was done by asking participants to rate their perceived success from 0 (being not successful) to 5 (being highly successful). According to the on-ground managers in the Gippsland Lakes Region the Gippsland Lakes Future Directions and Actions Plan is the most successful plan for addressing catchment issues, with 62% of respondents ranking it as ‘successful.’ This shows a significant contribution to ICZM as the vision for the Plan states to “continue to be a local, regional, national and international icon where everyone individually and collectively, will be working to achieve common, community owned objectives for the Gippsland Lakes and catchment” (DNRE 2002d p. 7). The Coastal Management Act was rated the least successful at addressing catchment issues with only 33% respondents believe it to be ‘successful.’ The Catchment and Land Protection Act was the second lowest rating legislative tool with only 35% of respondents considering it to be ‘successful’ in addressing catchment issues (refer to Figure 5.4).
Only 35% of on-ground managers believe that the existing policies/strategies/plans/legislation are ‘adequate’ to successfully address catchment issues (refer to Figure 5.5).

Figure 5.5: Perceived adequacy of policies/strategies/plans/legislation in addressing catchment management issues (Q. 1a).
The number of respondents who believe the policies/strategies/plans/legislation are ‘inadequate’ was 52%. Of the respondents who thought they were inadequate the reasons they gave were through a ‘lack of funding’ (70%) and a ‘lack of resources’ (44%). It is general opinion that ‘more organisations’ are not required (89%) (refer to Figure 5.6).

![Figure 5.6: Reasons for perceived inadequacy of policies/strategies/plans/legislation in addressing catchment management issues (Q. 1b).](image)

Other possibilities for the poor perceived performance of policies/strategies/plans/legislation suggested by respondents included:

- A lack of commitment (both community & political);
- A need for the whole of the community to be engaged and wanting the same outcomes;
- Plans having ‘no power’ and the incentive for Councils to comply with them;
- The policies are inadequate and difficult to implement at the local level; and
- Some plans may require reviewing.
The on-ground managers in the Gippsland Lakes Region rank Landcare as being the most successful organisation for managing catchment issues (67%). The East Gippsland Shire Council (19%) and the Wellington Shire Council (14%) were considered the least successful (refer to Figure 5.7).

Figure 5.7: Perceived success of authorities/organisations in addressing catchment management issues (Q. 2).

The existing authorities/organisations are viewed by the majority of respondents to be ‘adequate’ for addressing catchment issues (59%) (refer to Figure 5.8). For the 27% of respondents who thought they were ‘inadequate’ the main reasons were again ‘a lack of funding’ (93%) and a ‘lack of resources’ (53%) (refer to Figure 5.9).
Figure 5.8: Perceived adequacy of authorities/organisations in successfully addressing catchment management issues (Q. 2a).

Figure 5.9: Reasons for inadequacy of authorities/organisation in addressing catchment management issues (Q. 2b).

Other reasons for a lack of success of authorities and organisations, as suggested by respondents, were:

- The time required to establish the essential partnership between non-government bodies and individuals;
- There is too much red tape;
- The bodies have no real ‘power’; and
- There is a lack of public awareness.
Overall the on-ground managers believe that the catchment management issues are being managed ‘poorly’ with sustainable land use (75%) and aquatic pest animals (69%) being the worst. The most successfully managed issues are the provision for a variety of recreational activities (69%) and recreational fishing facilities and access (67%) (refer to Appendix 4 - Figure A4.13). Current policies are not perceived to be successful in addressing these management issues with aquatic pest animals (58%), run-off (56%), erosion of shoreline/bank stability (54%) and sustainable land use (54%) being the worst. Management issues being addressed ‘well’ by the current policies are the provision for a variety of recreational activities (64%), recreational fishing facilities and access (62%), and safe boating issues (66%) (refer to Appendix 4 - Figure A4.14).

On-ground managers consider that the most appropriate government level for addressing catchment management issues in the Gippsland Lakes Region is at the local/regional management level (50%) or a combination of management levels (35%) (refer to Figure 5.10). The most popular combination was between local/regional and state management levels (57%).

![Figure 5.10: Preferred level of management for catchment issues (Q. 6).]
Respondents believed that the aims and objectives of nationally accepted and agreed principles of environmental management were “generally appropriate but they are not being fully appreciated or implemented.” About a third of respondents believe local catchment management objectives are adequate to meet the national ones; however, they question whether they are attainable.

Figure 5.11: Perceived adequacy of current catchment management objectives to meet environmental management principles (Q. 7).

A total of 87% of on-ground managers believe the base funding to be ‘inadequate’ for catchment management in the Gippsland Lakes Region. And 54% of managers believe that the additional funding is also ‘inadequate’ (refer to Table 5.2). It was also suggested by participants that the way funding is provided is also an issue.
Table 5.2 – Perceived adequacy of base and additional funding (Q. 8a and Q. 8b).

The current catchment management framework in the Gippsland Lakes Region is perceived to be most successful in meeting the characteristic of Integrated Catchment Management which is ‘focussing on achieving agreed outcomes’ (50%), and the least successful being met is the characteristic which is ‘turning towards adaptive management’ (19%) (refer to Figure 5.12).

Figure 5.12: Perceived success of catchment management in the Gippsland Lakes in meeting ICM Characteristics (Q. 9).
Summary:
Section 1 of the Gippsland Lakes Questionnaire demonstrated that the current plans/legislation in place for addressing catchment management issues are viewed to be inadequate, and this is reflected by the perceived poor ecological state of the catchment and broader catchment area. This perceived inadequacy is considered to be a result of a lack of funding and a lack of resources.

The authorities and organisations are perceived to be adequately addressing catchment management issues. However, some significant issues are being managed poorly (such as sustainable land use) and this is considered to be due to a lack of funding and resources. This is also reflected in the agreed inadequacy of base and additional funding allocations.

Overall the on-ground managers do not consider the catchment management arrangements in the Gippsland Lakes adequately meet the characteristics of ICM, nor are they perceived to meet the national agreed environmental principles. This is perceived to be due to a lack of national leadership as also identified in Chapter 4. The preferred level of management for catchment issues is considered to be at the local/regional level or a combination of this with the state management level.

5.5.2 – Assessment of coastal zone management in Gippsland Lakes Region.

Section 2 asked the participants to make an assessment of the current status of coastal zone management in the Gippsland Lakes Region. The opinion of the on-ground managers is that the ecological state of the coastal zone in the
Gippsland Lakes Region is ‘degraded’ (58%) with 10% believing that it is ‘severely degraded’ (refer to Figure 5.13).

The Gippsland Lakes Questionnaire explored the success of the existing framework by assessing perceived the effectiveness of the current policies/strategies/plans/legislation and authorities/organisations. The first question in Section 2 asked participants to rate their perceived success of coastal policies/strategies/plans/legislation from 0 (being not successful) to 5 (being highly successful). According to on-ground managers the Gippsland Lakes Coastal Action Plan is the most successful plan for addressing coastal issues, with 65% of respondents ranking it as ‘successful.’ The West Gippsland Regional Catchment Strategy was the least successful at 23% (refer to Figure 5.14).
Participants were then asked if they thought the policies/strategies/plans/legislation were adequate to address coastal zone issues and possible reasons for this. Responses show that 43% of on-ground managers believe the existing policies are ‘adequate’ to successfully address coastal zone issues in the Gippsland Lakes Region, and 27% believing they are ‘inadequate’ (refer to Figure 5.15).
Those respondents who believe the policies to be ‘inadequate’ then identified possible reasons for their inadequacy in implementation to be due to a lack of funding (68%) and a lack of resources (59%) (refer to Figure 5.16). Other suggestions provided by respondents include the political interference (as opposed to decisions based on the long-term good of the region), there is a lack of incentive to do the right thing, the community is not well informed, and there needs to be a greater sense of urgency and enthusiasm.

![Figure 5.16: Reasons for perceived inadequacy of policies стрategies plans legislation in addressing coastal zone management issues (Q. 10b).](image)

Participants were asked to rate the success of authorities/organisations in managing/addressing coastal zone issues. The respondents thought the Gippsland Coastal Board (69%) and Parks Victoria (60%) were the most successful organisations in addressing coastal zone issues. The Wellington Shire Council and Southern Rural Water Authority were considered the least successful (19%) (refer to Figure 5.17).
Figure 5.17: Perceived success of authorities/organisations in addressing coastal zone management issues in the Gippsland Lakes Region (Q. 11).

The existing organisations were viewed by respondents to be ‘adequate’ (51%) for addressing coastal zone issues (refer to Figure 5.18).

Figure 5.18: Perceived adequacy of organisations/authorities in addressing coastal zone management issues in the Gippsland Lakes Region (Q. 11a).

For the 41% of respondents who thought they were ‘inadequate’ the main reasons were again a lack of funding (68%), inadequate management institute/organisation (40%) and lack of appropriate skills/expertise (40%).
There is also a perceived need for less organisations (44%) and more resources (36%) (refer to Figure 5.19). Other suggestions provided by respondents included the jobs and funding are short-term, there is a lack of positive legislation, better strategies are needed, there is a lack of power to authorities, and there needs to be a greater sense of urgency.

Figure 5.19: Reasons for perceived inadequacy of authorities/organisations in addressing coastal zone management issues (Q. 11b).

Overall the worst managed coastal zone issues were viewed to be the loss of riparian vegetation (56%) and marine pest species (54%). The most successfully managed issues were perceived to be the provision for recreational activities (64%) and public safety on beaches (58%) (refer Appendix 4 - Figure A4.15). When considering the degree to which policies provide for management issues respondents believed that the worst managed issue was again the loss of riparian vegetation (52%) and minimising risk/impact of marine pest species (50%). Overall policies were perceived to provide best for the provision of a variety of recreational activities (63%) and safe boating (60%) (refer to Appendix 4 - Figure A4.16).
It was considered by respondents that the most appropriate government management level for addressing coastal zone management issues in the Gippsland Lakes Region is a combination (42%) of management levels, the most popular being local/regional and state (refer to Figure 5.20).

![Figure 5.20: Preferred level of management for coastal zone issues (Q. 14).](image)

The on-ground managers believe that the current local coastal zone management objectives are meeting environmental principles to a poor standard. Only 42% of respondents believe Environmental Principles are being met and 35% believe NRM objectives are being met. A number of respondents used the ‘not sure’ option for this question (refer to Figure 5.21).
Of the on-ground managers 71% believe the base funding for coastal zone management in the Gippsland Lakes is ‘inadequate’ and 64% believe the additional funding is also inadequate (refer to Table 5.3).

<table>
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<th>Very Inadequate</th>
<th>Inadequate</th>
<th>Not Sure</th>
<th>Adequate</th>
<th>Very adequate</th>
</tr>
</thead>
<tbody>
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<td><strong>Base Funding</strong></td>
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<td>46%</td>
<td>19%</td>
<td>8%</td>
<td>2%</td>
</tr>
<tr>
<td><strong>Additional Funding</strong></td>
<td>17%</td>
<td>46%</td>
<td>23%</td>
<td>12%</td>
<td>2%</td>
</tr>
</tbody>
</table>

Table 5.3 – Perceived adequacy of base and additional funding (Q. 16a and Q. 16b).

The existing coastal zone management framework in the Gippsland Lakes Region is perceived to be most successful in meeting the characteristic of ICZM which is the consideration of all values (environmental, social, and economic) (44%) and least successful in meeting the characteristic of integration between government, community and industry groups (17%) (refer to Figure 5.22).
The existing coastal zone management framework in the Gippsland Lakes Region is overall perceived to be unsuccessful in meeting the objectives of the CCP. The objective of public participation is perceived to be met the most by 42% of respondents, and the objective of sustainable resource use is perceived to be met the least by 31% of respondents (refer to Figure 5.23).

Figure 5.23: Perceived success of coastal zone management framework in meeting objectives of the CCP (Q. 17a).
Summary:
As with the catchment ecosystems in the Gippsland Lakes, the coastal zone is also considered to be in a degraded state. The plans/legislation in place to address coastal zone management are perceived to be adequate and are considered to be slightly more successful than catchment management strategies. As was also the case with catchment management, the reasons for inadequacies in the plans/legislation were considered to be due to the lack of funding and resources.

Organisations/authorities were perceived to be less successful in coastal zone management issues than catchment management organisations/authorities. Reasons for this lack of success are also attributed to the perceived lack of funding, but also to an inadequate management institute/organisation and a lack of appropriate skills/expertise. As with catchment management, having the organisations/authorities which are currently in place is seen to be ‘adequate’ for addressing coastal zone management issues.

In contrast to catchment management, the most popular management level for addressing coastal zone issues was a combination of state and local/regional management levels. As with catchment management, coastal zone management arrangements are not meeting the objectives of environmental principles to a desirable level, according to respondents. Also the base and additional funding allocations are perceived to be inadequate. The current coastal zone management arrangements in the Gippsland Lakes are viewed to be unsuccessful in meeting the characteristics of ICZM and CCP.
5.5.3 – Assessment of current status of horizontal integration in the Gippsland Lakes Region.

Section 3 of the Gippsland Lakes Questionnaire aimed to discover if there is currently any horizontal integration across catchments and the coastal zone. If so, to what level this was being achieved and if not, was there scope to allow for horizontal integration to occur. Of the on-ground managers, 85% believe that horizontal integration would lead to better environmental outcomes in the Gippsland Lakes Region (refer to Figure 5.24).

Of this 85%, 19% believe that certain conditions would be required for this to occur. These conditions include: the availability of adequate funding, that all objectives of Total Catchment Management (TCM) are addressed, and the establishment of institutional arrangements would be required so that catchment management issues do not over-ride coastal zone issues (and vice versa).
Respondents believed that the increase in environmental outcomes as a result of horizontal integration would occur mainly because of agreed responsibilities (82%); and agreed objectives (75%) (refer to Figure 5.25).

![Figure 5.25: Why horizontal integration would lead to better environmental outcomes (Q. 18a).](image)

For the on-ground manager who believed that horizontal integration would not lead to better environmental outcomes it was thought to be because it would lead to a lack of focus on specific issues and to a reduction in funding (possibly as the respondent suggests through too many organisations competing for the rare funding dollars).

The most important structural provision in achieving horizontal integration was considered to be agreed management objectives (77%), followed by targeted and agreed program priorities and outcomes (75%) (refer to Figure 5.26).
In addition, respondents included that ‘adequate supervision’ was required in order to:

- See that policies are implemented;
- Enable ongoing improvement in outcomes; and
- If necessary, report when implementation is impossible or ineffective and why this is so.

The respondents believe the most desirable legislative provision for achieving horizontal integration would be a state (statutory) policy (58%). And the next most popular provision would be a state parliamentary act incorporating catchment and coastal zone management objectives (46%) (refer to Figure 5.27).
Of the respondents 69% believe there is currently ‘some’ horizontal integration between CMAs and RCBs in the Gippsland Lakes Region. A further 10% believe an ‘appropriate’ level of horizontal integration exists and only 8% that there is ‘no’ horizontal integration’ (refer to Figure 5.28).

Figure 5.27: Preferred legislative provisions for achieving on-ground horizontal integration (Q. 20).

Figure 5.28: Perceived level of horizontal integration between CMAs and RCBs (Q. 21).
The respondents who believed there is horizontal integration, perceived this to be occurring mainly through agreed objectives (39%) and shared responsibilities (34%) (refer to Figure 5.29). Other reasons suggested include goodwill between individuals, the development of updated RCSs including integration with coasts, and the need to address common problems.

![Figure 5.29: How horizontal integration is perceived to be occurring (Q. 21a).](image)

The level of government where horizontal integration should occur was thought to be at the local/regional management level (75%) and the second most popular option was at the state management level (50%) (refer to Figure 5.30). No respondent said that horizontal integration should not occur.
The following results were in response to questions which were based around the objective in the VCS Action 2.6 (as discussed in Section 4.6) relating to membership on management boards. For achieving combined membership on boards on-ground managers thought it was important that members should be included from the following backgrounds (in order of preference):

- State government representative (81%);
- Primary production (77%);
- Local government representative (67%);
- Indigenous representative (65%);
- Chair of CMAs (65%);
- Water authority member (65%);
- Chair of GCB (64%);
- Conservation (64%);
- Tourism (62%);
- Local conservation group (60%);
- Academic/research (60%);
- Commercial fishermen (56%);
- Environmental engineering (52%);
- Recreational fishermen (52%);
- Local landcare member (52%);
- Business (46%);
- Community affairs (41%); and
- Boating industry (39%).
Participants also noted that membership should include those who do not have a ‘vested interest’, who are independent and that the boards should be smaller with highly skilled representatives.

For achieving combined membership on boards on-ground managers thought it was important that the membership should include members which have the following specialities (in order of preference):

- Water resource management (86%);
- Environmental conservation (85%)
- Understanding coastal management concepts and issues (85%);
- Understanding catchment management concepts and issues (83%);
- Land protection (81%);
- Extensive local knowledge (77%);
- Town planning (74%);
- Indigenous issues (69%);
- Primary industries (69%);
- Tourism (65%);
- Business management (60%);
- Social Sciences (52%); and
- Community affairs (48%)

Participants commented that membership should represent areas of specific interest and members need to have demonstrated skills in resource and business management.

**Summary:**

It is agreed by the on-ground managers in the Gippsland Lakes that horizontal integration across catchments and the coastal zone would lead to better environmental outcomes. They consider that this would be best implemented through agreed responsibilities and objectives for catchments and the coastal zone. They believe that there is currently ‘some’ horizontal integration
between catchment and coastal zone management in the Gippsland Lakes, and
this is perceived to be occurring through agreed objectives and shared
responsibilities. Respondents believe that horizontal integration should occur
at the local/regional level, or the state management level. The most desirable
legislative provision for achieving horizontal integration would be a state
policy or a state parliamentary act. When considering membership on boards
it was believed that a representative from the state government and primary
production were significant inclusions.

5.5.4 – Achieving horizontal integration in the Gippsland Lakes Region.
Section 4 of the Gippsland Lakes Questionnaire explored any further
ideas/concepts/principles that on-ground managers may have had for
improving (or creating) horizontal integration in the Gippsland Lakes Region.
This section used the characteristics identified in Action 2.6 of the Victorian
Coastal Strategy 2002 (refer to section 4.6) as a basis for this assessment.
This VSC was used as it was the first attempt by a state of Australia to
implementing horizontal integration. The RCBs in Gippsland Lakes Region
must take note of the VCS in preparing their CAPs. Therefore, by basing
questions around these objectives was considered by the researcher to be the
best means for discovering the level of horizontal integration in the Gippsland
Lakes Region.

All seven characteristics identified in the Victorian Coastal Strategy 2002 are
considered to be important to successfully achieving horizontal integration
across catchment and coastal zone management in the Gippsland Lakes Region (refer to Figure 5.31).

As identified in Section 5.5.3 shared information and data, and joint objectives are important for achieving horizontal integration, these characteristics are already present in the VCS policy. This suggests that the VCS is a key statutory tool for achieving the successful on-ground implementation of horizontal integration and should be considered when addressing management issues and forming management policies.

5.6 – Implications of the Gippsland Lakes Questionnaire for horizontal integration at the regional level.

Results from the Gippsland Lakes Questionnaire provided insight into the current status of horizontal integration across catchments and the coastal zone at the regional management level as viewed by respondents. This section highlights the specific findings from the Gippsland Lakes Questionnaire.
which will help to improve the on-ground implementation of horizontal integration across catchments and the coastal zone.

Factors in the Gippsland Lakes which are enhancing the implementation of horizontal integration include the community involvement (refer to Table 5.1), the success of voluntary organisations (refer to Figure 5.7), that the managers are well educated (refer to Table 5.1), that managers have a broad knowledge of regional organisations, policies and principles (refer to Appendix 4 – Figure A4.1), that catchment and coastal zone management concepts are well known (refer to Appendix 4 – Figures A4.9 – A4.12) and the belief that horizontal integration will lead to better environmental outcomes (refer to Figure 5.24).

Factors which are perceived to be inhibiting horizontal integration in the Gippsland Lakes include the lack of funding (refer to Figures 5.6, 5.9, 5.16 and 5.19 and Table 5.3), a lack of resources (including appropriate skills and expertise) (refer to Figures 5.6, 5.9, 5.16 and 5.19), the absence of top-down leadership (and poor knowledge of national legislation) (refer to Figures 5.12, 5.25 and Appendix 4 - Figure 4.7), inadequate institutional arrangements (refer to Figures 5.11, 5.22 and 5.23), the lack of ‘real power’, and too much red tape (as identified in additional responses to question 2b).

The lack of funding is perceived to be a main contributor to the lack of horizontal integration across catchments and the coastal zone in the Gippsland Lakes. The introduction of stronger institutional arrangements and joint
management objectives across catchment and coastal zone management will help to reduce the competition for ‘rare’ funding through the consolidation of funds.

There is a gap in the experience of managers in the Gippsland Lakes. Although the majority of respondents had over 25 years experience providing long-term experience, the next common group of participants only had 0-5 years or short-term experience (refer to Table 5.1). Once the more experienced managers retire there will be a large gap in management experience which will equate to a lack of appropriate skills and expertise. Considering that many environmentally specific qualifications have developed over the last 20 years the current managers in ‘senior’ positions (i.e. over 5 years experience but less than 20 years) may not necessarily have an environmental management background. This gap in expertise and knowledge may significantly inhibit the implementation of horizontal integration.

The limited knowledge of national policies and principles suggests a need for more national leadership and an improvement in intergovernmental integration (as was also identified in Chapters 3 and 4). The intergovernmental integration between national management objectives and local management objectives is poor with coastal zone management in the Gippsland Lakes being unsuccessful overall in meeting the objectives of the CCP.
The perceived limited success of the overarching regulatory Catchment and Land Protection Act in addressing catchment management issues suggests that the standard of leadership and responsibilities from top-down is inadequate. The national government needs to provide leadership on the establishment of objectives and targets which can in turn be incorporated in to state legislation.

Capacity building is required to aid catchment and coastal zone managers (and the community) in the education of the relationship between upstream and downstream water bodies. With both the catchments and coastal zone ecosystems considered to be in degraded ecological state the need for spatial integration is important. The tributaries from the surrounding catchments areas lead into the coastal zone. Public awareness of current environmental issues constantly needs to be monitored and improved, this can be achieved with NGOs (Ducrotoy & Pullen 1999, Wescott 2000b). The enhanced awareness of environmental issues would greatly improve the success of horizontal integration. Widespread education is important as there are a variety of players, from a variety of backgrounds involved in the management of catchments and the coastal zone (Harvey et al. 2002, Adams 2008). Capacity building programs can promote community education and awareness and also provide training for skilled managers (Krelling et al. 2008). Such international programs as EUROCAT, CoastLearn and TRAIN-SEA-COAST (as discussed in Chapter 3) have been adopted by nations to provide education in ICZM.
The authorities which are specifically designed to manage catchments (CMAs) were not perceived to be the most successful organisation in addressing management issues by the on-ground managers. Instead the lower resourced, community-based body Landcare was acknowledged as being more successful than the funded organisations. The success of the community-based organisation could be due to the ‘goodwill’ present in the community, the involvement of managers in community groups, or that this organisation receives more funding from national NRM grants.

Improved institutional arrangements will address the issue of how funding is allocated. Coastal zone management institutional arrangements were perceived to be inadequate, but are considered an important condition necessary to achieve horizontal integration. Therefore, suggesting a need for increasing the power and capacity of coastal zone management organisations.

Improved institutional arrangements will also allow for joint management objectives. These will be required as catchment and coastal zone management are not meeting the objectives of ICM, ICZM and the CCP – all important concepts for implementing horizontal integration.

Environmental issues are being managed poorly compared to recreational (economic and social) as these bring in the tourism dollars. The political influence and allocation of funding and resources is not based on the long-term decisions for the good of the region.
Solutions proposed by regional respondents:

As identified in Figure 5.27 the most desirable legislative provision would be a state policy or a state parliamentary act. As the current integration is occurring through the regional bodies (CMAs and RCBs) a memorandum of understanding, established between the VCC and VCMC, would strengthen and formalise the interaction between the two boards. A MoU is considered a good interim option to legislative provision due to the perceived success of Landcare – a community based organisation – in addressing catchment management issues. This strong voluntary/community focus exists in Gippsland Lakes, as was also shown with the significant number of respondents who were members of local community groups.

5.7 – Conclusion.

The overall conclusion from the Gippsland Lakes Questionnaire is that horizontal integration across catchments and the coastal zone is desired, and has begun to occur to some degree. However, as the Questionnaire discovered there are factors which are still perceived to inhibit the successful on-ground implementation of horizontal integration. These perceived inhibiting factors include a perceived lack of funding, lack of resources, inadequate institutional arrangements for addressing management issues; and the absence of national leadership (vertical integration).

A solution supported by respondents for improving the successful on-ground implementation of horizontal integration was the introduction of a state policy or state parliamentary act which involves management from the state and
regional levels (as the desired management combination refer to Figure 5.10 and Figure 5.20). The proposed solution formed the basis for the Victorian state-wide Case Study which is presented in Chapter 6.
Chapter 6: Horizontal Integration at the State level.

6.0 – Introduction.

This Chapter uses the results from the regional case study to formulate management options for consideration and assessment by on-ground managers across the state of Victoria. From the Gippsland Lakes Case Study (Chapter 5) it became apparent that there are two main options perceived by managers to enhance horizontal integration across catchments and the coastal zone. These two options were identified in Figure 5.27, which illustrated that a state policy or parliamentary act were considered to be the most desirable ways to move forward in enhancing the implementation of horizontal integration. The first option was a model involving the use of a ‘memorandum of understanding’ and the other option was a model involving ‘legislative reform’.

6.1. – Memorandum of Understanding (Model 1).

The first section of the Victorian Questionnaire explored the option that uses a voluntary Memorandum of Understanding (MoU). The use of MoUs was discussed by Stojanovic et al. (2004) who suggests that voluntary covenants can facilitate cooperation. An MoU is the “establishment of formal partnerships between the key agencies, as the basis of spelling out responsibilities and resource commitments, and is a useful tool in ensuring integration between the relevant agencies and levels of government” (Middle 2004 p. 6).
A MoU requires goodwill from community members, which is present in the Gippsland Lakes Region. This goodwill is evident in Figure 5.7 – the perceived success of Landcare and Waterwatch which are community-based programs. The successful adoption and use of MoUs in NRM is also discussed by Cicin-Sain et al. (2000) and Hildebrand et al. (2002).

The MoU would occur between the Victorian Catchment Management Council and the Victorian Coastal Council (refer to Figure 6.1). The aim of the MoU was to gain better horizontal integration across catchment and coastal zone management with the minimal amount of additional institutional arrangements (i.e. with minimal change to current arrangements and no legislative reform).

The MoU incorporated a Catchment and Coastal Committee with members from both VCMC and VCC to identify both catchment and coastal zone issues. This Committee was incorporated in response to an observation noted in a review by the MCCN in 2003 that in NRM plans there were “relatively limited marine and coastal expertise on the regional bodies, particularly those bodies dealing with coastal catchments” (Flaherty 2004 p. 3).
6.1.1 – Legislative Reform (Model 2).

The second section of the Victorian Questionnaire explored the option of a model that uses legislative reform. The aim of a second model was to attempt to gain horizontal integration through a reform of the current legislative and structural arrangements. The Gippsland Lakes Questionnaire demonstrated that the current Catchment and Land Protection Act and Coastal Management Act are perceived to be less successful than other policies in meeting catchment and coastal zone management issues respectively (refer to Figure 5.4 and 5.14). This inadequacy suggests the need for legislative reform. Due to the extent of change required to achieve this legislative reform it would have to occur in two stages.

Firstly, at the state management level, new legislation would replace the current Catchment and Land Protection Act and the Coastal Management Act to have an overarching Catchment and Coastal Management Act. Secondly, this would be followed by the structural reform replacing the VCMC and the
VCC with an overarching Victorian Catchment and Coastal Management Council. Both the VCC and VCMC were perceived to be unsuccessful in addressing catchment and coastal zone management issues (refer to Figures 5.7 and 5.17). This was perceived to be due to a lack of funding and resources, therefore, an overarching Council will enhance horizontal integration through combined funding and combined resources. This would be followed by the formation of three Regional Catchment and Coastal Boards (reconfiguring the 5 existing coastally-located CMAs and the 3 existing RCBs). Legislative reform is based on the following institutional/structural arrangement:

![Diagram of structural arrangement](image)

Figure 6.2: Structural arrangement for Legislative Reform (Model 2).

### 6.2 – Methods.

The Victorian Case Study utilised two research methods. The first being a self-completed questionnaire and the second being a face-to-face interview. The Victorian Questionnaire was based on the same procedure as the Gippsland Lakes Questionnaire (refer to section 5.1-5.4). The Victorian Questionnaire also consisted of a combination of ‘open-ended questions’ and ‘closed-ended questions’ which resulted in both qualitative and quantitative
data. Again a postal questionnaire was chosen due to the large sample size and the time and cost constraints.

In addition to the Gippsland Lakes Case Study, the Victorian Case Study involved interviews as a method of data collection. Face-to-face interviews were used with a set of questions to enable comparison between participants. Interviews were used as a research method to determine the “knowledge, facts and opinions/attitudes of individuals” (van der Velde et al. 2004 p. 102). As the final stage in this research project the Victorian Interviews were able to provide more detailed information and a large amount of information in a short time (van der Velde et al. 2004). Interviews are a qualitative method and are often “regarded as providing rich data about real life people and situations and being more able to make sense of behaviour and to understand behaviour within its wider context” (De Vaus 2002 p. 5).

**Victorian Questionnaire (including Parts A & B) and Victorian Interview Design.**

The Victorian Questionnaire asked participants to identify the projected success of both the MoU and Legislative Reform in achieving horizontal integration and meeting the characteristics suggested in the 2002 VCS (refer to Appendix 5). The Questionnaire also asked participants to identify positive and negative aspects of each model and finished by asking for a preference between the models and reasons for this preference.
The final section of the Victorian Questionnaire sought statistics on the participants such as their gender, age group, level of education, employment sector and experience in managing catchments/coastal zone environments.

Due to the disappointing response rate for the Victorian Questionnaire, a short follow-up questionnaire was sent with two parts - Part A and Part B (refer to Appendix 6). This follow up questionnaire was sent to those who did not respond in an attempt to determine why on-ground managers were unable/unwilling to take part in the research project. The idea behind this was also to determine whether participants were interested in the research topic, did they simply not have enough time, or did they not feel they were in an appropriate position to answer the questions.

In order to sum up the state-wide study and to discover what key players thought of horizontal integration across catchments and the coastal zone, interviews with five key players were conducted (refer to Appendix 7). The purpose of these interviews was to explore if horizontal integration is desirable, if/why integration is being inhibited in Victoria, what would be the next step towards achieving greater horizontal integration and any individual comments or ideas participants wished to add. The interviews were ‘unstructured’ as these provide “a great deal of information and are often used as part of explorative research with the aim of acquiring more insight into the issue” (van der Velde et al. 2004 p. 104).
The research project already had Ethics Approval (refer to section 5.2), which was granted until 31st December 2004. However, the Victorian Questionnaire (including Part A and Part B) and Victorian Interviews needed to be approved and this was granted on 5th May 2005 for the research to continue until 31st December 2005.

**Data collection and analysis**

Victorian Questionnaire (including Parts A and B) and Victorian Interviews.

A list of on-ground managers of catchments and the coastal zone across the State of Victoria was compiled from the public domain (such as internet listings, publications, government directories etc.). The Victorian Questionnaire was mailed out on 14th October 2004 to 447 on-ground managers. Participants received a covering letter (PLS) outlining the research project and instructions for completion, an Ethics Committee consent form, a copy of the Victorian Questionnaire and a reply paid envelope (refer to Appendix 8). An initial follow up letter was sent 9th November 2004 and a second follow up letter 1st December 2004 (refer to Appendix 8).

Part A of the Victorian Questionnaire was sent to participants who were in key positions in catchment and coastal zone management who had not responded and who the researcher thought would have extremely valuable input to offer (refer to Appendix 9 for PLS and Consent Form). Part B of the Victorian Questionnaire was sent to the remaining participants who did not respond in any form to the Victorian Questionnaire (refer to Appendix 9 for PLS and Consent Form).
Qualitative and quantitative data received from the Victorian Questionnaire were analysed in the same manner identified in the Gippsland Lakes Questionnaire (refer to section 5.4).

A PLS and Consent Form was mailed to key players in catchment and coastal zone management across Victoria in September 2005 and interviews were conducted in October 2005 (refer to Appendix 10 for PLS and Consent Form). The Victorian Interviews were conducted and taped. The researcher then transcribed the interviews from the tape into Microsoft Word documents. The manuscripts were then emailed to participants for editing and confirmation of the transcription.

The Victorian Interviews produced qualitative data and the NVivo software program was used to identify trends in responses. Then quotes which specifically highlighted main trends in opinion among key players were extracted and used in the results to highlight main ideas and opinions.

6.3 – Results of Victorian Questionnaire (including Part A and B).

From the sample group for the Victorian Questionnaire, 78 completed questionnaires were received, 114 responded as ‘not taking part’, 241 no response was received. Therefore, out of the possible 333 (447 minus 114) who could respond that is a response rate of 23%.

Most of the participants were male (76%) and between the ages of 36-55 (53%). Participants were well educated with 50% having a post graduate
degree and a further 33% with a bachelor degree. Participants were from a wide variety of employment sectors including state and local government, private and public sectors, professionals and consultants. They were experienced in NRM with 23% having 6-10 years experience and 21% having 25+ years experience in management of coastal and/or catchment environments. Of the participants, 67% were members of a local community group (refer to Appendix 11, Figures A11.1 - A11.6).

**Voluntary Memorandum of Understanding (Model 1).**

The MoU was considered to provide for the integration of catchment and coastal zone management by 68% of respondents (Q.1). It is however debateable whether it carries enough force to encourage greater integration in practice. Of the participants who believe it would provide for integration 44% believe it will carry enough force to encourage greater integration and 44% believe it will not carry enough force (Q. 2). Respondents believe that the formation of a Catchment and Coastal Committee would aid the adoption of the MoU (65%) (Q. 3).

The MoU provides well for all the characteristics of Section 2.6 of the Victorian Coastal Strategy (Q 4a-g). The highest rating characteristic was ‘combined meetings, seminars and conferences’ (73%) and the lowest was ‘agreed management responsibilities’ (55%) (refer to Figure 6.3).
According to the state-wide managers in Victoria, a voluntary/co-operative approach to integrating catchment and coastal zone management is not preferable (55%) over a legislative approach (Q. 5 and 6) (refer to Appendix 11, Figure A11.7).

The main positive aspects of a MoU as identified by participants were that minimal change would be cost effective and easy to implement (Q. 8). It was suggested that a move towards integration which incorporated a MoU would be easier to gain political support due to the limited changes it would require. The cooperative and coordinated approach that would result from the introduction of a MoU was considered a positive aspect as this would allow for shared views, knowledge, resources, data, problems, solutions and accountability. The adoption of a MoU is seen as a step forward in achieving integration which can be easily and quickly implemented. It provides for a
whole of catchment (including the coastal zone) approach to management which allows for horizontal integration at two management levels (regional and state). The MoU brings players together without legislative change and too much red tape.

There were limited negative aspects perceived by participants (Q. 9). However, the main ones were the unequal partnership between the resource-rich CMAs and the resource-poor RCBs, and that its success depends on the voluntary, goodwill of on-ground managers.

Participants were equally divided (45%) over whether or not a MoU would work in practice (Q 10a). Some of the reasons identified by participants as to why a MoU will work in practice were that it would require minimal change and therefore could be achieved sooner (Q. 10b). The MoU would encourage joint work programs and a higher level of communication. It is an improvement on the current situation and would test integration before bringing in legislative reform.

Some of the reasons identified by participants as to why a MoU will not work in practice were the different focus of catchment management (being primary production) and coastal zone management (being recreation and tourism). It was considered that a MoU will not deliver the “magnitude of change required” for integration of catchments and the coastal zone, the voluntary change would not be as effective or efficient as a legislative one. The MoU will have no “real legal power” and there will be “no guarantee that all levels
will comply.” The MoU was considered not to work as CMAs and RCBs are not “equal partners” in current staffing and funding arrangements.

Some additional aspects which participants suggested could be included in the MoU (Q. 11) were greater money and resourcing, a better evaluation system with reporting to the community to ensure accountability and capacity building in local government. Participants thought more involvement from other players such as water authorities and DSE needs to be incorporated, and a clearer identification of common objectives and actions.

**Legislative Reform (Model 2).**

Of the participants in the Victorian Questionnaire; 86% believed that Legislative Reform would provide for the integration of catchment and coastal zone management (Q. 12). Of the participants who believe this 83% believe it will carry enough force to encourage greater integration in practice (Q. 13).

Legislative Reform also provides well for all the characteristics of Section 2.6 of the Victorian Coastal Strategy (Q. 14). The highest rating characteristic was ‘combined membership’ (82%) and the lowest was ‘agreed management responsibilities’ (76%) (refer to Figure 6.4).
Of the participants in the Victorian Questionnaire, 63% believe that legislative reform is preferable to a MoU for achieving horizontal integration (Q. 15) and also 63% believe the incorporation of an ‘integrated’ State parliamentary Act would improve integration on the ground (Q. 17).

Of the participants 18% believe the boundaries of a new Catchment and Coastal Board should be aligned with the existing RCB boundaries. Of the 67% who said ‘no’ to aligning with RCB boundaries, 77% believe they should align with the CMA boundaries (Q. 18 – 20).

Some other suggestions for boundaries as offered by participants included creating boundaries based on issues of concern and social basis to aid greater community contribution in decision making. Suggestions also included that
boundaries should reflect existing NRM organisation boundaries (such as those already offered by DSE and PV regions).

The main aspects of Legislative Reform that participants thought were positive included that it would provide the force required for groups to work together and become more integrated and be more effective with the allocation of funds and resources (Q. 21). Legislative Reform is seen as a positive step forward to eventually having less duplication and ultimately moving beyond the coastal zone to incorporate marine issues also. Legislative Reform is perceived to provide “strong government commitment to integration” and to set out government expectations for catchment and coastal zone management. Participants believe that Legislative Reform will combine issues, clarify accountability, remove duplication and define functions and objectives. The Legislative Reform is perceived to bring RCSs and CAPs to be more aligned and one organisation would be fully responsible for all land and water management for the state of Victoria.

Some of the main negative aspects of Legislative Reform, as identified by participants, included the time and money it would take to implement and the considerable ‘political will’ required to achieve such a change (Q. 22). Participants also expressed concern that Legislative Reform may result in a loss of focus on coastal zone issues. Participants suggested that local government had little power and responsibility under this Legislative Reform.
Of the participants 71% think that Legislative Reform will work in practice (Q. 23a). Reasons for this (Q. 23b), as offered by the participants, included that it provides a strong legislative framework which eliminates duplication and prioritises funding. With adequate political support and resourcing participants believe Legislative Reform will result in a better partnership between catchments and the coastal zone and provide well for horizontal and vertical integration. The establishment of Legislative Reform was perceived to provide for better integrated planning and strategies leading to a whole of catchment approach.

The main reasons participants believe Legislative Reform (Q. 23b) will not work in practice were centred on the perception that it is not voluntary and managers are being forced into a partnership and “such amalgamations may be seen as a take-over.” Legislative Reform also relies on funding and power. There is concern that the balance between catchment/coastal/marine priorities would not be achieved.

Additional aspects that participants would like to see in Legislative Reform (Q. 24) included the involvement of local government and water authorities. Participants believe that a reporting and evaluation system needs to be put in place to address accountability to management issues. The composition of the board is also considered to be important and needs to include coastal representatives to ensure a balance of catchment and coastal zone issues are addressed.
Preference between Memorandum of Understanding (Model 1) and Legislative Reform (Model 2).

Given the results from the analysis of both a MoU (Q. 1 - 11) and Legislative Reform (Q. 12 – 24) it was then possible to directly compare the two models to see which addressed the characteristics of the VCS and provided best for improving integration in practice (refer to Figure 6.5).

Figure 6.5: Direct Comparison of models for achieving better horizontal integration.

Preferred Solution for enhancing horizontal integration.

From the on-ground managers across the State of Victoria Legislative Reform was their first preference (53%) and MoU was their second preference (25%) (refer to Figure 6.6).
The main reasons for choosing Legislative Reform, as identified by participants, were that it has a better chance of actually achieving outputs and the legislative power to make things happen on the ground. As one participant stated it is the “ultimate evolutionary approach to achieving integration. But we need to move progressively to implementation of legislation to facilitate continued voluntary cooperation and increasing awareness of the need for greater integration.” Participants believe the strong legislative backing provided through Legislative Reform would form the basis for sound planning and management. Legislative Reform removes any uncertainties with respect to management responsibilities and forces action and cooperation, whilst improving vertical integration and horizontal integration and reducing the number of organisations involved in NRM. Legislative Reform reduces the competition for the limited funding. Meanwhile it prioritises the allocation of current funds.
The main reasons for choosing a MoU, as identified by participants, were that it would maintain current arrangements, was voluntary and would require less funding and time to implement. A MoU would result in minimal change and the coasts would maintain their own voice and identity. A MoU would result in cooperation and maintain flexibility for local solutions, therefore having a better chance at being successfully implemented.

Some additional suggestions for options other than those provided in the Victorian Questionnaire included a progression between the two models (refer to Figure 6.6) “I would like to see progression into a MoU (this is already happening between some coastal CMAs and RCBs) as a result of voluntary cooperative action and then, progression to something like the Legislative Reform.” Progression was also advocated by another participant who stated “currently informal partnerships and relationships exist, which depending on the personalities, can lead to very successful integration of catchment and coastal zone management, in other cases this is not so. It is clear that a totally integrated management system as proposed by Legislative Reform is the goal to work towards, whether there needs to be transition phases, such as a MoU, to develop the understanding and capacity for regional bodies to be able to implement integrated catchment and coastal zone management is the issue.”

Some participants did not prefer either of the model as one participants states that “a MoU adds bureaucracy where it is not needed, and Legislative Reform whilst okay in theory is not desirable in Victoria as it would (or be perceived to) disenfranchise the committed coastal marine institutions that have taken
decades to build an effective capacity to represent marine/coastal priorities. ICZM can be improved in Victoria by better relationships between bodies in the existing structure.”

It is the opinion of some participants that the models are worth exploring and will advance ICZM however to be successful they will require “adequate funding, passionate involvement, good policies, collaboration, cooperation and freedom for people to want to become involved.”

**Results from the Victorian Questionnaire (Parts A & B).**

For the Victorian Questionnaire- Part A (refer to Appendix 6) no responses were received. For the Victorian Questionnaire- Part B (refer to Appendix 6) there were 69 responses, a response rate of 25%. Of those who responded to the Victorian Questionnaire Part B, 75% said they were interested in the topic. The main reasons for not taking part included ‘didn’t have enough time’ and ‘didn’t feel qualified to answer the questions.’ Other reasons included that positions and contacts had moved, that they get a lot of requests for questionnaires and that the questionnaire was too hard/difficult so they found it hard to get motivated to respond.

**6.4 - Results of the Victorian Interviews.**

The Victorian Interviews with key players set out to identify existing inhibitors to the implementation of horizontal integration. In response to the question “do you support the concept of integrating catchment and coastal management?” all of the key players said that they support the concept. As one participant states, although it is difficult as coasts are predominately a
public asset with different objectives to catchments they “do need to be integrated and you do need to have structures or policy instruments or management arrangements or protocols in place that ensure that people take the whole catchment-coast-ocean view.”

In response to the question “why do you think integration is not currently happening to its full potential?” (i.e. what is inhibiting its progression in Victoria?) key players suggested that the complexity of integration, the time it would take to be achieved, and the change in culture it would require are inhibiting progression. As stated by one participant “its not just Victoria, it’s globally that it’s not happening, progress is being made but it’s a long term culture that we are trying to overcome.” Key players also highlighted that “integration is just one small part of the bigger picture” and there are “too many players to fully integrate.” Key players do however believe it is happening and as was pointed out in one interview “it’s an evolution and consolidation process.” Therefore, time and resources are perceived to be the main inhibitors, of which more are required to “keep the current processes moving.”

In response to the question “what do you believe is the next step to achieving integration in Victoria?” key players suggested a few options including the cross membership of management boards (CMAs and RCBs), more equitable provision of funds and resources, to get coasts higher on the political agenda; and investment priorities and time to encourage best practice. One key player highlights that there are “already considerable levels of integration and
effort.” The participant goes on to propose that a step forward would be to “determine investment priorities by the major investors and by those who are providing the delivery of that investment” (i.e. the prioritisation and allocation of funding and resources).

In response to the question “what do you believe in Victoria is ‘favouring’ integration?” participants thought that being a small, politically stable state with goodwill and the commitment of participants and a well developed policy framework already in place were key contributions. A key player suggested that Victoria has “a well educated community which is well versed and networked with long term experience.” This suggested a strong structure for capacity building. The existing structure has “good relationships and well developed policy frameworks in place.” These characteristics place Victoria in a good position to proceed with the evolution of integrating catchment and coastal zone management.

In response to the question “what do you believe is ‘not favouring’ integration?” key players thought some inhibitors included the unequal distribution of funding and resources, the complexity of integration, population movement and demographics and a conservative, politically sensitive government. As one key player states “there is a differential in the resources available to and the power of the CMAs versus the RCBs, so CMAs have become very powerful bodies with flow through funds in the millions of dollars. Simultaneously, the RCBs which are fully funded from state government have actually been lessened in their resources available.” The
coast is experiencing an expansion of population movement from inland catchments to the sea, changing the demographics. The Victorian government is stable, however, as was suggested in one interview the government is “conservative, so they are not into radical change which means that they are politically sensitive to change as it affects individuals in electorates.”

When asked “how can greater integration start to happen in Victoria given your experience/views?” the key players suggested steps such as further cross membership between boards (CMAs and RCBs), careful selection of members, shared information and data, ‘champions,’ increased understanding of integration, investment priorities, a MoU and on-ground practice of integration. There is suggestion that perhaps the theory and practice are not aligned. A key player discussed this by saying that “in theory it would be better to integrate the two completely. In practice the problem is that the coastal boards are underdeveloped and under resourced and the risk of total integration in terms of those bodies would be that in fact the catchments would simply dominate in the end and you would end up with CMAs with coasts mentioned in their titles and the loss of the RCBs and the various aspects of coastal planning and management.” Participants believe that to achieve integration it will need the use of ‘champions.’ These are, as one key player points out, “people who are in a leadership position who can promote, but also engage people with a passion to work with you and for you.” It is perceived that the understanding of integration is very low and leadership needs to come from the top down so there “are a whole lot of layers to it and a whole lot of different strategies at each layer.”
Key players were then asked “as an individual what would you like to see happen in Victoria to integrate catchment and coastal management?” The desired outcomes seem to be increase resource allocation to the coastal side (to become a more ‘equitable’ player), seeing what happens in Gippsland, some capacity building (such as stronger community involvement, education and awareness), to get political ownership and fresh ideas, and have stronger involvement from local governments. A participant believes Victoria has a good model for coastal management and “would like to see the Coastal Council continue into the longer term whilst it’s got a function.” From a political view, it is necessary to keep the coastal council and its focus “if you don’t keep them interested and give them a sense of ownership and keep them engaged that’s when you’re in danger of losing the structure.”

Some additional comments that participants wished to add included the need for a generational change (to bring in fresh ideas and different views), to have a test of what works (e.g. in Gippsland), and to develop the tools/practices/policies over time to improve integration. The idea of ‘pilot testing’ a solution was suggested as “a culture of continuous improvement and piloting and trying different models so you get the continuous improvement, because if there was one best way someone would have found it and everyone would have used it by now.”

**Summary.**

From the Victorian Interviews it is evident that integrating catchment and coastal zone management is desired among on-ground managers in Victoria.
It is evident that some integration has started to occur, however, more could be achieved. It is clear that Victoria’s current structural arrangements provide well for moving forward with integration; however it may be desirable to get coastal issues higher on the political agenda first before a change in institutional arrangements as this may result in a loss of coastal focus. The Victorian government appears to be inert to radical change – which is contributing to the slow progression in horizontal integration. Despite this being a conclusion from respondents in the mid 2000’s, the state government has behaved uncharacteristically more recently (see addendum). The use of ‘champions’ to get these issues on the political agenda is required to move forward and make the government more amendable to change.

6.5 – Implications for horizontal integration from the Victorian Questionnaire (including Part A & B) and the Victorian Interviews.

From the Victorian Questionnaire it is clear that both models are perceived to achieve horizontal integration. It was also identified that the majority of respondents preferred these models as a solution to implementing horizontal integration. The results from the Victorian Questionnaire were reinforced by the Victorian Interviews. The Victorian Case Study showed that there are obstacles which need to be overcome for the on-ground implementation of horizontal integration to be successful. These obstacles include gaining political support, the prioritisation and allocation of funding and resources, establishing an equal partnership between catchment and coastal zone management authorities, and providing enough legislative force to achieve changes on the ground.
Political will is the driving force required for achieving legislative reform. The state government of Victoria is considered to be conservative and politically sensitive (as identified by participants in the Victorian Interviews). A commitment to horizontal integration will require political ownership. Following a change of national government at the end of 2007, the newly elected Prime Minister made a prompt and strong political statement on environmental issues by agreeing to sign the Kyoto Protocol and putting climate change issues on the political agenda (Wescott 2009). Such a change in leadership may be what is required to get coastal zone issues higher on the political agenda.

Political obstacles require greater capacity building efforts and the assistance of ‘champions’ (James 2002, Cicin-Sain & Belfiore 2005) (as also noted in the Victorian Interviews). The need for ‘champions’ in catchment management to share information between programs was highlighted by Ewing et al. (2000) and Grayson et al. (2000).

Funding allocation needs to have a long-term commitment to projects as with ICZM it can take up to 10 to 15 years from implementation until managers see on-ground results (Olsen 2003, Chaniotis & Stead 2007). Much of managers’ time is spent applying for funding which would be time better allocated to achieving on-ground implementation (Lockwood et al. 2009). An increase in funding can be assisted through capacity building programs getting catchment and coastal zone management issues higher on the political agenda. The national NHT programs (as discussed in Section 4.2) could provide an on-
going commitment to the allocation of funding. The appropriate allocation of funding can be assisted through the introduction of institutional arrangements which will ultimately lead to joint and specific management objectives.

A significant inhibitor is the rate of change of managers in NRM positions, and council positions (Bammer et al. 2005b, Robins & Dovers 2007) (also reinforced by the Victorian Questionnaire Part B). Having the same person in the management position is important for consistency in management. McKenna et al. (2008) noted that in Europe there is also a case of ‘consultation overload’ (also reinforced by the Victorian Questionnaire Part B). This suggests that on-ground managers get many requests to participate in questionnaires. As well as not feeling qualified or having a lack of understanding (Memon et al. 2010).

As has been discussed the focus of catchment management differs from coastal zone management. With coastal zone management being focused on tourism and recreation and catchments being focused primarily on primary production (Wescott 2002a). Also the membership of CMAs and RCBs reflect different management objectives. The CMAs are by law required to have a percentage of ‘primary producers’ as members on their boards, and these members could be seen as having a ‘vested’ interest in the management of the catchments. Currently resources are allocated to industries which generate economic growth over ecologically sustainable development, as discussed in Wescott (2009a).
Funding arrangements and resource allocation is challenging with the relationship between publicly and privately owned lands. These fundamental differences make for difficulty in forming an equal partnership for horizontal integration as catchments are on private land and a lot of managers have a vested interest in management of the land, and the coastal zone is publicly owned.

Within Victoria there is a large discrepancy between funding of catchment and coastal zone management. The CMAs are currently ‘resource rich’ and the RCBs are ‘resource poor’ (as discussed in Chapter 4) (as also identified in responses to Question 9 of the Victorian Questionnaire). A rise in political interest in coastal issues, and therefore funding, would bring coastal bodies into a more equitable partnership with catchment bodies.

From the Victorian Questionnaire it was clear that the MoU would not hold enough force to achieve on-ground changes (as shown in response to Question 2). Therefore Legislative Reform would be more successful in implementing horizontal integration across catchments and the coastal zone (as it was agreed by the majority of respondents that legislative reform would provide enough force). The advantage of having a legislative framework is that it enforceable and exerts influence over the process of ICZM (Hildebrand et al. 2002, Gibson 2003, McKenna et al. 2008). As Chua et al. (2006) suggest the institutionalisation of coordinating mechanisms should be a non-negotiable target of ICZM practices. It is believed that the development of institutional arrangements and legislation with joint management objectives will result in
successful on-ground implementation of horizontal integration across catchments and the coastal zone (as shown in Figure 6.6) (and as agreed by Coccossis 2004, Memon et al. 2010).

**Developments in horizontal integration following data collection.**

Since the data for the Victorian Case Study was collected over the period 2004/2005, it is necessary to highlight some of the progress which has occurred since this period. At the time of writing the concept of horizontal integration across catchments and the coastal zone has found its way into policy documents. This would suggest that the policy is developing well, however the planning and implementation are yet to follow through the coordination of institutional arrangements.

Changes which have occurred since 2004/2005 include the National Framework for ICZM (refer to Section 4.1), the VCS 2008 (refer to Section 4.6) and the inclusion of coastal/marine issues in RCSs (refer to Section 4.7).

In 2006 the Commonwealth Government of Australia released its National Framework for ICZM (refer to section 4.1). This Framework provides an action of integration of issues across the catchment-coast-ocean continuum. Whilst this Framework provides national leadership for state and regional planning and management it does not assist the on-ground implementation required to achieve horizontal integration.
In 2009 the Victorian state government released its White Paper on Land and Biodiversity at a time of Climate Change (refer to addendum).

Therefore, when participants took part in this research project, the policy and planning/management needed improvement. Since collecting the opinions of on-ground managers and key players in Victoria, the NRM policy framework has improved, however, its planning/management needs improvement to implement the policies. The problem of a lack of funding remains unresolved.

**Summary:**
The Victorian Case Study indicates that progression from a voluntary MoU to the implementation of legislative reform is the most effective means for achieving horizontal integration. As both the MoU and Legislative Reform will aid horizontal integration, progression from the MoU to the Legislative Reform would be advantageous. The MoU can be used as a viable short-term interim solution to help the allocation of responsibilities and prioritise objectives for allocation of funding and resources (Morrison et al. 2004). An MoU is not a long-term solution as it is dependent upon voluntary agreements which can only be sustained for a period of time as in many NRM practices there is a risk of ‘volunteer burnout’ (Abrahams 2005, Frederiksen et al. 2008, Hajkowicz 2009). This was also noted in the Landcare community based program by Lane et al. (2004).

A MoU will encourage voluntary involvement by on-ground managers and a sense of ownership and responsibility. A MoU will assist in developing an
understanding of agreed objectives and set up a way to share information and data. It will help managers to explore the desired outcomes for the region and to develop better understanding and goodwill between participants leading to a more successful legislative reform and working relationship.

If the adoption of the MoU demonstrates a positive on-ground change in horizontal integration then legislative reform will be more attractive to governments to put these issues on the political agenda and in turn lead to the allocation of appropriate funding and resources to achieve these changes. This transfer from a MoU to legislative reform adopts the concept of ‘adaptive management’ as discussed in Chapter 2 as one of the global environmental concepts.

A MoU should be used as an interim step to encourage voluntary involvement by on-ground managers and a sense of ownership and responsibility. This interim step will assist in developing an understanding of agreed objectives and set up a way to share information and data. It will help on-ground managers to explore what are the desired outcomes for the region and a better understanding of management responsibilities.

6.6 – Conclusion.

The implications from the Gippsland Lakes Case Study, the Victorian Case Study, and international literature relate to three aspects of management. These aspects are training, the human attitudes and governance aspects.
The training aspect was demonstrated in the case studies through the identification of a lack of educated managers, and the need for tertiary level training courses. There is a need for an informed community and the adoption of up to date information from NGOs.

The human attitudes aspect was demonstrated with the different backgrounds of managers, composition of memberships on boards, and vested interests managers may have in catchment and coastal zone management. Political support and influence is thought to be essential for progress in catchment and coastal zone management, both in developed and developing nations and across all levels of management.

The governance aspect was demonstrated with the need for structural arrangements and national leadership. It was identified that there is sectoral, fragmented management which is present in coastal zone management and governance arrangements would help to overcome this. Governance relates closely to the allocation of funding and resources which is an aspect constantly highlighted as inhibiting the implementation of horizontal integration across catchments and the coastal zone. Governance is also closely related to the prioritisation and agreement of management objectives. This aspect will also allow for the incorporation of adaptive management principles resulting in effective governance.

The implications were listed under these three aspects and analysis of the implications under each aspect showed areas which are influencing horizontal
integration in a negative manner. In order to overcome these negative influences five factors were arrived at. These are a capacity building factor designed to address the training aspect. Professional territory and political motivation factors designed to address the human attitudes aspect. Funding and resources factor and institutional arrangements factor designed to address the governance aspect. These five factors have their origins in the results as discussed below.

The factor relating to *Capacity Building* was highlighted in responses to the Gippsland Lakes Questionnaire (Qu 2b) that there is a ‘lack of real power’ therefore illustrating the need to build the capacity of organisations. Table 5.1 demonstrates that there is a gap in years of experience which managers have in the Gippsland Lakes. The respondents with long-term experience offer a good existing structure for capacity building (as also identified in the Victorian Interviews page 218) as they are well educated in catchment and coastal zone management issues. However, this structure needs to be adopted to address the absence of education and awareness present in managers with only short-term experience. It was suggested that the perceived inadequacy in policies addressing coastal zone issues was also a result of the community not being well informed (Gippsland Lakes Questionnaire Qu 10b). Capacity building programs will assist in educating the community on current and local management issues.

The factor relating to *Professional Territory* was highlighted in the Victorian Questionnaire (Qu 9) by the unequal partnerships between the CMAs and
RCBs. This demonstrated the dominance of catchment issues, and the unequal distribution of funding and staffing and resources and power (as stated in the Victorian Interviews page 21). The lack of ‘real power’ and presence of ‘too much red tape’ was also noted in the Gippsland Lakes Questionnaire (Qu 2b). This unequal partnership will lead to difficulty in arriving at agreed objectives which can result from the different focus of catchment management (i.e. primary production) and coastal zone management (i.e. recreation and tourism). It was also noted in the Victorian Questionnaire (Qu 23b) that amalgamations between CMAs and RCBs may be seen as a ‘take-over.’

The factor relating to Political Motivation was highlighted in the Gippsland Lakes Questionnaire from the absence of top-down leadership and poor knowledge of national organisations (Figures 5.12 and 5.25, Figure A4.7). In the Victorian Questionnaire (Qu 22) in was noted that political will is required to achieve (legislative) change. The considerable political will which would be required to achieve legislative reform is seen as a major impediment to achieving horizontal integration (Victorian Questionnaire Qu 22). Political motivation will be required to get coastal issues higher on the political agenda, which in the Victorian Interviews was identified as important to achieving horizontal integration.

The factor relating to the need for increased Funding and Resources was noted throughout the Gippsland Lakes Questionnaire (Figures 5.6, 5.9, 5.16 and 5.19 and Table 5.3). The lack of resources relating to absence of
appropriate skills and expertise was also highlighted. Incorporating capacity building programs and gaining political attention on catchment and coastal zone issues can assist in increasing allocation of funding and resources. Respondents also mentioned that the way in which funding was provided was also an issue. A procedure for the allocation of funding would be assisted with adequate institutional arrangements. Institutional arrangements will also reduce competition for ‘rare’ funding through consolidation.

The factor relating to the introduction of Institutional Arrangements arose from the need to address several of the above issues along with current arrangements being considered inadequate (Figures 5.11, 5.22 and 5.23). Institutional arrangements are required to provide the power to organisations to achieve the on-ground outcomes (such power was identified as lacking in the Gippsland Lakes Questionnaire). Institutional arrangements will aid the allocation and prioritisation of funding and resources (Victorian Questionnaire Qu 23b). They will also allow for joint management objectives (eliminating duplication, Qu 23b) and a legislative approach which is considered preferably by the on-ground managers (Victorian Questionnaire Qu 5 & 6).

Each of these five factors identified in this research influence horizontal integration in a positive or negative manner. The interrelationship between these factors and their influence on horizontal integration will be discussed in Chapter 7. Chapter 7 also presents a framework and implementation phases for enhancing horizontal integration across catchments and the coastal zone and suggestions for future directions in the research of horizontal integration.
Chapter 7: Framework and Implementation
Phases for enhancing horizontal integration and Conclusion.

7.0 – Introduction.

The results presented in this thesis demonstrate that there are five crucial factors which influence the implementation of horizontal integration across catchments and the coastal zone in ICZM programs (as discussed in section 6.6). These five factors are clearly interrelated and can influence horizontal integration in a positive or negative manner. Collectively these factors constitute a Horizontal Integration Framework.

This chapter provides four implementation phases, which reinforce this framework, and are designed to enhance the outcomes of horizontal integration across catchments and the coastal zone. The chapter will conclude with a discussion of implications from this research for the theory of horizontal integration as a key characteristic of ICZM (as identified by Cicin-Sain et al. 1995 and, Sorenson 1997) and suggestions for future research to further enhance horizontal integration in ICZM.

7.1 – The five crucial factors influencing horizontal integration.

This study reveals five crucial factors influencing the on-ground implementation of horizontal integration, which are:-

I. Capacity building;
II. Professional territory;
III. Political motivation;
IV. Funding/resources; and
V. Institutional arrangements.
These five factors complement observations made by McLain and Lee (cited in Yao 2008) and Moss (2004) who note that the management of coastal zone resources are influenced by political, administrative, institutional, social, territorial, economic and cultural factors. The five factors which influence horizontal integration in ICZM are presented in Table 7.1. As this table illustrates, each factor can influence the on-ground implementation of horizontal integration in a positive or negative manner. Each column of the table shows how the factor relates to the other four factors in each row. The red points indicate how the factor influences the implementation of horizontal integration in a negative manner, the amber points indicate what needs to occur to overcome this negative influence, and the green points indicate how the factor will influence the implementation of horizontal integration in a positive manner. The key advances in enhancing horizontal integration will be achieved through management objectives which transform the negative influences into positive influences. All five factors are interrelated and must be revisited throughout the development of an ICZM program by adopting and implementing the principles of adaptive management.

The interrelationship between the five factors is further demonstrated in Figure 7.1 – The Horizontal Integration Framework. The various factors are not mutually exclusive and are required to occur in conjunction with each other to achieve true horizontal integration. The bold outside circle represents the primary relationship required for achieving the desired final stage: legislative reform. This figure highlights capacity building as the key factor as it is required at all stages of coastal zone management and planning to achieve change in the other four factors.
### Table 7.1: Interrelationship between factors influencing horizontal integration.

<table>
<thead>
<tr>
<th>Factors</th>
<th>I. Capacity Building</th>
<th>II. Professional Territory</th>
<th>III. Political Motivation</th>
<th>IV. Funding &amp; Resources</th>
<th>V. Institutional Arrangements</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Capacity Building</td>
<td>Important to horizontal integration as it increases awareness and education which ultimately leads to better management objectives and the appropriate allocation of funding and resources.</td>
<td>Lack of qualified on-ground managers. Implement strategies to educate managers (upstream/downstream relationship). Overcome professional territorial disputes and promote working together.</td>
<td>Lack of catchment and coastal zone issues on political agenda. Gain political support. Enhance interaction with NGOs and adoption of latest scientific information.</td>
<td>Insufficient allocation of funding and resources. Raise awareness of catchment and coastal zone issues. Increase allocation of funding and resources.</td>
<td>Absence of institutional arrangements. Improves and strengthens institutional arrangements. Achieves policy development and legislative reform.</td>
</tr>
<tr>
<td>II. Professional Territory</td>
<td>Rapid staff turn-over, limited ‘institutional memory’ Enables programs for managers with required skills. Overcomes age/generation gap, long-term positions of staff, skills required for both catchment and coastal zone management. Important to horizontal integration as it will help to overcome “turf” protection and eliminate vested interests. Professional territory addresses the cooperation and attitudes of on-ground managers.</td>
<td>Political focus is on dollar driven decisions. Identify priority management issues. Gain political focus on important environmental and social issues (not just economic).</td>
<td>Political motivation is important for horizontal integration as it is the driving force for achieving legislative reform. Political motivation is required to get catchment and coastal zone issues on the political agenda to receive attention and allocation of funding and resources.</td>
<td>Duplication/overlap of management efforts and expenditure. Combination of funding and resources. Promote sharing of skills, information and data, eliminate duplication.</td>
<td>Differing management objectives for catchments and coastal zone. Professional territory influences the board membership of new institutional arrangements. Composition of board members to reflect both management objectives.</td>
</tr>
<tr>
<td>III. Political Motivation</td>
<td>Lack of political ownership and leadership. Provision of leadership (top-down governance). Nationally agreed objectives, enhance intergovernmental integration.</td>
<td>Political focus is on dollar driven decisions. Identify priority management issues. Gain political focus on important environmental and social issues (not just economic).</td>
<td>Political motivation is important for horizontal integration as it is the driving force for achieving legislative reform. Political motivation is required to get catchment and coastal zone issues on the political agenda to receive attention and allocation of funding and resources.</td>
<td>Short-term allocation of funding and resources. Commitment to funding and resources. Political motivation is required for a long-term commitment to funding and resources.</td>
<td>Lack of political motivation, especially in coastal zone management. Political motivation is required to achieve legislative reform. Reach final stage of horizontal integration.</td>
</tr>
<tr>
<td>IV. Funding &amp; Resources</td>
<td>Limited funding for programs. Provide for effective capacity building efforts. Increase allocation of funding and resources will result in achieving management objectives.</td>
<td>Authorities competing for limited funding. Overcome turf protection. Reducing competition for funding.</td>
<td>Unsuccessful policies and authorities for implementing horizontal integration. Attention for catchment and coastal zone issues. Increase resources to address issues gaining political attention with this success.</td>
<td>The allocation of funding and resources is required to achieve on-ground changes. Currently catchment management is receiving significantly greater funding than coastal zone management.</td>
<td>Different management focus. Needed to put institutional arrangements in place. Successful application of joint management objectives.</td>
</tr>
</tbody>
</table>

Key for factors:
- ■: Factor influencing horizontal integration in a negative manner.
- □: Proposal for factor to influence horizontal integration positively.
- ◆: Factor influencing horizontal integration in a positive manner.
Commencing at Factor I, Figure 7.1 illustrates the information flow of the primary relationship. This primary relationship shows that capacity building is required to educate managers in overcoming ‘turf’ protection (Factor II). Cicin-Sain et al. (2000) and Paisley et al. (2004a) also note the importance of capacity building in effective ICZM programs, especially to enhance the capacity of institutions and the individuals involved. Once bureaucratic bodies are working together they are a stronger force to bring the importance of horizontal integration into the political arena.
Until catchment and coastal zone managers are committed to a common goal, political motivation is unlikely to change. Obtaining political motivation is required for the commitment of funding and resources which in turn are essential for achieving institutional arrangements. The relationship between institutional arrangements and capacity building is a constant two-way relationship as the adoption of adaptive management principles will require capacity building efforts to improve, reinforce and strengthen institutional arrangements and vice versa.

The grey lines in the centre of the Framework represent the information flow of the secondary relationships between the factors. The line between I and III shows that capacity building will enhance interaction with NGOs which in turn will gain political motivation through NGO influences and support. Political motivation will provide leadership for nationally agreed objectives. The line between I and IV shows that capacity building will raise awareness of catchment and coastal zone issues which will promote the allocation of funding and resources. Funding and resources will result in capacity building programs achieving management objectives.

The line between II and IV shows that once bureaucratic bodies are sharing skills and data their funding and resources can be combined which will decrease, and ultimately eliminate, competition between bodies for funding and resources. The line between II and V shows that professional territory will impact on the composition of board membership in any new institutional arrangement. New institutional arrangements will reduce professional
territory through the consolidation of organisations which will eliminate duplication of management efforts between catchment and coastal zone organisations.

The line between III and V shows that political backing is required to achieve any legislative reform, which this research has shown is the desired final stage for implementing horizontal integration. *Institutional arrangements* will minimise bureaucracy and provide leadership to reinforce *political motivation*.

### 7.2 – Implementation phases for enhancing horizontal integration.

As the previous section has demonstrated Factors I to V can influence horizontal integration in a negative manner, as illustrated by the red points in Table 7.1. To enhance horizontal integration by overcoming these negative influences on implementation, the most significant inhibiting influences must be transformed into positive influences (as represented by the green points in Table 7.1).

Consideration of the five factors by the researcher, in conjunction with the data and literature presented in this thesis, has led to the identification of the most significant inhibiting influences. In order to overcome these, the researcher designed a set of implementation phases. There are four implementation phases, which when executed in this order, strengthen the Horizontal Integration Framework (Figure 7.1). The four implementation phases are illustrated in Figure 7.2.
Implementation Phase 1: Creation of Equal Partnerships.

The first implementation phase is the creation of equal partnerships between catchment and coastal zone management. This implementation phase aims to improve the theory of ICM in order to achieve an internationally accepted concept for catchment management which is equivalent to ICZM. This phase also aims to place coastal issues higher on the political agenda.

This study indicates that the theory surrounding ICZM is far more advanced than ICM at international and national management levels. Given that horizontal integration is not being achieved to its full potential this would
suggest that the theory of ICZM is further developed than its practical implementation. This is supported by research from Olsen (2003), Thom (2004) and Chaniotis & Stead (2007) who comment on the implementation gap between theory and practice.

Conversely, this research has shown that in Australia, catchment management is more successful with its on-ground achievements than its theoretical developments. In the case studies this is attributed to better funding allocations resulting in management objectives being reached. This contradicts studies by Grayson et al. (2000) and Clarke (2006) who conclude that, similar to ICZM, there are significant obstacles in moving from theory to practice in ICM.

By simultaneously bringing the theory behind ICZM and ICM to the same level of sophistication and development, and ensuring equitable funding, then the negative influences of the professional territory factor will be minimised and cooperation enhanced.

Fundamental attitudes need to be changed for managers to begin considering the impact poor management practices (on catchments which drain into the coast) have on the coastal zone. The political preoccupation, in Australia, with inland water catchments has resulted in catchment management receiving greater attention on the political agenda and therefore being allocated greater funding and resources than coastal zone management. Political obstacles
were also discussed by Blomquist and Schlager (2005) as hindering integrated catchment management in the United States of America.

A negative influence on partnerships between catchment and coastal zone management is the unequal distribution of funding and resources. In order to overcome this negative influence coastal zone management issues need to receive more political attention. Political attention may be gained through NGOs who are not influenced by political priorities. The creation of equal partnerships between catchment and coastal zone management will lead to addressing joint management objectives for enhancing horizontal integration.

**Implementation Phase 2: Alignment of Objectives.**

Outcomes for the second implementation phase include the composition of board membership, the education of on-ground managers as to the relationship between upstream and downstream environments, the alignment of joint management objectives, and identification of core objectives for managers.

The management of catchments and the coastal zone incorporates many different aspects spanning environmental, social and economic disciplines. Membership of management boards must cover all these skills and members should be from varying generations to bring in fresh and new ideas on one end of the scale and long-term experiences on the other. Having membership which spans across disciplines in both catchment and coastal zone agencies will enable the merging of joint management objectives. This will also aid
sharing of information and knowledge, enhancing the capacity building of boards.

Horizontal integration will be further enhanced with an increase in appropriately qualified managers. The limited availability for education and training was noted by Cicin-Sain et al. (2000) and Chua et al. (2006). Poor upstream management clearly impacts on the downstream environment; therefore, it is imperative that managers are sufficiently educated on the impact of uses and activities. The need for addressing this relationship was also discussed by Boully (2000), Ledoux et al. (2005) and Claudet et al. (2006).

Identifying and prioritising management responsibilities will aid in the allocation of funding and resources to the appropriate management issues. This supports the suggestion by Coffey and Major (2005). Once bureaucratic bodies are working together and have identified joint management objectives the duplication of efforts and expenditure will be eliminated. The duplication of efforts and its impediment to the implementation of horizontal integration was also noted by Margerum and Born (2000) and Lane and Robinson (2009).

Identifying the core objectives of managers and allocating their resources to meeting these core objectives will eliminate time spent on frequent applications for grant money to complete existing projects. Political support to catchment and coastal zone management issues will generate a commitment to funding and allow managers to focus on core objectives. Agreed
responsibilities and core objectives will result in stronger leadership, provided governments increase core funding in preference to short term grant-based funding.

**Implementation Phase 3: Attainment of Leadership.**

The importance of national leadership in natural resource management was highlighted by Dawei and Jingsheng (2001), Burbridge and Humphrey (2003), Coccossis (2004) and Memon et al. (2010). In addition, Juda (2007) notes that in the case where issues are transboundary, a national approach is deemed to be insufficient and therefore, international leadership is required.

Leadership provides top-down governance which is required for adopting a MoU and achieving the final stage for horizontal integration - legislative reform. A MoU will create a voluntary working relationship and goodwill between participants leading to more successful legislative reform and working relationship.

Lessons from the adoption and implementation of the MoU can be used to design the aims and objectives of new legislation and any subsequent introduction of institutional arrangements. If the MoU is demonstrating positive on-ground changes in enhancing horizontal integration, it will be more successful in gaining political attention and the allocation and commitment of funding and resources.
The need for legislative force has been highlighted by Hildebrand et al. (2002), Coccossis (2004) and Coffey and Major (2005). With legislation in place, adaptive management principles can be adopted to continually improve and strengthen institutional arrangements.

**Implementation Phase 4: Introduction of Adaptive Management.**

The final implementation phase to enhance horizontal integration involves the introduction of adaptive management. The principles of adaptive management will incorporate new scientific methods and information offered by NGOs, universities and research institutes. This will overcome the absence of a monitoring and review system, as noted by Kay and Lester (1997) and Coffey and Major (2005), and improve and update policies and legislation.

As Chaniotis and Stead (2007) suggest, ICZM is still seen as being ‘theoretical’ and the implementation of legislation with adaptive management principles will help to develop the practical on-ground implementation of ICZM. Ewing et al. (2000) promote the use of adaptive management in ICM programs, which when combined with ICZM will enhance horizontal integration across catchments and the coastal zone.

Legislative review and reform is an important step in ensuring that current scientific research is relevant and that appropriate management objectives are being met. The review of legislation and identification of joint management objectives will ensure that sufficient funding is allocated to the appropriate agencies to carry out their responsibilities.
7.3 – How to enhance horizontal integration in ICZM.

As discussed in Chapter 1, the literature describes the components of spatial and intersectoral dimensions and their relationship to horizontal integration (Cicin-Sain & Knecht 1998, Cicin-Sain & Belfiore 2005). The literature implies that the components - biophysical environment, management issues, uses and agencies - remain uncoordinated, refer to Figure 7.3 (Figure 1.2 reproduced). For example, the components of intersectoral integration were designed to overcome fragmentation in coastal zone management, however, as this research has demonstrated this is still prevalent.

![Figure 7.3: Components of Horizontal Integration.](image)

This research confirms that these four components are currently being considered independently in attempts at on-ground implementation of horizontal integration. In order to enhance horizontal integration further the complex interrelationship between these four components must be acknowledged and incorporated into ICZM programs. Concentrating on the
bottom level of Figure 7.3 (the components), the important interrelationship between these four components is illustrated in Figure 7.4.

![Figure 7.4 – Interrelationship between components of spatial and intersectoral dimensions of horizontal integration.](image)

The biophysical environment (i.e. catchments, the coastal zone or the ocean) is the region which is being managed, and is represented as the central component. This central component interacts with the agencies responsible for managing the biophysical environment. The central component also interacts with the uses component (this being human activities in the catchment and coastal zone). Finally, the central component also interacts with management issues associated with natural process in catchments and coastal zones, such as erosion and algal blooms.

The management issues can be a result of natural processes (in the biophysical environment) or as a result of human activities (uses). The agencies use legislation, plans and programs to then manage both the management issues from natural process and those resulting from human uses.
This continuous and circular information flow adopts the principles used in adaptive management (as discussed in Chapter 2), offering feedback and creating new and improved management practices.

Horizontal integration will therefore be enhanced as a result of a management program which considers the interrelationship between the four components. When considering management options for a biophysical environment (a catchment, the coastal zone, or the ocean) management agencies must address the management issues associated with human uses and natural processes. This leaves one unresolved issue for enhancing horizontal integration – the confusion surrounding the definition of the spatial integration dimension.

7.3.1 – Spatial Integration.

As discussed in Chapter 1, horizontal integration has two dimensions: intersectoral integration and spatial integration. The largely unexplored dimension of spatial integration in turn has two components (biophysical environment and management issues). However, much of the literature focuses solely on the biophysical environment component (catchment-coastal zone-ocean) of spatial integration (Cicin-Sain et al. 2000, Thom & Harvey 2000, Harvey & Caton 2003, Cheong 2008). This narrow focus omits the impact of human use on the biophysical environment and is therefore unlikely to achieve horizontal integration in practice. Other literature demonstrates that these two components of spatial integration are interconnected (Cicin-Sain & Knecht 1998, Bennett 2001, Cicin-Sain & Belfiore 2005). This research shows the latter focus to be more accurate as it recognises that
management issues must be considered in conjunction with the biophysical environment. This interrelationship was illustrated in Figure 7.4.

The inadequate definition of spatial integration may be a significant inhibitor to the successful implementation of horizontal integration. To adequately represent the purpose of spatial integration intended in an ICZM program the definition of this dimension of horizontal integration must incorporate both the ‘management issues’ component (resulting from both natural processes and human uses) and the ‘biophysical environment’ component (catchments-coastal zone-ocean).

Therefore, to overcome this inhibitor to horizontal integration, this study proposes improving the definition of spatial integration to reflect the integration of management issues across the biophysical environment (catchment-coastal zone-ocean). This aspect is worthy of further consideration and a working definition is suggested as:

\textit{Spatial Integration: the interrelationship between the management issues (both natural and human induced) and the biophysical environment (catchment-coastal zone-ocean).}
7.4 – Conclusion.

The efficient and effective management of the coastal zone is of immense importance due to its high economic, environmental and social value. The significant impacts on the coastal zone resulting from high population density, pollution from land-based sources and climate change led to the introduction of the internationally accepted concept of ICZM. ICZM has been applied in both developed and developing nations across the globe and has two significant characteristics – vertical integration and horizontal integration.

This research focussed on the less researched characteristic of horizontal integration and its two dimensions of spatial and intersectoral integration.

Due to the significant impact on coastal zones from land-based uses, and the human habitation of coastal zones this research focussed on the land-based side of the coastal zone and its horizontal integration with catchments.

Australia was used as a national case study due to its adoption of ICZM principles and its long history of coastal zone management. Horizontal integration was explored at the state management level in Victoria and at the regional management level in the Gippsland Lakes Region. From these case studies and literature this research has shown that horizontal integration is a critical element in delivering ICZM and the planning and management of the coastal zone in a sustainable manner. The research demonstrates the critical importance and interaction of five crucial factors which influence the on-ground implementation of horizontal integration in either a positive or negative manner. Horizontal integration will be enhanced by overcoming negative influences on capacity building efforts, professional territorial
responses, gaining political motivation and funding and resources, and the establishment of institutional arrangements. This thesis proposes a Horizontal Integration Framework which will address the interrelationship between these five factors. In turn, there are four implementation phases, which strengthen the Framework, and which need to be addressed to overcome negative influences on the implementation of horizontal integration across catchments and the coastal zone. The four implementation phases are the creation of equal partnerships, alignment of objectives, attainment of leadership and the introduction of adaptive management.

The interrelationship between spatial and intersectoral integration is demonstrated through this research. The illustration of this interrelationship extends the theory of horizontal integration suggesting the need for a more accurate definition of the spatial dimension. A working definition is suggested as a starting point for further consideration.

Further research in horizontal integration is required to explore the implementation of the Horizontal Integration Framework across the geographical range incorporating the coastal zone and ocean side. This will complete the implementation of horizontal integration across the catchment-coastal zone-ocean continuum as a key characteristic of the internationally accepted concept of ICZM.
Addendum:

In late 2008 the Victorian state government released a ‘Green Paper’ on ‘Land and Biodiversity at a time of climate change.’ This was after all results for the thesis (the questionnaires) had been completed. Following submissions and input from Victorians, the state government released a ‘White Paper’ for ‘Land and Biodiversity’ in November 2009. The state government began implementation of the ‘White Paper’ recommendation concerning the relationship between catchment and coastal management in mid 2010. Therefore, it has been too late to incorporate discussion of these changes into the thesis.

Although coastal management is a factor considered in the ‘Green Paper’ its delivery outcomes suggest joining the Regional Coastal Boards and Catchment Management Authorities. The ‘White Paper’ suggests that catchment and coastal management be represented under a Natural Resource and Catchment Council (NRCC). The Victorian Coastal Council and Victorian Catchment Management Council will be represented under this NRCC along with the Victorian Environmental Assessment Council (Victorian State Government 2010).

These institutional arrangements presented in the White Paper have potential implications for horizontal integration across catchment and coastal zone management in Victoria. The proposed establishment of a ‘new state-wide body’ – the Victorian Natural Resources and Catchment Council (NRCC) (Victorian State Government 2010) may enhance horizontal integration if the power balance between the CMAs and RCBs is overcome, as recommended in this thesis.
References:


Boyd J., Castellan A., Mountz E., Namtvedt Best P., Phipps L., & van der Schalie S. (2007) Fostering coastal management at the local level through the CZMA. In: *Coastal Zone 07*, Portland, Oregon USA.


Last cited 28/8/08. Parks Victoria, Melbourne, Victoria, Australia.


Appendix 1

Gippsland Lakes Questionnaire
Questionnaire 1:

Section 1 – Assessment of Catchment Management in the Gippsland Lakes Region.

Question 1:
Please rate the following policies, strategies, plans and legislation for their success in addressing catchment issues in the Gippsland Lakes Region. (N/B. catchment = including lake and estuary issues).

(Rating 0 = not successful to 5 = highly successful, or NA = not sure/unable to answer).

<table>
<thead>
<tr>
<th>Policy/Strategy/Plan/Legislation</th>
<th>Rating:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gippsland Lakes Coastal Action Plan (GCB, 1999)</td>
<td></td>
</tr>
<tr>
<td>Gippsland Boating Coastal Action Plan (GCB, 2002)</td>
<td></td>
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<tr>
<td>Coast Action/Coastcare Programs</td>
<td></td>
</tr>
<tr>
<td>Victorian Coastal Strategy (State of Victoria, 2002)</td>
<td></td>
</tr>
<tr>
<td>Gippsland Integrated Planning Coastal Action Plan (GCB, 2002)</td>
<td></td>
</tr>
<tr>
<td>Gippsland Lake Future Directions and Actions Plan (GCB, 2002)</td>
<td></td>
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<tr>
<td>Coastal Management Act (State of Victoria, 1995)</td>
<td></td>
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<tr>
<td>Catchment and Land Protection Act (State of Victoria, 1994)</td>
<td></td>
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<tr>
<td>East Gippsland Regional Catchment Strategy (EGCMA, 1997)</td>
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<tr>
<td>West Gippsland Regional Catchment Strategy (WGCMA, 1997)</td>
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<tr>
<td>Gippsland Integrated Natural Resources Forum</td>
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<tr>
<td>Other(s):</td>
<td></td>
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</tbody>
</table>

Question 1a:
Do you believe the above policies, strategies, plans and legislation alone are adequate to successfully address catchment issues in the Gippsland Lakes Region? (Please tick appropriate response):

- Very adequate
- Adequate
- Make no difference
- Inadequate
- Very inadequate
- Not sure

Participant code: Qu01 –
Question 1b:
If your response to Question 1a was that the policies, strategies, plans and legislation are making no difference or are inadequate/very inadequate, what do you believe could be the possible reason(s) for this inadequacy? (Please tick any or all appropriate boxes)

- Lack of funding
- Lack of appropriate skills/expertise
- Lack of appropriate objectives
- Inadequate time allocation by organisations
- Lack of resources (i.e. staff no.’s, office facilities etc.)
- Inadequate management institute/organisation
- More organisations are required
- Less organisations required (i.e. there are too many and one overall program would be more successful)
- Not sure
- Other (please list)

Question 2:
Please rate the following authorities/organisations in place for their success in managing/addressing catchment issues in the Gippsland Lakes Region. (Rating 0 = not successful to 5 = highly successful, or NA = not sure/unable to answer).

<table>
<thead>
<tr>
<th>Authority/Organisation:</th>
<th>Rating:</th>
</tr>
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<tbody>
<tr>
<td>Gippsland Coastal Board</td>
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<tr>
<td>Department of Primary Industries</td>
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<tr>
<td>Department of Sustainability and Environment</td>
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<td>East Gippsland Catchment Management Authority</td>
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<td>West Gippsland Catchment Management Authority</td>
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<tr>
<td>Southern Rural Water Authority</td>
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<tr>
<td>Wellington Shire Council</td>
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<td>Gippsland Ports</td>
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<td>Victorian Coastal Council</td>
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<td>Victorian Catchment Management Council</td>
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<td>Parks Victoria</td>
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<td>Environment Protection Authority</td>
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<td>Gippsland Lakes and Catchment Taskforce</td>
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<td>Landcare</td>
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<td>Coast Action/Coastcare</td>
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<td>Waterwatch</td>
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<tr>
<td>Other(s):</td>
<td></td>
</tr>
</tbody>
</table>
**Question 2a:**
Do you believe the above authorities/organisations alone are adequate to successfully address catchment issues in the Gippsland Lakes Region? *(Please tick appropriate response):*
- Very adequate
- Adequate
- Make no difference
- Inadequate
- Very inadequate
- Not sure

**Question 2b:**
If your response to Question 2a was that the authorities/organisations are making no difference or are inadequate/very inadequate what do you believe could be the possible reason(s) for this inadequacy? *(Please tick any or all appropriate boxes):*
- Lack of funding
- Lack of appropriate skills/expertise
- Lack of appropriate objectives
- Inadequate time allocation by organisations
- Lack of resources (i.e. staff no.’s, office facilities etc.)
- Inadequate management institute/organisation
- More organisations are required
- Less organisations required (i.e. there are too many and one overall organisation would be more successful)
- Not sure
- Other (please list)

…………………………………………………..

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**Question 3:**
How well are the following catchment issues being managed in the Gippsland Lakes Region?
Rating: 0 – not being managed at all
- 1 – management is very poor
- 2 – management is poor
- 3 – management is adequate
- 4 – management is successful
- 5 – management is very successful
or NA - not sure/unable to answer
### Question 4:
How well are the following catchment management issues being addressed by the current catchment management policies, strategies, plans and legislation (as outlined in Question 1)?

**Rating:**
- 0 – not being addressed at all
- 1 – issue being addressed very poorly
- 2 – issue being addressed poorly
- 3 – issue being addressed adequately
- 4 – issue being addressed well
- 5 – issue being addressed very well
- or NA - not sure/unable to answer

<table>
<thead>
<tr>
<th>Catchment Management Issue</th>
<th>Rating of management:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Erosion of shoreline/bank stability</td>
<td></td>
</tr>
<tr>
<td>Safe boating issues</td>
<td></td>
</tr>
<tr>
<td>Provision for a variety of recreational activities</td>
<td></td>
</tr>
<tr>
<td>Water Quality (salinity, turbidity)</td>
<td></td>
</tr>
<tr>
<td>Commercial fishing facilities and access</td>
<td></td>
</tr>
<tr>
<td>Recreational fishing facilities and access</td>
<td></td>
</tr>
<tr>
<td>Artificial opening</td>
<td></td>
</tr>
<tr>
<td>Conflict of uses/users</td>
<td></td>
</tr>
<tr>
<td>Aquatic pest animals (eg. Carp)</td>
<td></td>
</tr>
<tr>
<td>Establishment of sea walls or groynes</td>
<td></td>
</tr>
<tr>
<td>Loss of riparian vegetation</td>
<td></td>
</tr>
<tr>
<td>Sustainable land use</td>
<td></td>
</tr>
<tr>
<td>Run off</td>
<td></td>
</tr>
<tr>
<td>Environmental flows</td>
<td></td>
</tr>
<tr>
<td>Other(s):</td>
<td></td>
</tr>
</tbody>
</table>
Question 5a:
In your opinion what is the current ecological state of the Gippsland Lakes? (Please tick appropriate response).
- Very healthy □
- Healthy □
- Degraded □
- Severely degraded □
- Not sure □

Question 5b:
In your opinion what is the current ecological state of the broader catchment area leading into the Gippsland Lakes (i.e. the rivers leading into the lakes)? (Please tick appropriate response).
- Very healthy □
- Healthy □
- Degraded □
- Severely degraded □
- Not sure □

Question 6:
What level of management do you consider would be most appropriate for addressing catchment issues in the Gippsland Lakes Region? (Please tick appropriate response):
- Local/Regional Management Level □
- State Management Level □
- National Management Level □
- International Management Level □
- Not sure □
- Combination of (please state) □

Question 7:
Do you believe the current local catchment management objectives are adequate to meet the following (Please circle appropriate response). (Refer to Regional Catchment Strategy for current objectives).
- Principles of Ecologically Sustainable Development
  Yes/No/Unsure
- Natural Resource Management objectives
  Yes/No/Unsure
- Regional economic objectives
  Yes/No/Unsure
- Regional social objectives
  Yes/No/Unsure
- Regional environment objectives
  Yes/No/Unsure
Question 8a:
Do you believe the current base funding received for catchment management in the Gippsland Lakes Region is adequate? (Please tick appropriate response):
- Very Adequate
- Adequate
- Inadequate
- Very inadequate
- Not sure

Question 8b:
Do you believe the current additional funding received for catchment management in the Gippsland Lakes Region is adequate? (Please tick appropriate response):
- Very Adequate
- Adequate
- Inadequate
- Very inadequate
- Not sure

Question 9
How successful is the present catchment management framework in the Gippsland Lakes Region in meeting the characteristics of Integrated Catchment Management (Refer to Glossary and Appendix 2 for further explanation) (Please tick appropriate rating):

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Very successful</th>
<th>Successful</th>
<th>Unsuccessful</th>
<th>Very unsuccessful</th>
<th>Not sure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fostering institutional arrangements that are enabling.</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Ensuring the integrity of participation.</td>
<td></td>
<td></td>
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<tr>
<td>Building individual, community and agency capacities.</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Moving beyond planning to implementation.</td>
<td></td>
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<tr>
<td>Turing towards adaptive management.</td>
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<tr>
<td>Focussing on achieving agreed outcomes.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Developing socially-robust knowledge.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Section 2 – Assessment of Coastal Management in the Gippsland Lakes Region.

Question 10:
Please rate the following policies, strategies, plans and legislation for their success in addressing coastal issues in the Gippsland Lakes Region.

(Rating 0 = not successful to 5 = highly successful, or NA - not sure/unable to answer).

<table>
<thead>
<tr>
<th>Policies/Strategies/Plans/Legislation:</th>
<th>Rating:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gippsland Lakes Coastal Action Plan (GCB, 1999)</td>
<td></td>
</tr>
<tr>
<td>Gippsland Boating Coastal Action Plan (GCB, 2002)</td>
<td></td>
</tr>
<tr>
<td>Coast Action/Coastcare Programs</td>
<td></td>
</tr>
<tr>
<td>Victorian Coastal Strategy (State of Victoria, 2002)</td>
<td></td>
</tr>
<tr>
<td>Gippsland Integrated Planning Coastal Action Plan (GCB, 2002)</td>
<td></td>
</tr>
<tr>
<td>Gippsland Lake Future Directions and Actions Plan (GCB, 2002)</td>
<td></td>
</tr>
<tr>
<td>Coastal Management Act (State of Victoria, 1995)</td>
<td></td>
</tr>
<tr>
<td>Catchment and Land Protection Act (State of Victoria, 1994)</td>
<td></td>
</tr>
<tr>
<td>East Gippsland Regional Catchment Strategy (EGCMA, 1997)</td>
<td></td>
</tr>
<tr>
<td>West Gippsland Regional Catchment Strategy (WGCMA, 1997)</td>
<td></td>
</tr>
<tr>
<td>Gippsland Integrated Natural Resources Forum</td>
<td></td>
</tr>
<tr>
<td>Other(s):</td>
<td></td>
</tr>
</tbody>
</table>

Question 10a:
Do you believe the above policies, strategies, plans and legislation alone are adequate to successfully address coastal issues in the Gippsland Lakes Region? (Please tick appropriate response):

- Very adequate
- Adequate
- Make no difference
- Inadequate
- Very inadequate
- Unsure

Question 10b:
If your response to Question 10a was that the policies, strategies, plans and legislation are making no difference or are inadequate/very inadequate, what do you believe could be the possible reason(s) for this inadequacy?

(Please tick any or all appropriate boxes):

- Lack of funding
- Lack of appropriate skills/expertise
- Lack of appropriate objectives
- Inadequate time allocation by organisations
- Lack of resources (i.e. staff no.’s, office facilities etc.)
• Inadequate management institute/organisation
• More organisations are required
• Less organisations required (i.e. there are too many and one overall program would be more successful)
• Not sure
• Other (please list)

Question 11:
Please rate the following management authorities/organisations in place for their success in managing/addressing coastal issues in the Gippsland Lakes Region?

(Rating 0 = not successful – 5 = highly successful, or NA - not sure/unable to answer):

<table>
<thead>
<tr>
<th>Authority/Organisation:</th>
<th>Rating:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gippsland Coastal Board</td>
<td></td>
</tr>
<tr>
<td>Department of Primary Industries/Department of Sustainability and Environment</td>
<td></td>
</tr>
<tr>
<td>East Gippsland Catchment Management Authority</td>
<td></td>
</tr>
<tr>
<td>West Gippsland Catchment Management Authority</td>
<td></td>
</tr>
<tr>
<td>Southern Rural Water Authority</td>
<td></td>
</tr>
<tr>
<td>Wellington Shire Council</td>
<td></td>
</tr>
<tr>
<td>East Gippsland Shire Council</td>
<td></td>
</tr>
<tr>
<td>Gippsland Ports</td>
<td></td>
</tr>
<tr>
<td>Victorian Coastal Council</td>
<td></td>
</tr>
<tr>
<td>Victorian Catchment Management Council</td>
<td></td>
</tr>
<tr>
<td>Parks Victoria</td>
<td></td>
</tr>
<tr>
<td>Environment Protection Authority</td>
<td></td>
</tr>
<tr>
<td>Other(s):</td>
<td></td>
</tr>
</tbody>
</table>

Question 11a:
Do you believe the above authorities/organisations alone are adequate to successfully address coastal issues in the Gippsland Lakes Region? (Please tick appropriate response):
• Very adequate
• Adequate
• Make no difference
• Inadequate
• Very inadequate
• Not sure
**Question 11b:**
If your response to Question 11a was that the authorities/organisations are making no difference or are inadequate/very inadequate what do you believe could be the possible reason(s) for this inadequacy? *(Please tick any or all appropriate boxes):*
- Lack of funding
- Lack of appropriate skills/expertise
- Lack of appropriate objectives
- Inadequate time allocation by organisations
- Lack of resources (i.e. staff no.’s, office facilities etc.)
- Inadequate management institute/organisation
- More organisations are required
- Less organisations required (i.e. there are too many and one overall organisation would be more successful)
- Not sure
- Other (please list)

……………………………………………..
……………………………………………..
……………………………………………..
……………………………………………..

**Question 12:**
How well are the following coastal management issues being managed in the Gippsland Lakes Region?

Rating: 0 – not being managed at all
1 – management is very poor
2 – management is poor
3 – management is adequate
4 – management is successful
5 – management is very successful
or NA - not sure/unable to answer

<table>
<thead>
<tr>
<th>Coastal Management Issue</th>
<th>Rating of management:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inward erosion of coastline.</td>
<td></td>
</tr>
<tr>
<td>Safe boating issues (allocating areas away from swimming and other recreational uses).</td>
<td></td>
</tr>
<tr>
<td>Provision for a variety of recreational activities.</td>
<td></td>
</tr>
<tr>
<td>Maintaining water quality (impact of effluent).</td>
<td></td>
</tr>
<tr>
<td>Commercial fishing facilities (and access).</td>
<td></td>
</tr>
<tr>
<td>Recreational fishing facilities (and access).</td>
<td></td>
</tr>
<tr>
<td>Artificial opening.</td>
<td></td>
</tr>
<tr>
<td>Coastal Development (accommodation, housing, size, location, design etc.).</td>
<td></td>
</tr>
<tr>
<td>Coastal Dependent uses (giving preference to).</td>
<td></td>
</tr>
<tr>
<td>Establishment of sea walls or groynes (affecting tides).</td>
<td></td>
</tr>
<tr>
<td>Coastal Management Issue</td>
<td>Rating of management:</td>
</tr>
<tr>
<td>---------------------------------------------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>Loss of riparian vegetation.</td>
<td></td>
</tr>
<tr>
<td>Minimising risk/impact of marine pest species.</td>
<td></td>
</tr>
<tr>
<td>Sufficient public (safe) access to coastal areas.</td>
<td></td>
</tr>
<tr>
<td>Maximising environment, economic and social outcomes.</td>
<td></td>
</tr>
<tr>
<td>Maintaining biological diversity (marine and coastal).</td>
<td></td>
</tr>
<tr>
<td>Ensuring public safety on beaches.</td>
<td></td>
</tr>
<tr>
<td>Increased awareness and understanding of coastal processes.</td>
<td></td>
</tr>
<tr>
<td>Increased Indigenous involvement in cultural site protection.</td>
<td></td>
</tr>
<tr>
<td>Protection of aesthetic coastal values.</td>
<td></td>
</tr>
<tr>
<td>Other(s):</td>
<td></td>
</tr>
</tbody>
</table>

**Question 12a:**
How well are the following coastal management issues being addressed by the current coastal management policies, strategies, plans and legislation (as outlined in Question 10)?
Rating: 0 – not being managed at all
1 – management is very poor
2 – management is poor
3 – management is adequate
4 – management is successful
5 – management is very successful
or NA - not sure/unable to answer
Protection of aesthetic coastal values.

Question 13:
In your opinion what is the current ecological state of the Gippsland Lakes coastal areas? (Please tick appropriate response):
- Very healthy
- Healthy
- Degraded
- Severely degraded
- Not sure

Question 14:
What level of management do you consider would be most appropriate for addressing coastal issues in the Gippsland Lakes Region? (Please tick appropriate response):
- Local/Regional Management Level
- State Management Level
- National Management Level
- International Management Level
- Not sure
- Combination of (please state) …………………………………………………

Question 15:
Do you believe the current local coastal management objectives are adequate to meet the following principles (Please circle appropriate response):
- Principles of Ecologically Sustainable Development
- Yes/No/Unsure
- Natural Resource Management objectives
- Yes/No/Unsure
- Regional economic objectives
- Yes/No/Unsure
- Regional social objectives
- Yes/No/Unsure
- Regional environment objectives
- Yes/No/Unsure

Question 16a:
Do you believe the current base funding received for coastal management in the Gippsland Lakes Region is adequate? (Please tick appropriate response):
- Very Adequate
- Adequate
- Inadequate
- Very inadequate
- Not sure
**Question 16b:**
Do you believe the current additional funding received for coastal management in the Gippsland Lakes Region is adequate? *(Please tick appropriate response):*

- Very Adequate
- Adequate
- Inadequate
- Very inadequate
- Not sure

**Question 17:**
How successful, to date, is the coastal management framework in the Gippsland Lakes Region in meeting the characteristics of Integrated Coastal Zone Management (Refer to Glossary and Appendix 2 for further explanation) *(Please tick appropriate rating).*

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Very successful</th>
<th>Successful</th>
<th>Unsuccessful</th>
<th>Very unsuccessful</th>
<th>Not sure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consideration of all values – ecological, economic, cultural, social and others – associated with a resource and its uses, and the effects of those values in decision making.</td>
<td></td>
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<tr>
<td>Integration of the effects of sectoral management activities within government.</td>
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<tr>
<td>Integration of the effects of management between spheres of government.</td>
<td></td>
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<tr>
<td>Integration between government and community and industry groups.</td>
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</tbody>
</table>

**Question 17a:**
How successful is the coastal management framework in the Gippsland Lakes Region in meeting the objectives of the Commonwealth Government as outlined in the Commonwealth Coastal Policy (Refer to Glossary and Appendix 2 for further explanation) *(Please tick appropriate rating):*

<table>
<thead>
<tr>
<th>Objective</th>
<th>Very successful</th>
<th>Successful</th>
<th>Unsuccessful</th>
<th>Very unsuccessful</th>
<th>Not sure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sustainable Resource Use</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resource conservation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public Participation</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Knowledge and understanding</td>
<td></td>
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</tr>
</tbody>
</table>
Section 3 – Assessment of the integration of catchment and coastal management in the Gippsland Lakes Region.

Question 18:
Do you believe that the integration of catchment and coastal management would lead to better environmental outcomes in the Gippsland Lakes Region? (Please tick appropriate response)

- Yes □
- Yes (under certain conditions) □
  Please state conditions:
  ..................................................................................................................
  ..................................................................................................................

- Possibly □
- No □
- Not sure □

Question 18a:
If you responded YES to Question 18, why do you believe this to be? (Tick any or all appropriate responses)

- There would be more opportunity for input from different sectors? □
- There would be less authorities working against each other? □
- There would be agreed objectives? □
- There would be agreed responsibilities? □
- There would be opportunity to incorporate funding, leading to more money for management of joint issues? □
- Provide scope for integration between public and private sectors? □
- Other (please expand on your response)
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**Question 18b:**
If you responded NO to Question 18, why do you believe this to be? *(Tick any or all appropriate responses)*
- Lack of focus on specific issues? ☐
- Not enough management organisations? ☐
- Would lead to a reduction in funding? ☐
- Other (please expand on your response)

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**Question 19:**
What structural provision(s) do you believe are required to achieve the on-ground integration of catchment and coastal management in the Gippsland Lakes Region? *(Please tick any or all appropriate responses)*
- Combined membership on catchment and coastal boards? ☐
- Agreed management objectives? ☐
- Targeted and agreed program priorities and outcomes ☐
- Agreed management responsibilities? ☐
- Agreed geographical boundaries? ☐
- Combined meetings, seminars and conferences? ☐
- One local authority responsible for catchment and coastal management? ☐
- Information/data sharing? ☐
- Coastal programs to incorporate catchment wide issues, involving CMAs in the development process? ☐
- Catchment programs to incorporate coastal issues, involving RCBs in the development process? ☐
- Other (please expand on your response)

……………………………………………………………………
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……………………………………………………………………
Question 20:

What legislative provision(s) do you believe are required to achieve the integration of catchment and coastal management in the Gippsland Lakes Region? (Please tick any or all appropriate responses)

- A state parliamentary act incorporating catchment and coastal management objectives? [ ]
- Nationally agreed objectives? [ ]
- Commonwealth parliamentary act? [ ]
- A National policy on integrated catchment and coastal management [ ]
- A State policy on integrated catchment and coastal management [ ]
- Other (please expand on your response) ………………………………………………………………………….

Question 21:

Do you believe there is currently integration between the Catchment Management Authorities and the Regional Coastal Boards in the Gippsland Lakes Region? (Please tick appropriate response).

- Strong integration [ ]
- Appropriate level of integration [ ]
- Some integration [ ]
- No integration [ ]
- Not sure [ ]

Question 21a:

If your response to question 21 was there is integration, what do you perceive this integration is occurring through?

- Combined membership on boards? [ ]
- Shared responsibilities? [ ]
- Agreed objectives? [ ]
- Other (please list) ………………………………………………………………………………………………

…………………………………………………………………………………………………………………………
**Question 21b:**
If your response to Question 21 was that there is no integration, do you believe there is scope for this integration?

- Yes [ ]
- No [ ]
- Not Sure [ ]

If you responded YES, how could this scope be achieved?

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**Question 22:**
At what level of management should the integration of catchment and coastal management occur (please tick any or all appropriate boxes)?

- Local/Regional [ ]
- State [ ]
- National [ ]
- International [ ]
- All of the above [ ]
- No level [ ]
- Not sure [ ]

**Question 23:**
To achieve combined membership/integration on boards/authorities, members should be included from which backgrounds? (Please tick any or all appropriate responses)

- Govt representatives (state) [ ]
- Chair of GCB [ ]
- Commercial fishermen [ ]
- Primary producers [ ]
- Local Conservation Groups [ ]
- Indigenous representative [ ]
- Boating industry [ ]
- Environmental engineering [ ]
- Business [ ]
- Other: (please list) ..................................................

- Govt representatives (local) [ ]
- Chair of CMAs [ ]
- Recreational fishermen [ ]
- Local Landcare Member [ ]
- Academic/Research [ ]
- Water authority member [ ]
- Tourism [ ]
- Conservation [ ]
- Community affairs [ ]
**Question 23a:**
To achieve combined membership/integration on boards/authorities, there should be members containing which specialities? *(please tick any or all appropriate boxes)*:

<table>
<thead>
<tr>
<th>Speciality</th>
<th></th>
<th>Speciality</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Water resource management</td>
<td>☐</td>
<td>Environmental Conservation</td>
<td>☐</td>
</tr>
<tr>
<td>Tourism</td>
<td>☐</td>
<td>Extensive local knowledge</td>
<td>☐</td>
</tr>
<tr>
<td>Land protection</td>
<td>☐</td>
<td>Primary Industries</td>
<td>☐</td>
</tr>
<tr>
<td>Indigenous issues</td>
<td>☐</td>
<td>Business Management</td>
<td>☐</td>
</tr>
<tr>
<td>Social sciences</td>
<td>☐</td>
<td>Town planning</td>
<td>☐</td>
</tr>
<tr>
<td>Community affairs</td>
<td>☐</td>
<td>Understanding of coastal management</td>
<td>☐</td>
</tr>
<tr>
<td>Understanding of catchment management concepts and issues.</td>
<td>☐</td>
<td></td>
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<tr>
<td>Other: (please list)</td>
<td>☐</td>
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Section 4 - Ideas/concepts/principles which may improve (or create) integration between catchment and coastal management in the Gippsland Lakes Region.

**Question 24:**
For the integration of catchment and coastal management in the Gippsland Lakes Region how important do you think it is to have combined membership on both boards? *(Please tick appropriate response)*
- Very important
- Important
- Won’t make any difference
- Not important
- Not sure

**Question 25:**
For the integration of catchment and coastal management in the Gippsland Lakes Region how important do you think it is that both authorities have agreed objectives? *(Please tick appropriate response)*
- Very important
- Important
- Won’t make any difference
- Not important
- Not sure

**Question 26:**
For the integration of catchment and coastal management in the Gippsland Lakes Region how important do you think it is to have agreed geographical boundaries of responsibility? *(Please tick appropriate response)*
- Very important
- Important
- Won’t make any difference
- Not important
- Not sure

**Question 27:**
For the integration of catchment and coastal management in the Gippsland Lakes Region how important do you think it is for the organisations to have combined meetings, seminars and conferences? *(Please tick appropriate response)*
- Very important
- Important
- Won’t make any difference
- Not important
- Not sure
**Question 28:**
For the integration of catchment and coastal management in the Gippsland Lakes Region how important do you think it is for the organisations to have agreed program priorities and intended outcomes (i.e. targets)? *(Please tick appropriate response)*
- Very important
- Important
- Won’t make any difference
- Not important
- Not sure

**Question 29:**
For the integration of catchment and coastal management in the Gippsland Lakes Region how important do you think it is for the organisations to have agreed management responsibilities? *(Please tick appropriate response)*
- Very important
- Important
- Won’t make any difference
- Not important
- Not sure

**Question 30:**
For the integration of catchment and coastal management in the Gippsland Lakes Region how important do you think it is for the organisations to share information and data? *(Please tick appropriate response)*
- Very important
- Important
- Won’t make any difference
- Not important
- Not sure

**Question 31:**
Any additional comments or suggestions you would like to make for achieving successful integration of catchment and coastal management in the Gippsland Lakes Region? (or at any other management level)?

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Section 5 – Participants position.

**Question 32:**
Participant’s Gender  
- Male ☐  
- Female ☐

**Question 33:**
Participant’s age group  
- 18 – 25 ☐  
- 26 – 35 ☐  
- 36 – 55 ☐  
- 56 – 69 ☐  
- 70+ ☐

**Question 34:**
Level of education achieved  
- Secondary School ☐  
- Tertiary Qualifications ☐  
- TAFE ☐  
- Bachelor Degree ☐  
- Post Graduate Degree ☐  
- Other……………………………

**Question 35:**
Please list any relative additional qualifications/certificates:  
.................................................................................................................................  
.................................................................................................................................

**Question 36:**
Participant’s employment sector:  
- Professional ☐  
- Private Sector ☐  
- Public Sector ☐  
- State Government ☐  
- Local Government ☐  
- Self Employed/Consultant ☐  
- Farmer ☐  
- Retired ☐  
- Unemployed ☐  
- Federal Government ☐  
- Other: ……………………………

**Question 37:**
Years of experience with management of coastal/catchment environments:  
- 0 – 5 years ☐  
- 6-10 years ☐  
- 11-15 years ☐  
- 16-20 years ☐  
- 21-25 years ☐  
- 25+ years ☐
**Question 38:**
Years of experience with management of the Gippsland Lakes and catchment?

- 0 – 5 years
- 6-10 years
- 11-15 years
- 16-20 years
- 21-25 years
- 25+ years

**Question 39:**
Are you involved in any local community groups? Yes/No

If yes, please name the community group:

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Section 6 – Participants knowledge base.

Question 40:
Are you aware (i.e. know of their existence) of the following organisations/authorities? (Please circle your response):

Local:
- Gippsland Coastal Board Yes/No
- East Gippsland Catchment Management Authority Yes/No
- West Gippsland Catchment Management Authority Yes/No
- Gippsland Southern Rural Water Authority Yes/No
- Wellington Shire Council Yes/No
- East Gippsland Shire Council Yes/No
- Gippsland Ports Yes/No

State:
- Victorian Coastal Council Yes/No
- Victorian Catchment Management Council Yes/No
- Department of Primary Industries Yes/No
- Department of Sustainability and Environment Yes/No
- Coast Action/Coastcare Yes/No
- Landcare Yes/No
- Waterwatch Yes/No
- Parks Victoria Yes/No
- Environment Protection Authority Yes/No
- River Basin Management Society Yes/No

National:
- National Oceans Office Yes/No
- Natural Heritage Trust (NHT) Yes/No
- Cooperative Research Centre for Catchment Hydrology Yes/No
- Cooperative Research Centre for Coastal Zone, Estuary and Waterway Management Yes/No
- Marine and Coastal Community Network Yes/No
- Environment Australia Yes/No
- Coasts and Clean Seas Program Yes/No

International:
- Partnerships in Environment Management for the Seas of East Asia (PEMSEA) Yes/No
Question 41:
Are you aware (i.e. know of their existence) of the following legislation/policies/strategies? (Please circle your response):

Local:
- Gippsland Lakes Coastal Action Plan
- Gippsland Boating Coastal Action Plan
- Integrated Coastal Planning for Gippsland Coastal Action Plan
- Draft Gippsland Coastal Waters Coastal Action Plan
- East Gippsland Regional Catchment Strategy
- West Gippsland Regional Catchment Strategy
- Gippsland Lakes Future Directions and Actions Plan
- Gippsland Lakes RAMSAR Site – Draft Strategic Management Plan
- Gippsland Lakes Shore Erosion and Revegetation Strategy

State:
- State Environment Protection Policy (Waters of Victoria)
- Victorian Coastal Strategy
- Coastal Management Act 1995
- Catchment and Land Protection Act 1994
- Victorian River Health Strategy
- Victorian Greenhouse Strategy
- Environment Protection Act 1970
- Environment Conservation Council Act 1997
- National Parks (Marine National Parks & Marine Sanctuaries) Act 2002
- Planning and Environment Act
- Local Government Act

National
- Commonwealth Coastal Policy 1995
- Australia’s Oceans Policy 1998
- Coastal and Marine Planning Program
- National Strategy for Ecologically Sustainable Development

International
- RAMSAR Convention for the protection of wetlands
- Agenda 21/United Nations Conference on Environment and Development
Questions 42.
Have you heard of the following concepts/principles? (Please circle)

Local
- Shoreline Erosion Yes/No
- Salinity (land and water) Yes/No

State
- Integrated Natural Resource Management Yes/No

National
- Integrated (or Total) Catchment Management Yes/No
- Ecologically Sustainable Development Yes/No

International
- Integrated Coastal Zone Management Yes/No
- Global Warming/Greenhouse Effect Yes/No
Glossary:

**Catchment:**
‘a discrete geographical area of land, comprising one or more hydrometric sub-catchments, whose boundaries are derived primarily from natural features such that surface water drains and flows to a river, stream, lake, wetland or estuary’ (Commonwealth of Australia, 2001).

**Catchment Management:**
refers to the practice of integrating the three aspects of Natural Resource Management (ecological, economic and social) where the catchment system is the unit of management.

**Coast:**
In Victoria: ‘the sea and the seabed to the State limit – three nautical miles or 5.5kms; and land and inland waters within the coastal catchment’ (State of Victoria, 2002).

**Coastal Management:**
management of the coastal zone, this being ‘the area at the interface between land and sea, where the sea influences the land and vice versa’ (Cicin-Sain & Knecht, 1998).

**Ecologically Sustainable Development:**
Ecologically Sustainable Development (ESD) is defined as ‘using, conserving and enhancing the community’s resources so that ecological processes, on which life depends, are maintained and quality of life for both present and future generations is increased’ (Commonwealth of Australia, 1992).

**Integrated Catchment Management:**
“is 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 Commission, 2001).
**Integrated Coastal Zone Management**

ICZM is an international concept which has been used as a precedent for developing strategic policies at national, state and regional management levels. These strategies are developed and implemented for the allocation of environmental, socio-economic and institutional resources to achieve the conservation and sustainable multiple use of the coastal zone. ICZM has been defined by Sorenson as: “the integrated planning and management of coastal resources and environments in a manner that is based on the physical, socioeconomic, and political interconnections both within and among the dynamic coastal systems, which when aggregated together, define and coastal zone. An integrated approach requires both the horizontal (cross sectoral) and vertical (the levels of government and non government organisations) coordination of those stakeholders whose actions significantly influence the quantity or quality of coastal resources and environments “ (Sorenson 1997 AJofEM).

**Success:**

Success refers to the programs ability in meeting objectives of Integrated Catchment Management/Integrated Coastal Zone Management, Ecologically Sustainable Development and Natural Resource Management.
Appendix 1 – Map of Gippsland Lakes Region

Source: Gippsland Coastal Board Website, 2002.
Appendix 2:

Commonwealth Coastal Policy: In 1995 the Commonwealth Government of Australia released a Commonwealth Coastal Policy *Living on the coast* with the purpose of providing “a framework within which Commonwealth activities that may have an impact on the coastal zone will be developed and implemented. The Policy was the Commonwealth’s response to the Final Report of the Resource Assessment Commissions Coastal Zone Inquiry (National Local Govt Association, 2001).

The Policy provides a clear statement of the Commonwealth Governments position on coastal management matters and identifies the initiatives that the Commonwealth will take to help improve the management of the coastal zone” (CCP, 1995).

Ecologically Sustainable Development

Under the Strategy five key principles for ESD have been established:
1. integrating economic and environmental goals in policies and activities;
2. ensuring that environmental assets are properly valued;
3. providing for equity within and between generations;
4. dealing cautiously with risk and irreversibility; and
5. recognising the global dimension.

Principles of Integrated Catchment Management:

The following principles have been developed to ensure evolution of ICM initiatives move towards the achievement of sustainable resource use at a catchment level:
1. *Fostering institutional arrangements that are enabling*:
   a. Institutional arrangements that suit, and evolve with, their contexts;
   b. Institutional arrangements that empower collaborative governance;
   c. Institutional arrangements that empower integration with other governance systems;
   d. Institutional arrangements that enable achievement of outcomes.
2. *Ensuring the integrity of participation*:
   a. Aim for inclusiveness;
   b. Recognise and adapt to differences in stakeholder cultures;
   c. Focus on empowerment, but beware of participant fatigue;
   d. Use mixed modes of participation;
   e. Look to build ownership, commitment and enthusiasm;
   f. Reaching agreement;
   g. Fostering fairness.
3. *Building individual, community and agency capacities*:
   a. Building capacities of all stakeholders – not just community to participate;
   b. Build collective capacities as well as individual capacities;
   c. Build sectoral capacities to participate;
   d. Broadening the experience base beyond current members.
4. *Moving beyond planning to implementation*:
   a. A cyclical strategic process;
b. Enabling implementation;
c. Celebrating achievements.

5. **Turning towards adaptive management:**
   a. Viewing systems beyond their parts;
   b. Fostering systemic learning.

6. **Focussing on achieving agreed outcomes:**
   a. On-going monitoring and review of progress;
   b. Clarify accountabilities.

7. **Developing socially-robust knowledge:**
   a. Understanding is evolving;
   b. Coming to collective interpretations
   c. A broad focus on knowledge;
   d. Knowledge sharing. (Bellamy et al, 2002)

**Principles of Integrated Coastal Zone Management**

The four elements of ICZM:

1. Consideration of all values – ecological, economic, cultural, social and others – associated with a resource and its uses, and the effects of those values in decision making.

2. Integration of the effects of sectoral management activities within government.

3. Integration of the effects of management between spheres of government.

4. Integration between government and community and industry groups (RAC, 1993).
Appendix 2

Plain Language Statement and Consent Form – Gippsland Lakes Pilot Test
Dear «Title» «Surname»,

I am currently undertaking a research project for my Doctor of Philosophy Degree at Deakin University. The supervisor for this research project is Associate Professor Geoff Wescott.

The title of my project is ‘A model for the integration of catchment and coastal management.’ The primary aim of my research is to devise a model applicable throughout the world to integrate the management of catchment and coastal areas. This will be utilised to test the hypothesis that ‘the cooperative integration between catchment and coastal management, through agreed objectives and responsibilities, will improve environmental management outcomes.’

The objectives of my research are:

1. To gain a better understanding of catchment and coastal management practices throughout the world, how integrated (if at all) they are and examine any existing provisions for their integration.
2. Use the Gippsland Lakes as a case study of current practices, including derivation of a questionnaire to obtain first hand information on the integration of catchment and coastal management from practitioners.
3. Using findings from the Gippsland Lakes questionnaire develop and test state-wide a legislative and sectoral framework for integrating catchment and coastal management.
4. From the results of these two questionnaires establish an integrated framework (model) for catchment and coastal management to improve on-ground success throughout the world.
5. Test the derived model with national and international practitioners.
I would like to invite you to participate in the pilot testing of the enclosed questionnaire for this research project. This is the first questionnaire of my research project and consists of 42 questions relating to the on-ground implementation of catchment and coastal management in the Gippsland Lakes Region, the degree (if any) of integration of catchment and coastal management and ways in which integration might be improved. There is also a small section on the participant’s background knowledge. The majority of questions will require participants to give a rating or tick a response with the opportunity for further explanation on answers if desired.

The purpose of this questionnaire is to obtain the opinion of on-ground managers on the status of catchment and coastal management and their integration (if any) in the Gippsland Lakes.

Could you please make any suggestions, changes or additions that you would like to see result from this questionnaire on the draft survey (or attach any additional comments if space is insufficient). Please also fill out the consent form and return to me in the reply paid envelope within 2 weeks of receipt.

Please note that all responses will be kept confidential and only used for the purpose of this Doctor of Philosophy research project. Please contact me on the above phone number or email address to obtain a copy of the findings from this questionnaire. Data will be secured in accordance with Deakin University guidelines, identifiable consent forms will be stored separately to the coded questionnaire responses and will be stored for a minimum of 6 years and will only be accessible to the researcher and supervisor. Following the 6 years of storage all data will be destroyed.

Please note that you are free to participate or not participate to any extent, and to withdraw your participation at any stage. If you do withdraw any information received by you will be destroyed by the researcher (or returned to you if requested) immediately after your withdrawal.

If you require further information about your participation in this project or the research project in general please contact myself or Geoff Wescott using the above contact details.

Thanking you in anticipation for your assistance in this important step of my research project.

Yours faithfully,

Amanda Cornish

Should you have any concerns about the conduct of this research project, please contact the Secretary, Ethics Committee, Research Services, Deakin University, 221 Burwood Highway, BURWOOD VIC 3125. Tel (03) 9251 7123 (International +61 3 9251 7123).
DEAKIN UNIVERSITY HUMAN RESEARCH ETHICS COMMITTEE

CONSENT FORM: Questionnaire 1 – Pilot Test

I, [Name], of [Address]

Hereby consent to be a subject of a human research study to be undertaken

By Amanda Suzanne Cornish

and I understand that the purpose of the research is

to establish the degree of integration between catchment and coastal management in the Gippsland Lakes Region, and from these findings devise a universal model for this integration. This is to be achieved through a series of questions which relate to the principles of Integrated Coastal Zone Management, Integrated Catchment Management, Ecologically Sustainable Development, Natural Resource Management and other relevant national, state and local legislation, policies and programs.

I acknowledge

1. That the aims, methods, and anticipated benefits, and possible risks/hazards of the research study, have been explained to me.

2. That I voluntarily and freely give my consent to my participation in such research study.

3. I understand that aggregated results will be used for research purposes and may be reported in scientific and academic journals.

4. Individual results will not be released to any person except at my request and on my authorisation.

5. That I am free to withdraw my consent at any time during the study, in which event my participation in the research study will immediately cease and any information obtained from me will not be used.

Signature: [Signature] Date: [Date]

NOTE: In the event of a minor's consent, or person under legal liability, please complete the Ethics Committee's "Form of Consent on Behalf of a Minor or Dependent Person".
Appendix 3

Plain Language Statement,
Consent Form & Follow up letters
Gippsland Lakes Questionnaire
Researchers Name: Amanda Cornish
Researchers contact details: 0418 53 63 98 or ascor@deakin.edu.au
Course: Doctor of Philosophy (Environmental Management)
Supervisor: Associate Professor Geoff Wescott
Supervisors contact details: 9251 7623 or wescott@deakin.edu.au

19 February 2004

Dear «Title» «Surname»,

I am currently undertaking a research project for my Doctor of Philosophy Degree at Deakin University. The supervisor for this research project is Associate Professor Geoff Wescott.

The title of my project is ‘A model for the integration of catchment and coastal management.’ The primary aim of my research is to devise a model applicable throughout the world to integrate the management of catchment and coastal areas. This will be utilised to test the hypothesis that ‘the cooperative integration between catchment and coastal management, through agreed objectives and responsibilities, will improve environmental management outcomes.’
The objectives of my research are:

1. To gain a better understanding of catchment and coastal management practices throughout the world, how integrated (if at all) they are and examine any existing provisions for their integration.
2. Use the Gippsland Lakes as a case study of current practices, including derivation of a questionnaire to obtain first hand information on the integration of catchment and coastal management from practitioners.
3. Using findings from the Gippsland Lakes questionnaire develop and test state-wide a legislative and sectoral framework for integrating catchment and coastal management.
4. From the results of these two questionnaires establish an integrated framework (model) for catchment and coastal management to improve on-ground success throughout the world.
5. Test the derived model with national and international practitioners.

I would like to invite you to participate in this research project by completing the enclosed questionnaire. This is the first questionnaire of my research project and consists of 42 questions relating to the on-ground implementation of catchment and coastal management in the Gippsland Lakes Region, the degree (if any) of integration of catchment and coastal management and ways in which integration might be improved. There is also a small section on the participant’s background knowledge.

It is estimated that the questionnaire will take approximately 15 minutes to complete, although the questionnaire appears long, the majority of questions will require participants to give a rating or tick a response with the opportunity for further explanation on answers if desired.

Participants are required to complete the enclosed consent form, and it is requested that completed questionnaires and consent forms are returned in the reply paid envelope within 2 weeks of receipt.

Please note that all responses will be kept confidential and only used for the purpose of this Doctor of Philosophy research project. Please contact me on the above phone number or email address to obtain a copy of the findings from this questionnaire. Data will be secured in accordance with Deakin University guidelines, identifiable consent forms will be stored separately to the coded questionnaire responses and will be stored for a minimum of 6 years and will only be accessible to the researcher and supervisor. Following the 6 years of storage all data will be destroyed.
Please note that you are free to participate or not participate to any extent, and to withdraw your participation at any stage. If you do withdraw any information received by you will be destroyed by the researcher (or returned to you if requested) immediately after your withdrawal.

If you require further information about your participation in this project or the research project in general please contact myself or Geoff Wescott using the above contact details.

Thanking you in anticipation for your assistance in this important research project.

Yours faithfully,

Amanda Cornish

Should you have any concerns about the conduct of this research project, please contact the Secretary, Ethics Committee, Research Services, Deakin University, 221 Burwood Highway, BURWOOD VIC 3125. Tel (03) 9251 7123 (International +61 3 9251 7123).
DEAKIN UNIVERSITY HUMAN RESEARCH ETHICS COMMITTEE

CONSENT FORM: Questionnaire 1

I, ___________________________ of ___________________________

Hereby consent to be a subject of a human research study to be undertaken

By Amanda Suzanne Cornish

and I understand that the purpose of the research is

to establish the degree of integration between catchment and coastal management in the Gippsland Lakes Region, and from these findings devise a universal model for this integration. This is to be achieved through a series of questions which relate to the principles of Integrated Coastal Zone Management, Integrated Catchment Management, Ecologically Sustainable Development, Natural Resource Management and other relevant national, state and local legislation, policies and programs.

I acknowledge

1. That the aims, methods, and anticipated benefits, and possible risks/hazards of the research study, have been explained to me.

2. That I voluntarily and freely give my consent to my participation in such research study.

3. I understand that aggregated results will be used for research purposes and may be reported in scientific and academic journals.

4. Individual results will not be released to any person except at my request and on my authorisation.

5. That I am free to withdraw my consent at any time during the study, in which event my participation in the research study will immediately cease and any information obtained from me will not be used.

Signature: ___________________________ Date: ___________________________

NOTE: In the event of a minor’s consent, or person under legal liability, please complete the Ethics Committee's "Form of Consent on Behalf of a Minor or Dependent Person".
17 March 2004

Dear «Title» «Surname»

Re: Research Project – Gippsland Lakes

I refer to the letter I sent to you on the 19th of February inviting you to participate in a Questionnaire on the Effectiveness of the Management of the Gippsland Lakes.

I would be grateful if you could complete the questionnaire and return it to me by **Monday the 29th March**.

If you have any queries relating to the Questionnaire or my project please do not hesitate to contact myself or my supervisor Geoff Wescott as per the above contact details.

Whilst I would be grateful for your participation in my research project please note that you are under no obligation to participate. If you have decided not to, please disregard this letter.

I thank you for your assistance, time and support in relation to my project and look forward to receiving your completed questionnaire.

Yours faithfully,

Amanda Cornish
29 June 2004

Dear «Title» «Surname»

Re: Research Project – Gippsland Lakes

I refer to the letter I sent to you on the 19th of February inviting you to participate in a Questionnaire on the Effectiveness of the Management of the Gippsland Lakes.

I would be grateful if you could complete the questionnaire and return it to me by **Friday 9th July 2004**.

If you have any queries relating to the Questionnaire or my project please do not hesitate to contact myself or my supervisor Geoff Wescott as per the above contact details.

Whilst I would be grateful for your participation in my research project please note that you are under no obligation to participate. If you have decided not to, please disregard this letter.

I thank you for your assistance, time and support in relation to my project and look forward to receiving your completed questionnaire.

Yours faithfully,

Amanda Cornish
Appendix 4

Results of Gippsland Lakes Questionnaire
Organisations/Authorities:

Figure A4.1: Participants knowledge base, Local organisations/authorities (Q. 40)

Figure A4.2: Participants knowledge base, State organisations/authorities (Q. 40)
Figure A4.3: Participants knowledge base, National organisations/authorities (Q. 40)

Figure A4.4: Participants knowledge base, International organisations/authorities (Q. 41)
Legislation/policies/strategies:

Figure A4.5: Participants knowledge base, Local legislation (Q. 41)

Figure A4.6: Participants knowledge base, State legislation (Q. 41)
Figure A4.7: Participants knowledge base, National legislation (Q. 41)

Figure A4.8: Participants knowledge base, International legislation (Q. 41)
Concepts/Principles:

Figure A4.9: Participants knowledge base, Local concepts/principles (Q. 42)

Figure A4.10: Participants knowledge base, State concept Natural Resource Management (Q. 42)
Figure A4.11: Participants knowledge base, National concepts/principles (Q. 42)

Figure A4.12: Participants knowledge base, International concepts/principles (Q. 42)
Figure A4.13: Success of management for catchment issues (Q. 3).

Figure A4.14: Catchment management issues addressed by current policies/strategies/plans/legislation (Q. 4)
Figure A4.15: Success of management for coastal zone issues (Q. 12).

Figure A4.16: Perceived provision by policies/strategies/plans/legislation to address coastal zone management issues (Q. 12a).
Appendix 5

Victorian Questionnaire
Questionnaire Two

Participant Code: Qu02 –

Following is the description of 2 alternative models for achieving greater integration between catchment and coastal management. These 2 models have been derived from the results of a case study on the Gippsland Lakes Region which explored the existing level of integration between catchment and coastal management and sought ideas/concepts for improving (or creating) integration in the Region.

The following questionnaire seeks the participants view on the 2 models in order to establish a preferred model for achieving successful on-ground integration of catchment and coastal management. There is a set of questions to be answered following the description of each model.

MODEL 1: MINIMAL CHANGE

Description of Model:

The aim of this model is to gain integration of catchment and coastal management with the minimal amount of additional institutional arrangements with no legislative change and minimal new bodies.

This model would retain the current legislative and structural arrangements in place for both catchment and coastal management in Victoria. However, in an attempt to improve the integration between these two areas of Natural Resource Management a Memorandum of Understanding (MoU) or similar mechanism, focussing on the concepts of Integrated Catchment Management¹ and Integrated Coastal Zone Management¹, would be adopted.

The existing structure provides well for ‘vertical integration’¹. This MoU (or similar mechanism) would provide for ‘horizontal integration’¹ at the State management level between the existing Victorian Catchment Management Council (VCMC) and the Victorinan Coastal Council (VCC).

At the regional/local level the catchment management authorities and the regional coastal boards would interact with the relevant local government providing further ‘horizontal integration’¹.

To ensure adoption of the agreed objectives devised by the VCMC and the VCC the MoU (or similar mechanism) could include the formation of a Catchment and Coastal Committee which would consist of members from both the VCMC and the VCC. This Committee would have a Chairperson and Secretary which could be rotated (between representatives from CMAs, RCBs and local government) to achieve greater coverage of management issues and locations across the State.
Model 1 is based on the following structural/institutional arrangement:

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<table>
<thead>
<tr>
<th>Catchment and Land Protection Act</th>
<th>Coastal Management Act</th>
</tr>
</thead>
<tbody>
<tr>
<td>↓</td>
<td></td>
</tr>
<tr>
<td><strong>Catchment and Coastal Committee</strong></td>
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<tr>
<td>Victorian Catchment Management Council ↔ MOU ↔ Victorian Coastal Council</td>
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<tr>
<td>Catchment Management Authority ↔ Local Government ↔ Regional Coastal Board</td>
<td></td>
</tr>
</tbody>
</table>
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The current coastally based Catchment Management Authorities (CMAs) would be required to continue their responsibilities under the CaLP Act but would also have to comply with the introduced MOU (or similar mechanism).

**Section 1a: Model 1**

(Please circle response):

1. Does Model 1 provide for the integration of catchment and coastal management? [YES / NO]

2. If you answered YES to Question 1 do you believe this model will carry enough force to encourage greater integration in practice? [YES / NO]

3. Will the incorporation of a Catchment and Coastal Committee aid the adoption of the MoU (or similar mechanism)? [YES / NO]

4. Does Model 1 provide for the characteristics for integrating catchment and coastal management as identified in the Victorian Coastal Strategy 2002 (for further explanation refer to Appendix 1):

(Please circle response)

<table>
<thead>
<tr>
<th>Characteristic:</th>
<th>Model 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Combined Membership</td>
<td>YES / NO</td>
</tr>
<tr>
<td>b) Agreed objectives</td>
<td>YES / NO</td>
</tr>
<tr>
<td>c) Agreed geographical boundaries</td>
<td>YES / NO</td>
</tr>
<tr>
<td>d) Combined meetings, seminars and conferences</td>
<td>YES / NO</td>
</tr>
<tr>
<td>e) Agreed program priorities and intended outcomes (i.e. targets)</td>
<td>YES / NO</td>
</tr>
<tr>
<td>f) Agreed management responsibilities</td>
<td>YES / NO</td>
</tr>
<tr>
<td>g) Shared information and data.</td>
<td>YES / NO</td>
</tr>
</tbody>
</table>
(Please circle response):

<p>| | |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>5. Is it preferable to have a voluntary/co-operative approach to integrating catchment and coastal management (as opposed to a legislative approach)?</td>
<td>YES / NO</td>
</tr>
<tr>
<td>6. If you answered NO to Question 5 do you think a legislative approach is preferable?</td>
<td>YES / NO</td>
</tr>
<tr>
<td>7a. Is it desirable to rotate the Chairperson of the <em>Catchment and Coastal Committee</em> in order to cover a wide range of management issues and locations?</td>
<td>YES / NO</td>
</tr>
<tr>
<td>7b. Is it desirable to rotate the Secretary of the <em>Catchment and Coastal Committee</em> in order to cover a wide range of management issues and locations?</td>
<td>YES / NO</td>
</tr>
</tbody>
</table>

**Section 1b: Model 1**

8. What do you believe are the positive aspects of *Model 1*?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
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9. What do you believe are the negative aspects of Model 1?

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10a. Do you think Model 1 will work in practice? YES/NO (please circle response)

10b. Please explain why/why not.

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11. What additional aspects (if any) do you think should be included in **Model 1**?
MODEL 2: LEGISLATIVE REFORM

Description of model:

The aim of Model 2 is to gain integration through a reform of the current legislative and structural arrangements. Due to the extent of change required to achieve this integrated model, the reform would need to occur in two stages.

Firstly, at the State management level, new legislation would be created to replace the current *Catchment and Land Protection Act* and the *Coastal Management Act* to have an overarching *Catchment and Coastal Management Act*.

Secondly, this would be followed by the structural reform replacing the VCMC and the VCC with an overarching *Victorian Catchment and Coastal Management Council*. Followed by the formation of a *Regional Catchment and Coastal Board* combining the 5 existing coastally located Catchment Management Authorities and the 3 existing Regional Coastal Boards.

This would be achieved firstly by the passing of the Act which would be followed by the creation of the Council and Board soon afterwards.

Model 2 is based on the following structural/institutional arrangement:

```
  Catchment and Coastal Management Act
       ↓
Victorian Catchment and Coastal Management Council
       ↓
Regional Catchment and Coastal Boards
```

The existing Catchment Management Authority (CMA) boundaries and Regional Coastal Board (RCB) boundaries would need to be reviewed and adjusted to become a ‘Regional Catchment and Coastal Board.’ The three options being:

1. Keep the three existing RCB boundaries and incorporate the 5 coastally based CMAs into these boundaries (Refer to Map 1, page 7).
2. Keep the five existing CMA boundaries and split the 3 RCBs into these boundaries (Refer to Map 2, page 7).
3. Create new boundaries based on catchment/coastal management issues.
Map 1: Regional Coastal Board Boundaries

(Source: Victorian Coastal Council, 2002)

Map 2: Catchment Management Authorities Boundaries
Section 2a: Model 2

(Please circle response):

<table>
<thead>
<tr>
<th>12. Does Model 2 provide for the integration of catchment and coastal management?</th>
<th>YES / NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>13. If you answered YES to Question 12 do you believe this model will carry enough force to encourage greater integration in practice?</td>
<td>YES / NO</td>
</tr>
</tbody>
</table>

14. Does Model 2 provide for the characteristics for integrating catchment and coastal management as identified in the Victorian Coastal Strategy 2002 (For further explanation refer to Appendix 1):

(Please circle response)

<table>
<thead>
<tr>
<th>Characteristic:</th>
<th>Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Combined Membership</td>
<td>YES / NO</td>
</tr>
<tr>
<td>b) Agreed objectives</td>
<td>YES / NO</td>
</tr>
<tr>
<td>c) Agreed geographical boundaries</td>
<td>YES / NO</td>
</tr>
<tr>
<td>d) Combined meetings, seminars and conferences</td>
<td>YES / NO</td>
</tr>
<tr>
<td>e) Agreed program priorities and intended outcomes (i.e. targets)</td>
<td>YES / NO</td>
</tr>
<tr>
<td>f) Agreed management responsibilities</td>
<td>YES / NO</td>
</tr>
<tr>
<td>g) Shared information and data.</td>
<td>YES / NO</td>
</tr>
</tbody>
</table>

(Please circle response):

<table>
<thead>
<tr>
<th>15. Is it preferable to have a legislative approach to integrating catchment and coastal management (as opposed to a voluntary approach)?</th>
<th>YES / NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>16. If you answered NO to Question 15 do you think a voluntary/co-operative approach is preferable?</td>
<td>YES / NO</td>
</tr>
<tr>
<td>17. Will the incorporation of an ‘integrated’ State parliamentary Act improve integration on-ground?</td>
<td>YES / NO</td>
</tr>
<tr>
<td>18. Should the boundaries of the newly created Regional Catchment and Coastal Board be aligned with the existing Regional Coastal Board (RCB) boundaries?</td>
<td>YES / NO</td>
</tr>
<tr>
<td>19. If you answered NO to Question 18 do you believe the new boundaries should be aligned with the existing Catchment Management Authority boundaries?</td>
<td>YES / NO</td>
</tr>
</tbody>
</table>

20. If you answered NO to both Question 18 & Question 19 what do you believe the new boundaries should be? and why? (If required please indicate boundaries on the map provided on the following page).
Question 20: Please draw the desired boundaries for a new Regional Catchment and Coastal Board (if different from the existing Catchment Management Authority and Regional Coastal Board boundaries).
Section 2b: Model 2

21. What do you believe are the positive aspects of Model 2?

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22. What do you believe are the negative aspects of Model 2?

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23a. Do you think Model 2 will work in practice?

YES/NO (please circle response).

23b. Please explain why/why not.

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24. What additional aspects (if any) do you think should be included in Model 2?

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Section 3: Comparative

25. Please state whether you would prefer the adoption of Model 1 (Minimal Change) or Model 2 (Legislative Reform) for the integration of catchment and coastal management in Victoria and Why?

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Section 4 – Participants profile.

**Question 26:**
Participant’s Gender  Male ☐ Female ☐

**Question 27:**
Participant’s age group
18 – 25 ☐
26 – 35 ☐
36 – 55 ☐
56 – 69 ☐
70+ ☐

**Question 28:**
Level of education achieved
Secondary School ☐
TAFE ☐
Bachelor Degree ☐
Post Graduate Degree ☐
Other_____________________

**Question 29:**
Please list any relative additional qualifications/certificates:
____________________________________________________________________
____________________________________________________________________

**Question 30:**
Participant’s employment sector:
Professional ☐
Private Sector ☐
Public Sector ☐
State Government ☐
Local Government ☐
Self Employed/Consultant ☐
Farmer ☐
Retired ☐
Unemployed ☐
Federal Government ☐
Other: ..............................

**Question 31:**
Years of experience with management of coastal/catchment environments:
0 – 5 years ☐
6-10 years ☐
11-15 years ☐
16-20 years ☐
21-25 years ☐
25+ years ☐
Question 32:
Are you involved in any local community groups? Yes/No
If yes, please name the community group(s):
______________________________________________________________
______________________________________________________________
______________________________________________________________

Question 33:
Any additional information or comments you wish to make.
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Thank you for your time and assistance in my research project.

Please return your completed questionnaire and consent form in the enclosed reply paid envelope.
**Glossary**

**Horizontal Integration:** or the integration of planning and management by the coordination of activities of the various government agencies and non-government organisations in the coastal zone (Victorian Coastal Strategy, 2002).

**Integrated Catchment Management:** “is 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 Commission, 2001).

**Integrated Coastal Zone Management:** (ICZM) is an international concept which has been used as a precedent for developing strategic policies at national, state and regional management levels. These strategies are developed and implemented for the allocation of environmental, socio-economic and institutional resources to achieve the conservation and sustainable multiple use of the coastal zone.

ICZM has been defined by Sorenson as: “the integrated planning and management of coastal resources and environments in a manner that is based on the physical, socioeconomic, and political interconnections both within and among the dynamic coastal systems, which when aggregated together, define the coastal zone. An integrated approach requires both the horizontal (cross sectoral) and vertical (the levels of government and non-government organisations) coordination of those stakeholders whose actions significantly influence the quantity or quality of coastal resources and environments” (Sorenson, 1997 AJofEM).
**Vertical Integration:** of the various tiers of government action or the integration of the coastal and marine activities of the Commonwealth, State and local governments, including a commitment to community consultation at all tiers (Victorian Coastal Strategy, 2002)

**Appendix 1**

**Victorian Coastal Strategy 2002**

A copy of the VCS can be obtained from the Victorian Coastal Council’s website [www.vcc.vic.gov.au](http://www.vcc.vic.gov.au).

In the Victorian Government’s 2002 Victorian Coastal Strategy Action 2.6 (Improve the integration of catchment and coastal management) it is stated that integration will be enhanced through mechanisms including joint membership on boards; targeted and agreed program priorities and outcomes; and, joint meetings, seminars and conferences. The remaining characteristics listed in Questions 4 and 14 are referred to throughout the Strategy.
Appendix 6

Victorian Questionnaire
Part A and Part B
Questionnaire Two (Part A)

Evaluation form for on-ground managers who chose not to participate in the original questionnaire.

**Please explain how you would reform the current management practices in Victoria to gain better integration between catchment and coastal management?**

(In your response you may wish to consider commenting on some or all of the following aspects:

- Whether or not you agree in theory with the integration of catchment and coastal management in Victoria (why or why not) and why do you think integration isn’t currently occurring in Victoria? i.e. what is inhibiting the process of integration?
- If you agree with integration, what process would you employ to achieve this (maybe a progressive change in management or a complete reform?)
- Whether or not you would employ the use of leaders/champions to create a change?
- What would be your ideal end result (i.e. management structure) for integrating catchment and coastal management in Victoria?)

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Thank you for your time and assistance.

Please return this completed form and consent form in the enclosed reply paid envelopes.
Questionnaire Two (Part B)

Evaluation form for on-ground managers who were unable to respond.

1. Were you interested in this research project topic? – YES / NO (Please circle your response).

2. If yes, please identify the reason(s) listed below as to why you were unable to respond to the full questionnaire. (Please tick appropriate box).

☐ I did not have enough time.
☐ I did not feel qualified enough to answer the questions.
☐ I found the questionnaire too hard.
☐ I found the questionnaire too limiting.
☐ I did not like the questionnaire technique.

Other reason(s)………………………………………………………………………………
………………………………………………………………………………
………………………………………………………………………………
………………………………………………………………………………

Thank you for your time and assistance.

Please return this completed form and consent form in the enclosed reply paid envelopes.
Appendix 7

Victorian Interview Questions
Project Background
This research project focuses specifically on Objective 2.6 in the Victorian Coastal Strategy 2002 of which the purpose is to ‘Improve the integration of catchment and coastal management.’ Using principally Victoria and other national and international case studies this project aims to devise a model applicable throughout the world to integrate best practice in catchment and coastal management.

The hypothesis that ‘The cooperative integration between catchment and coastal management, through agreed objectives and responsibilities, will result in better environmental outcomes’ will be tested by the following objectives:

- To gain a better understanding of coastal and catchment management practices throughout the world, how integrated (if at all) they are and examine the existing provisions for their integration.
- Use the Gippsland Lakes (located in Eastern Victoria) as a case study of current practices, including derivation of a questionnaire to obtain first hand information on the integration of catchment and coastal management from practitioners.
- Using findings from the Gippsland Lakes questionnaire develop and test state-wide a legislative and sectoral framework for integrating catchment and coastal management.
- From the results of the two questionnaires establish an integrated framework (model) for catchment and coastal management to improve on-ground success throughout the world.
Interview Questions

1. Preliminary Results (as at 17/10/05)

From Questionnaire One
(Consisted of responses from 52 participants, who were on-ground managers in the Gippsland Lakes Region)

- Preferred level of management for addressing catchment issues was local/regional (50%) and second was a combination (34.6%).
- Preferred level of management for addressing coastal issues was a combination (42.3%) and second was local/regional (38.5%).
- Base funding was thought to be inadequate for catchment management (86.5%) as was additional funding (73%).
- Base funding was thought to be inadequate for coastal management (71.2%) as was additional funding (63.5%).
- 84.6% of participants think integration of catchment and coastal management will lead to better environmental outcomes in the Gippsland Lakes Region.
- Participants believed the most important structural provision for achieving integration was to have ‘agreed management objectives’ (76.9%).
- The most popular legislative provision required to achieve integration of catchment and coastal management in the Gippsland Lakes Region was ‘a state policy’ (57.7%) and second was ‘a state parliamentary act (46.2%).
- 78.8% of participants believe there is currently some integration. This integration is most likely to be occurring through ‘agreed objectives’ (30.8%) and least likely to be occurring through combined membership (21.2%).
- 75% of participants believe that integration should occur at the local level.
- Sharing information and data was considered to be the most important principle for integrating catchment and coastal management in the Gippsland Lakes (96.2%).
Importance of characteristics for integration:

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Important:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shared information &amp; data.</td>
<td>96.2%</td>
</tr>
<tr>
<td>Agreed management responsibilities</td>
<td>94.2%</td>
</tr>
<tr>
<td>Agreed program priorities &amp; intended outcomes (i.e. targets)</td>
<td>92.3%</td>
</tr>
<tr>
<td>Agreed objectives</td>
<td>92.3%</td>
</tr>
<tr>
<td>Combined meetings, seminars &amp; conferences</td>
<td>84.7%</td>
</tr>
<tr>
<td>Agreed geographical boundaries</td>
<td>80.7%</td>
</tr>
<tr>
<td>Combined Membership</td>
<td>78.9%</td>
</tr>
</tbody>
</table>

From Questionnaire Two (78 participants from state-wide on-ground managers)

- 24.4% of participants would prefer the adoption of Model 1, 52.6% would prefer the adoption of Model 2.
- 67.9% said Model 1 provides for the integration of catchment and coastal management, 85.9% said Model 2 provides for the integration of catchment and coastal management.
- 30.8% think Model 1 carries enough force to encourage greater integration in practice, and 74.4% think Model 2 carries enough force.
- 62.8% said the adoption of an ‘integrated’ State parliamentary Act would improve integration on-ground.
- Participants opinion was split whether Model 1 would work in practice (44.9% each way), but 70.5% believe Model 2 will work in practice.

Provision for meeting characteristics in VCS 2002.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Model 1</th>
<th>Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combined Membership</td>
<td>66.7%</td>
<td>82.1%</td>
</tr>
<tr>
<td>Agreed objectives</td>
<td>69.2%</td>
<td>79.5%</td>
</tr>
<tr>
<td>Agreed geographical boundaries</td>
<td>56.4%</td>
<td>76.9%</td>
</tr>
<tr>
<td>Combined meetings, seminars &amp; conferences</td>
<td>73.1%</td>
<td>78.2%</td>
</tr>
<tr>
<td>Agreed program priorities &amp; intended outcomes (i.e. targets)</td>
<td>56.4%</td>
<td>78.2%</td>
</tr>
<tr>
<td>Agreed management responsibilities</td>
<td>55.1%</td>
<td>75.6%</td>
</tr>
<tr>
<td>Shared information &amp; data.</td>
<td>69.2%</td>
<td>76.9%</td>
</tr>
</tbody>
</table>

Model 2 meets characteristics of the VCS 2002 to a higher degree with Combined Membership being meet most successfully.
From Questionnaire Two (a) (75 participants)

- 74.7% were interested in the research project topic.
- Main reasons for not participating were ‘not enough time’ (52%) and ‘not feeling qualified to answer the questions’ (37.3%)

2. Do you support the concept of integrating catchment and coastal management? (If so why, if not why not?)

3. If you are in favour of integrating catchment and coastal management:
   - Why do you think integration isn’t currently happening to its full potential? (i.e. what is inhibiting its progression in Victoria?)
     - What do you believe is the next step to achieving integration in Victoria?
     - What in Victoria is favouring integration?
     - What in Victoria in ‘not favouring’ integration?

4. How can greater integration start to happen in Victoria given your experience/view? (You may wish to discuss the inclusion of an MoU or integrated state parliamentary act, and perhaps the use of champions?)

5. As an individual what would you like to see happen in Victoria to integrate catchment and coastal management?

6. Are there any comments/thoughts you would like to add?
Appendix 8

Victorian Questionnaire
Plain Language Statement,
Consent Form and Follow-up Letters
Dear [Title] [Surname]

I am currently undertaking a research project for my Doctor of Philosophy Degree at Deakin University. The supervisor for this research project is Associate Professor Geoff Wescott.

The title of my project is ‘A model for the integration of catchment and coastal management.’ The primary aim of my research is to devise a model applicable throughout the world to integrate the management of catchment and coastal areas. This will be utilised to test the hypothesis that ‘the cooperative integration between catchment and coastal management, through agreed objectives and responsibilities, will improve environmental management outcomes.’

The objectives of my research are:

1. To gain a better understanding of catchment and coastal management practices throughout the world, how integrated (if at all) they are and examine any existing provisions for their integration.
2. Use the Gippsland Lakes as a case study of current practices, including derivation of a questionnaire to obtain first hand information on the integration of catchment and coastal management from practitioners.
3. Using findings from the Gippsland Lakes questionnaire develop and test state-wide a legislative and sectoral framework for integrating catchment and coastal management.
4. From the results of these two questionnaires establish an integrated framework (model) for catchment and coastal management to improve on-ground success throughout the world.
5. Test derived model on national and international case studies.
Participants who may have an interest and/or background knowledge in catchment and coastal management have been selected to take part in this second stage of my research project. To date objectives 1 and 2 have been completed. This is the second questionnaire developed from the results of the Gippsland Lakes Case Study.

I would like to invite you to participate in this stage of my research project by completing the enclosed questionnaire. This is the second questionnaire of my research project and consists of 32 questions relating to two models for the integration of catchment and coastal management. These models have been derived from the results of a Case Study on the Gippsland Lakes which explored the on-ground implementation of catchment and coastal management in the Gippsland Lakes Region, the degree (if any) of integration of catchment and coastal management and ways in which integration might be improved.

Sections 1a and 2a of the questionnaire are close ended questions and require a YES/NO response to establish the validity of the Models. Sections 1b and 2b of the questionnaire consists of open ended questions to indicate the positive and negative aspects of the two Models. This is followed by an open-ended question seeking a preferred Model and reasons for this preference. There is also a small section at the end of the questionnaire on the participant’s profile.

The purpose of this questionnaire is to establish a preferred model for achieving successful on-ground integration of catchment and coastal management in Victoria. From this Model a set of characteristics will be established to apply this principle to national and international areas for the integration of catchment and coastal management.

It is estimated that the questionnaire will take approximately 15 minutes to complete. Participants are required to complete the enclosed consent form, and it is requested that completed questionnaires and consent forms are returned in the reply paid envelope within 2 weeks of receipt. Following receipt all completed questionnaires will be coded for analysis and correlation with other data collected. Please note that all responses will be kept confidential and only used for the purpose of this Doctor of Philosophy research project and other research publication arising from it. Please contact me on the above phone number or email address to obtain a copy of the findings from this questionnaire. Data will be secured in accordance with Deakin University guidelines, identifiable consent forms will be stored separately to the coded questionnaire responses and will be stored for a minimum of 6 years and will only be accessible to the researcher and supervisor. Following the 6 years of storage all data will be destroyed.
Please note that you are free to participate or not participate to any extent, and to withdraw your participation at any stage. If you do withdraw any information received by you will be destroyed by the researcher (or returned to you if requested) immediately after your withdrawal.

If you require further information about your participation in this project or the research project in general please contact myself or Geoff Wescott using the above contact details.

Thanking you in anticipation for your assistance in this important research project.

Yours faithfully,

Amanda Cornish

Should you have any concerns about the conduct of this research project, please contact the Secretary, Ethics Committee, Research Services, Deakin University, 221 Burwood Highway, BURWOOD VIC 3125. Tel (03) 9251 7123 (International +61 3 9251 7123).
I, of

Hereby consent to be a subject of a human research study to be undertaken by Amanda Suzanne Cornish

and I understand that the purpose of the research is to establish the degree of integration between catchment and coastal management in the Gippsland Lakes Region, and from these findings devise a universal model for this integration. The purpose of this questionnaire is to establish a preferred model for achieving successful on-ground integration of catchment and coastal management in Victoria. From this Model a set of characteristics will be established to apply this principle to national and international areas for the integration of catchment and coastal management.

I acknowledge

1. That the aims, methods, and anticipated benefits, and possible risks/hazards of the research study, have been explained to me.

2. That I voluntarily and freely give my consent to my participation in such research study.

3. I understand that aggregated results will be used for research purposes and may be reported in scientific and academic journals.

4. Individual results will not be released to any person except at my request and on my authorisation.

5. That I am free to withdraw my consent at any time during the study, in which event my participation in the research study will immediately cease and any information obtained from me will not be used.

Signature: Date:

NOTE: In the event of a minor’s consent, or person under legal liability, please complete the Ethics Committee’s “Form of Consent on Behalf of a Minor or Dependent Person”.
9th November 2004

Dear «Title» «Surname»

Re: Research Project – Integrating catchment and coastal management.

I refer to the letter I sent to you on the 14th of October 2004 inviting you to participate in a questionnaire to establish the validity of two models for integrating catchment and coastal management.

I would be grateful if you could complete the questionnaire and return it to me by Friday 26th November.

If you have any queries relating to the questionnaire or my project please do not hesitate to contact myself or my supervisor Geoff Wescott as per the above contact details.

Whilst I would be grateful for your participation in my research project please note that you are under no obligation to participate. If you have decided not to, please disregard this letter.

I thank you for your assistance, time and support in relation to my project and look forward to receiving your completed questionnaire.

Yours faithfully,

Amanda Cornish
1st December 2004

Dear «Title» «Surname»

Re: Research Project – Integrating catchment and coastal management.

I refer to the letter I sent to you on the 14th October 2004 inviting you to participate in a questionnaire to establish the validity of two models for integrating catchment and coastal management.

I would be grateful if you could complete the questionnaire and return it to me by Monday 13th December.

If you have any queries relating to the questionnaire or my project please do not hesitate to contact myself or my supervisor Geoff Wescott as per the above contact details.

Whilst I would be grateful for your participation in my research project please note that you are under no obligation to participate. If you have decided not to, please disregard this letter.

I thank you for your assistance, time and support in relation to my project and look forward to receiving your completed questionnaire.

Yours faithfully,

Amanda Cornish
Appendix 9

Victorian Questionnaire
(Part A and Part B)
Plain Language Statement
and Consent Form
May 2005

Dear «Title» «Surname»

Re: Research Project Integrating Catchment and Coastal Management

I refer to letters I sent to you in October and November 2004 inviting you to participate in the above research project. The title of my project is ‘A model for the integration of catchment and coastal management.’ The primary aim of my research is to devise a model applicable throughout the world to integrate the management of catchment and coastal areas. This will be utilised to test the hypothesis that ‘the cooperative integration between catchment and coastal management, through agreed objectives and responsibilities, will improve environmental management outcomes.’

I originally sent the questionnaire to 450 relevant on-ground managers of whom a number informed me that they were unable to participate for varying reasons. Due to such a low response rate to the questionnaire I would be grateful to obtain some feedback on my research topic. Therefore I would like to invite you to complete a one page summary on your views of integrating catchment and coastal management in Victoria.

If you are able to assist me in this important section of my research project I would be very appreciative if you could fill in the enclosed pages. I estimate this will take approximately 10 minutes. Upon completion please return the questions in one of the enclosed reply paid envelope. To ensure all responses remain anonymous please return the consent form in the other enclosed reply paid envelope.

Alternatively if you would prefer to meet with me and discuss the questions raised in the enclosed pages please do not hesitate to contact me and I shall arrange to interview you.

Obviously once again you are under no obligation to participate and if you have chosen not to participate please disregard this letter.
I look forward to receiving your responses in the next two weeks or hearing from you in due course. Thanking you for your assistance and participation in this important research project.

Kind Regards,

Amanda Cornish

Should you have any concerns about the conduct of this research project, please contact the Secretary, Ethics Committee, Research Services, Deakin University, 221 Burwood Highway, BURWOOD VIC 3125. Tel (03) 9251 7123.
DEAKIN UNIVERSITY HUMAN
RESEARCH ETHICS COMMITTEE

CONSENT FORM: Questionnaire 2 (Part A)

I,                                 of

Hereby consent to be a subject of a human research study to be undertaken

By Amanda Suzanne Cornish

and I understand that the purpose of the research is to establish the degree of integration between catchment and coastal management in the Gippsland Lakes Region, and from these findings devise a universal model for this integration. The purpose of this questionnaire is to establish a preferred model for achieving successful on-ground integration of catchment and coastal management in Victoria. From this Model a set of characteristics will be established to apply this principle to national and international areas for the integration of catchment and coastal management.

I acknowledge the purpose of this 1 page summary is to highlight the views of current on-ground managers in Victoria on integrated catchment and coastal management.

I acknowledge

1. That the aims, methods, and anticipated benefits, and possible risks/hazards of the research study, have been explained to me.

2. That I voluntarily and freely give my consent to my participation in such research study.

3. I understand that aggregated results will be used for research purposes and may be reported in scientific and academic journals.

4. Individual results will not be released to any person except at my request and on my authorisation.

5. That I am free to withdraw my consent at any time during the study, in which event my participation in the research study will immediately cease and any information obtained from me will not be used.

Signature:                Date:

NOTE: In the event of a minor's consent, or person under legal liability, please complete the Ethics Committee's "Form of Consent on Behalf of a Minor or Dependent Person".
May 2005

Re: Research Project Integrating Catchment and Coastal Management

Can I please have five minutes of your time?

I refer to letters previously sent to you in October 2004 inviting you to participate in the above research project. The title of my project is ‘A model for the integration of catchment and coastal management.’ The primary aim of my research is to devise a model applicable throughout the world to integrate the management of catchment and coastal areas. This will be utilised to test the hypothesis that ‘the cooperative integration between catchment and coastal management, through agreed objectives and responsibilities, will improve environmental management outcomes.’

In October I sent these letters to 450 relevant on-ground managers. Unfortunately there has been a low response rate. As part of my research I would like to discover why the response rate was so low.

If you could kindly take 1 minute to complete the enclosed brief evaluation sheet to help me identify why there has been such a low response rate I would be very appreciative. Please tick the appropriate response and return in one of the enclosed reply paid envelope in the next two weeks. To ensure all responses remain anonymous please return the consent form in the other enclosed reply paid envelope. Obviously, you are under no obligation to participate and if you have chosen not to please disregard this letter.
Thanking you in anticipation for your contribution to this important research project.

Yours faithfully,

Amanda Cornish

Should you have any concerns about the conduct of this research project, please contact the Secretary, Ethics Committee, Research Services, Deakin University, 221 Burwood Highway, BURWOOD VIC 3125. Tel (03) 9251 7123.
DEAKIN UNIVERSITY HUMAN
RESEARCH ETHICS COMMITTEE
CONSENT FORM: Questionnaire 2 (Part B)

I, of

Hereby consent to be a subject of a human research study to be undertaken

By Amanda Suzanne Cornish

and I understand that the purpose of the research is
to establish the degree of integration between catchment and coastal management in the Gippsland Lakes Region, and from these findings devise a universal model for this integration. The purpose of the second questionnaire was to establish a preferred model for achieving successful on-ground integration of catchment and coastal management in Victoria. From this Model a set of characteristics will be established to apply this principle to national and international areas for the integration of catchment and coastal management.

I acknowledge that the purpose of this evaluation form is to establish reasons for a low response rate from on-ground managers to the second questionnaire.

I acknowledge

1. That the aims, methods, and anticipated benefits, and possible risks/hazards of the research study, have been explained to me.

2. That I voluntarily and freely give my consent to my participation in such research study.

3. I understand that aggregated results will be used for research purposes and may be reported in scientific and academic journals.

4. Individual results will not be released to any person except at my request and on my authorisation.

5. That I am free to withdraw my consent at any time during the study, in which event my participation in the research study will immediately cease and any information obtained from me will not be used.

Signature: Date:

NOTE: In the event of a minor's consent, or person under legal liability, please complete the Ethics Committee's "Form of Consent on Behalf of a Minor or Dependent Person".
Appendix 10

Victorian Interviews
Plain Language Statement
and Consent Form
Dear [Title] [Surname]

Re: Research Project Integrating Catchment and Coastal Management

I refer to letters previously sent to you inviting you to participate in the above research project. The title of my project is ‘A model for the integration of catchment and coastal management.’ The primary aim of my research is to devise a model applicable throughout the world to integrate the management of catchment and coastal areas. This will be utilised to test the hypothesis that ‘the cooperative integration between catchment and coastal management, through agreed objectives and responsibilities, will improve environmental management outcomes.’

I would like to invite you to take part in the next stage of my research which involves an interview of principal people involved in catchment and coastal management in Victoria. The purpose of the interview is to explore if integration is desirable, if/why integration is being inhibited in Victoria, what would be the next step towards achieving greater integration and any individual comments or ideas the participant wishes to add.

I estimate the interview will take approximately 30 minutes and will be recorded. All comments will remain confidential and a copy of the transcript of the interview will be provided to participants to review their comments if required.

Please note that all responses will be kept confidential and only used for the purpose of this Doctor of Philosophy research project and other research publication arising from it. Data will be secured in accordance with Deakin University guidelines, identifiable consent forms will be stored separately to
the coded questionnaire responses and will be stored for a minimum of 6 years and will only be accessible to the researcher and supervisor. Following the 6 years of storage all data will be destroyed.

Please note that you are free to participate or not participate to any extent, and to withdraw your participation at any stage. If you do withdraw any information received by you will be destroyed by the researcher (or returned to you if requested) immediately after your withdrawal.

If you require further information about your participation in this project or the research project in general please contact myself of Geoff Wescott using the above contact details.

I shall be in contact with you shortly to arrange a mutually convenient time and location to conduct the interview should you wish to participant.

Thanking you in anticipation for your assistance in this important research project.

Yours faithfully,

Amanda Cornish

Should you have any concerns about the conduct of this research project, please contact the Secretary, Ethics Committee, Research Services, Deakin University, 221 Burwood Highway, BURWOOD VIC 3125. Tel. (03) 9251 7123.
DEAKIN UNIVERSITY HUMAN
RESEARCH ETHICS COMMITTEE
CONSENT FORM: Interview

I, of

Hereby consent to be a subject of a human research study to be undertaken

By Amanda Suzanne Cornish

and I understand that the purpose of the research is to establish the degree of integration between catchment and coastal management in the Gippsland Lakes Region, and from these findings devise a universal model for this integration. The purpose of this interview is to establish the opinion on integrating catchment and coastal management from principal people involved in catchment and coastal management in Victoria.

I understand that the interview will be taped and a transcript of which will be sent to me to review any of my comments if required.

I acknowledge

1. That the aims, methods, and anticipated benefits, and possible risks/hazards of the research study, have been explained to me.

2. That I voluntarily and freely give my consent to my participation in such research study.

3. I understand that aggregated results will be used for research purposes and may be reported in scientific and academic journals.

4. Individual results will not be released to any person except at my request and on my authorisation.

5. That I am free to withdraw my consent at any time during the study, in which event my participation in the research study will immediately cease and any information obtained from me will not be used.

Signature: Date:

NOTE: In the event of a minor's consent, or person under legal liability, please complete the Ethics Committee’s "Form of Consent on Behalf of a Minor or Dependent Person."
Appendix 11

Results for Victorian Questionnaire
Figure A11.1: Participants Gender (Q. 26)

Figure A11.2: Participants Age Group (Q. 27)

Figure A11.3: Participants Education (Q. 28)
Figure A11.4: Participants Employment Sector (Q. 30)

Figure A11.5: Years of experience in coastal/catchment environments (Q. 31).
And of the 22% who thought a legislative approach was not preferable 91% think a voluntary approach is preferable.
Figure A11.9: Committee to align CMA boundaries (Q. 19)