

**Policy Design for Common Pool Resources  
Management: Sustainable Development Platform  
Methods in the Fleurieu Group of Islands,  
Tasmania**

By

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I declare that this dissertation contains no material which has been accepted for the award of any other higher degree or graduate diploma in any tertiary institution and that, to the best of my knowledge and belief, this dissertation contains no material previously published or written by another person, except where due reference is made in the text of the dissertation.

I declare that this dissertation is not more than 16,500 words in length, exclusive of bibliography, footnotes, appendices and any maps or other illustrative material.

Matthew Campbell-Ellis

23 October, 2009

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## GLOSSARY OF KEY TERMS AND ACRONYMS

**Collaboration** – a process whereby participants work together to resolve a conflict or develop and advance an agreed objective.

**CPR** – Common Pool Resources are defined by Ostrom, Gardner and Walker (1994, cited in Ostrom 2005, p. 79) as a ‘natural or man-made resource from which it is difficult to exclude or limit users once the resource is provided by nature or produced by humans’. Examples of CPR are oceans, lakes, the atmosphere, public lands, and technologies such as the Internet and free to air television and radio.

**Dirigiste** – in the context of this dissertation, pertaining to State agencies that exercise centralised control over economic and social policies.

**Embedded** – for the purposes of this dissertation, embedded is defined as being an integral part of an institutionalised network that extends from within the local community to reach beyond the local, extending as far as State or Federal Government departments (see also: nested).

**FGI** – the Fleurieu Group of islands, locally known as the Hunter Isles or Hunter Group, are situated off far Northwest Tasmania. The group comprises some 30+ islands ranging from less than one hectare in size to over 7,000 hectares.

**Institutions** – the structures and socio-cultural processes, including rules and behavioural norms that shape and constrain human actions and interactions (Thelen and Steinmo 1992, Hall, 1986, Peters 1999, cited in Koontz et al. 2004, p. 22).

**NRM** – Natural Resources Management is defined within the Tasmanian *Natural Resource Management Act 2002* as the ‘management of any activity that uses, develops or conserves –

- (a) Air, water, land, plants, animals and micro-organisms; and
- (b) The systems they form;’

**Nested** – for the purposes of this dissertation, nested is defined as being located within a community whilst being supported through collaborative networks by local and external organisations and institutional relationships (see also: embedded).

**PWS** – Tasmanian Parks and Wildlife Service.



**Public goods** – are defined as having a ‘*jointness of supply and impossibility of exclusion*’ (Hardin 1982, p. 17), Becker and Ostrom (1995, p. 116) add that public goods ‘are characterised by problems of exclusion without any subtractability’.

**RPWG** – Robbins Passage Wetlands Coast and Landcare Group.

**Usufruct** – in the context of this dissertation, usufruct describes an agency or management authority that manages a resource belonging to others (the public) for profit and exploitation without causing its waste or destruction.

# INTRODUCTION

This dissertation explores the design characteristics and potential suitability of a Sustainable Development Platform Method (SDPM), adapted from the Regional Development Platform Method (RDPM) designed by Harmaakorpi and Pekkarinen (2003), as a policy framework tool for community-based and sustainable Common Pool Resources (CPR) management to achieve regional economic, environmental, social and cultural benefits.

The policy challenge that this dissertation attempts to solve is how sustainable development concepts and the RDPM can be aligned with locally constructed institutions to promote trust-based innovative cooperation for CPR management, sustainable use, and development within a case study of the Fleurieu Group of Islands (FGI) and their adjacent catchments. To do this, the dissertation explores how theories of collective action can support regional innovation, and through empirical research explores and assesses the complexities involved in applying a development platform approach to a socio-resource management issue.

## 1.1 The Research Problem

Hardin (1968, p. 1243) and others (see Malthus 1798; Ehrlich and Ehrlich 1990; Meadows 2000; May 2005) have argued that humans exist upon a world of finite resources, capable of supporting a finite population. How those resources can be sustainably managed and developed continues to provoke much policy debate. This dissertation adds to this debate in a proactive and solutions oriented manner by exploring options for sustainable CPR management within the case study context of the FGI and their adjacent catchments off Northwest Tasmania.

According to Dietz, Ostrom and Stern (2003, p. 1909), ‘much environmental regulation in complex societies has been “command and control”’ and that dirigiste governments often lack the will or capacity to manage resource-rich ecosystems in a sustainable, economically efficient and user-supported way. Dietz, Ostrom and Stern (2003), Ostrom and Janssen (2004) and Mwangi and Ostrom (2009) argue that self-governing institutional arrangements that endogenise and nest adaptive decision-making, supported by multi-layered governance arrangements, can positively contribute to sustainable CPR management outcomes at the local scale.

The FGI and their adjacent catchment environments feature highly dynamic and interrelated ecosystems that are facing 'new threats, occurring at greater frequency' (Tasmanian Land Conservancy, Community Solutions and Birds Tasmania 2006, p. 16). The islands and their surrounds are currently facing threats from: habitat loss and fragmentation; decreased water quality; human access impacts; invasive flora and fauna; harvesting of wild populations; damaging cultural activities (Tasmanian Land Conservancy, Community Solutions and Birds Tasmania 2006, pp. 4-7); erosion of sandy shorelines resulting from extreme high tide events (pers. obs.; Sharples 2006, p. 1), and; climate change related sea level rise (Sharples 2006, p. 1). In addition, the islands and adjacent mainland catchments are a significant primary source of local wealth, employment and well-being (Circular Head Council 2008, pp. 44-48). Changes to management policies and practices or the continuation of current 'non' management practices, threatens the stability of this resource base and its associated flow-on benefits to the local community.

Many of these management challenges are human induced and as such, require human responses that are coordinated, multifaceted and solutions oriented. Fischer, Peterson, Feldkötter and Huppert (2007, p. 131) argue that management responses can be centralised, market-based, hierarchical or collective. Each of these management approaches may provide effective solutions under a variety of specific applications that are capable of resolving CPR-focused community conflicts and environmental decline. This dissertation presents a case specific CPR management option that aims to generate community support whilst providing multifaceted sustainable development benefits.

## **1.2 Purpose and Research Question**

Community conflict resulting from CPR management decision-making has regularly occurred throughout much of Tasmania's history (Gee 2001, pp. ix-xiv). Recent examples include the construction of the Meander Dam, the Tamar Valley Pulp Mill proposal, logging of the Styx, Weld and Florentine valleys, and the proposed Tarkine tourist link road (pers. obs.; Campbell-Ellis 2009, p. 3). Divergent community views largely stem from a conflict of ethical, aesthetic and economic value paradigms centred on the role of humans in what may be described as largely natural ecological systems (Ehrlich and Ehrlich 1981, cited in Van Houtan 2006, p. 1368).

The use of, and access to Tasmania's natural and cultural resources is strongly contested by communities and management authorities (Gee 2001; Campbell-Ellis 2009, p. 3; Jones 2004, pp. 73-74). The use of natural resources however, is and always has been a core human need (Flannery 2005, pp. 54-55; Berger and Hilton-Barber 2000, pp. 8-9; Ehrlich and Ehrlich 1990, p. 66). In today's globalised world, it is argued that all ecosystems are now affected by human activity, through resource extraction and environmental manipulation and the widespread pollution of CPR such as the oceans and atmosphere (McKibben 2003, p. 38). Managing contested and coupled human and natural systems requires consideration of dynamic global exogenous forces (Dietz, Ostrom and Stern 2003, p. 1908) and endogenous policy response choices at the local scale to enable an untangling of relational ecosystem complexities undergoing increasingly rapid changes (Liu et al. 2007, p. 639).

According to the World Commission on Environment and Development (1987, p. 24), the management, maintenance and use of natural resources is a core objective of sustainable development, which aims to meet 'the needs of the present without compromising the ability of future generations to meet their own needs'. Sustainable development attempts to balance and maintain social, economic and environmental outcomes and can result in enhanced community well-being and improved fiscal prosperity (Haynes, McCool, Horne and Birchfield 1996, p. 222). Human use and exploitation of natural resources within the Circular Head region, of which the FGI and adjacent catchments are a part, provide a significant mainstay of the region's economy (Tasmanian Land Conservancy, Community Solutions and Birds Tasmania 2006, p. 27; Circular Head Council 2008, p. 44). The use and exploitation of these resources however, are arguably sub-optimal, due to a failure by local entrepreneurs to instigate and develop successful networks of cooperative innovation, effective spatial knowledge management systems and a lack of path dependant organisational and governance capabilities (important stakeholder #01 2009 pers. comm., 16 August) as advocated by Heidenreich (2004, pp. 365 and 371) and Cooke (2004, p. 2, and 2007, pp. 183-184).

The economic value inherent within the FGI and adjacent catchments could, if sustainably and optimally exploited, provide a source of revenue that encourages community involvement in CPR management as well as a source of funds that could be tithed and dedicated to sustainable CPR management efforts. Securing these important fiscal incentives and resources requires a mechanism for the cooperative

attainment of profits that could be procured through the development and management of Regional Innovation Systems (RIS).

Cooke (2004, p. 2) asserts that innovation is a key component of the knowledge economy within which globalised financial systems operate; and that clustered innovation networks, capable of delivering RIS, have become a core ingredient for individual regional prosperity. Heidenreich (2004, p. 363) adds that the success of RIS is determined by a region's ability to face and overcome the specific set of dilemmas that confront the region and that are 'connected to territorially bounded production and innovation processes'. Heidenreich (2004, p. 363) also points out that whilst existing business institutions and processes may maintain regional revenue streams, new economic strengths are more likely to result from the exploration of novel innovative trajectories (Heidenreich 2004, p. 382) which, according to Harmaakorpi and Pekkarinen (2003, p. 2) should feature 'valuable, rare, inimitable and non-substitutable resources'.

Investigating a new policy trajectory that has the potential to support sustainable and self-funding CPR management, whilst enabling private economic development, may provide a path forward for authentic, community-supported and participatory, resource management in the FGI and adjacent catchments.

It is therefore hypothesised that:

a Sustainable Development Platform Method (SDPM) for CPR management can provide an effective policy tool for sustainable, community-supported CPR management.

To test this hypothesis, a synthesis of research and analysis methods has been applied to enable qualitative input into issues identification and the design of a SDPM-based community management process to create a policy model capable of reducing conflict and creating community supported governance institutions for sustainable CPR management. The research does this by answering the following two questions:

1. Are local stakeholders supportive of community-based CPR management, and do they have the capacity to participate?
2. How can the RDPM be modified to create a SDPM able to deliver a cooperative process for community-based CPR management?

### **1.3 Theoretical and Methodological Overview**

The proposed research sits within the fields of regional science and public policy and draws on deliberative democracy and collective action theories, focussing largely on the challenge of collective action-based community governance. This theoretical basis for community-based management is coupled with Harmaakorpi and Pekkarinen's (2003) RDPM and RIS processes to provide a new, incentive-based method for nested and embedded CPR community governance. The use of the developed SDPM as a tool for deliberative-based collective action CPR management is supported by calls for incentive-based economic instruments to play a greater role in environmental management processes (Australian Government unknown date, pp. 2-3; Shi 2006, pp. 1-3; Comerford 2004, p. 1; Comerford and Binney 2005, p. 2; Robinson and Ryan 2002, p. 396).

### **1.4 Research Limitations**

The research is concerned with CPR management and as such excludes resources located on freehold land that are privately owned. CPR are defined by Ostrom, Gardner and Walker (1994, cited in Ostrom 2005, p. 79) as 'natural or man-made resource[s] from which it is difficult to exclude or limit users once the resource is provided by nature or produced by humans'. CPR in the FGI and adjacent catchments include, but are not limited to: the marine environment; lakes; the atmosphere; public lands; riverine systems, and; non-exclusive human created technologies and infrastructure. The research does not attempt to explore case specific policy and legislative alignments. The design aims to be adaptable enough to facilitate a diversity of bureaucratic, policy and legislative conditions. Lastly, the research has not aimed to extensively critique CPR policy alternatives, it does however, present an additional option that may be capable of delivering a more preferable policy choice for some communities.

### **1.5 Organisation of the Dissertation**

This dissertation is organised into seven chapters including the Introduction (Chapter 1) and the Conclusion (Chapter 7), as well as References and an Appendix. Chapter 2 describes the theoretical grounding of the research problem and the methodological approach to this study. The chapter explores the foundational qualities and

theoretical connections between CPR management, collective action, institutional governance, deliberative democracy, competitive advantage, RIS, and the RDPM.

Chapter 3 describes the case study, being the physical qualities and social properties underpinning CPR management in the FGI and adjacent catchments. The path dependencies inherent within the case study are also described and the suitability of the case study to the research is explained.

Chapter 4 describes the analysis methods used in the empirical research to collect and analyse data, and presents its associated limitations and reliability. Applied methods included dimensional sampling of target participants to adequately represent identified conceptual variables followed by interviews using non-schedule standardised questions and discussions, with the resulting qualitative data treated with a synthesis of thematic analysis processes as per Aronson (1994) and content analysis methods as per Monette, Sullivan and Dejong (1986, pp. 175-184).

Chapter 5 breaks down the analysed data into five sections, being: (1) stakeholder satisfaction with management systems; (2) past community-based management efforts; (3) stakeholder preferences for CPR management approaches; (4) community capacity and readiness for CPR governance, and; (5) community readiness for a RDPM-based approach to CPR. This breakdown enables a detailed description of stakeholder views on the conceptual issues central to the research problem.

A discussion of these results is presented in Chapter 6 which provides the analysis conclusions and the implications of the research findings. In this chapter, stakeholder readiness for community-based management of CPR located within the FGI and adjacent catchments is described. The SDPM is also presented and explained.

The final chapter concludes the dissertation and explains the significance of the SDPM as an alternative policy option to CPR management challenges.

# CHAPTER 2: KEY THEORIES AND POLICY APPROACHES

## 2.1 Collective Action

Collective group behaviour is not a new theoretical idea or social phenomena. Collective efforts to shelter, protect, and nourish groups form an integral component of human evolution (Washburn 2004, p. 143). Group behaviour featuring cooperation and collaboration however, does not automatically assume the existence of a desire to seek a collective good or altruistic outcome (Olson 1971, p. 1). Group behaviour can be motivated by personal interests and individual pursuits (Olson 1971, p. 1). Olson (1971, p. 2) asserts in *The Logic of Collective Action* that:

*rational, self-interested individuals will not act to achieve their common or group interests... unless there is coercion to force them to do so, or unless some separate incentive, distinct from the achievement of the common or group interest, is offered to the members of the group individually on the condition that they help bear the costs or burdens involved in the achievement of the group objectives.*

Olson (1971, pp. 33-34) adds however, that small groups can provide collective goods without coercion or incentives beyond those of the collective good because some members will receive personal gains above the cost of provision, even to the point whereby the benefit may be greater than the total cost of achieving the collective good. The inverse, as Olson (1971, p. 35) points out, is that *'the larger the group, the farther it will fall short of providing an optimal amount of a collective good'*. In addition, the issue of 'free riders' begins to impact on larger groups when the share of the cost of a collective good is disproportionately distributed and smaller contributors can achieve the collective good without the larger input of other contributors (Olson 1971, p. 35). This collective action problem can result in withdrawal from collective action efforts and a failure by large groups to achieve collective good benefits. This means that the amount of participants, each with rational self-interest motives, directly affects the benefits returned, resulting in the failure of collective action when the benefits equal or exceed the costs. Olson (1971, p. 871) argues that marginal cost sharing, based on a proportional distribution of costs and benefits, can result in ongoing participation.



The challenge of collective action, according to Ostrom (1983, p. 839) however, is to resolve the problems of collective *inaction* or *mis-action* through the removal of disincentives and the effective provision of collective goods. Collective action, according to Hardin (1982, p. 50), aims to reduce the impacts that harmful actions have on resources. Collective action theory has been applied by Ostrom and others as a possible pathway to solving the institutional and governance challenges of CPR management. Ostrom's discussions on centralised resource management and collective choice alternatives (Ostrom 1990; Ostrom and Janssen 2004; Mwangi and Ostrom 2009) are cornerstones of the collective action approach to CPR management.

To avoid the pitfalls of centralised control and state administered usufruct resource management processes that have resulted in the establishment of managerial elites and, in many places, a rapid decline in biophysical values, Ostrom and Janssen (2004, p. 241) and Dietz, Ostrom and Stern (2003, p. 1907) have called for greater self-determination by communities with regard to CPR management. Dietz, Ostrom and Stern (2003, p. 1907) argue that many social groups have successfully struggled 'against threats of resource degradation by maintaining self-governing institutions'. Dietz, Ostrom and Stern (2003, p. 1908), argue that effective commons governance requires the design of institutional arrangements that establish and support the following five conditions, being: (i) the resources and use of the resources by humans can be monitored, and the information can be verified and understood at relatively low cost; (ii) rates of change in resources, resource-user populations, technology, and economic and social conditions are moderate; (iii) communities maintain frequent face-to-face communication and dense social networks that increase the potential for trust; (iv) outsiders can be excluded at relatively low cost, and; (v) users support effective monitoring and rule enforcement.

Dietz, Ostrom and Stern (2003, p. 1910) assert that three general principles apply for the design of resilient and effective governance institutions for local resources management, these are;

- *analytic deliberation* – well informed dialogue between scientists, resource users, and interested members of the broader public;

- *institutional nesting* – that is complex and positioned within multiple layers of governance structures; and
- *institutional variety* – featuring multiple design types capable of diverse decision-making rules ‘to change incentives, increase information, monitor use, and induce compliance’ (Dietz, Ostrom and Stern 2003, p. 1910).

Andersson and Ostrom (2008, p. 88) reinforce the central theme of Ostrom’s work, clearly articulating ‘that the key to effective governance arrangements lies in the relationships among actors who have a stake in the governance of the resource’.

Mwangi and Ostrom (2009, p. 36) add that institutions need to be ‘well-matched to the ecological and social conditions on the ground’ to avoid resource overuse and that decentralised and nested governance approaches where governments take on a subsidiarity role may provide effective approaches to CPR management challenges (Mwangi and Ostrom 2009, p. 43).

According to Ostrom (1990, p. 90), institutional design for collective action-based sustainable CPR management should follow the eight principles presented in Table 1 below that incorporate both incentive and coercive mechanisms.

**Table 1 Design principles illustrated by long-enduring CPR institutions (Source: Ostrom 1990, p. 90).**

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1. <i>Clearly Defined Boundaries</i>	The boundaries of the resource system (e.g. groundwater basin or forest) and the individuals or households with rights to harvest resource products are clearly defined.
2. <i>Proportional Equivalence Between Benefits and Costs</i>	Rules specifying the amount of resource products that a user is allocated are related to local conditions and to rules requiring labour, materials, and/or money inputs.
3. <i>Collective-Choice Arrangements</i>	Most individuals affected by harvesting and protection rules are included in the group who can modify these rules.
4. <i>Monitoring</i>	Monitors, who actively audit physical conditions and user behaviour, are at least partially accountable to the users or between users and officials.
5. <i>Graduated Sanctions</i>	Users who violate rules are likely to receive graduated sanctions (depending on the seriousness and context of the offences) from other users, from officials accountable to these users, or from both.
6. <i>Conflict-Resolution Mechanisms</i>	Users and their officials have rapid access to low-cost, local arenas to resolve

conflict among users or between users and officials.

7. *Minimal Recognition of Rights to Organise*

The rights of users to devise their own institutions are not challenged by external government authorities, and users have long-term tenure rights to the resource.

*For resources that are parts of larger systems:*

8. *Nested Enterprises*

Appropriation, provision, monitoring, enforcement, conflict resolution, and governance activities are organised in multiple layers of nested enterprises.

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Collective action-based governance institutions designed to enable community-based CPR management can provide a pathway for the sustainable use of natural resources for social, cultural, environmental and economic benefits. Such an approach, supported by a nested and embedded collaborative network that engenders authority and legitimacy and provides the needed capacity and resourcing for community-based governance, can incorporate effective incentive and coercive mechanisms for CPR management.

## **2.2 The ‘Tragedy of the Commons’ and CPR Management**

Hardin (1968, pp. 1243-1244) hypothesises that humanity exists on a finite world that ‘can support only a finite population’ and that a ‘society that believes in the freedom of the commons... brings ruin to all’. Hardin (1968, p. 1248) identified that ‘mutual coercion’ could be used to curtail the freedom of the commons dilemma. The use of an incentives-based collective action approach, coupled with community-based coercion, can provide an effective *carrot and stick* approach to CPR management. Stern (2007, pp. 450-452), in *The Economics of Climate Change: The Stern Review*, argues that collective action aims to overcome the tragedy of the commons’ market failures by providing incentives for individual participation that result in increased public good benefits.

Stern (2007, pp. 317 and 449-575) calls for an international collective action response to the global CPR management issue of climate change, perhaps the most compelling case for a Hardenesque tragedy of the commons yet realised. Stern (2007, pp. 450-452) argues that the collective action free rider dilemma handicaps global efforts to tackle climate change and that the work of Ostrom and her colleagues provides the best path forward for countering this challenge and minimising the impacts of climate change. Stern (2007, pp. 450-452) asserts that

international collective action approaches to CPR dilemmas are already underway and when combined with private sector responses to climate change, can provide a powerful international response built on cooperative national government agreements and local action-based initiatives. These responses however, require structured dialogical processes that enable cooperation and collaboration. Deliberative democracy provides well-suited principles that can guide collective discourse and decision-making with regard to CPR.

### **2.3 Deliberative Democracy and Devolution**

Dietz, Ostrom and Stern's (2003, p. 1910) collective action approach and its associated endogenous and nested institutional governance arrangements require the provision of 'analytic deliberation' that may best be served through the application of deliberative democracy principles. Deliberative democracy is a governance process that facilitates discussion-based decision-making. According to Cohen (1989, pp. 3-4), deliberative democracy has five main features:

D1 A deliberative democracy is an ongoing and independent association, whose members expect it to continue into the indefinite future.

D2 The members of the association share (and it is common knowledge that they share) the view that the appropriate terms of association provide a framework for or are the results of their deliberation. They share, that is, a commitment to co-ordinating their activities within institutions that make deliberation possible and according to norms that they arrive at through their deliberation. For them, free deliberation among equals is the basis of legitimacy.

D3 A deliberative democracy is a pluralistic association. The members have diverse preferences, convictions and ideals concerning the conduct of their own lives. While sharing a commitment to the deliberative resolution of problems of collective choice (D2), they also have divergent aims, and do not think that some particular set of preferences, convictions or ideals is mandatory.

D4 Because the members of a democratic association regard deliberative procedures as the source of legitimacy, it is important to them that the terms of their association not merely be the results of their deliberation, but also be manifest to them as such. They prefer institutions in which the connections between deliberation and outcomes are evident to ones in which the connections are less clear.

D5 The members recognize one another as having deliberative capacities i.e. the capacities required for entering into a public exchange of reasons and for acting on the result of such public reasoning.

These design characteristics for devolved decision-making aim to be equitable, legitimising and trust building, as well as representative, deliberative and capable of genuinely influencing outcomes (Carson and Hart 2006, p. 1). These qualities provide important principles for the design of institutional relationships and decision-making processes able to construct forms of consensus without avoiding the contentious issues that Roe (1994, p. 4) argues are critical to policy responses and decision-making.

Pettit (2001, p. 725) advocates three core constraints, being: (1) the inclusive constraint; (2) the judgemental constraint, and; (3) the dialogical constraint. These three constraints aim to provide all participants with an entitlement to participate and vote, and that 'less than a unanimous vote' should be 'sufficient to determine the outcome', to enable deliberation on 'presumptively common concerns' prior to voting on issues, and that deliberation should be conducted openly and in an 'unforced' manner. Pettit (2001, p. 726) also argues that deliberative democracy voting should be selfless and polity free.

Gutmann and Thompson (2004, p. 3) add that deliberative democracy 'affirms the need to justify decisions' and that its 'first and most important characteristic, then, is its *reason-giving* requirement'. Gutmann and Thompson (2004, p. 4) also assert that deliberative democracy requires that 'reasons given in the [decision-making] process should be accessible to all the citizens' they affect. Gutmann and Thompson's (2004, p. 5) third characteristic is that decisions reached are intended to be '*binding* for some period of time'. It is assumed by participants that discourse will lead to decisions and that these decisions will be implemented (Gutmann and Thompson 2004, p. 5). The fourth characteristic is that the deliberative process is '*dynamic*', keeping 'open the possibility of a continuing dialogue' and that decisions will be subject to future challenges (Gutmann and Thompson 2004, p. 6).

To enable community-based deliberative decision-making for CPR management, dirigiste agencies are required to devolve knowledge-based powers and decision-making autonomies in a depoliticised environment (Pettit 2001, p. 736).

Communities undertaking a deliberative approach to CPR management require sufficient and timely information and resourcing that enables effective deliberation and decision-making (Hilder 2006, pp. 238-239), a commitment to mutual

responsiveness, mutual support and joint activity (Bratman 1992, p. 328), and a sense of shared *participatory* ownership of processes and associated outcomes. Ostrom (2005, p. 18) asserts that institutionalised *working* rules are required within the CPR governance processes to guide human behaviour and enable effective monitoring and sanctioning of actions. The adoption of rules in a deliberative democracy sense, facilitates the realisation of the process commitment component of Cohen's (1989, p. 3) deliberative democracy ideals, whereby participants share 'a commitment to co-ordinating their activities within institutions that make deliberation possible and according to norms that they arrive at through their deliberation'.

To effect successful community-based management, Cavaye (2004, p. 2) argues that more flexible forms of community-government governance systems achieved through changes in policy, structure and practice, are needed. Cavaye (2004, pp. 8, 12 and 17) claims that embedded relationships between actors are central to good community engagement, and that participation relies on genuine influence and outcomes. These are core attributes affecting the design and success of governance systems that underpin the contextual placement of the SDPM within a deliberative and inter-disciplinary CPR management approach. Such an approach must have core strengths lying within regional-scale macroeconomic management, social constructivism, and ecological sustainability.

## **2.4 An Inter-disciplinary Approach**

An inter-disciplinary approach to co-dependent macroeconomics development is supported by calls for increased discourse between social-constructivists and macroeconomic sociologists to better understand the role of economic sociology in understanding network embeddedness and spatial relationships between economic actors, institutions, organisations, and culture (Peck 2005, p. 134). Peck's (2005, pp. 131, 136 and 168) call for establishing a better understanding of socio-economic networks suggests that if the SDPM is to be applied as a resource-based decision-making management process, then locating the right actors and designing the socio-institutional governance relationships that support them, is critical to developing incentive benefits arising from innovation outcomes that lead to effective community-based CPR management.

Ensuring the incentives component of such an approach has been and continues to be discussed throughout this dissertation. The critical point here however, is that including the right actors, within suitably nested and embedded socio-relationships, is of utmost importance. The RDPM approach developed by Harmaakorpi and Pekkarinen (2003, p. 10), advocates actively inviting potential participants that have ‘a broad overview of the business life in the region’ and are identified through a preliminary analysis of businesses and industry expertise within the region. The SDPM approach developed in this dissertation aims to create an institutionalised network milieu that combines business and industry leaders with other stakeholders (non-government organisations, scientists, indigenous users, and others), for the achievement of sustainable community-based CPR management for multiple outcomes.

Storper (1995, pp. 204 and 206) challenges regions to organise creative institutional milieus that construct ‘absolute advantages’ in the global economy that are manifested through ‘territorial specialisation and differentiation’ that is path dependent, temporarily constrained and spatial. Storper (1995, p. 206) argues that regional economic prosperity is reliant on un-traded interdependencies that are supported by network interactions producing shared learning and knowledge spillovers, these are central characteristics of the RDPM approach and the constructed SDPM. The use of the RDPM derived SDPM provides an answer to Storper’s (1995, pp. 203-206 and 213) challenge to construct creative institutional milieus capable of delivering local economic advantage, by encouraging trust and the nesting of social interactions that underpin local innovation and support sustainable CPR management.

## **2.5 Sustainable CPR Management**

Randolph (2004, p. 3) claims that the management of human relationships with the environment has been ‘a continuous requirement and responsibility for people and society’ and that this management is subject to ‘technology, human ingenuity, and the values and norms of society, which also vary across cultures and over time’. To achieve human-ecosystems management, Barrow (1999, p. 4) argues that management efforts must do three things ‘(1) identify goals; (2) establish whether these can be met; [and] (3) develop and implement the means to do what it deems possible’. According to Barrow (1999, p. 7), environmental management is applied

through three main approaches, being: (1) an advisory approach; (2) an economic or fiscal incentives and disincentives approach, and; (3) through regulatory and enforcement mechanisms. Barrow (1999, p. 9) advocates the adoption of sustainable development principles to guide environmental management strategies and that a precautionary science-based approach to resource access and use be applied (O’Riordan 1995, cited in Barrow 1999, p. 9).

The use of science-based knowledge to identify goals and inform strategies to achieve them has been a common component of the Australian integrated NRM approach to CPR management since the establishment of regional NRM organisations and strategies under the terms of the Natural Heritage Trust (NHT) and the Intergovernmental Agreement on a National Action Plan for Salinity and Water Quality (NAP) (Whelan and Oliver 2005, pp. 12-13). An integrated and participatory approach is widely supported in the literature (see Hillman, Crase, Furze, Ananda and Maybery 2005; Aplin and Batten 2004; Margerum 1999; Morrison, McDonald and Lane 2004) and in the Australian NRM context, stems from the view that centralised top-down governance approaches have failed to deliver sustainable NRM outcomes (Whelan and Oliver 2005, p. 12).

The NHT and NAP devolved approach results in the regionalisation of decision-making and transforms governments from being ‘determiners and funders of projects’ to ‘investors in the community’s regional strategies’ (Handke and Baldwin 2003, p. 44). The success of this integrated NRM approach is arguably dependent on the effectiveness of local and regional-scale collaborative engagement efforts that facilitate community-based CPR management (Handke and Baldwin 2003, p. 44). According to Margerum (1999, p. 152), such approaches should be holistic, capable of analysing natural and human systems interconnections, goal oriented, and strategic in their planning and evaluation components.

A community-based multifarious management response is required where coupled human and environmental systems feature complex interacting relationships that are based on CPR exploitation, or result in impacts caused by human activities (Liu et al. 2007, pp. 639 and 646). CPR management in line with sustainable development principles affirms the need to resolve conflicts between social, cultural, environmental and economic values in a manner that maintains resource access



without compromising future resource conditions and availability (Randolph 2004, p. 12).

Community participation can provide both environmental and non-environmental benefits arising from uses and associated management practices (van der Jagt, Gujadhur and van Bussel 2000, pp. 13-14) that include: receiving direct financial benefits from the use of natural resources and the creation of employment; the provision of services, and; the provision of intangible benefits. Intangible benefits can include: the creation or adaptation of community institutions, community confidence and resilience; cultural identity development and increased social cohesion; the recognition of tacit and indigenous knowledge values, and; representative and accountable leadership (van der Jagt, Gujadhur and van Bussel 2000, pp. 13-14). The benefits resulting from resource management practices however, are largely the result of the specific management policy that is adopted.

## **2.6 Policy and Management Alternatives**

There is a myriad of policy approaches available to governments for CPR management. These approaches essentially fall into five distinct groups (ABARE 2001, pp. 8-13), these are: (1) property rights; (2) information provision; (3) suasive measures; (4) economic instruments, and; (5) regulatory instruments. Each approach is briefly described below and has unique merits that may provide the best policy response to any particular CPR management issue or may provide a component of an overarching multifaceted approach.

**CPR property rights** are difficult to assign and enforce. Normative property rights feature well defined and exclusive benefits where the property right is secure and transferable. Becker and Ostrom (1995, pp. 121-122) argue that many communities of interest with a direct stake in a CPR have developed working rules that assign forms of property rights underpinned by collective action-based governance arrangements. Becker and Ostrom (1995, p. 122) stress that it is not the particular individual design but the underlying design principles for CPR governance institutions that are of importance.

**Information provision** seeks to address information asymmetry. The public good nature of many types of information can lead to sub-optimal investments in

information generation (ABARE 2001, p. 9). The provision of information can lead to collective action responses by affected parties, and can lead to the enforcement of common law rights (ABARE 2001, p. 9).

**Suasive measures** aim to influence stakeholder perceptions and decision-making priorities to improve environmental behaviour and assign a sense of responsibility (ABARE 2001, p. 9). Suasive measures include training and knowledge sharing, social pressure, negotiation, and the threat of regulatory or societal/customer retaliation (ABARE 2001, p. 9). Suasive measures require either a carrot or stick approach or both, and are most likely to succeed when the costs of compliance are small or the benefits greater (ABARE 2001, p. 9).

**Regulatory instruments** allow stakeholders to access and use resources within a stipulated set of constraints that are defined, enforced and monitored, and where non-compliance with the rules is penalised (ABARE 1993, cited in ABARE 2001, p. 12). This approach to CPR management has been heavily criticised by Becker and Ostrom (1995, p. 115) who argue that regulatory authorities rarely have adequate information to monitor and enforce compliance. Regulatory instruments are also criticised for being too costly to implement and for being insufficiently adaptable to changing market and environmental conditions (ABARE 2001, p. 13).

Due to polycentric constraints on CPR management in the FGI and adjacent catchments it is likely that a multifaceted management approach is required (as per Ostrom and Janssen 2004, p. 255). The management response matrix however, requires authority and enforceability and this may best be achieved through formal and informal regulatory means that include community-based socio-compliance mechanisms featuring collective action incentives and coercion criteria. To generate the incentives component of such an approach, RIS provide mechanisms for cluster-based innovation that are capable of creating dispersed competitive advantages amongst market participants and can provide fiscal resources for the SDPM approach to CPR management.

## **2.7 Regional Innovation Systems**

RIS play an important role in economic development policies within advanced economies across the globe (Cooke and Memedovic 2003, p. 1). Regional economies

and individual enterprises are competing in competitive global markets, where businesses and communities are increasingly exposed to new and dynamic market environments that require them to ‘restructure their business organisation, including their innovation activities and consumer and supplier relationships’ (Cooke and Memedovic 2003, p. 2). RIS promote endogenous development (Cooke 2001, p. 957) that is socially and territorially embedded (Muscio 2006, p. 773), aligned with regional path dependencies and trajectories (Heidenreich 2004, pp. 374-375), and that aim to construct competitive advantages (Cooke 2007, pp. 186-188). RIS can be applied as a policy-forming tool (Cooke 2007, pp. 186-188) that aims to stimulate local investments in private sector innovation activities (Cooke 2001, p. 971) supported by nested institutional relationships and governance systems (Cooke and Memedovic 2003, p. 2) that include trust (Heidenreich 2004, p. 372), knowledge creation (Bosco 2007, p. 1085) and collective action principles (Heidenreich 2004, p. 378). RIS provide regionally specific resource configurations that are built on the available natural and human attributes within the region and can provide the SDPM with a means to develop market-based incentives that encourage participation and a commitment to sustainable management as well as providing a source of fiscal resources for the implementation and ongoing application of the SDPM for CPR management.

Cooke (2001, pp. 953-954) describes an RIS as having five key components, being: (1) the *region*, which is capable of supporting innovative economic development; (2) *innovation*, embodied through the ‘commercialisation of new knowledge’; (3) *networks*, built on ‘reciprocal, reputational or customary trust and co-operation-based linkages among actors that coalesces to enable its members to pursue common interests; (4) *learning*, particularly ‘institutional learning’ that develops and embeds new ‘knowledge, skills and capabilities’, and; (5) *interaction*, being both formal and informal communications and association activities that aim to ‘learn, critique or pursue specific project ideas or practices of collective and individual economic, commercial or communal relevance’. These five components enable the identification of RIS and provide overarching principles that can support their construction.

Although many theorists aside from Cooke have contributed to regional innovation theories, Cooke’s work has been significant and influential to the approach explored in this dissertation. Importantly however, Edqvist (1997, cited in Harmaakorpi and

Pekkarinen 2003, p. 3) has identified nine common features to regional innovation that are present within the dominant schools of thought and are of importance to development platform approaches, these are:

(i) Innovations and learning are at the centre, (ii) assessments are holistic and interdisciplinary, (iii) a historical perspective is natural in them, (iv) differences between systems and non-optimality are present, (v) emphasis is on interdependence and non-linearity, (vi) approaches encompass product technology and organisational innovations, (vii) institutions are central, (viii) approaches are conceptually diffuse, (ix) approaches are conceptual frameworks rather than formal theories.

Heidenreich (2004, p. 363) supports the conceptual nature of regional innovation environments but argues however, that the success of a RIS is dependent not upon the presence or absence of specific institutional arrangements, but upon a region's ability to 'face the numerous dilemmas connected to territorially bounded production and innovation processes'. Heidenreich (2004, p. 363) adds that 'satisficing (even if not optimal) results can be obtained [by regions] with previous routines, products, technologies, and institutions' whereas the adoption of new routines and methods involves 'extraordinary investments and the outcomes remain uncertain'. Johnson (1992, cited in Cooke 2001, p. 953) advocates discarding old routines and conventions and replacing these with new routines and methods that are more innovative and capable of constructing advantages. Furthermore, Heidenreich (2004, p. 382) advocates a departure from path dependent trajectories and the placement of regional enterprises and networks within 'new technological and economic domains' to increase opportunities for RIS-based successes.

The role of the *local* within the *regional* is significant when constructing RIS (Muscio 2006, p. 775). Local innovation systems draw upon regional capabilities to create new resource configurations at the local scale that are capable of developing and applying technological innovations, and capable of providing incentives that support nested networks and their constructed innovative capacities (Belussi 2003, cited in Muscio 2006, p. 775). To construct a RIS, Harmaakorpi and Pekkarinen (2003) advocate the use of the RDPM approach which describes in detail a method for identifying and creating many of the conditions that support, identify and deliver innovative competitive advantage capable of providing fiscal incentives and resourcing for CPR management.

## 2.8 RDPM

Harmaakorpi and Pekkarinen (2003, p. 1) assert that regional development strategies ‘should be based on the sound assessment of regional resources, capabilities, competences and core competences, as well as on dynamic capabilities’ within a region. The RDPM was developed to design and manage RIS and consists of several phases that seek to explore competitive potential within a region (Harmaakorpi and Pekkarinen 2003, p. 2).

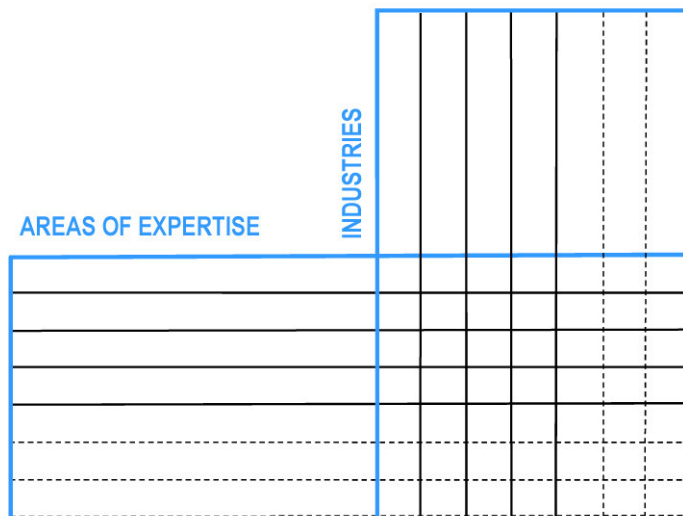
Harmaakorpi and Pekkarinen (2003, pp. 2 and 6) focus on five dynamic capabilities that they have identified as important components of a networked regional innovation environment, these are: (1) the innovative capability of the region; (2) the learning capability of the region; (3) networking capabilities; (4) leadership capabilities, and; (5) forecasting capabilities. According to Harmaakorpi and Pekkarinen (2003, p. 6), these dynamic capabilities contain the region’s ability to generate interactions and competitive resource configurations that are based on the region’s history and potential opportunities. Essential to their RDPM approach, and for regional competitive capabilities, are socio-economic networks (Harmaakorpi and Pekkarinen 2003, pp. 4 and 7) that not only develop a collective vision and associated goals, but also develop trust ‘in order to overcome some of the uncertainties characterising the innovation process’ (Lundvall and Borrás 1999, cited in Harmaakorpi and Pekkarinen 2003, p. 4).

Harmaakorpi and Pekkarinen (2003, p. 9) recommend that during the innovation planning stages and prior to the application of the RDPM, consideration should be given to the following factors:

- (i) understanding the phenomena of regional path-dependency and agglomeration, (ii) avoiding regional lock-ins, (iii) defining competitive regional resource configurations, (iv) forming multi-actor innovation networks to exploit the resource configurations, (v) enhancing the absorptive capacity of the innovation networks, (vi) creating sufficient social capital and creative tension, and (vii) promoting regional dynamic capabilities (for example, innovative, learning, networking, leadership and forecasting capabilities).

The consideration of these factors assists identify regional capacity for the RDPM approach and also provides important data that guides decision-making processes throughout its application. Part of this preliminary phase involves the identification of industry expertise, skills capabilities and competencies identified through a

desktop analysis of regional enterprises. The basic method is presented in Figure 1 (Harmaakorpi and Pekkarinen 2003, p. 10):



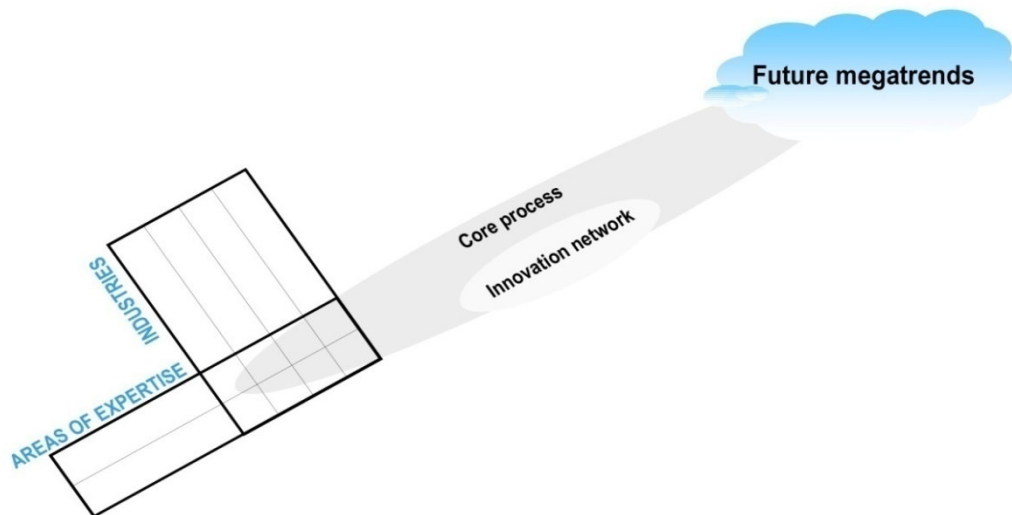
**Figure 1 Principle of Industries and Areas of Expertise in the Regional Development Method (Source: Harmaakorpi and Pekkarinen 2003, p. 10).**

After completing the preliminary phase of the RDPM approach, eight distinct phases of the RDPM need to be performed (Harmaakorpi and Pekkarinen 2003, p. 10), these are presented below, and are followed by a brief explanation:

- (i) benchmarking through the assessment of regional innovation system theories, (ii) background study of the industries and areas of expertise in the region, (iii) expert panels, (iv) assessment of future scenarios, (v) analysis of statistical and empirical information, (vi) conceptualisation of the regional innovation system, (vii) search of core processes of the regional innovation system and (viii) definition of knowledge creation and management system.

The first phase is performed to ‘learn from the past [and] compare what has been done in other regions’ (Harmaakorpi and Pekkarinen 2003, p. 10); the second phase is performed through the use of the preceding desktop analysis combined with additional tacit knowledge inputs derived from the expert panel; the expert panel is formed from identified target participants that can expose the ‘hidden’ information within regional statistical data and expert observations; future scenarios are identified through the available statistical data that enables the recognition of megatrends that existing resource bases and entrepreneurial trajectories could realise through the development of RIS platforms; the fifth phase, defines the ‘potential development platforms within the region’ based on ‘statistical and empirical information including the futures research results’; the sixth phase seeks to ‘conceptualise’ the RIS through defining and developing ‘institutional resource configuration[s]’ and involves

creating shared visions and goals; the seventh phase is perhaps the most critical and involves ‘the definition of core processes’ that exploit ‘the potential existing in the defined development platforms’ to enhance the ‘dynamic capabilities in a region’ (see Figure 2), and; the final phase involves effective knowledge management capable of distributing learning and knowledge within the network, and of creating environments that support the creation of new knowledge (Harmaakorpi and Pekkarinen 2003, pp. 10-12).



**Figure 2 Principle Description of a Core Process (Source: Harmaakorpi and Pekkarinen 2003, p. 12).**

The application of the RDPM as a regional economic development tool able to create RIS has been argued by Harmaakorpi and Pekkarinen (2003) and Harmaakorpi (2004) who draw on their experiences developing and applying the RDPM in Lahti, Finland. Outside of Lahti, it appears the RDPM has only been significantly attempted in two instances, both in South Africa, and both still underway (V. Harmaakorpi 2009, pers. comm., 7 July). An assessment of the RDPM’s suitability as a regional economic development tool therefore, cannot be adequately performed due to a lack of grounded application and study. The RDPM’s use as a CPR management tool has not been explored prior to the commencement of this dissertation, or attempted in a real world context. The use of economic tools to deliver environmental outcomes however is not new, and as Stern (2007, p. 449) argues, under current global environmental and market conditions may be exactly what is needed. The research conducted for this dissertation therefore, theoretically places the RDPM within a CPR management context.

## CHAPTER 3: CASE STUDY – THE FLEURIEU GROUP OF ISLANDS

There is a tribe of natives that belong to this island, and before the sealers came here the natives must have been well provided for... The natives used to wander in quest of game, and from this island they could go to others, to the rocks to get birds, fish &c, and to the main. The natives were very numerous, but have been destroyed by the sealers and by the tribes with whom they are at war, and are now but few in number.

George Augustus Robinson, on Robbins Island, 19 June, 1830 (Robinson 1830, cited in Plomley 2008, p. 211).

Kirkpatrick (in Kirkpatrick and Bridle 2007, p. 1) asserts that ‘to understand the present, and make guesses about the future, we must try to understand the past’. The following section attempts to provide some insight into the path dependant historical context of land and resources management within the FGI and their adjacent catchments to better understand the opportunities available for present day management decision-making that will affect future human activities.

The FGI and adjacent catchments have been intermittently occupied by humans since between 30,000 and 22,000 years ago (I. McFarlane 2009, pers. comm., 21 July; Bowdler 1975, p. 24). The abundant resources present within the islands and adjoining mainland provided important resources for Aboriginals and the colonising Europeans (McFarlane 2008, pp. 39 and 142; Plomley 1992, p. 16, 2008, p. 652). Early European contact with the local Aboriginals frequently resulted in conflict (Cosgrove 1990, p. 19; Plomley 1992, p. 16) commonly prompted by either the abduction of Aboriginal women by lawless sealers (Pink and Ebdon 1988, p. 29; Plomley 1992, p. 16) or as a result of direct competition for natural resources (Pink and Ebdon 1988, p. 9).

Conflict between European settlers and the colonial Government over natural resources within the area began during negotiations for the granting of lands to the Van Diemen’s Land Company, lands that extended beyond Circular Head (now Stanley) and Woolnorth to include Trefoil, Robbins and Walker Islands (Buckby 1988, p. 26); foreshadowing the highly politicised resource management decisions that have continued to occur throughout the region’s history. A recent example of community conflict is the 2005 proposed changes to the management of the Hunter Island lease. These changes included a shift from private cattle production to



conservation management by the Bush Heritage Trust and resulted in extensive community opposition (pers. obs.; important stakeholder #06 2009, pers. comm., 31 March).

Today, the FGI and its surrounding coastal communities support a diverse range of economic activities. The FGI directly supports and interacts with: agricultural activities including beef and dairy production; aquaculture, particularly oyster farming; fishing, particularly rock lobster and abalone; tourism (Tasmanian Land Conservancy, *Community Solutions and Birds Tasmania 2006*, p. 3), and; mutton bird harvesting (pers. obs.). The islands and associated ecosystems are also sources of emerging and prospective industries including renewable energy production (Tasmanian Land Conservancy, *Community Solutions and Birds Tasmania 2006*, p. 3; important stakeholder #01 2009, pers. comm., 16 August) and niche shellfish farming (pers. obs.). The marine environments around the islands also receive and filter effluent and waste water from farms and processing plants for vegetables, meat, milk and sea foods (Tasmanian Land Conservancy, *Community Solutions and Birds Tasmania 2006*, p. 3).

The adjacent catchments to the islands include the Duck, Montagu, Marcus, and Welcome catchments. These catchments feature a significant proportion of the region's productive agricultural land which is dominated by dairy, beef and timber production and includes local food processing plants; contributing significantly to the rich provision of agricultural products from the Circular Head region (Circular Head Council 2008, pp. 44-54). The region supports a strong manufacturing industry, downstream timber processing and veneering industry, and mineral extraction and processing (Circular Head Council 2008, pp. 44-54). The region has also been recognised as a possible future tourism destination, building on the tourism drawcard of Stanley and the development of the Tarkine wilderness tourism asset (EMDA, Moore Consulting and SCA Marketing 2008, p. 5).

Although the area features highly productive and successful industries and individual businesses, case study relevant communities within the region are characterised by below average economic and social indicators, particularly: low income tax levels; low tertiary education rates; low internet access rates; low proportions of managers and professional workers, and; a high proportion of manual labourers (ABS 2008a, 2008b). The Circular Head municipality is also characterised by decreasing

population projections and the Cradle Coast region ranks below the Australian and Tasmanian averages for relative socio-economic disadvantage (DoTaRS 2003, pp. 19 and 41). Conversely, the research conducted for this dissertation supports the view that local residents enjoy cultural lifestyle benefits that enhance social capital through accessing and exploiting the FGI and adjacent catchment's CPR (research participant #04, pers. obs.).

Recently however, the unallocated Crown Land and public reserves within the FGI and adjacent catchments were assessed for suitable land tenure status under the Crown Lands Assessment and Classification (CLAC) project. CLAC has resulted in additional areas within the islands and adjacent coastal zones being recommended for transferral to Parks and Wildlife Service (PWS) management (CLAC Project Team 2005, pp. 16-58) without any additional resourcing being provided to the PWS to appropriately manage these areas (important stakeholder #02 2009, pers. comm., 16 June).

Although reducing the polycentricity of CPR management in the FGI and adjacent coastline, the transfer of land management from the Department of Primary Industries, Parks Water and Environment (DPIPWE) to the PWS, has some local stakeholders concerned (important stakeholder #03 2009, pers. comm., 29 July; important stakeholder #04 2009, pers. comm., 12 August). Some local stakeholders (important stakeholder #03 2009, pers. comm., 29 July; important stakeholder #04 2009, pers. comm., 12 August) believe that the Department of Primary Industries and Water (now DPIPWE) had a more rigorous and tangible relationship with the islands and local industries, and were therefore more valued for their participation in the management of the FGI and its surrounding catchments than are the PWS; whereas the PWS are perceived to manage the islands through centralised and external 'non-management' inaction (important stakeholder #03 2009, pers. comm., 29 July).

### **3.1 The Failure of Centralised Control**

A lack of management resourcing and capacity (important stakeholder #05 2008, pers. comm., 20 June), combined with a lack of community participation and support (pers. obs.; important stakeholder #02 2009, pers. comm., 29 July; important stakeholder #04 2009, pers. comm., 12 August) has led to an absentee or 'non' management approach by the PWS to CPR in the FGI and their adjacent catchments

(important stakeholder #05 2008, pers. comm., 20 June). Recent attempts to advance community participation in management (Tasmanian Land Conservancy, *Community Solutions and Birds Tasmania* 2006, pp. 16-17) have failed due to: insufficient volunteer capacity and time constraints; bureaucratic and legislative barriers; individual vested interests (important stakeholder #01 2009, pers. comm., 16 August); a lack of resourcing and government support, and; a lack of genuine participation amongst community-based front groups purporting to support community-based management whilst serving vested interests (research participants #01, #06, #07, and #08).

Management shortfalls and the failure of centralised hierarchical control approaches is a common theme within the resource management and collective action literature (Ostrom 1990, pp. xv-xvi). Common problems with centralised management include: the inability for 'command and control regulation' to resolve the often complex, inter-spatial and multi-actor dimensions inherent in contemporary resources degradation or pollution practices (Koontz et al. 2004, p. 26; National Research Council 2008, pp. 7-8); a lack of accurate and timely CPR information and the inability to effectively monitor user access and resource conditions (Ostrom 1990, pp. 9-11); policy failure and mismanagement of state-controlled resources (Ascher 2001, cited in Ostrom and Janssen 2004, p. 244; Repetto and Gillies 1988, cited in Ostrom and Janssen 2004, p. 243; Marchak 1987, cited in Acheson 2006, p. 123); the influence of local power tyrannies on decision-making processes within poly-centric governance systems (Ostrom 2005, p. 282) that affect the decision-making processes of dirigiste agencies, and; in the local context, a lack of capacity, resourcing and organisational will to manage CPR by the PWS (Henderson and Campbell-Ellis 2009, p. 27).

As communities of interest have increasingly become sceptical of government capacities to manage natural resources (Koontz et al. 2004, p. 5), and as local environmental issues have become increasingly global (research participants #01, #02, #03, #05, #06 and #08), stakeholders continue to articulate their desire to participate in CPR management decision-making processes (Whelan and Oliver 2005, p. 131) and have effectively reduced the role of governments to a more equal participatory role (Mandell 1990, Kickert et al. 1997, cited in Koontz et al. 2004, p.6).

### **3.2 A Role for Community-based Management**

Given that the PWS are currently under-resourced to effectively manage the FGI (important stakeholder #05 2008, pers. comm., 20 June), and with additional lands coming under their management through the CLAC project, the PWS will be further stretched. Existing management efforts undertaken by the PWS involve little community participation and any attempt that seeks to involve the local community is stymied by constraints imposed by a plethora of policy frameworks, legislation and bureaucratic barriers (see Appendix 8.1). Further complicating participatory management is the path-dependent history of community responses to management changes that indicate shifts in management systems can result in community hostility (important stakeholder #06 2009, pers. comm., 31 March).

Collaborative resources management that is community-based and deliberative can resolve these issues and foster network development, establish trust and deliver genuine participatory democracy (Koontz et al. 2004, p. 184). Section 7.3 of the nearby Arthur-Pieman Conservation Area's (APCA) Management Plan, expressly promotes the use of community-based management processes (PWS 2002) and although the APCA's community-based management results are less than ideal, community participation has remained strong (Henderson and Campbell-Ellis 2009, p. 14). The Circular Head community and visitors to the area value community input into the management of areas of natural significance as expressed recently by the Circular Head Council's passing of a National Parks policy stipulating that the Council would only support the proposal of new National Parks within the Circular Head municipality after extensive community consultation (Circular Head Council 2009). Community consultation and participation in management decision making can take many forms and unfortunately, is not exempt from poor practice as demonstrated in the APCA, and in the FGI with the Robbins Passage Wetlands Coast and Landcare Group (RPWG).

Although the RPWG was described by many research participants (research participants #01, #06, #07, and #08) as a front group for vested interests, the desire by some RPWG participants was for genuine community-based management (research participant #03). The diversity of expressed values that local communities place on CPR in the FGI and adjacent catchments: recreational; cultural; economic; aesthetic, and; environmental – indicates that the local community feels strongly

about the way in which these resources are managed. There is a sense of community ownership of the islands and the region's natural areas (important stakeholder #01 2009, pers. comm., 16 August; important stakeholder #03 2009, pers. comm., 29 July; important stakeholder #04 2009, pers. comm., 12 August; important stakeholder #06 2009, pers. comm., 31 March) that has fuelled recent community opposition to poorly supported proposals for management changes in the FGI and adjacent catchments – such as those involving changes to the Hunter Island lease (important stakeholder #06 2009, pers. comm., 31 March).

The outcomes of the APCA community-based management approach and the initial Resource Planning and Development Commission (RPDC) recommendations for the APCA Management Plan (RPDC, 2001) provide valuable insights into how local stakeholders would like to participate in the management of public lands and their associated CPR within the region. Public submissions to the RPDC's recommendations for the APCA's management state that the local community would be unlikely to support community-based management that is advisory only in nature (RPDC 2001, p.6) and that the local community strongly supports local management as opposed to external centralised control (RPDC 2001, p.83). These insights into local community attitudes are arguably as relevant for public lands within the FGI and adjacent catchments and indicate support for the notion of genuine community-based management.

The use of the islands as a case study enables the placement of a theoretical model over a complex and contested landscape that would benefit from improved CPR management practices. The suitability of the islands and their adjacent catchments for this research is indicated by the area's: capacity to generate a significant amount of wealth for local businesses and indigenous user groups; generate multi-industry employment (Tasmanian Land Conservancy, *Community Solutions and Birds Tasmania* 2006, p. 22), and; provide significant recreational value to local communities and visitors (Hudson 2008, p. 14); as well as for the area's highly valued ecosystem qualities that are threatened by recreational activities, unsustainable resource use practices, and climate change impacts (Hudson 2008, p. 3; Tasmanian Land Conservancy, *Community Solutions and Birds Tasmania* 2006, pp. 27-47; Sharples 2006, p. 1).

## CHAPTER 4: ANALYSIS – METHOD

### 4.1 Data Collection

A dimensional sampling method was applied to identify target participants that adequately represent the important conceptual variables of the research. A desktop analysis revealed that at least 33 key individual and organisational stakeholders had engaged in a meaningful way with CPR management of the FGI and surrounding catchments in recent years or held skills and knowledge that could contribute to future management approaches. Of these stakeholders, 11 were identified as representing the identified conceptual variables, these variables being: (1) wild and farmed fisheries; (2) recreational users; (3) indigenous users; (4) freehold and leasehold land managers; (5) land management authorities; (6) non-government organisations; (7) regional development organisations; (8) local businesses, including agricultural enterprises, tourism operators and the manufacturing sector; (9) education and training institutions; (10) government authorities, and; (11) natural resource management organisations. Of the 11 target participants, eight were formally interviewed and are referred to as research participant #01 through to research participant #08. In addition, two target participants contributed to the research through in-depth subject-specific conversations outside of the formal interview process and are referred to as important stakeholders. A further four important stakeholders that represented conceptual variables already accounted for, contributed through additional in-depth conversations, to explore particular facets of the research. The resulting sample effectively represented ten of the eleven conceptual variables.

Of the eleven conceptual variables, interviews were not conducted with representatives of the wild and farmed fisheries cohort or the principle land management authority, being the PWS. PWS personnel however, participated in the informal subject-specific conversations and are identified as important stakeholders #02 and #05. Important stakeholders #01 and #06 are land and resource managers within the FGI and adjacent catchments, whilst important stakeholder #03 represents local government and important stakeholder #04 represents a local non-government organisation. Informal contributions resulted from a desire not to participate in recorded and transcribed interviews. Reasons for non-participation in the formal

research included time constraints, a lack of knowledge regarding the management of the FGI and adjacent catchments, and non-responsive communication efforts on behalf of invited target participants. It is also assumed that non-participation resulted from a fear of the research purpose and its possible outcomes. These fears may have been reinforced by the ‘closed’ nature of the Circular Head community and an associated wariness of the author/researcher as an ‘outsider’.

Data was collected through one-to-one interviews using non-schedule standardised open-ended questions and discussions that enabled the collection of individual stories as per Roe (1994, pp. 155-162) as well as a thematic exploration of issues relevant to the research. Data was collected using an audio recording device with the consent of the interviewee and transcribed by the author with all transcripts checked by interviewees for accuracy. Ethical consideration was given to the methods used to collect, analyse and store data with all data handling compliant with the *Personal Information Protection Act 2004 (Tas)* and the Guidelines approved under Section 95A of the *Privacy Act 1988*. The additional data collected through the six in-depth conversations was used to elaborate on key themes or held values, and provided further depth and clarification to specific issues revealed in the primary data.

## **4.2 Data Analysis**

A synthesis of thematic analysis (Aronson 1994) and content analysis methods (Monette, Sullivan and Dejong 1986, pp. 175-184) were applied to the primary data to identify common and important themes. The thematic analysis process identified cross-case theme-based units of analysis (Aronson 1994). These thematic units of analysis were then subjected to content analysis methods (Monette, Sullivan and Dejong 1986, pp. 175-184) that defined response categories based on coherent strings of expressed meanings and purposes and were analysed using a values coding system that accounted for the presence or absence of themes and issues, and ranked their frequency. A residual category enabled the collection of interesting or important content that was not commonly expressed by the interviewees. This data was used to enable a rich description of the issues surrounding the management of the islands and specific components of the theoretical SDPM.

This analysis method enabled a systematic and theoretically supported conceptual analysis of the empirical data’s thematic and relational qualities. The approach

provided guided, succinct and explorative research that resulted in a focussed elicitation of data capable of being systematically analysed with reduced ambiguity and interviewer bias. The resulting conclusions were then tested against existing theory to determine validity.

### **4.3 Limitations**

A major limitation of the applied methodological approach is the occurrence of wording variations during interviews that can impact on reliability and validity of the research. The leading of responses, the possibility of social desirability and bias introduced by the interviewer can influence the data collected and its associated analysis. These issues were exacerbated by the closed nature of the represented stakeholder communities to external enquiry which may have resulted in further constraints being placed on interviewee responses and in the in-depth discussions. The small sample size also constrains the ability to generalise the study findings beyond the views of the participants.

Wondolleck and Yaffee (2000, p. 58) assert that cultural norms and attitudes can create barriers to cooperation that include ‘a pervasive lack of trust, [and] stereotyped “us-them” images that lead to polarisation... and fear of committing to a collaborative approach because it requires new and potentially risky behaviour’. In addition, vested interests, a fear of change and power relationships between stakeholders, as observed in the FGI and adjacent catchments, can provide disincentives to collaborate, and may have resulted in a refusal to engage by some stakeholders. The dominance of a small cohort of the community that wield significant community influence and power and have a vested interest in current non-management approaches may also have stymied research efforts (E. Ostrom 2009, pers. comm., 4 October). This cohort of power may have negatively influenced participation rates in the research and impacted on the depth and representativeness of the research.

### **4.4 Reliability and Validity**

Interview transcripts were checked for accuracy by individual interviewees without interviewer input, and any desired amendments were included in finalised transcripts prior to the commencement of analysis processes. This self-directed double-checking



of raw data attempted to remove interviewer bias and enable participants to amend any unwanted social desirability traits inherent in the interview transcript.

The response categories were compiled during the thematic analysis stage and included five categories, being: (1) stakeholder satisfaction with management systems in the FGI; (2) stakeholder satisfaction with past community-based management efforts in the FGI; (3) stakeholder preferences for CPR management approaches; (4) community capacity and readiness for collective CPR governance, and; (5) community capacity and readiness for a RDPM approach to sustainable CPR development and management. These response categories enabled an objective analysis of the data through a rigorous coding system that was precisely defined and mutually exclusive to enable consistent theme identification and associated ranking.

Conclusions reached through the analysis approach were subject to a triangulated response review that aimed to ensure: the bias-free identification of common themes and elements of interest; independent peer assessment of the analysis process and findings, and; the testing of conclusions against the current literature.

## **CHAPTER 5: ANALYSIS – RESULTS**

### **5.1 Stakeholder Satisfaction with Management Systems**

“Local land should be managed by local people... when you’ve got these faceless, umm, what do you call them, bureaucrats or public servants, or you know, people controlling from Hobart... there’s no face, you try to approach somebody and you get in the bureaucratic paper trail and end up nowhere” (research participant #03).

Research participants strongly expressed the view that the PWS are under-resourced and lacking in capacity to manage the parts of the FGI currently under PWS control, let alone any additional areas that may be assigned to the PWS as a result of the CLAC recommendations. Research participant #01 expressed that there “seems to be a discrimination against the Parks and Wildlife Service in the budget process, they never get the money that they need, and yet they manage the flagship areas that tourists come to”. Research participant #03, like others, supported the view that the PWS are “starved of both resources and expertise and... [that no] active management or enforcement activities will occur on those islands, so the threatening processes that are currently existing... will continue unabated and unmanaged”.

The view that the PWS lack management capacity for the FGI was supported by the views of important stakeholders #02, #03, #04, and #05, elicited through the in-depth discussions. This view is also reinforced by the findings of Henderson and Campbell-Ellis (2009 pp. 11 and 13) where community-based stakeholders in the nearby APCA felt that the PWS were under-resourced and lacked organisational will to manage the significant cultural, recreational and natural values of the area.

### **5.2 Past Community-based Management Efforts**

“The area up here is, well the people are far enough away from the authorities if you want to call it that, they’ve got their own way of doing things” (research participant #06).

Community participation in CPR management and the management of natural and cultural areas of significance is not uncommon in Northwest Tasmania, with the principal example being the management structures of the APCA. Specific to the FGI and adjacent catchments is the formation of the RPWG that aimed to ‘enhance local ownership and management’ of the wetlands (Tasmanian Land Conservancy, Community Solutions and Birds Tasmania 2006, p. 16). The majority of research

participants felt that the RPWG was created as a vested interest front group formed specifically to stymie a Ramsar nomination for the wetlands with one respondent (research participant #06) claiming that a key RPWG participant had said he was “really pleased he’d stopped it becoming a Ramsar”. Research participants also felt that the RPWG had not been effective at fostering genuine local management of the wetlands.

One research participant (research participant #03) however, felt that the vested interests represented within the RPWG contributed positively to the efforts of the group, arguing that the commercial interests of these RPWG members was framed within a desire to achieve “an ecological balance to those commercial enterprises”, enabling a balance between “making a quid and looking after our backyard”.

### **5.3 Stakeholder Preferences for CPR Management Approaches**

“I think the local community and locally-based management is the only way that you are going to get continuous, relevant, responsive, adaptive, long-term management, based on good relationships, happening. However, if an area like this is going to be resourced to the levels that it needs to, the local community is not going to be able to provide all that resourcing. If you have significant resources, the committing of those resources and the maintenance of them requires big decisions and that won’t be done in the local area. It needs to be informed heavily by the local community...”  
(research participant #05).

The majority of research participants felt that the PWS have a role to play in the management of the FGI and adjacent catchments but that this role should be framed within a genuine community-based partnership model that is open to external participation and where the PWS assist to achieve sustainable CPR management. Research participants strongly supported the notion that local communities should be appointed as the major decision-makers with regard to the CPR of the FGI and adjacent catchments. Research participant #02 felt there were many stakeholders able to participate in a management process that enabled “work[ing] together and combin[ing] incomes and resources” and that could provide “better management in the long run than what just dumping it on Parks” could achieve.

Research participant #03 felt that “if local people control local areas, there’s a level of accountability’ stating that local people ‘work beside other community members, we play football, you know, we go mutton-birding, umm, we go camping or fishing or whatever, and you know, there’s a level of civil responsibility to each other”. The

emphasis on local management however, did not exclude external participation.

Research participants unanimously felt that the area contains qualities of national and international significance and as such valued the role that external stakeholders could play in the management of the FGI and adjacent catchments; to provide additional revenue and capacity support streams, as well as other more specialised knowledge-based inputs.

Research participants felt that some form of criteria was required to temper or frame external participation and influence so that external parties' "power in the decision-making processes is of a different nature and needs to be written differently to those of people who have direct heritage, lifestyle and livelihood equity in an issue or policy responsibility" (research participant #05). Research participant #02 felt similar to the majority of participants in that "you'd have to have a terms of reference or something that sets that criteria in place. We don't want to just get a body that is coming out of left field... we need to have a structured group or body or whatever it may be".

Research participant #05 added that stakeholder participants in community-based management should be skilled and representative, able to "convey or respect the interests of the group" and "participate fully in, and contribute what they bring to the making of good decisions rather than just as a watchdog, or single issue advocate". To enable successful participatory decision making, research participant #05 also believes that facilitators "need to somehow create a safe enough place [where] every discussion isn't played out in front of an audience... of less informed lobbyists, otherwise people get afraid of being found to have had a discussion with the enemy".

#### **5.4 Community Capacity and Readiness for CPR Governance**

"Being local, you're accountable... with local land management and local people, you know, the kids go to school with someone else's kids, they might go to church with someone else, they might go to, like play footy or golf or whatever, or go fishing. And yeah, you know, it's a very, very networked community" (research participant #03).

"We have got people in this region from every walk of life, doctors, lawyers, judges, right down to your land, just farmers, every day just milking cows, workers... I'd be very confident that if a good group was to be picked from as wide and diverse a community as what we've got here, you'd get a really good management group together." (Research participant #02).

Working in a networked business and social environment within a small and trusting community can arguably increase the opportunities for collaboration between actors. One research participant (research participant #03) felt that they worked effectively within a strong local network and that the relationships existing within this network are built on trust. Research participant #03 also felt that although the Circular Head community is a “closed community”, if you belonged to this community, or were accepted by it, and trusted by it, the opportunities to collaborate for mutual benefits existed.

Most local research participants indicated that they had some form of networked relationship within the Circular Head community but that these relationships were mostly fragmented or specific to a small part of their organisational or individual activities. Importantly, several respondents who identified as being partly networked within the community identified a lack of trust as being a significant barrier to effective networking, while research participant #02 indicated that they did not feel they operated at all in any collaborative and trusting partnerships within the area. Research participant #02 however, placed a high value on the role that trust could play in networked environments stating, in relation to the management of the FGI, that “you can’t get anywhere without trust and you’ll never build trust until you get correct engagement with those individual stakeholders”.

The majority of research participants believed that to effectively manage the CPR in the FGI and adjacent catchments, local people needed the support of government authorities and other expert contributors. Research participants identified skill shortages that could be met by government or expert contributors through direct input or learning-based activities. These skill shortages included: the provision of global perspectives on issues and management approaches; natural and cultural values knowledge; sustainable resources management practices, and; branding, marketing and awareness raising techniques and approaches. Research participant #02 felt that this input could be applied on a sliding scale over time to enable increased and improved community-based management to evolve.

## **5.5 Community Readiness for a RDPM-based Approach to CPR**

“[I]n the current global financial crisis, the measure of resilience that grew across this community... tells us something about this [creative] tension,

about this know-how in this community, and an entrepreneurial can-do kind of spirit...” (Research participant #04).

The majority of research participants felt that the *sustainable* extraction of economic, social and cultural benefits from CPR within the FGI and adjacent catchments was a desirable outcome for the management of the area, with one research participant (research participant #01) emphasising the need to focus on biodiversity maintenance as the dominant guiding principle for the use of CPR within the area. The decision-making processes surrounding CPR access and use were a central concern for the majority of research participants. Research participant #05 expressed that “the decision-making system needs to be almost blind to the value of the values, but needs to be aware of their critical thresholds of stability, intactness, resilience and those sorts of things so that it doesn’t matter how much you care about Plovers or cattle, but you need to know that there’s a point where there’s too much of one puts on... a warning light for the sustainability of the other”. The emphasis placed on this approach to resource decision-making stressed the valuing of the process, whereby research participant #05 added that “it doesn’t need everybody to think the same, about each of these values, but to think in the same way about how they are legitimate, and how they are managed”.

A collaborative approach to CPR decision-making may require a diverse skill set that is contributed by a broad array of stakeholders, well supported with human resourcing, technical resourcing and financial resourcing (Koontz et al. 2004, p. 24). By combining a collaborative CPR management approach with the RDPM, additional endogenous business and entrepreneurial skills are required. Many research participants felt that local people had the necessary skills to achieve sustainable community-based management that delivered economic, social, cultural and environmental outcomes. One research participant (research participant #06) however, was unsure if the region had the right people, whilst another participant (research participant #01) felt the region did not, and one other felt that CPR management was about protection and not economic use (research participant #07).

Two of the research participants had a significant regional development focus and felt that external skills could be provided to remedy local skills and knowledge shortfalls. The majority of research participants agreed with this view and felt that external specialised assistance would form an important component of locally-driven

community-based management. Non-local research participants felt that their ability to contribute to a community-based management approach faced significant barriers.

Research participant #05 stated that “one of the biggest barriers to these things working well is that the smaller and more isolated the community, it is at once more self-reliant and resilient and more likely to work in a block, which is fantastic, but it can also be more paranoid about other interests, who are invariably perceived to be more cosmopolitan, better read, better connected, have greater influence and access and control”. These social barriers, research participant #05 added, may require endogenous solutions in the form of local champions that are “interested, motivated, successful” and have knowledge of the external world. Research participant #05 identifies that these people may be capable of “bringing back a combination of understanding in the place and knowing how others have dealt with things. And I think that those people are going to be important because they will be the interlockers, the people who can bridge some of the distance between Smithton and Hobart or between land users, traditional land users, and policy makers”.

Research participant #04 expressed that whilst participation in a RDPM-based CPR management initiative was supported by organisational will; fiscal, time and staff capacity constraints were barriers to the organisation’s ability to contribute resources. As an external organisation with limited networking into the local community, participation costs were identified as high and research participant #04 indicated that the role that their organisation could play would be through the provision of services that drew on organisational strengths and could predominantly be delivered externally.

## CHAPTER 6: DISCUSSION – THE SUSTAINABLE DEVELOPMENT PLATFORM METHOD

“I think they’re a very important part of Circular Head’s culture. You get a nice day with a light sou-westerly, you know, on a Saturday, and the number of boats that are out there fishing or [for] just recreation, or mutton-birding and so forth, there’s a sense of belonging...” (Research participant #03).

Nagendra and Ostrom (2007, p. 3) argue that ‘under appropriate conditions, communities can devise appropriate operational and collective-choice arrangements that enable the sustainable use of natural resources’. The research conducted for this dissertation has attempted to develop a method for CPR management that is flexible enough to allow community input into its design to accommodate complex human-ecosystem relational qualities and constraints. To do this, the research has attempted to test the hypothesis that a SDPM, designed for CPR management, can provide an effective policy tool for sustainable, community-supported CPR management. The research does this by answering the two questions presented in the Introduction, being:

1. Are local stakeholders supportive of community-based CPR management, and do they have the capacity to participate?
2. How can the RDPM be modified to create a SDPM able to deliver a cooperative process for community-based CPR management?

In response to the first question, the research indicates that participants strongly support local community-based CPR management. Participants expressed that community-based management capacities were lacking and that external support was needed to provide necessary skills, resources and capital for local management efforts. Participants felt strongly that government agencies should play a partnering role that assists provide sustainable management outcomes. Participants also felt that governance arrangements should be open to external participation but that external influence should be constrained.

Answering the second question however first requires a consideration of participants’ responses in light of the contributing literature surrounding CPR management presented in Chapter 2. Secondly, it requires a critical assessment of the RDPM approach, which it is premature to undertake as the RDPM has not been sufficiently



applied in real world settings. In the absence of a critical assessment of applied RDPMs, consideration has been given to its theoretical design purpose, which is to construct regional innovation through organisational innovation capable of exploiting ‘the potential existing in the defined development platforms’ to enhance the ‘dynamic capabilities in a region’ (Harmaakorpi and Pekkarinen 2003, pp. 8-10) that are ‘based on valuable, rare, inimitable and non-substitutable resource configurations’ (Harmaakorpi and Pekkarinen 2003, p. 19).

Harmaakorpi and Pekkarinen’s (2003) RDPM approach to regional innovation development is arguably capable of delivering RIS derived economic benefits to communities. The RDPM however, does not aim to deliver sustainable social, cultural and environmental benefits that are competitively beneficial in current global environmental and market conditions. This results from the RDPM’s core focus being on sustained economic developments, and not sustainable development or the maintenance of natural resources. To achieve sustainable development outcomes, a modified RDPM – the SDPM, may better suit the needs of communities that place multiple values on CPR and maintain deep and connected relationships with natural places. Such an approach could provide communities with the necessary fiscal resourcing to actively manage those CPR whilst providing mechanisms for altruistic, profit seeking and vested interest participation.

Given that research participants have clearly articulated their willingness and desire to see community-based CPR management in the FGI and adjacent catchments, and to answer the second research question pertaining to the design of a sustainability-based RDPM for community-based CPR management, design considerations for the SDPM have been broken down into four key fields. These fields are: (1) desirable outputs of a SDPM; (2) essential inputs and characteristics of a SDPM; (3) barriers hindering the success of a SDPM, and; (4) solutions to SDPM barriers.

## **6.1 Desirable Outputs of a SDPM**

The empirical research and theoretical inputs indicate that a SDPM attempting to provide collective action-based CPR management in the FGI and adjacent catchments should provide coordinated and multifaceted solutions to CPR management challenges and opportunities that deliver and maintain environmental, social, cultural and economic benefits through the use of the SDPM to create

sustainable RIS platforms. In addition to this principle objective, the use of the SDPM should enable a holistic and strategic CPR management and planning approach capable of providing valued and recognised process outputs that enhance community capital. These processes should aim to provide network-based competitive advantage interdependencies and generate network supported community authority and legitimacy.

## **6.2 Essential Inputs and Characteristics of a SDPM**

The research has identified important characteristics and input considerations for a SDPM, these are broken down into desirable network characteristics and desired network deliverables. Desirable SDPM characteristics include the creation and support (mutual and external) of responsive, adaptive and collective choice-based nested networks that are institutionally embedded and capable of fostering creative tension. This network should facilitate stakeholder participation resulting from altruistic, profit seeking, and vested interest-based incentive and coercive motivators. Through respected and applied deliberative democracy processes, community leadership can emerge and a shared vision and goals for CPR management will be developed that encourages the creation of mutually agreed to working rules, the assignment of devolved powers, and the development of community accepted authority supported by socio-economic graduated sanctions. The network should also provide avenues for participation by new entrants and emerging stakeholders that are open and inclusive, whilst providing a scale of influence based on perceived stakes and multifaceted sustainability criteria designed through collective choice-based deliberation. In addition, the network should contain a knowledge management system that enables the creation and distribution of new and existing knowledge and learning opportunities, and provide an avenue for suasive knowledge delivery.

The research also revealed a range of considerations that contribute to the network deliverables associated with a SDPM approach. Of principle concern is the definition of the resource boundaries that are subject to the application of the SDPM approach (in the case of the FGI and adjacent catchments, this is all terrestrial, freshwater, marine and atmospheric realms that are publicly owned within the designated geographic area) to enable contextual rulemaking, resource evaluation (including the definition of resource condition indicators and the identification of social and community capitals) and stakeholder identification. To assess resource conditions

and facilitate effective monitoring, low cost, accurate and timely resource specific information that incorporates the precautionary principle is required to identify resource limitations, and production and innovation barriers. This assessment should be thorough and exhaustive and should include natural and human resources (specifically community, industry, government and academic), regional capabilities, competences, core competences and dynamic capabilities within the region and defined resource area, whilst revealing inherent path dependencies and existing trajectories. An output of the resource assessment and audit process should be the definition of property rights to CPR that feature proportional equivalence between benefits and costs, and can be exclusively assigned to provide long term access and input into decision-making processes that result in genuine influence and tangible outcomes. Furthermore, the SDPM should provide participants with the opportunity to develop skills and capacities through internal and external mechanisms.

### **6.3 Barriers Hindering the Success of a SDPM**

The research has revealed several significant challenges for the application of a SDPM within the FGI and adjacent catchments. Existing polycentric governance systems, bureaucratic barriers, and unsupportive legislation and policy frameworks discourage community-based participation and can significantly stymie efforts to establish devolved management. Regional lock-ins and the free rider dilemma inhibit innovation and participation at the regional and individual scales and could contribute to the failure of SDPM-based CPR management efforts and associated collective action-based RIS. In addition, the potential lack of organisational will on behalf of existing management authorities, poorly managed past efforts and community-based management, and stakeholders 'who can disproportionately benefit from resisting new rules – or, imposing ones that they benefit from rather than others' (E. Ostrom 2009, pers. comm., 4 October) further complicate the application of community-based CPR management.

### **6.4 Solutions to SDPM Barriers**

Possible solutions for these barriers were identified through the research and present critical design considerations for the construction of a SDPM. The solutions identified in the research all centre on institutional factors and as such, institutional

embeddedness is the principle concern for SDPM success. Dense and well nested socio-relationships supported by embedded and institutionalised networks can significantly benefit efforts that seek to align policies and provide supportive mechanisms for collective action-based approaches to CPR management challenges. Collective approaches should be capable of providing socio-economic incentives, rewards and punishments (for example, graduated sanctions) to provide the best opportunity for the SDPM approach to remove free rider and vested interest barriers, and for the SDPM process to be accepted by stakeholders.

## 6.5 A Theoretical Model for the SDPM Approach

Harmaakorpi and Pekkarinen's (2003) RDPM approach features eight phases that form the foundations for the theoretical design of the SDPM. The research and analysis conducted for this dissertation suggests a nine phase approach to the creation of a SDPM. These nine phases are diagrammatically presented in Figure 3, followed by a brief descriptive explanation of each phase.

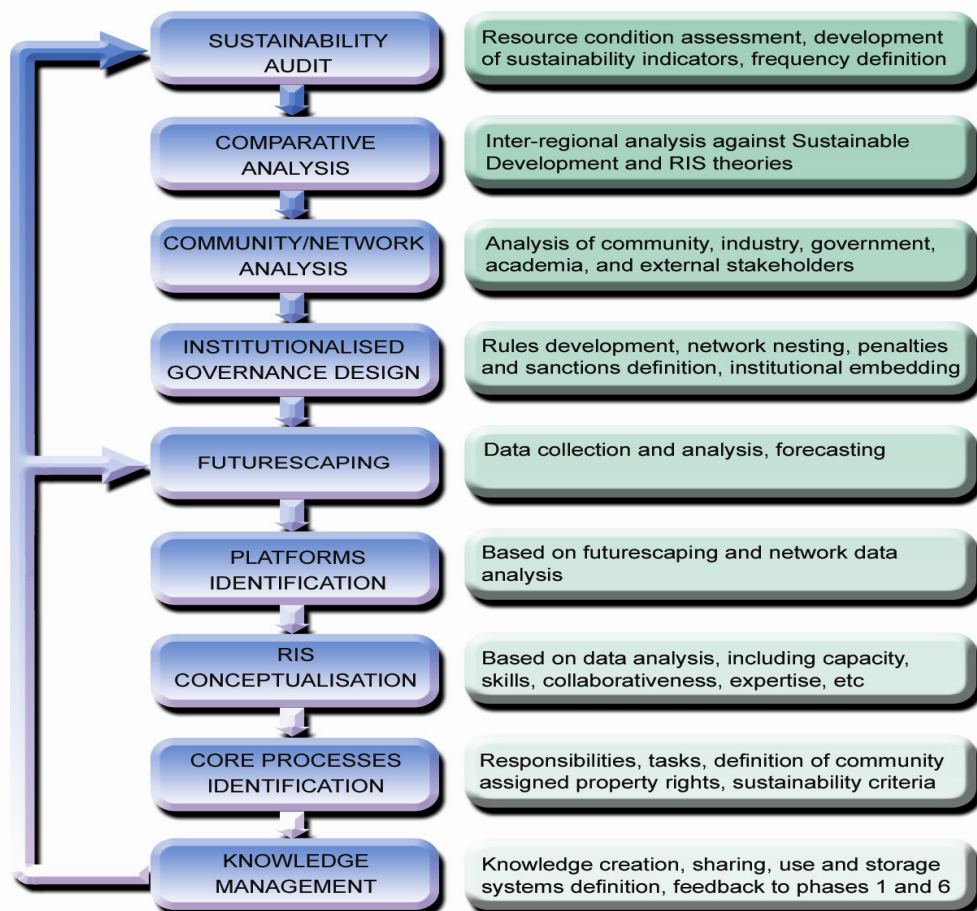


Figure 3 Theoretical conceptualisation of the SDPM approach.

The first phase of the SDPM, the **Sustainability Audit**, seeks to independently assess the sustainability of current resources and to conduct an audit of resource conditions. This is done to provide sustainability checks and balances and to identify resource condition indicators. This task should be independently performed by experts either annually or bi-annually to enable effective monitoring of resource providing systems. This phase also identifies environmental management actions capable of improving CPR conditions and provides a trigger for the application of identified environmental management actions funded through SDPM generated RIS.

The second phase of the SDPM, **Comparative Analysis**, aims to provide an inter-regional comparison of natural and human resource conditions against sustainable development and RIS theories. This phase attempts, as with the RDPM, to ‘learn from the past, compare what has been done in other regions, and to try and do some benchmarking’ (Harmaakorpi and Pekkarinen 2003, p. 10). The research conducted in this phase should include a detailed background study of regional assets, industries, communities, academic institutions and government participation. This phase utilises statistical data combined with intrinsic and tacit knowledge.

The third phase of the SDPM, **Community / Network Analysis**, builds on the preceding phase to explore the potential network(s) that could participate in and contribute to the SDPM approach. This phase is explorative in nature and involves undertaking a detailed stakeholder analysis and SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis, the purpose of this phase is to begin building the network relationships that will form the key component of the SDPM approach to enable effective nesting and embedding of institutional and governance arrangements.

Phase four, **Institutionalised Governance Design**, is arguably the most critical and complex phase in the SDPM. This phase seeks to involve and effectively network self-identified and research identified participant stakeholders and process leaders, and to nest the resulting community-based network within local and regional community settings whilst embedding associated institutional relationships to maximise collaboration and cooperation across all governance scales. This phase involves defining the collective action-based governance structure (including specific

leadership components and their defined tasks and responsibilities) and associated working rules, and defining rewards and penalty systems that involve socio-economic graduated sanctioning mechanisms. Importantly, this phase also defines the structural governance conditions that scale involvement and influence in decision-making processes to reflect participant stakes in the applicable resources and associated management process.

Phase five, **Futurescaping**, begins with a grounded path dependent basis from which future megatrends are identified using statistical data. This analysis aims to reveal the success or failure chances of existing and possible trajectories based on network and regional capabilities. The Futurescaping phase should also provide a detailed and statistically supported view of possible futures and expected resource conditions.

The sixth phase, **Platforms Identification**, stems from the preceding analyses and in particular the Futurescaping and Sustainability Audit to, as with the RDPM, 'define the potential development platforms in the region' (Harmaakorpi and Pekkarinen 2003, p. 11). This phase attempts to identify as many platform opportunities as can be realised given the inherent regional and resource constraints and the capacity and interest of the network participants to explore individual platform opportunities. Harmaakorpi and Pekkarinen (2003, p. 11) identify within the RDPM, that this phase of finding the 'promising combinations of industries and areas of expertise while taking into account the possibilities offered' aims to reveal the most 'fruitful' platforms where, in the context of the SDPM, resources that are rare, unique and non-substitutable, but *can be managed sustainably* are selected for RIS platform development.

The seventh phase of the SDPM, **RIS Conceptualisation**, aims to create a 'shared understanding of the environment where innovation policies are conducted' (Harmaakorpi and Pekkarinen 2003, p. 11). This phase involves identifying likely network participants and associated institutional resource configurations (through invitation or self-nomination) to pursue a specific RIS platform. The RIS Conceptualisation phase also creates a shared individual platform vision that supports and guides the identification and definition of core processes associated with the particular RIS platform.

Phase eight of the SDPM, **Core Processes Identification**, the aim of which, like the RDPM, is to exploit the '*potential existing in the defined development platforms*' (Harmaakorpi and Pekkarinen 2003, p. 11). The SDPM approach extends the scope of this phase to include participant created and defined responsibilities and tasks, how sustainability indicators will be reported against monitoring criteria, and how specific CPR property rights will be assigned and enforced (aligned with the broader working rules). Participants must own, create and define these core processes within the constraints of the larger collective SDPM network, and must be willing, as with the RDPM, to invest resources to develop the core process' (Harmaakorpi and Pekkarinen 2003, p. 11) and, by extension, to invest resources into the overarching SPDM-based CPR management approach, including tithed fiscal resources derived from successful SDPM developed RIS to fund environmental management actions identified in the first phase.

The final phase, **Knowledge Management**, supports and develops the innovative capacity and competitive advantage of the SDPM network that, like the RDPM, is reliant on learning and knowledge creation and its dissemination (Harmaakorpi and Pekkarinen 2003, p. 11). This phase of the SDPM approach aims to harness and coordinate the learning and knowledge capacity within the SDPM network to foster opportunities for new knowledge creation and sharing, and broad institutional learning. This phase feeds directly back into phases one and six to ensure that knowledge is distributed at critical phases of the SDPM process and to ensure that knowledge is not lost.

## **6.6 Considerations for Future Research**

The SDPM presented in this dissertation is a theoretical construct that is untested in a real world scenario. The model is therefore limited in its ability to foresee all barriers and challenges affecting its application and success. The assumptions, upon which the SDPM model has been built therefore, require testing. These assumptions include: that some participants will contribute in an altruistic manner; that leadership, authority and legitimacy will be constructed through the SDPM; that incentives and coercive mechanisms will result in participation and compliance; that stakeholder power inequities can be overcome through the practice of deliberative democracy; that sustainable resources management is valued as much, if not more than, resource exploitation; that the SDPM can provide a cooperative and 'safe' decision-making

platform and set of working rules for actors with opposing paradigms and polity positions, and; that environmentally unsustainable actors will adopt sustainable practices as a result of the incentive and coercive mechanisms built into the SDPM.

Research is also needed that can explore and resolve the challenge of freehold interests and legally enforceable property rights that result in non-compliance with the SDPM approach to CPR management; and to determine what impact freehold interests have on participation rates. This research should also explore the role of freeholder power over CPR and how private rights can be aligned to collective action principles and the SDPM.

Similarly, the suitability of applying the SDPM within a hierarchical management context that seeks to manage CPR in unequal partnership arrangements with the community also requires investigation. Such applications are likely to appeal to traditionally dirigiste agencies uncertain or sceptical of the benefits that can be derived from community-based management partnerships, thus providing a pathway to devolved power relationships and deliberative decision-making in CPR management.

Lastly, the application of the SDPM in a real world scenario is required to determine its ability to provide community-based CPR management capable of delivering sustainable economic, environmental, cultural and social outcomes that benefit not only participants, but also the broader community.



## CONCLUSION

[A]lthough every man has his own property, some things he will place at the disposal of his friends, while of others he shares the use with them' (Aristotle, 350 B.C.E., Book 2, Part V).

Natural resources within the FGI are threatened by human activities within the marine and terrestrial environments of the islands and their adjacent catchments (Tasmanian Land Conservancy, Community Solutions and Birds Tasmania 2006, pp. 4-7). Current management approaches within the FGI are either exploitative or largely absent, and both are unsustainable. The FGI and adjacent catchments are deeply valued by local, national and international stakeholders for a range of economic, social, recreational and environmental values. Allowing current management approaches to continue is likely to result in ongoing changes to existing ecosystem qualities, which has been identified by research participants as an undesirable outcome. Finding a solution that meets human and ecosystem needs is preferable to inaction; the research conducted for this dissertation has attempted to reveal a policy option capable of delivering such a solution.

The hypotheses that this dissertation has attempted to test is whether the RDPM, when coupled with sustainable development principles, could provide an effective policy tool for sustainable CPR management outcomes. Secondly, the dissertation aimed to test the assumption that the resulting SDPM approach could broker community-supported CPR management decisions in the FGI and adjacent catchments through the development of endogenous RIS coupled to sustainable resource use, development and community-based management.

The research has found that the RDPM approach does not incorporate sustainable development concepts that can provide increased regional community benefits and sustainable CPR management outcomes. To achieve sustained social, cultural, environmental and economic benefits, it is argued that sustainable development principles need to be incorporated into the RDPM's design. To do this, a theoretical SDPM has been developed from empirical case specific research combined with design considerations sourced from relevant literature.

The empirical research also revealed that community-based stakeholders participating in this research support community involved management. The theoretical SDPM incorporates design characteristics aimed to encourage and enable

community-supported CPR management decisions through RIS-based incentives and socio-economic coercive motivators.

The theoretical assumptions inherent within the SDPM model however, require grounded testing to develop a robust community-based CPR management tool capable of overcoming the social, institutional and free-rider market barriers that stymie the sustainable development of CPR resources. Community input is a central characteristic of the approach and enables flexibility of design to accommodate a diversity of applications. The SDPM can be applied to a range of complex polycentric management systems involving freehold, dirigiste controlled, or usufruct managed resources and public lands and waters, through to community-owned resources such as Aboriginal lands or public reserves, and also national and state owned terrestrial, marine and riverine CPR environments.

The significance of the SDPM lies within its capacity to eliminate the need for exogenous funding that is inherent within dirigiste approaches to CPR management. The SDPM does this through the creation of RIS that sustainably provide wealth through optimal, innovative and collaborative resource configurations that are nested and embedded within institutionalised network relationships. This wealth generation leads to fiscal resourcing for genuine community-based CPR management and associated environmental management actions, supported by a participatory and deliberative governance approach. The SDPM's core aim as an endogenous policy design tool is to enable the realisation of sustainable development outcomes that provide community-generated and supported economic, social, cultural and environmental benefits derived from CPR.

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# APPENDIX

## 9.1 Policy Framework

Key policy frameworks affecting the management of the FGI and its surrounding areas include (Tasmanian Land Conservancy, Community Solutions and Birds Tasmania 2006, pp. 20-22):

### International conventions and agreements

- The Bonn Convention (or Convention on the Conservation of Migratory Species of Wild Animals)
- China Australia Migratory Bird Agreement
- Japan Australia Migratory Bird Agreement
- Ramsar Convention (or Convention on Wetlands)

### Australian government legislation and policy

- Commonwealth Environmental Protection Biodiversity and Conservation Act 1999
- National Strategy for the Conservation of Australia's Biodiversity (Commonwealth of Australia 1996)
- National Water Quality Management Strategy

### Tasmanian Legislation, policy and strategies

- Resource Management and Planning System
- Marine Farm Planning Act 1995
- State Coastal Policy 1996
- State Water Quality Management Policy 1997
- Environmental Management and Pollution Control Act 1994
- Living Marine Resources Act 1995
- Nature Conservation Act 2002
- Land Use Planning and Approvals Act 1993
- Natural Resources Management Act 2002
- National Parks and Reserves Management Act 2002
- Threatened Species Protection Act 1995
- Crown Land Act 2002
- Aboriginal Relics Act 1975
- Historic Cultural Heritage Act 1995
- Tasmanian Wetland Strategy
- Tasmanian Coastal Weeds Strategy

### Regional strategies and local government regulations

- Cradle Coast Natural Resource Management Strategy 2005
- Cradle Coast Regional Weed Management Strategy 2005
- Cradle Coast Coastal Weeds Management Strategy 2009
- Far North West Marine Farming Development Plan 1999
- Circular Head Planning Scheme 1995