The environmental implications of the local-state antinomy in Australia

by

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Declaration

This thesis represents independent and original research except as indicated below. This information is also provided in relevant sections of the acknowledgments and text.

Several sections of Chapter 2 expand on my 'Local Government' chapter in a refereed book, on *Australian Experiences in Processes and Institutional Arrangements for Resource and Environment*. Land and Water Australia funded that project (Dovers and Wild River (eds), forthcoming, 2002).

All of the maps included in the thesis were designed by the author, but produced by Jane Lawson and Alex Russell from Sinclair-Knight Merz (Canberra). Permission to produce the maps, and present them in the thesis and on the CD-Roms was obtained from state government departments holding the copyright of the original maps.

Chapter 5 includes much work that has been presented or published elsewhere. Academic papers that have included some of this material include Wild River, S. 2001. "Comparative environmental risk assessment: a practical and applied method" *Australian Journal of Environmental Management*, and Wild River, S. 2001. "Tackling corporate environmental risk: a practical and applied approach". *Paper at ATEM/AAPPA. Conference*. This author was the main author of each of these documents, but others also need to be acknowledged for aspects of the method development. Ian Christesen of BCC was an early initiator of this work. Several BCC officers assisted by confirming the practical validity of the environmental risk ratings. Laura Hahn, formerly of Mary Maher and Associates helped to develop the generic risk assessment method from an industry-specific approach, as part of a project undertaken for the Queensland Department of Environment (now the Queensland Environmental Protection Agency). Ross Cunningham provided insight and practical suggestions for translating the quantitative method into useful analysis and findings.

Chapter 6 presents data gathered for the Brisbane and Queensland Benchmarking Studies. The former was entirely undertaken by this author and funded by the Brisbane City Council. The latter incorporated the Brisbane Benchmarking Study data and was funded by the Queensland Department of Environment. In all, Su Wild River undertook 238 of the 410 site inspections and interviews included in the Queensland study dataset, and was the project manager for that work. Laura Hahn undertook 63 site inspections, Greg Miller 56 and Geoff Renouf 53. The data, methods and reports from that project

are referred to in the thesis and presented on the accompanying CD-Rom under a Deed of Agreement (219917pt2) between the State of Queensland and Su Wild River.

All statistical analysis was performed by Ross Cunningham and Christine Donnelly of the Australian National University Statistical Consulting Unit. This included statistical sampling of participants in environmental risk studies, analysis of results, and the analysis of local government population data from the *Australian Local Government Guide* (Information Australia 2000).

Most of the 34 case studies of local government attempts to deliver beneficial environmental outcomes (provided in Appendix 4) were jointly authored. This researcher developed the format and initiated the compilation of all case studies, and is recognised as the first author in each case. Other authors are indicated on each case study.

Su Wild River

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Abstract

An antinomy is a contradiction between a principle and its opposite, where there is a compelling case for accepting both. This thesis adopts the antinomy of local-state government in Australia as its central conceptual theme, describing it with the following defensible, but contradictory principles that:

- Australian local governments are statutory agencies of Australia's state governments, with no power or authority beyond that which is ascribed to them by the states (the *outside-in* principle); and
- Local governments in Australia are independent agencies whose authority and interests transcend their regulatory powers by nature of their attachment to their local area (the *inside-out* principle).

The central conceptual theme of the antinomy of local-state government shapes the overall thesis, as well as providing the focus for its introduction and conclusion. The thesis induces elements of the antinomy and structures much of its discussion around these key issues. It does not try to prove or resolve the antinomy. Instead the thesis uses the concept to explore and develop its second complex theme - the practical and applied experience of Australian local governments (LGs) as they attempt to deliver beneficial environmental outcomes. The great bulk of the substantive work presented in the thesis focuses on descriptions and analyses of LGs' environmental work and the contexts within which they do it. The thesis contends that the local-state antinomy underpins many problems facing Australian LGs as they attempt to deliver beneficial environmental outcomes.

Four research questions are addressed. They are:

- How can Australian LG capacity to deliver beneficial environmental outcomes be understood?
- Within this capacity, what are the environmental outcomes now being achieved by Australian LGs?
- How can Australian local government extend its capacity to deliver beneficial environmental outcomes? and
- What are the implications of the local-state antinomy on Australian LG capacity to deliver beneficial environmental outcomes?

This thesis reviews literature on Australian LG, LG environmental work, and the methods that are appropriate in investigating these questions. The overall thesis uses scientific, grounded theory and action research methods and draws on ideas from symbolic interactionism. Parts of the thesis also use environmental risk assessment, gap analysis techniques, case study and comparative analysis. The goal of generating grounded theories led to a strong focus on the development and exploration of analytical categories and the relationships between them. One such category summarises the relationship between LG and state government (SG), whereby LGs are identified as the *inside* sphere of government, while the SG is one of several *outside* spheres. Environmental efforts that impact between the spheres are described in relation to their source and impact, using this terminology, so that *inside-out* initiatives are driven by LGs but impact more broadly, and *outside-in* initiatives are driven by states but impact on local areas.

Two extensive studies are presented, each stemming primarily from one side of the local-state antinomy. The first is a quantitative, statewide study of local (and state) government implementation of the Queensland Environmental Protection Act. That process is considered a predominantly *outside-in* environmental initiative, in that LG interest and authority for that work stem directly from a SG statute. For simplicity, this is referred to as an outside-in study. That study involved the development and application of the Comparative Environmental Risk Assessment Method, that enabled the assessment of the environmental and other outcomes from the Queensland legislation.

The outside-in study is complimented by comparative case studies that mostly reflect inside-out environmental initiatives as they are defined and described by LGs. Again, this required the development of innovative research methods, specifically a comparative case study method. 34 case studies gathered from different types of LGs across Australia are presented, each representing an attempt by LG to deliver beneficial environmental outcomes.

In answer to the research questions, LG capacity to deliver environmental outcomes can be understood when the antinomy is examined through the research methods and analytical categories developed and presented here. LGs are delivering significant beneficial environmental outcomes, both as agents of SGs and through their own initiatives. Improving LG capacity to deliver environmental outcomes primarily requires a respect for LG perspectives, and for LG priorities, which inherently include a focus on their own local areas. State governments can build effective partnerships between the spheres and enhance LG environmental capacity by recognising and supporting LG's own priorities, while assisting their engagement with broader strategic objectives.

Author's Preface

This Preface tells my story, and summarises how I came to embark on this research project, and how the research and my own understanding of issues have grown together.

My professional work has been dedicated to seeking solutions to environmental problems. I completed a degree in environmental studies at Griffith University, Brisbane in 1993, having majored in various social science disciplines. Those studies taught me that environmental problems are usually human problems, and their solutions lie in social and institutional change. My honours thesis was an interdisciplinary analysis of Australia's *National Strategy for Ecologically Sustainable Development*. I was disturbed to find during that research, that in essence, the national strategy had recommended that Australia follow its existing unsustainable trajectory for environmental management, making very few changes beyond those that could be justified on purely economically rational grounds (Wild River. 1993. Unpublished).

I moved into work for Mary Maher & Associates (MM&A), which was a small, new, Brisbane-based environmental consulting agency. The Director had a background and interest in LG environmental work, and local issues became MM&A's focus, and that of my work there. My last major project for MM&A was to develop the training course for the initial implementation of Queensland's proposed *Environmental Protection Act* (EP Act), which was pitched at both LG and SG officers who would be implementing the Act. From there, I became the LG Liaison Officer in the Policy Coordination Section of the Queensland Department of Environment and Heritage, which was responsible for developing the EP Act. I conceived my role as requiring me to understand DEH's expectations of LG, diligently informing LG of those expectations, listening to LG responses to them, and negotiating within DEH[1] for more workable policy directions. In this position, I worked closely with LG officers, managers, and councillors throughout Queensland and Australia, the Local Government Association of Queensland and many other LG stakeholders.

[1] Note that for the remainder of this Thesis, this Department is referred to by its current title of the Queensland Environmental Protection Agency. This is despite several changes of name since the start of this research. It has also twice been known as the Queensland Department of Environment and Heritage, and once as the Queensland Department of Environment.

During my three years as LG Liaison Officer, I became increasingly frustrated at what I saw as the failure of SG to understand the situations, issues and processes that affected LG capacity to implement the EP Act. At the same time, I was struck by the very tangible outcomes that were being achieved by LGs as a result of the EP Act. This fascinated me, since much of the substance of the EP Act derived from the National Strategy for Ecologically Sustainable Development, and other Commonwealth initiatives that had seemed to me unlikely to drive tangible environmental outcomes. I searched, and found little in the academic literature to help me better understand the flawed relationships between LG and the other spheres, or to link what seemed to be bland Commonwealth policy directions with practical outcomes at the local level. My honours grades had given me the opportunity to obtain a scholarship to study for a Doctor of Philosophy, and I decided to tackle these issues myself.

One implication of this professional background, is that it places me in rather strange territory, somewhere between being an insider, and an outsider to LG environmental issues. This is because although I have always worked with LG and as an advocate of LG issues, I have never been employed by a LG (other than as a consultant while researching for this thesis). I consider that, although incomplete, this perspective has provided the opportunity for many worthwhile insights into a range of LG issues, problems and strategies.

The key research questions I was interested in seemed broader than the 'brown' pollution prevention goals incorporated into the EP Act. I decided to extend the scope of the research across any LG environmental issue. I was also familiar with and interested in Queensland's new *Integrated Planning Act 1997* that had been concurrently developed. The *Integrated Planning Act* also had significant implications for LGs' environmental roles and seemed likely to present some similar and some contrasting implementation challenges, that would ultimately be sorted out at the local level, rather than through SG policy development.

My years spent as a consultant and working as a LG liaison officer provided me with contacts within and ideas about LG institutions. I drew on these throughout the research process, conducting pilot interviews with individuals I had worked with previously, and working with LG Associations to identify environmentally proactive LGs to include in my research.

The thesis' primary goal of producing research that would be useful to LG environmental practitioners derived from the interviews I conducted during the pilot stage of the project. I was surprised and pleased to realise that this goal could readily be

incorporated into the grounded theory research process. This goal has underpinned all of the research, and has proven to be a clarifying and rewarding approach to postgraduate studies. I would recommend such an applied approach to most students undertaking environmental research.

During the pilot interviews, many of my former colleagues expressed a pressing need to assess the environmental and other outcomes from the *Queensland EP Act*. My previous experiences with the EP Act enabled me to lodge successful consultancy bids to make such assessments throughout Brisbane, and later across all of Queensland. These projects were undertaken in partnership with the Australian National University (ANU) Statistical Consulting Unit, which played a significant part in all of the quantitative analysis presented in this thesis. A key benefit of the environmental risk studies was the opportunity for me to visit over 250 sites where EP Act licences had been issued, to assess environmental risk reductions resulting from the Act, and the responses of individuals to the new environmental requirements. This certainly lent a practical reality to my consideration and analysis of environmental issues and outcomes.

The environmental risk assessment consultancies also provided most of the funding for the other major research effort. This was undertaken during a field trip around Australia, which I made in my 1974 Kombi campervan, along with my (then) partner and Dalmatian dog. Together, we presented as a most unthreatening team, and were welcomed into many diverse local settings, in both personal and professional contexts. LG officials were typically fascinated to hear the stories I had to tell of environmental initiatives in other places.

I bought a digital camera and projector with some of the profits from the risk assessments, and used these in retelling the stories of local environmental work. This approach was also welcomed in many settings, and provided colour, technical details of environmental initiatives, and encouraged others to share their own stories. Many of the photographs are presented in the thesis and appendices, but they were not used as an analytical tool in this research. Because of this, they are not specifically discussed in the thesis, which already has enough to report on.

But by far the most moving experiences I have had during this research have been the opportunities to meet and stay with Aboriginal Australians, in their own local areas and settings. I used contacts provided by a thesis supervisor to stay for a week at Hall's Creek in the Kimberley region of Western Australia with an Aboriginal matriarch and her family. I protested for a week against uranium mining at Jabiluka, following the rules laid down by the Mirrar people for respecting their country and their

environmental campaign. I stayed with several Yamatji families at Carnarvon on the central coast of Western Australia, after simply stopping for lunch in a scrubby park, and sharing it with a passerby. I made serendipitous contacts such as these in small Aboriginal towns across Australia, simply by wearing Aboriginal colours (red, yellow and black), allowing children to play with my dog, offering transport to those who asked, and sharing food when the opportunity presented. These experiences enabled me to glimpse some of modern Aboriginal Australia from close at hand. Unfortunately (as was mentioned above), the space needed to do justice to these issues in this thesis is simply not available.

The research process has been both inspiring and depressing, since the many successful environmental outcomes delivered by LG are balanced by the significant constraints they face, as well as by their widespread reluctance to make attempts. Another striking feature was the incorrect, but almost universal belief among LG outsiders, that LGs cannot, will not and do not attempt or succeed with environmental goals. The great number of case studies of environmental attempts are presented to clearly demonstrate the flaw in this thinking. I consider the research process, stories and analytical conclusions to be inherently interesting, as well as important for Australia's environmental future.

As I progressed through the research, the local-state antinomy became increasingly apparent to me. I realised that the frustration I had initially felt while working as a LG advocate within a SG agency reflected an apparently universal tension between the spheres which was worthy of detailed attention. After reading some philosophical texts about paradoxes, antinomies, oxymorons and other contradictions, I concluded that this problem was best described as an antinomy. However its articulation as such was more a vehicle for exploring pragmatic issues than one for debating philosophy, so I made the decision to use the antinomy as a guiding concept, rather than to attempt its resolution. I have since described the antinomy to many people with experience in LG, SG or the FG and have found it to resonate strongly for many people. I feel that this is a concept that could assist understanding and cooperation between spheres, and it has been exciting to explore it with that in mind.

Chapter 1. Introduction

1.1 Introduction

An antinomy is literally a 'conflict of laws', or a contradiction between a principle and its opposite, where there is a compelling case for accepting both. Philosophers such as Kant (1929) and Quine (1966) have discussed various antinomies, aiming to resolve both the principles they describe, and the reasons for the contradictions (see Cohen 1995. p.40). This thesis does not present a philosophical debate of this kind. Instead, it explores a pair of compelling but contradictory principles, using them as the primary conceptual theme with which to analyse a practical problem. The principles are that:

- Australian local governments are statutory agencies of Australia's state governments, with no power or authority beyond that which is ascribed to them by the states (the *outside-in* principle); and
- Local governments in Australia are independent agencies whose authority and capacity transcends their regulatory powers by nature of their attachment to their local areas (the *inside-out* principle).

The contradiction between these principles is labeled the local-state antinomy in this thesis. For brevity, it is sometimes referred to simply as *the antinomy*. This is not to suggest that it is the only antinomy affecting local government (LG), state government (SG), or any other Australian institution. Others certainly exist, that are also worthy of discussion. It would also be possible for instance, to express as an antinomy, the consumer-provider model currently being applied to many public good institutions. However throughout the course of this research, the local-state antinomy has emerged as a key concept providing insight into how LG functions in environmental decision making and action. It has helped to make sense of a complex research project, and similarly assists the discussion of findings in this text.

The thesis presents arguments and experiences to support both of the contradictory principles that make up the antinomy. It does this first by discussing the sources of LG authority, then by describing its environmental roles, responsibilities and interests (Chapters 2 and 3). This discussion shows that the local-state antinomy has

been a constant since formal LG was first established in Australia and it continues to impact on LG environmental capacity (as well as other areas of LG work). The thesis then presents evidence that the people who work in LG and SG have differing perspectives on LG, that generally adhere to one or other of the contradictory principles. SG officials tend to perceive LGs as creatures and servants of the state, while LG officials see them as creatures and servants of the local. They generally do not understand the contrary perspective. People with experience in both spheres appear more likely to recognise the existence of both viewpoints than those with experience in only one sphere, although this knowledge does not necessarily help them to resolve the antinomy in any practical way. Chapter 4 describes nine key issues where the perceptions of people with different perspectives on LG and SG contradict one another. These nine issues are then used to structure discussions about the findings from two extensive studies that make up the original thesis research and that is the second, practical theme of the thesis.

Discussion of the methods and findings from the two extensive studies accounts for the bulk of the substantive work presented in the thesis. The first study quantifies environmental and other outcomes from LG implementation of Queensland SG environmental protection legislation. The second study is a qualitative analysis of environmental priorities identified by LGs, and of LG experiences delivering environmental outcomes. Through these studies, the thesis takes both an *outside-in* and an *inside-out* approach to explaining LG environmental work in Australia. In this sense, LG are identified as the *inside* sphere for government, while the SG is one of several *outside* spheres. *Inside-out* initiatives are driven by LGs, but impact more broadly. Meanwhile, *outside-in* initiatives are driven by states but impact on local areas.

Regarding the context for the practical thesis theme, the achievement of sustainable solutions to environmental problems is critically important for the future of Australia and every other society. Australia's environmental values are suffering extensive degradation as a result of population, management and lifestyle pressures. The study of environmental issues is also a highly complex and dynamic research area, requiring interdisciplinary analysis, long time-frame and flexible research methods (State of the Environment Advisory Council, 1996: WCED 1987). The many attempts made in Australia to deliver environmental outcomes have resulted in fewer major improvements than widely perceived as possible or desirable. This stems in part from the inherent difficulty of solving the often-intransigent problems. Research also

suggests that Australian institutions lack the purposeful design that might enable their systematic and effective pursuit of sustainability (Dovers, 2001).

LG is a fundamental Australian institution with important environmental roles. LG is responsible for over half of Australian government environmental spending despite having a total budget of less than 5% of total government expenditure (Trewin, 2000. p.2; Searle 2000. p.8). Yet Australian LG receives very little attention in the refereed, academic literature (Mowbray, 1997). Even those relatively rare efforts to make sense of LG predominantly take an outside-in perspective, focusing on LG issues as they are defined by regional, state or federal agencies, rather than as they are perceived by local actors. LG environmental efforts have received even less consideration, although a handful of authors have made concerted efforts to raise the profile of these important issues, often producing reviews, discussion papers, training materials and off-the-shelf models, sometimes from an inside-out perspective (see Brown, 1994;1996; 1997; AHC, 1998; Binning et al 1999; Berwick and Thorman 1999 and others). This thesis fills some of the methodological, information and analytical gaps that to date have inhibited widespread understanding of LG environmental issues.

This short introduction to the thesis sets the scene for the remaining discussion. It first defines the key concepts that have already been used in the text above and that follow shortly below. Next, it formalises the major research questions that the thesis seeks to answer. Third, it outlines the thesis structure.

1.2 Key concepts and categories

This thesis integrates a variety of established and novel research methods in analysing the antinomy of environmental local governance in Australia. Despite this methodological pluralism it retains a central focus on discovering grounded theories about its topic. The articulation of analytical concepts and categories to support those theories is central to grounded research methods (Strauss and Corbin. 1990. pp.61-74). Grounded theory and the other methods are discussed in Chapter 4, while the specific research methods developed for the two major (outside-in and inside-out) analyses are presented in Chapters 5 and 7. Each of these chapters discusses the processes used in developing the analytical concepts and categories that have been adopted or discovered during the research process. However the thesis also requires consistent use of those concepts and categories throughout. For this reason, the terms that have already been

introduced here are defined in this section. The tables presented in this section are excerpts from the *thesis category map*, which appears in Appendix 1. That appendix contains the full list of analytical concepts and categories that are developed and used throughout the thesis.

The terminology used to describe the local-state antinomy demands early attention. The terms *outside-in* and *inside-out* have already been used to describe analysis and perspectives on LG environmental work (see Brown, 1996). Those terms are also used in the thesis to describe environmental initiatives, as defined in Table 1.1 below.

Table 1.1 Elements of the antinomy

Elements of the Antinomy	Outside-In	Inside-Out
Perspectives	State government, federal government and other points of view based in spheres of understanding at broader than local scales.	Local government and mixed points of view based in spheres of understanding within local scales.
Analysis	Research into local government delivery of state or federal government initiatives, where the analytical categories derive from those initiatives.	Research into local government delivery of initiatives that are important in the local area, where the analytical categories are defined in terms of the local issues.
Environmental initiatives	Attempts originating in state or federal government spheres and excluding local initiatives.	Attempts originating in local areas and those where the initiative came from local, together with broader spheres.

Source: Appendix 1. Thesis category map.

Table 1.2 presents the remaining terms that are used in this introduction. Again, this is an excerpt from the thesis category map in Appendix 1. Each time that a new concept or category is introduced in the thesis text, it will also be formally defined in a table such as the ones in this section. The categories are all interconnected, and many are nested together into higher and lower-order categories. This is an inherent and unavoidable feature that enriches the theories that are developed, but also has the potential to confuse the reader. The category map and Table 1.2 are designed to minimise confusion through shading of the higher-order categories and grouping the lower-order categories below them. In addition, every attempt is made to introduce categories in their entire nested groups throughout the thesis. As a result, the formal definitions support the logical flow of the text.

Table 1.2 Categories for local government, theories and environment

Concepts and Categories	Definition
Local Government	The sphere of government that is closest to the people and the environment.
Governance	The manner, acts and processes of governing, including the government, private and community sectors (UNDP 1997)
Components of theories	Analytical constructs that comprise the formal articulation of theories.
Concepts	The labels placed on discrete happenings, events and other instances of phenomena (Strauss and Corbin 1990. p.61).
Categories	Higher order classifications of concepts, discovered when the concepts are compared against one another, and appear to pertain to a similar phenomenon (Strauss and Corbin 1990. p.61).
Environment	Comprehensive, dynamic and complex systems encompassing nearly everything, living and non-living. Ecological, social and economic aspects are explicitly recognised here.
Environmental issue	An environmental problem associated with conflict between people (Conacher & Conacher. p.16).
Environmental problem	A threat to environmental values with an adverse affect on people (Conacher & Conacher. p.15).
Beneficial environmental outcomes	The practical, tangible effects of successful efforts to protect environmental values, in the context of current, often degrading environmental values. They do not necessarily imply a practical change to any situation. In this sense, the retention of an environmental value that has been under threat of degradation, is considered a beneficial environmental outcome.
Environmental value	A quality of physical characteristic of the environment that is conducive to ecological health, or public amenity or safety (from QG 1994. S.9).
Sustainable environmental outcome	Environmental outcomes that will continue over time.

Source: Appendix 1. Thesis category map.

1.3 Major research questions

This thesis argues the case that Australian LGs can and do deliver some sustainable environmental outcomes. However their capacity to do so is severely limited by a range of issues that can be understood in relation to the local-state antinomy. Four major research questions are addressed in developing this thesis. They are:

- How can Australian LG capacity to deliver beneficial environmental outcomes be understood?
- Within this capacity, what are the environmental outcomes now being achieved by Australian LGs?
- How can Australian local government extend its capacity to deliver beneficial

environmental outcomes? and

- What are the implications of the local-state antinomy on Australian LG capacity to deliver beneficial environmental outcomes?

The thesis does not explicitly tackle the question of why some LGs do not make attempts to deliver environmental outcomes, preferring to focus on the experiences of those that do. The focus was restricted to avoid too great a scope for a study with limited means. It was also thought that any steps taken to resolve constraints to LG environmental effectiveness might help to encourage other LGs to take similar action.

1.4 Research principles

In addition to the overall thesis and major research questions, several principles have been consistently applied throughout the research and write-up. These are also worth introducing since they explain much of the content, structure and presentation of the thesis.

The thesis addresses a primary goal of producing research that is directly useful to LG environmental practitioners. In many ways, this is a natural extension of the topic itself. The third research question makes it clear that the thesis is interested in improving LG environmental capacity. But LGs are extremely practical institutions and few people who are involved with LGs have the time or inclination to read weighty research reports such as PhD theses. Adopting this primary goal of practical value meant finding ways to bridge that gap and make the research accessible, interesting and relevant to LGs. The topics and presentation of the two major studies are a direct result of this goal. The first component of the outside-in study was a product delivered under contract to a specific LG. Guidance on how to ensure its value to that LG was written into the contract and reinforced during project meetings. The inside-out study is presented in three parts – two thesis chapters and the case studies that form Appendix 4. The case studies in the appendix are produced as stand-alone stories complete with references, pictures, and technical details necessary for source LGs to demonstrate their achievements, and for other LGs who read them to take action along similar lines. This principle led to the decision to produce the CD-Rom that forms part of this submitted thesis, and can also be produced cost-effectively to be given to each contributor. The author also gave many presentations to LG practitioners and others during the course of

the thesis research, as a way of addressing this principle. As well as being well-received by audiences, the responses assisted the development of the thesis ideas and arguments.

A second research principle was to be respectful of LG situations, accommodating LG interests wherever possible. One impact of this principle was that each LG area that is included in this thesis was visited by the researcher, and LG practitioners were interviewed on-site. This avoided a common difficulty faced by LG practitioners confronting mailed surveys and other 'distant' research tools which can fail to pick up on key local issues, and may seem irrelevant in local settings. It also enabled the research themes to be developed gradually as the visits proceeded, and tested through discussions with LG practitioners in different settings. LG practitioners were typically very happy to meet face-to-face in their local area to discuss their environmental issues, and often expressed pleasure and satisfaction at the chance to reflect on their experiences within settings that they could define. Another outcome from the principle of respect was the ongoing contact that was maintained with contributors. For the outside-in research, this relationship was formalised through the contract, and continued through further development of a risk assessment method that emerged from that study. For the inside-out research it meant that each case study was written in consultation with at least one LG practitioner, and many are co-authored. All case studies are being provided to the LGs who have been involved with this thesis so that they may put them to further use. In both cases, the ongoing relationships brought an action-research element into the thesis and this is discussed further in Chapter 4 (see Homan 1991 for a detailed discussion on the ethics of social research).

A third research principle was to recognise indigenous Australian communities. Chapter 2 argues that indigenous Australians were the first local authorities and that they remain important stakeholders in formal LGs across the country. This principle also makes sense because LG is the sphere of government that is most accessible to indigenous Australians, with over 13 per cent of the current formal LGs being indigenous. This principle led the researcher to visit and stay in many indigenous communities throughout Australia. Indigenous issues however proved too different and complex to be effectively covered by much of the original research in the thesis. They are recognised in the typology of LG that is proposed in Chapter 2, discussed briefly in that chapter, and presented in one of the case studies[1]. But even these minor efforts have

[1] T1 on the Mirrar's struggle to avoid uranium mining at Jabiluka in the Northern Territory.

been interesting to this author and may also help others to see indigenous and other LGs in context.

1.5 Thesis structure

Part one of the thesis comprises its literature review and overall methodology and lays the foundations for the original thesis research. The thesis has a two-chapter literature review that develops arguments for both principles involved in the local-state antinomy, and also shows that the first two research questions have not previously been posed or answered. Chapter 2 introduces Australian LG, outlining its history, its structure, the rapid changes that it is currently undergoing and some of the systemic constraints to its effective operation. It also proposes a simple typology of LG that establishes the analytical categories for LGs that are used in the remainder of the thesis. Chapter 3 discusses Australian environmental local governance, outlining the many important environmental roles played by LGs, and the major constraints and opportunities that they face. Together, these chapters detail the context within which LGs perform their environmental roles and the paucity of scientific knowledge about LG environmental efforts and outcomes. This discussion supports the decision to adopt a grounded theory methodology, together with a range of specific methodologies designed to find out how LG capacity to deliver environmental outcomes can be understood, and what outcomes are being achieved. Chapter 4 outlines the grounded theory approach to the original research presented in Part 2 and the plurality of other methods that are integrated into the grounded framework.

Part 2 presents the two major thesis studies and is both descriptive and analytical. Chapter 5 details the methodology for the outside-in study of Queensland LG implementation of the Queensland Environmental Protection Act 1994 while Chapter 6 discusses the findings. Chapter 7 presents the comparative case study methods developed for the inside-out study whose findings appear in Chapter 8. There are other important differences between these studies, beyond their outside-in and inside-out focus. The first was undertaken as a series of consultancy projects and is predominantly quantitative. The second was self-funded through the profits from the outside-in study, is predominantly qualitative and has an Australia-wide focus, involving 34 case studies from four states and both Australian territories. These and other features are discussed further in Chapter 4.

Chapter 9 synthesises the findings from Part 2. This chapter presents the grounded theories that were discovered to explain LG environmental efforts and outcomes in ways that integrate outside-in and inside-out perspectives and attempt to transcend the local-state antinomy. In doing so, this chapter tackles the predictive third major research question posed in the thesis. The overall thesis structure is pictured in Figure 1.1.

The thesis also includes four appendices. Much of the detail of each appendix is presented on the accompanying CD-Rom, rather than as printed material. A summary of all documents on the CD-Rom is presented at the start of the appendices. In summary, the appendices entail:

- **Appendix 1: Categories and tools** - Thesis category map is printed, with N-vivo software and instructions included on CD-Rom.
- **Appendix 2: Research** – These documents, relate to the overall research effort including any relevant material from Part 1 of the thesis. Material in this appendix is summarised or presented in the thesis text and on the CD-Rom, rather than being included in this printed document.
- **Appendix 3: Environmental risk studies** – Again, none of this material is printed here. The Appendix on the CD-Rom includes publications, methods and data from the Brisbane City and Queensland statewide benchmarking studies and some other relevant documents that are discussed in Chapter 6.
- **Appendix 4: Comparative case studies** - 34 case studies of LG attempts to deliver environmental outcomes. These comprise the primary data for the discussion of the inside-out research in Chapter 8. All of these documents are included in this printed version, as well as on the CD-Rom. The CD-Rom also includes the N-Vivo database containing the case studies, and the results of the qualitative analysis.

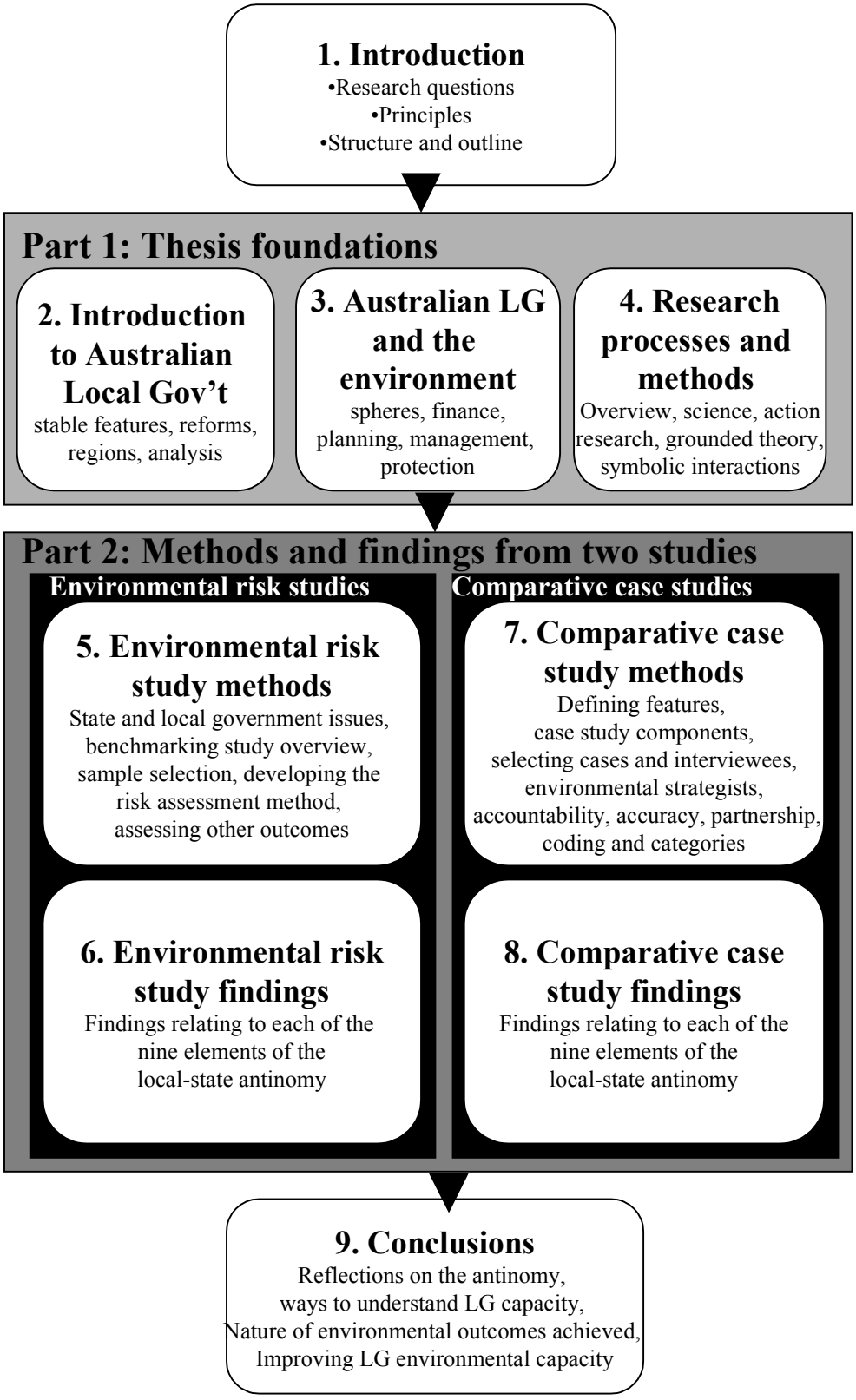
1.6 The end of the beginning

This introduction has presented the starting points for this thesis' analysis of LG capacity to deliver environmental outcomes. It has started a discussion on the importance of LG as an environmental manager in Australia, and has suggested that the study of environmental local governance is underdeveloped. It has introduced the two major studies that are reported on in this thesis, and has defined the concepts of outside-

in, and inside-out approaches to perception and analysis of LG. It noted that this distinction underpins the two major studies presented in the following chapters. The story of the research has also been told, highlighting the personal journeys that have shaped the formal analyses that make up the remainder of this work.

As you read the remainder of the thesis, you may wish to remember that every environmental issue occurs in a local area. People who live, grow, work, play and die in every part of Australia care deeply about their local environments, mourn when environmental values are lost and celebrate when improvements are gained. Local environmental governance is inherently important to all of us, as it anchors us to our homes and shapes the perspective from which we view the world. This thesis covers a powerful, and almost unexplored analytical territory that will enrich Australians if it can be better understood, and the antinomy of environmental local governance resolved.

Figure 1.1 Thesis structure



Part 1

Thesis Foundations

Chapter 2. An Introduction to Australian Local Government[1]

2.1 Introduction

LG is a fundamental and environmentally significant sphere of government in Australia. While this has been recognised by many authors and agencies, there is little in the academic literature that explores LG environmental capacity both broadly and in depth. Such an exploration must start with an understanding of the institution of LG in Australia. This chapter aims to provide that understanding. It discusses relevant academic texts and government documents that give insight into the features of Australian LG that influence its capacity to deliver beneficial environmental outcomes. It also discusses the absence of universal indicators to report on LG performance of its functions, defined either from the outside-in or the inside-out. This absence is part of the reason for the use of grounded research methods for the thesis, as discussed in Chapter 4.

The chapter starts by discussing the local-state antinomy in Australia. That is that LG is a creature of the SGs, while simultaneously being a creature of local communities and their environments. These contradictory roles are discussed, and a heuristic diagram presented to demonstrate *outside-in* and *inside-out* perspectives on LG. This section also explains how the thesis structure enables an exploration of both sides of the local-state antinomy, so that grounded and practical conclusions may be drawn about its impacts. It also defines the analytical category of perspectives on LG issues.

Section 2.3 examines the historical and statutory context of LG in Australia. This includes LG formation by colonial authorities, well before the constitution of the Australian Federation. It also explores LG relations with SGs, its representation by LG Associations (LGAs), the common range of powers and responsibilities held by LGs Australia-wide and the variations in LG roles between states. This section also defines analytical categories for LG roles.

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[1] Note that Sections 2.2, 2.3, 2.4, 2.5, and 2.8 expand on my 'Local Government' chapter in a refereed book, on *Australian Experiences in Processes and Institutional Arrangements for Resource and Environment*. Many thanks to Land and Water Australia, who funded that project (Dovers and Wild River (eds), forthcoming, 2002).

Section 2.4 introduces the theme of LG reform. It describes the many fundamental changes that have recently occurred in Australian LG, and that have the potential to profoundly influence LG environmental management. In many cases, similar reforms affect LGs in all Australian states, but policy detail and implementation strategies vary markedly between them. National Competition Policy reforms, LG amalgamations and corporatisation are examined as important examples of both the scale of change and the interstate variations in implementation. This section also reports on efforts to define and adopt LG performance indicators.

Section 2.5 is a brief discussion on indigenous local governance. This raises some fascinating, complex and environmentally important issues. For instance, the presence across Australia of 97 LGs with mostly indigenous councillors, servicing largely indigenous communities, clearly shows that LG is the sphere of government that is most accessible to indigenous Australians. Much of Australia's desert and rangeland areas are managed by aboriginal local authorities. However these issues are worthy of an entire thesis, and other than one case study[2], indigenous issues have been beyond the scope of this thesis.

An environmentally significant area where ongoing reforms affect LG is in the myriad of regional arrangements across Australia. Section 2.6 describes issues facing LGs in regional arrangements. The section uses Noosa Shire Council, on Queensland's Sunshine Coast, to demonstrate the inconsistency of regional arrangements facing LGs, and discusses the general implications of these.

As well as making sense of the structures and processes affecting LG operation, this thesis also relies on comparisons of LG characteristics, within and between states for both its sampling and analysis. Section 2.7 develops a typology of Australian LG that is applied throughout the thesis for this purpose. The section reviews the Australian Classification of LGs and remoteness classification, then proposes an alternative typology or more relevance to this research which is then applied throughout the thesis. The section presents a map of the LG types, and statistical analysis of geographic, population and wealth of Australian LGs, along with a map showing the locations of each LG type. It defines analytical categories for the LG types and their defining features, based on that statistical analysis.

[2] T1, on the Mirrar resistance to the Jabiluka mine in the Northern Territory. See Chapters 7 and 8, and Appendix 4.

Section 2.8 gives an overview of academic discourse related to the topic of LG environmental work. This is not intended to be a complete review of all potentially relevant literature. This is partly because this research aims to be highly practical, meaning that government documents were often the most relevant. The scarcity of academic literature related to the thesis' key research questions also led to the decision to adopt an analytical framework based on grounded theory methods, as is discussed in Chapter 4. That methodology requires the application of techniques to discover analytical categories and relationships, which are then compared with the theories in relevant academic texts. So the academic literature that is cited has a focus on those areas of research that proved particularly valuable to this research during the grounded theory development. The literature that is covered includes relevant, recurring themes from policy and institutional studies.

2.2 Statutory basis of the local-state antinomy

The local-state antinomy has already been briefly introduced. That is, the contradiction between the two compelling principles that:

- Australian local governments are statutory agencies of Australia's state governments, with no power or authority beyond that which is ascribed to them by the states; and
- Local governments in Australia are independent agencies whose authority and capacity transcends their regulatory powers by nature of their attachment to their local areas.

This thesis is structured around the local-state antinomy because it considers that many problems in intergovernmental relations involving LGs stem from a widespread failure to acknowledge, understand and work sensitively with both sides of the antinomy. The thesis does not attempt to resolve the antinomy, but instead to use it as a analytical construct to discover concepts about LG environmental capacity that make sense on the basis of both the outside-in and inside-out principle. This section presents a model of LG that identifies separations and functional linkages between the inside and outside of Australian spheres of government. It also discusses some insights from academic discourses that assist an understanding of the local-state antinomy.

The outside-in principle has solid legal and practical foundations. Every Australian LG exists as a result of its formal constitution by SG legislation, and will cease to exist if written out of that same legislation. As a common law principle, LG has no formal roles beyond those that are prescribed for it by the SG. LG capacity to fulfil its responsibilities also relies on SGs and the Federal Government (FG), which help to fund LG work and which establish and enforce standards for LG operation. Appeals against LG practices or decisions are decided outside of LGs, by SG judicial systems or ministers. When SGs initiate new roles for LGs they frequently rely on national or international models, rather than on lessons from local areas. And when they evaluate LG efforts, they use criteria deriving from the state or broader spheres. (These issues are dealt with further in Sections 2.3 and 2.4.)

Many analysts of Australia's public institutions implicitly subscribe to outside-in perspectives on LG. Many authors ignore LG roles completely (see for example Davis et al 1988). Otherwise LG issues are seriously downplayed and seen "as being of little significance" compared with SGs and Federal Governments (FGs) (Aitkin, Jinks and Warhurst 1989. p.54). When LG is mentioned, many scholars respond to its diversity and complexity by providing untested generalisations from limited case studies, or by avoiding serious theoretical debates. Others restrict their theories about LG operation to the scope of State and Federal Government legislation and policies affecting them (Mowbray 1997).

There are equally strong arguments to support the inside-out principle, although these have received less attention. LGs may be constituted by SGs, but they derive their authority and personnel from local settings. The decision makers in LGs are the democratically elected councillors who must live in the local area. Councillors usually perceive themselves as operating at a level between the local community and the LG as a whole, working to lead, inform, and correct (and sometimes ignore) communities. They also represent community needs to, and review the performance of, the remainder of their LG on behalf of local residents (Newnham and Winston 1997). Councillors hold the responsibility for appointing the most senior council staff member (the Chief Executive Officer), who in turn is responsible for appointing other council staff. LGs perform and evaluate their own work with reference to its perception by local residents, rather than its description in SG legislation (see LGAQ 1997a). There are also examples in Australia of SGs meeting powerful local resistance when they have tried to use their statutory powers to dismantle LGs (see Section 2.4). There is substantial anecdotal

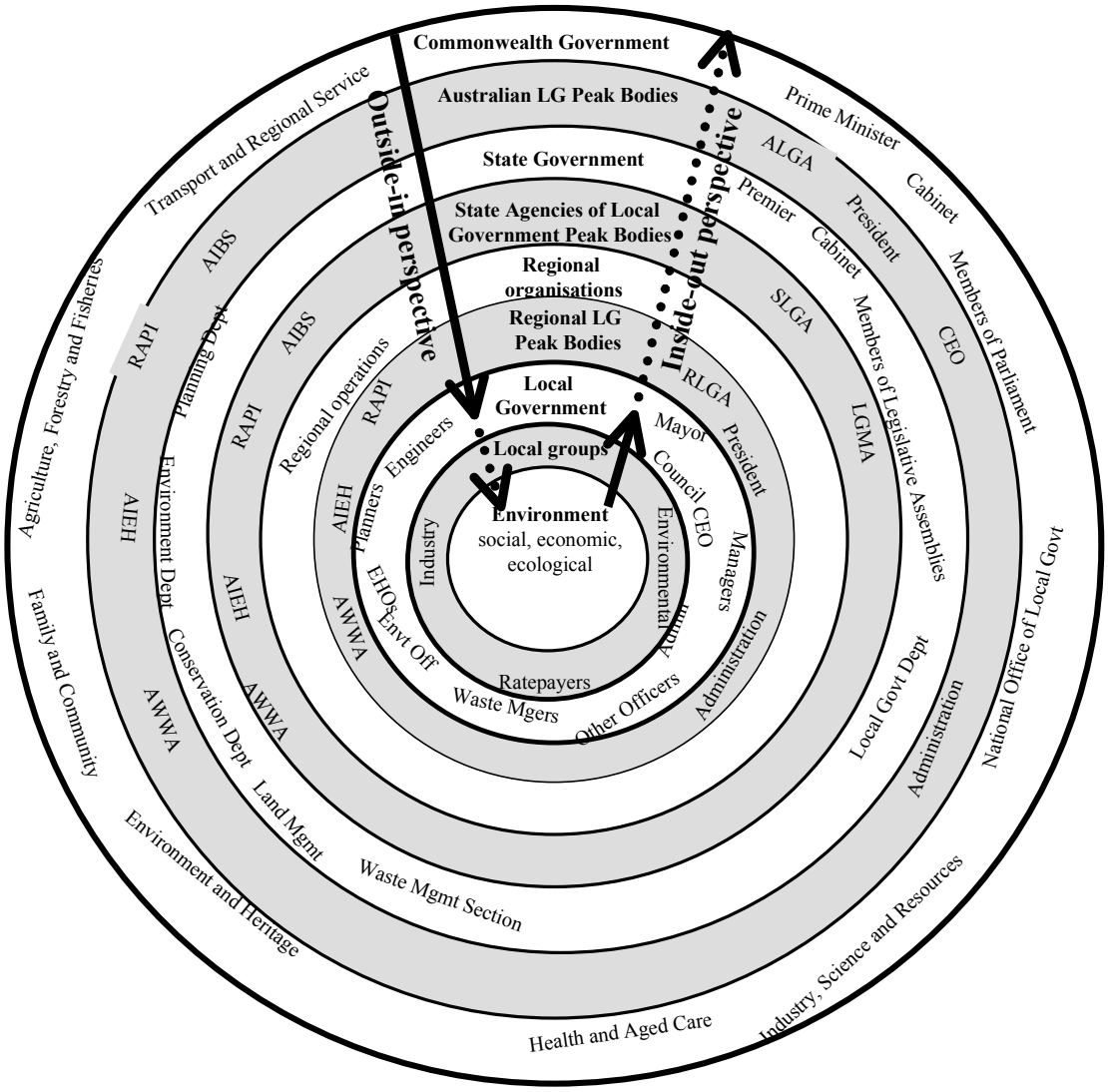
evidence that LGs respond most immediately and strongly to local needs and issues, and that SGs do not understand this. It was the recognition of this that led to the adoption of the local-state antinomy as a central conceptual theme for the thesis[3].

Figure 2.1 is a heuristic diagram to help readers to picture the inside-out and outside-in perspectives. The series of circles represent Australia's spheres of government. The figure takes any local environment or community as its hub, and shows the many layers of public agencies, involved in governing environments, that are encountered looking out from any local perspective, or in from the FG. In addition to the LGs, SGs and the FG, this figure includes spheres for LGAs and for regional organisations. These organisations are discussed further in Sections 2.3 and 2.6.

Figure 2.1 also shows some of the practical linkages between the inside and outside spheres. These include the agencies that are represented across several spheres of government. Such agencies can connect individuals on the inside and outside, and support consistent approaches to policy implementation across the spheres. Regardless of the sphere in which they work, members of the same peak body will have had similar training, be bound by the same professional obligations and may meet regularly for conferences and other in-service information sessions that provide a degree of coherence across the spheres.

[3] Chapter 4 presents original research into this issue.

Figure 2.1 Australian spheres of community and government



Acronyms

CEO	=Chief Executive Officer
SLGA	=Institute of Municipal Managers
EROs	= Environmental Resource Officers
ALGA	= Australian Local Government Assn
LGMA	= Local Government ManagersAssn
WMAA	=Waste Mgmt Association of Australia
AIBS	=Australian Inst of Building Surveyors
AWWA	= Australian Water and Waste Water
AIEH	= Australian Institute of Envtl Health
RAPI	= Royal Australian Planning Inst

(See also Brown, V. 1999 for an alternative conception of outer and inner spheres).

A range of perspectives on LG issues is evident in Figure 2.1 and it is most logical to introduce these analytical categories here. Table 2.1 defines four different perspectives on LG. Inside perspectives are covered by the *LG* and *other* categories. Outside perspectives are covered by the state and federal government category. The *mixed* category includes those people who demonstrate both inside-out and outside-in

perspectives. This category is particularly important, since it identifies those people whose perspective could provide them with insights necessary to integrate the two sides of the local-state antinomy. These perspectives are explored further in relation to the antinomy in Section 4.5.

Table 2.1 Analytical categories for perspectives on LG issues

Categories	Definition
Perspectives	The point of view or conceptual framework of a person that provides their insight into local environmental issues.
Local government	Includes those people who have held formal roles in LG, and in no other sphere of government.
Mixed	People with experience working in LG associations, or have held formal LG roles and worked in at least one other sphere of government. Includes people who have worked in LG and regional, state or federal government.
State and federal government	People who have worked in state and/or federal governments, but not in local governments.
Other	People who have not worked in any form of government.

Source: Appendix 1. Thesis category map.

Existing literature in policy studies provides models similar to the outside-in and inside-out analysis. Similar models to the former include top-down or forward-mapping with bottom-up or backward-mapping approximating the inside-out approach (see Elmore 1982; Sabatier 1990; Dahl 1995). According to the literature the approaches similar to the outside-in perspective start with a policy decision by a Commonwealth or SGs, and then consider the consistency of outcomes with policy goals. This approach is recognised for its value in determining the effectiveness of LG delivery of state- or federally-determined environmental initiatives. Outside-in theorists have proposed six variables that they argue are sufficient and generally necessary conditions for effective implementation. These are: clear and consistent objectives; an adequate causal theory; a well structured implementation process; committed and skillful implementing officials; support of interest groups and sovereigns; and relative stability in surrounding socioeconomic conditions (Sabatier 1990). Such issues are dealt with in the outside-in study reported in Chapters 5 and 6.

Approaches similar to inside-out analysis focus on system elements such as implementation structures, described as "clusters of parts of public and private organisations" (Hjern and Porter 1981). This approach is instructive in its primary focus on implementing agencies such as LGs. It also supports recognition of times when

events don't match statutes, and aims to discover the reasons for this. The main flaw of these equivalents of an inside-out analysis is a lack of a coherent methodological or theoretical framework that can be consistently applied in different circumstances (Sabatier 1990). The comparative case study method that was developed in this research, detailed in Chapters 6 and 7, specifically aim to provide such a framework.

A final point in this discussion of the local-state antinomy is the need to ensure that this analytical framework does not inhibit recognition of processes that integrate effectively between inside-out and outside-in issues. Forces focused inside, outside, and those aiming to integrate across the antinomy are defined in Table 2.2.

Table 2.2 Analytical categories for forces affecting the local-state antinomy

Categories	Definitions
Antinomy forces	The source or target of a shift that stimulates or is caused by any part of an attempt by a LG to deliver an environmental outcome, expressed in terms of the local-state antinomy.
Inside	A force originating from or focused within the local area, including within the LG.
Outside	A force originating from or focused outside of the local area, excluding the LG's particular concerns.
Integrated	A force that integrates efforts and initiatives within and outside the local government area, and that therefore seeks to provide a practical solution to the local-state antinomy.

Source: Appendix 1. Thesis category map.

The local-state antinomy can readily be observed in many of the relations and conflicts between LGs and SGs, and in the contradictory perceptions held by those agencies of the roles, responsibilities and ideal operation of LGs. The combination of outside-in and inside-out studies presented in this thesis aims to strengthen the bases for mutual understanding between spheres of government, thus reducing conflict arising from the antinomy.

2.3 Local government in statutory and historical context

This section gives a very brief outline of the statutory and historical context of LG in Australia and of the stable features that underpin Australian LG. It also formally defines the analytical categories of perspectives on LG issues and roles within LGs.

Australia's earliest formal LGs (usually called municipalities) were constituted by the statutory authorities governing the English colonies, in what are now Australia's state capital cities. Although the eastern seaboard was colonised first, the earliest LGs were established in Western and South Australia in 1838 and 1840. Municipalities were first established for Sydney and Melbourne in 1842 and in Hobart in 1846. From the outset, the LGs were established both in response to the inside-out demand for local democratic representation, and to provide essential services for developing, and often remote parts of Australia, that could not be adequately provided from outside by the central authorities. Australian LGs were modeled on the English equivalents, but the models generally needed significant adjustment to Australian conditions. The early systems for LG were frequently short-lived and problematic due to small populations, large areas, and mismatches between LG powers and resources. Debates about the taxes and charges that would be gathered by each of these first two spheres, and the range of powers undertaken relating to those taxes, have continued since these earliest days of Australian LG (Power, Wettenall & Halligan 1981, pp.7-15).

Permissive systems, where SGs provided powers to enable communities to initiate LG from the inside were established early on in many states. The permissive systems entrenched different funding and service provision arrangements between areas with and without LGs. These systems were particularly problematic in Queensland, where very few LGs had been formed, and then in the 1860's, petitioners sought to establish three strong regional governments that would have threatened the central SG authority. Such complications and threats lead to compulsory LG gradually being established in each state, although a voluntary system still exists in Australia's Northern Territory (Power, Wettenall & Halligan 1981, pp.7-15 and Tucker 1981, pp.379-381).

In 1901, the state governments formed a federation to cover the entire country, and Australia's FG system commenced. Written by the SGs, Australia's Constitution passes only a discrete set of powers onto the FG, based on the issues that were considered to be of national importance at the time of federation. Given the developing and diverse systems of LG throughout the country, and their 'minor' functions, it is unsurprising that no mention of the smallest sphere appears in the Constitution. FG officials and other interested parties have made many attempts to forge direct relationships between the FG and LGs in the ensuing century, but the initiatives have not been successful. Consequently, SGs have always been, and remain, the statutory authority underpinning LG (and FG) affairs (see Australia 1988: Chapman 1997).

Since SGs exert statutory control over LG numbers, powers, resources and other key features, there is great potential for disempowerment of the smallest sphere. SGs can also be disempowered in relation to LG, since they face difficulties in communicating effectively about policy development and implementation with the many and varied LGs in their jurisdictions. The state, regional and national Local Government Associations (LGAs) that have gradually been established in each state provide some solutions to intergovernmental communication and advocacy problems between LG and SG. Elected members of all Australian LGs are represented by the LGAs. However the LGAs have no formal authority over SG dealings with LGs and instead must rely on negotiation and lobbying in their representation of LG issues.

Many LG powers, structures and functions are consistent and distinctive across Australia. An analysis of Australia's *separation of powers* sheds some light on this. All LGs lack judicial powers, and rely on state courts for legal rulings. LG legislative functions are undertaken by elected councillors, including a senior councillor (referred to as 'mayor' in this Thesis). Executive powers in LG are overseen by chief executive officers (CEOs - although the title differs between states) appointed by the council. This is the only executive position in many of the smallest LGs, but larger ones employ managers and officers for policy development and a mix of officers and contractors for direct service delivery. These are usually grouped within departments including finance and administration, engineering, planning, environmental health, and many more in larger LGs. Direct contact between individuals in each of the legislative and executive roles is common throughout LG, but in no other tier of government. Table 2.3 formally defines the analytical categories used in this thesis to refer to the different roles within LGs. These include sub-categories for different types of elected officials, managers and officers.

Table 2.3 Analytical categories for LG roles

Categories	Definitions
Roles	Formal positions held within a LG that influence available options for tackling environmental issues.
Elected	Local government officials that are elected to legislative roles.
Mayor	The most senior elected official (also known as President, Chief Minister).
Councillors	All elected local government officials other than the Mayor.
Council	The entire group of elected officials in a single local government. The legislative part of the local government.
Manager	A senior officer, working with executive powers, accountable for delegated responsibilities.
Chief Executive Officer	The most senior manager in any LG (also known as general manager and town clerk).
Other manager	Managers other than the Chief Executive Officer.
Officer	An official working with executive powers, accountable to a manager.
Environmental	An officer working in any area with direct environmental relevance (including environmental officers, environmental health officers, environmental planners and others).
Other	Any officer who is not involved in environmental work.

Source: Appendix 1. Thesis category map.

Many LG managers and officers usually administer several, and sometimes very many, separate statutes, and in associated liaison with relevant state or federal government departments. In contrast, officers and managers in line-departments of the SG or FG will generally only be involved with one or a very small number of strongly related laws. This means that although LGs are not empowered to develop state or federal laws, they are the sphere of government that is most involved in integrating laws during their implementation, and will often be acutely aware of discrepancies or other mismatches between different laws. It is worth noting that Australia's federal and state constitutions support such discrepancies by allowing for responsibilities to be 'allocated in appropriate ways', rather than divided up exactly (Galligan and Fletcher. 1993. p.3). However the Australian LG Accord, and other agreed protocols between State and LGs, emphasise the need to more clearly define and rationalise LG roles responsibilities (ALGA 1998a, S.3.7).

LGs are politically complex and distinctive. The issues that matter most to different LGs relate to local features such as population and geographic size, main economic activities, location (for example, remoteness), environmental and other unique features. Active commitment to these issues of local importance tends to be the motivator for

community members to stand for local elections. This means that elected councillors tend to be committed to positions on key local issues, rather than being attached to any formal political party. It is only in Australia's capital and other large cities that party politics are powerful at the local level (see Chapman 1997). LGA conferences are the LG equivalent of parliament, but they operate very differently. Since highly varied local issues, rather than party politics, are the strong influences in local politics, the voting blocs at the LGA conferences tend to be issue specific, and alliances shift with the issues. The likelihood that LG representatives will agree on many issues, even when they disagree on some, can make for quite congenial relationships across political, geographic and other spectrums, compared to partisan state or federal parliaments.

Some key LG features also vary considerably between states in ways that affect LG generally and environmental capacity in particular. For instance, the democratic election of LG councillors is a key pillar of their legitimate powers for managing local areas. Yet voting in LG elections is not compulsory in Western Australia, South Australia and Tasmania. Voter turnouts in the most recent LG elections were 42%, 40% and 58% respectively in these states (see Table 2.4 for figures and references). Voting is also not compulsory for non-resident ratepayers and rate-paying lessees in New South Wales.

Another example of interstate difference lies in the land areas governed by them. LGs govern continuous tracts of land in all Australian states. However in the Northern Territory LGs are constituted mainly for many community centres and the small areas surrounding them. Remote parts of South Australia and New South Wales also lack a specific local sphere of government (see Figure 2.3, discussed later in this chapter).

LG roles vary considerably within and between states, and have also increased over recent decades. General competence powers from each jurisdiction’s LG Act are presented in Table 2.4. Some roles are undertaken as statutory requirements. Others are optional, and undertaken through adoption of local laws, or as voluntary initiatives. Roles that LGs generally take on include:

- public works and services such as road and bridge construction;
- community services such as street lighting, public toilets, car parks and campsites;
- community development;
- public order and safety such as fire prevention, animal protection and beach patrol;
- health services such as immunisation and infectious disease control;
- welfare services including meals-on-wheels, child care and emergency care centres;
- housing and community amenities for people with special needs;

- recreation and cultural facilities including swimming pools, parks, reserves, cultural heritage sites and pathways; and
- trading systems and other involvement in fuel, energy, transport and communications (Power, Wettenall and Halligan 1981; McNeill 1997).

One of the ironies of Australian LG is that the smallest, poorest and most remote LGs tend to fulfil many more roles than their better-resourced counterparts in the larger centres. This is because LGs are often the only government agency represented in many remote communities (other than the police that are also present in many). So LGs in those areas also responsible for supplying housing, power, water, sewage, medical and other services. In doing so, they are likely to deal with over 30 different state or territory-level and FG departments (RAMP 1997).

Australian LG functions are also internationally distinctive for their limitations. For instance the provision of police, school and hospital services that are provided by LGs in other countries such as Britain and the United States are not provided by Australian LGs. This is despite several of these issues having been within the mandate of the earliest LGs (Power, Wettenall & Halligan 1981, pp.7-15).

Finally, it is worth noting that many of the challenges facing LGs are also fairly consistent throughout most of the institutions. Key among these are the chronic resource shortages facing most LGs, and especially the smaller ones. Over 50 per cent of LG funds are gathered through land taxes, or rates (NOLG 1998, 2001). These are notoriously unpopular taxes, and community outrage usually follows any attempt to raise rates, to pay for improved or new services. Rate capping by SGs is also increasingly occurring, has not helped LGs, and has the capacity to cause long-term problems for LG operation (Wensing 1997).

LGs are often also constrained due to inadequate statutory powers, lack of technical expertise or knowledge about problems, and lack of time to adequately address them. LGAs have strong policy platforms of ensuring that new LG requirements are fully funded, but this is rarely achieved, and in many cases, the continual increase in LG roles and responsibilities is placing considerable strain on LGs (ALGA 1998a).

Table 2.4 Local Government Legislation

State/Territory Act	Voting obligations	General competence powers

Queensland *Local Government Act 1993* (QG 1993)	Voting is compulsory. (S. 282)	"The objects of this Act include – (a) providing a legal framework for an effective, efficient and accountable system of LG; and (b) recognising a jurisdiction of LG sufficient to allow a LG to take autonomous responsibility for the good rule and government of its area with a minimum of intervention by the State; and (c) providing for community participation in the LG system…" (S. 2)
Northern Territory *Local Government Act 1993* (NTGa 1993)	Voting is compulsory. "No elector may fail to vote without a valid and sufficient reason for so failing"(S. 42).	S. 120. "A Council in the performance of its function is charged with the peace, order and good government of its Council area and has the control and management of that good government". (S. 120)
Western Australia *Local Government Act 1995* (WAG 1995)	Voting is not compulsory. Electors may vote if they are on the electoral role, or omitted in error from the electoral role (S. 4.65.). 42% of electors voted in the 1999 postal voting elections (WAEC 2001).	"The general function of a LG is to provide for the good government of persons in its district…. A liberal approach is to be taken to the construction of the scope of the general function of a LG" (S. 3.1).
South Australia *Local Government Act 1999* (SAG 1999)	Voting is not compulsory. People on the electoral role are entitled to vote (S. 16.) In the 1999 elections, the lowest voter turnout was 32.7%, and the state average was 40.1% (SEO SA 2000, pp. 21, 24).	"A Council is, under the system of LG established by this Act, established to provide for the government and management of its area at the at the local level, and in particular… e) to manage, develop, protect, restore, enhance and conserve the environment in an ecologically sustainable manner and to improve amenity" (S. 6)

Victoria *Local Government Act 1989*. (VG 1989)	Voting is compulsory for enrolled residents, but not compulsory for non-resident land-owners. (S. 40)	"(1) The purposes of a Council are— a) to provide for the peace, order and good government of its municipal district; and b) to facilitate and encourage appropriate development of its municipal district in the best interests of the community; and c) to provide equitable and appropriate services and facilities for the community and to ensure that those services and facilities are managed efficiently and effectively; and d) to manage, improve and develop the resources of its district efficiently and effectively…." (S. 6)
Tasmania *Local Government Act 1993* (TG 1993a)	Voting is not compulsory. S. 254. (1) Any person is entitled to vote in an election in a municipal area if the person is enrolled on the electoral roll for the House of Assembly in respect of an address within that municipal area. In the 2000 LG elections, an average of 58% of enrolled electors voted (TEC 2000).	(1) "The council of a municipal area has the following functions: a) to formulate, implement and monitor policies, plans and programmes for the provision of appropriate services and facilities to meet the present and future needs of the community; b) to facilitate and encourage the proper planning and development of the municipal area in the best interests of the community; c) to manage, improve and develop efficiently and effectively the resources of the council; d) to develop, implement and monitor strategic plans for the development and management of the municipal area; e) to provide for the health, safety and welfare of the community; f) to represent and promote the interests of the community; g) to provide for the peace, order and good government of the municipal area. (S. 20).
New South Wales *Local Government Act 1993.* (NSWG 1993).	S. 286. Compulsory with exceptions. "Electors on the residential roll must vote at a contested election unless exempt…. Electors on the non-residential roll or the roll of occupiers and ratepaying lessees may vote, but are not required to vote."	1) A council has the following charter: a) to provide directly or on behalf of other levels of government, after due consultation, adequate, equitable and appropriate services and facilities for the community and to ensure that those services and facilities are managed efficiently and effectively; b) to exercise community leadership; c) to exercise its functions with due regard for the cultural and linguistic diversity of its community; d) to properly manage, develop, protect, restore, enhance and conserve the environment of the area for which it is responsible; e) to have regard to the long term and cumulative effects of its decisions…" (S. 6)

Note: all legislation is described as in force September 2001.

2.4 Local Government Reforms

LGs throughout Australia have been the subject of a major reform process over the last decade. Changes have often been imposed from outside by SGs, frequently with instigation from the FG, but input and even drive from LGs and LGAs has also regularly occurred. This section explores some of the major changes to the institution of Australian LG over the last decades. Although LG environmental work is not discussed here, the section focuses on those issues with environmental implications.

Since 1989, all States have commenced new LG Acts. In comparison with their predecessors, these provide wider general competence powers, set clearer accountability mechanisms, reduce detailed prescriptions, and provide the framework for microeconomic and other reforms (see Table 2.4 above, and Wensing 1997 pp.90-91 for general comments). The changes reflect and encourage a more autonomous, strategic and responsible approach to LG compared to the traditional, relatively rudimentary administration of infrastructure and services. Several of the Acts refer specifically to LG roles in providing for community participation, and for sustainable development of local areas.

LGs throughout Australia are now also required to develop strategic and holistic visions for their local areas through corporate planning processes involving consultation, review and accountability mechanisms. These types of changes have a profound influence on the potential limits of LG roles. There is a common law principle that bodies created by statute can only do those things for which there is expressed or implied legislative authority, or which are reasonably incidental to those acts (Lonie and Bryant. 1989). Modern LG Acts place almost no constraints on the limits of LGs roles, with the constraints tending to come from the inside, in the form of financial limits and political interest.

The National Competition Policy has impacted heavily on LG, since each State has passed legislation ensuring that LGs, along with other public agencies, identify and avoid anti-competitive behaviour (CofA 1996, pp. 36-37). Different States have embarked on the reforms with varying verve. In Victoria for instance, the Kennett Government worked from the outside to establish tough annual targets for proportions of Council expenditure to be subject to compulsory competitive tendering, and most achieved the 1996-97 target of 50 per cent (NOLG 1996-97, pp. 150-153). In contrast,

Queensland took a gradual and consultative approach that considered LG inside-out issues, initially requiring only the 17 largest councils to conduct a public benefit assessment into the possible corporatisation and commercialisation of their significant business activities. Definitions of types of activities that could require such assessments were provided, with transparent and accountable decision-making processes providing the safeguard to ensure that the LGs followed up their assessments with appropriate decisions about whether to proceed with competitive tendering. Most Queensland LGs are required simply to identify activities that compete with the private sector, and then decide whether these should be subject to a Code of Competitive Conduct (QG 1996).

Changes aimed at enhancing the competitive efficiency of LGs have encouraged them to reconsider both the functions they perform and the way they perform them. Many have also divested themselves of some basic operational service delivery. SGs have also provided statutory opportunities for private operators to become certified and compete to perform many traditional LG roles, such as building approval. Debates about the types and importance of values that are saved and lost in these processes are ongoing, and issues such as job opportunities for locals and quality of the work performed are not resolved to the satisfaction of all stakeholders (Phillips 1998). However in Victoria, where the changes have been most extensive, many report an increased flexibility with opportunities to determine and achieve policy outcomes that were previously not even considered[4]. Publications such as *'Attending to the Environment: A Manual for Contract Specifications'* have been developed by LGs to provide models to help themselves ensure that desired local environmental values are maintained through the competitive tendering process (Osmond and Ray 1996).

The reduction in some direct service delivery by LGs through competitive reforms has not reduced LG roles overall, since this rarely removes LG responsibility for issues, and has also been coupled with increasing roles in other areas. Some, such as the responsibility for issuing environmental licences for over 10,000 potentially polluting activities in Queensland, are essentially new government functions, since before this devolution in 1995 there were no enforceable environmental requirements facing those businesses (Wild River et al. 1998, p.10). Others, such as achieving waste minimisation targets, or effectively managing prescribed wastes, require improvements to the way activities are conducted (NSWSWAC 1997). Many are also entirely voluntary, relying

[4] See Victorian case studies V1, V2, V3, V4, V5, V6, V7, V8.

on enthusiasm from within council or the community for their initiation and drive. These include efforts towards *Local Agenda 21*, a United Nations initiative aiming to promote ecological sustainability through LG efforts (see Cottern and Hannan 1999). In any case, a key problem for LG remains that their increased roles are rarely supported by sufficient, long-term and reliable funding options that ensure that both old and new roles can be undertaken effectively over time (LGAQ 1997a).

Last century also saw a significant reduction in the number of LGs in Australia, with a particularly sharp decline in the final decade, as shown in Table 2.5. These reforms have stemmed from State, and often also LG, pursuit of goals such as improving economies of scale, achieving transparency, better distributing resources and power, enhancing capacity to deal with modern social issues, and a decrease in geographic barriers due to improved transport infrastructure. Other options for advancing these goals without the financial, personal and practical costs of forced amalgamations have not been tackled with such vigour (Vince 1997: See Sproats 2001 for a detailed discussion of these issues in inner-city and eastern suburbs of Sydney).

Table 2.5 Australian Local Governments by State, 1910-97

	1910	1991	September 2000
New South Wales	324	176	173
Victoria	206	210	79
Queensland	164	134	125 (31)
South Australia	175	122	68 (5)
Western Australia	147	138	142
Tasmania	51	46	29
Northern Territory	1	8	7 (61)
Total	**1067**	**826**	**623 (97)**

Note: Aboriginal and Torres Straight Islander Community Councils and other Indigenous local governing bodies are indicated in brackets, only for 2001. (NOLG 2001, p.42; LGANT 1998).

Recent LG amalgamations were most striking and controversial in Victoria, and demand some special attention here, since they provide insights into institutional reform and adaptation that are worthy of particular attention. The reduction from 210 to 79 LGs was forced on Victorian LGs between 1994 and '95 by the Kennett government. This process involved the dismissal of virtually all democratically-elected councillors, and their replacement for up to two years by appointed Commissioners. The realisation that this move was soon to occur sparked the inception of a new institution, the Victorian

Local Governance Association (VLGA), with a mandate to protect local democracy and progress the cause of responsible LG. Having been sacked, many ex-councillors from all political persuasions joined the VLGA, which also held a great many well-attended public meetings throughout Victoria, on issues of democracy and good governance. Membership has now increased to include many Victorian LGs and some surprising outsiders, including a former New South Wales Minister for LG. In contrast to Kennett's autocratic approach, the intentionally inclusive Bracks government has welcomed VLGA as a valuable partner in the development and delivery of many new programs in Victoria (Hill 1999). Similar inside-out resistance to SG attempts to dismantle LGs also occurred in the Northern Territory when the Northern Territory government sacked the Yulara Council, apparently to enable private, rather than public, sector management of the township (Sherwood 1999).

An increasingly popular approach to improving intergovernmental relations for LG effectiveness, has been the signing of non-statutory agreements such as protocols, across spheres of government. These have sought to clarify roles and responsibilities of all spheres in relation to powers and responsibilities, funding and financial obligations, consultation, policy development, program implementation, and a range of other issues. LGAs have usually signed such agreements on behalf of their member councils. Some, such as the *Commonwealth-LG Accord* (CofA/ALGA 1995), or the *Intergovernmental Agreement on the Environment* (HoG 1992), cover general issues in inter-governmental relations. Others, such as the *Protocol Establishing Roles and Responsibilities of the State Government and LG in the Queensland System of LG* (QG/LGAQ 1997) or *The Newcastle Declaration* (Pathways 1997) target specific strategies or legislation. The documents certainly highlight key areas of concern for LGs and the other spheres, but by no means guarantee a solution.

Reforms to the transparency and perceived integrity of LG operations have been approached in several ways. Statutory changes for instance have clarified roles within LGs from the outside, placing limits on what powers might be delegated to and beyond CEOs and establishing mechanisms for dealing with conflicts of interest and other problems (LGTCQ 1994; QDLGP 1996 provide examples). LG officials themselves have clearly demonstrated their commitment to such improvements from the inside-out, through such actions as the adoption of 'codes of ethics' to guide responsible local governance (IMM 1995; LGAQ 1997b).

Each State has now also increased LG accountability by embarking on programs to define, measure and report on LG performance. These rarely tackle substantive issues such as the successful completion of construction projects, improvements to effluent emissions from sewage treatment plants or other practical outcomes from LG work. Instead, they are based mostly on micro-economic indicators such as the cost of delivery of various services and the amount of funds received under various schemes (see for example WADLG 1997; NTDHLG 1998). Many other SG statutes implemented by LGs also involve specific reporting and accountability requirements. These include the numbers and timing of decisions made under Planning Acts, and of licences issued under Environmental Protection Acts. Again, these tend to be administrative, rather than substantive. The quality of planning decisions, in relation to their adherence to strategic plans or consideration of environmental constraints, and the effectiveness of environmental protection licenses in reducing pollution for instance, are not part of the reporting processes under the relevant acts.

Later discussions will further develop this distinction between administrative and substantive actions and accountability measures. At this point it is worth formalising these as analytical categories. Table 2.6 provides the definitions. It also introduces two other types of impacts that have not yet been discussed, but which complete this set of analytical categories. These are impacts to relationships and knowledge.

Table 2.6 Analytical categories for types of impacts

Categories	Definitions
Impact type	The type of change that directly results from any part of an environmental initiative.
Administrative	An impact based in a document or financial transaction with no direct affect on any environmental values.
Substantive	A physical or practical impact that changes environmental values.
Relationships	A shift in the way that individuals, organisations or institutions perceive and treat one another.
Knowledge	A shift in understanding about environmental issues or values.

Source: Appendix 1: Thesis category map

The FG recently tried to determine whether and how the various SG reporting programs could be made compatible to allow for national comparisons of LG performance. After an extensive analysis it concluded that practical difficulties mean that an outside-in approach is not warranted at this time (NOLG 1996-97, pp. 135-138). Instead, subsequent *Local Government National Reports* simply describe the progress in each

State's development of performance indicators and report on the distribution of the FG financial assistance grants, as well as presenting basic information on LG populations, land area and total road length (see NOLG. 1999-2000). None of these FG publications consider the possibility that LGs may themselves define indicators that could support outside analysis of LG issues.

While this suite of reforms is clearly substantial, this discussion has essentially provided only a brief overview of some of the major changes and of *the continuing lack of universally reported or meaningful measures of LG performance monitoring in any area*.

2.5 Indigenous Local Government

It is also useful to take a broader perspective on Australian environmental local governance, which has arguably been present in Australia for tens of thousands of years. Indigenous Australians traditionally arranged themselves into widely recognised, and distinct local authorities that actively and diligently described and maintained environmental and other values throughout the local areas that they were responsible for. The enduring and significant nature of these responsibilities has been demonstrated in numerous texts, and recognised in High Court judgements in recent years (see for example Sproats 2002: Berndt and Berndt 1977: Maddock, K. 1974: Hiatt 1978, High Court of Australia FC96/044 and 88/062). Despite numerous and ongoing attempts by colonists to extract indigenous Australians from their lands, waters and traditions, most remain closely tied to their country, and retain a sense of personal responsibility for land and cultural management there. Australia can rightly be seen to have had two overlapping and often conflicting systems of environmental local authority ever since the commencement of formal LG.

Formal governance by indigenous peoples is currently most dominant at the local level. There is currently only one indigenous Federal Parliamentarian, few in SGs, and about a thousand in LG. Naturally, it is those areas with predominantly indigenous populations that elect predominantly indigenous people to their local councils. But many areas with predominantly indigenous populations still have nearly exclusively non-indigenous councils, as in much of Western Australia and parts of New South Wales. Debate is ongoing about the appropriateness and effectiveness of the indigenous LG systems (Fletcher 1998). There are also several programs, such as the Remote Area Management

Project in the Northern Territory, providing training and other assistance to address the challenges facing indigenous LGs.

NT has by far the most extensive system of indigenous participation in LG. 634 of the 762 Councillors in the NT were Aboriginal in 1998 (LGANT 1998). The NT is also the most unique system of LG in Australia. For instance, it is the only jurisdiction where LG boundaries are not contiguous, and instead often cover little more than the town or community area. It is also only NT LGs that have no planning powers, as is discussed in Section 3.4, below.

There are four legal forms of LG in the Northern Territory. The six Municipal Governments cover each major population centre (Darwin, Alice Springs and others), and are a lot like small city councils in other states. A second type of LG in the NT are the Special Purpose Towns (Jabiru and Nhulinbuy) which service remote mining communities. Although constituted under separate Acts of Parliament, these most closely resemble the Municipal Governments, in the scope of their powers and their predominantly non-indigenous populations.

The 32 Community Governments are a third form of LG constituted under the NT *Local Government Act* 1993. These have predominantly Aboriginal populations ranging from 155 to nearly 1,500 inhabitants (NTG 2000). The Community Governments are the only government agents in most remote communities. Because of this, Community Governments accept statutory responsibilities for far more roles than LGs elsewhere. In addition to all of the usual LG powers, these Councils are also responsible for functions such as policing, aged care, airstrips, banking, building, dealing with domestic violence, education, post office, tourism, women's centres and many others (RAMP 1997).

Incorporated Associations are the fourth form of LG in the NT, and are constituted under the commonwealth *Aboriginal Councils and Associations Act* 1976. The Incorporated Associations carry out many of the functions of the Community Councils, but cannot pass by-laws. Their decision-making powers are also more limited, extending only to the Association, and not to the whole community (RAMP 1997).

Queensland also has separate statutory systems for indigenous Community Councils in remote areas. 11 Aboriginal Councils are constituted under the *Community Services (Aborigines) Act 1984* (QG 1984a) and 20 Island local governments are constituted under the *Community Services (Torres Strait*) *Act 1984* (QG 1984b). These councils have jurisdiction over similarly small land areas to the NT Community Councils, and are excised from other LG boundaries. The excisions are predominantly from the two

most northern Queensland Shires of Torres and Cook. In contrast to the Northern Territory, the statutory powers of Aboriginal and Islander Community councils are more limited than those of the remainder of Queensland LGs. For instance, the Community Councils cannot charge rates, and are therefore almost entirely dependent on the State and Federal Governments for revenue.

The remaining States do not have such numerous or formalised systems of indigenous LG, although many have significant indigenous populations and South Australia has some predominantly indigenous LGs. In recent decades, many such LGs have been criticised for failing to provide adequate infrastructure and services to local indigenous communities (Rumley H. 1987). Various attempts have been made to improve processes and outcomes for local service delivery to indigenous communities, and several have, or seem likely, to deliver significant improvements (ALGA 1998b). There is certainly a long way to go however, and many indigenous communities still lack very basic services.

Issues of indigenous LG are significant, complex and sensitive. It is the great regret of the author that there is not the time, space or focus to do justice to these issues, by including any comprehensive discussion on the topics in this thesis. Case Study T1 - Mirrar Say No describes the attempts by the traditional owners of the Jabiluka mine site in the Northern Territory, and is the only focal point in the thesis on indigenous environmental initiatives.

2.6 Local government and regional dissonance

Regional organisations support the cooperation of groups of LGs on issues that are shared across council boundaries. The regional level is also an effective focus for many agencies that work with LGs. The boundaries of Australian regions are far more variable than any other sphere of government. This is partly due to variety in the stimuli for regional cooperation. This section explores regional issues affecting LGs, demonstrating some impacts of regional inconsistency. It proposes the concept of regional dissonance to describe the impact of regional boundaries that have such variety and incongruence that they create barriers to effective, long-term regional partnerships.

Voluntary Regional Organisations of Councils (VROCs) are organisations established from the inside by LGs, usually because of a need to lobby the FG or SGs, or because LGs recognise the potential benefits from cooperation on issues such as land use

planning or economic development. VROCs have enjoyed consistent outside-in support and encouragement from LGAs, the FG and SGs since the 1980s. In 1997 there were 52 VROCs. Most had a CEO with a primary employment commitment to another organisation (usually a member LG), and over 80% of the serving members on VROCs were mayors and other councillors (Johnson 1997, RCC 1995). VROCs are typically self-funded by their member councils, but a limited number receive SG or FG grants. VROCs such as the South East Queensland Regional Organisation of Councils (SEQROC) have driven extensive projects such as the SEQ2001 regional planning initiative. Six VROCs recently received funding from the Commonwealth Department of Environment, Sport and Territories and support from ALGA for a *Regional Environmental Indicators Project*. The project made progress in establishing regional indicators, and ways of linking the needs of different tiers of government, for state of environment reporting (see ALGA 1997 and case study W5 on South West Western Australia).

The VROCs were also a basis for the FG's mid-1990s establishment of Regional Development Organsiations (RDOs) involving LGs and major sectoral groups within their regions. Their programs aim specifically to enhance economic development. Unlike the VROCs the RDOs are funded by the FG and aim to supply infrastructure, improve access to investment finance and develop managerial skills in regional settings. The RDOs were an outside-in approach to developing inside-out economic development and have been criticised by LGs for both their limited, economic focus, and their marginalisation of LG members (Marshall 1997, p.12, Garlick 1997, p.282.). In addition to these differences between the RDOs and VROCs, the two organisations often operate with inconsistent regional boundaries.

Inconsistent boundaries are also a feature of many other organisations working with regions of LGs. This point is demonstrated in Figure 2.2, which takes Noosa Shire as an example of such inconsistencies. The 13 maps in this figure depict the boundaries of many of the regional organisations of which Noosa is a member. The organisations include several FG and SG agencies as well as the various peak bodies that work with LGs as a whole, or with different professions within LGs. No two of the regional boundaries are exactly the same and one organisation even has Noosa in two of its districts (Maps 2.2d and 2.2e).

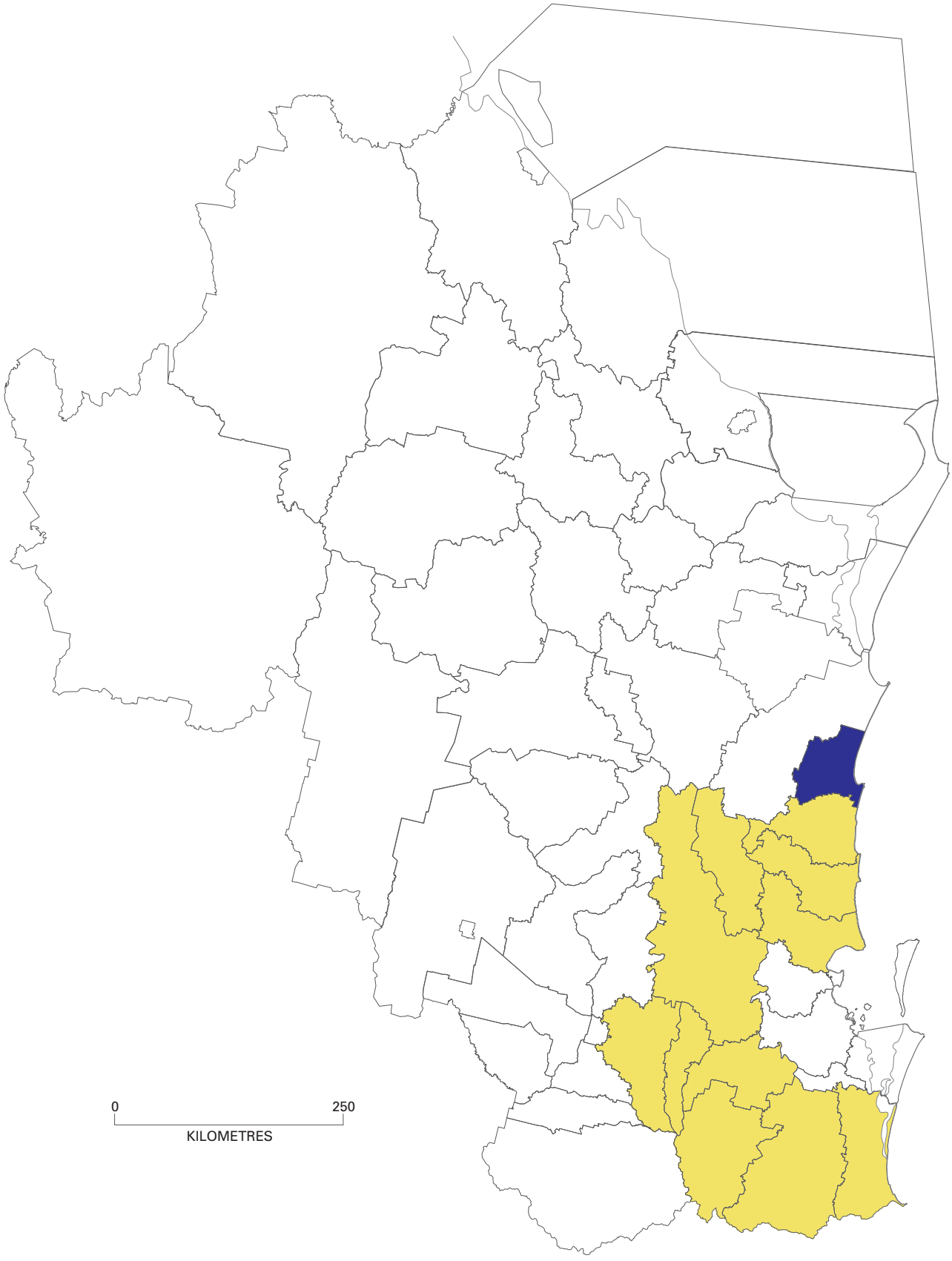
These regional differences can readily be justified in relation to the issues that are the focus of any of the agencies working outside of LG. For instance, it makes sense for the

Australian Bureau of Statistics to derive census statistics separately for state capital Brisbane, and for the Moreton region surrounding it (Map 2.2a). Similarly, the Regional Development Organisation can readily justify its Sunshine Coast focus, since the economy of that area is distinctively different from that of Brisbane, the Gold Coast, and other surrounding areas (Map 2.2b).

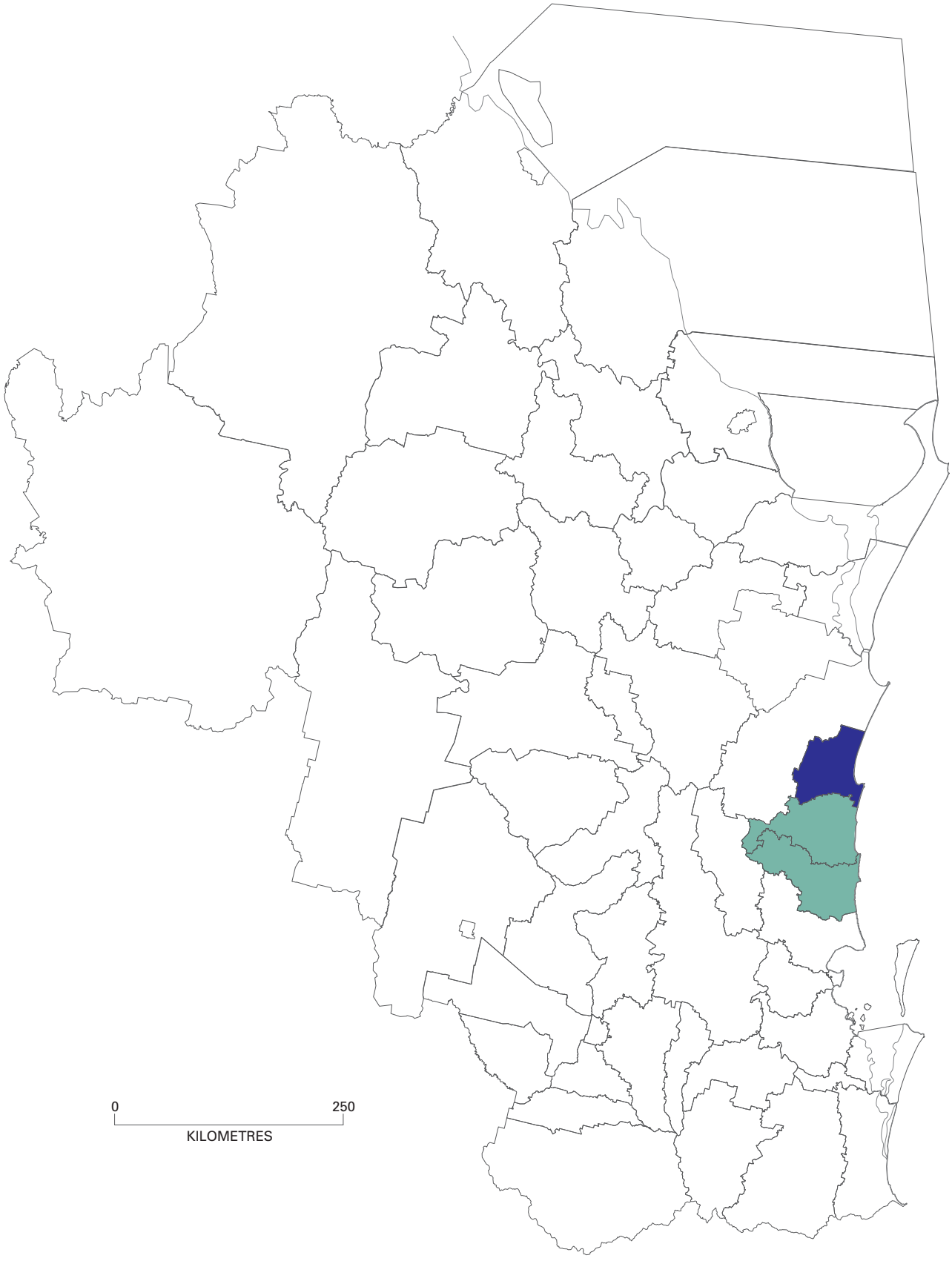
Regional groupings can also derive from the capacity of different LGs to contribute to them. For instance the Sunshine Coast groups of both the Australian Institute of Environmental Health and the Royal Australian Planning Institute are defined by the participation of potential member councils, which in turn relies on the presence of relevant professionals within those councils (Maps 2.2g and 2.2h). In these cases, and a few others, a 'region' consists of groups of LGs whose boundaries are not contiguous. This also occurs with the Urban Local Government Association of Queensland (Map 2.2m), which is a group of councils sharing similar interests due to features such as high population density and growth. The inclusion of this grouping as a 'region' demonstrates the point that LGs also find it useful to group themselves together on the basis of similar interests rather than shared locations. Beyond the Noosa example, other examples of non-contiguous groupings include links made through the *Sister City Relationships* – an outside-in initiative supported by the former Local Government Development Program. Meanwhile, the formation of the Council of Capital City Lord Mayors is an inside-out initiative aiming to develop an identity and some strategic directions for a group of geographically dispersed LGs. The eight members share the quite specific common interest of governing the local area that seats the state parliament (see for example CCCLM 1996).

The following maps appear in the printed version of the thesis, but you will have to view them one at a time on this digital version.

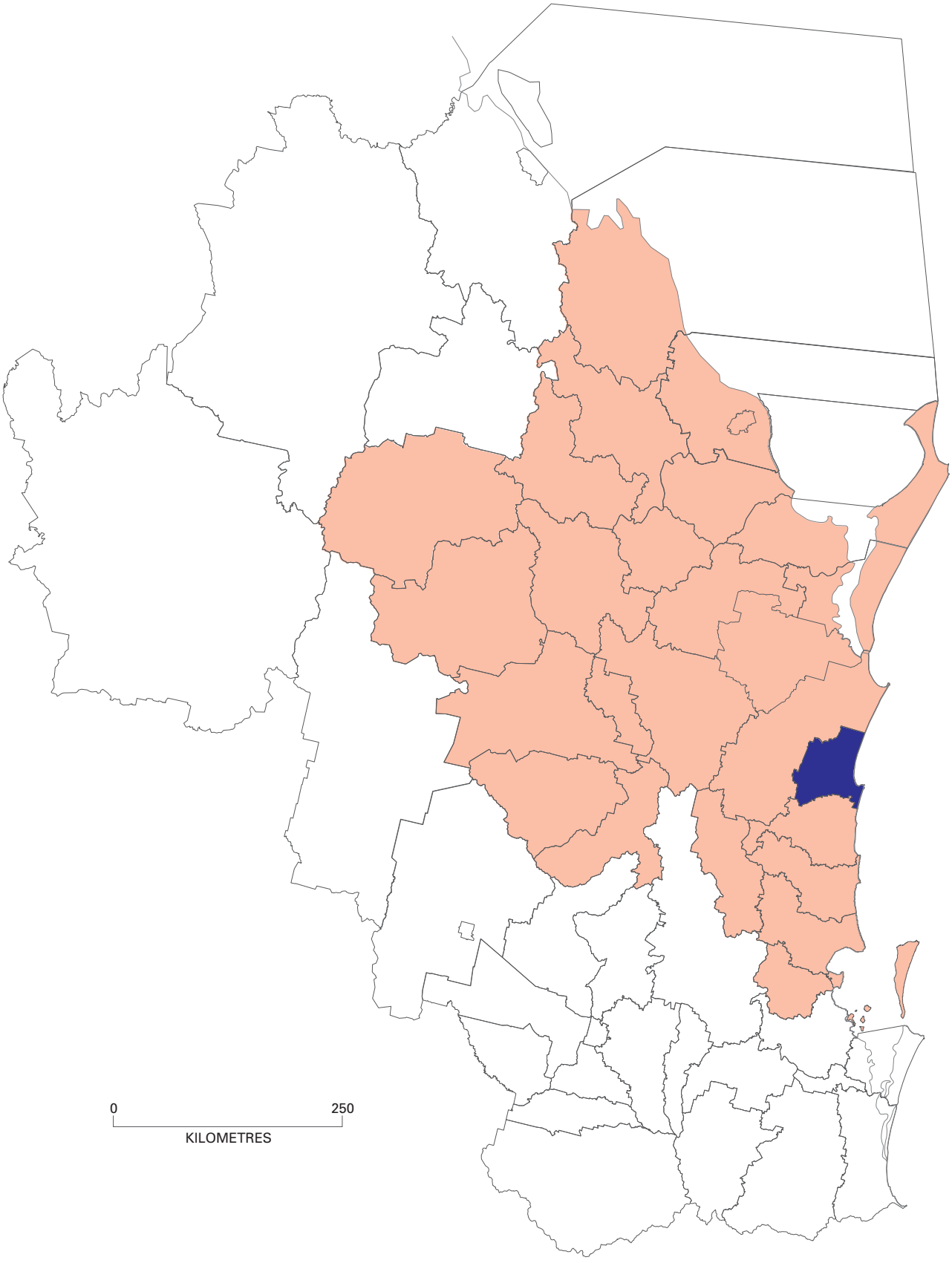
Noosa Maps
a) Moreton Region, Australian Bureau of Statistics
b) Sunshine Coast Branch, Regional Development Organisation
c) North and wide Bay Burnett Team, South East Queensland Planning
d) sunshine Coast district, Queensland Environmental Protection Agency
e) Wide Bay Burnett Region, Queensland Environmental Protection Agency
f) South East Queensland Branch, Local Government Managements Association
g) Sunshine Coast Chapter, Australian Institute of Environmental Health.
h) Sunshine Coast District, Royal Australian Planning Institute
i) South East Branch, Local Government Services, State Local Government Department
j) South East Queensland Regional Organisation of Councils
k) Northern District, South East Queensland Regional Organisation of Councils
l) South East District, Local Government Association of Queensland
m) Urban Local Government Association of Queensland
n) North East regional Aboriginal language group
o) South East Queensland bioregion
p) North East Coast Drainage Division



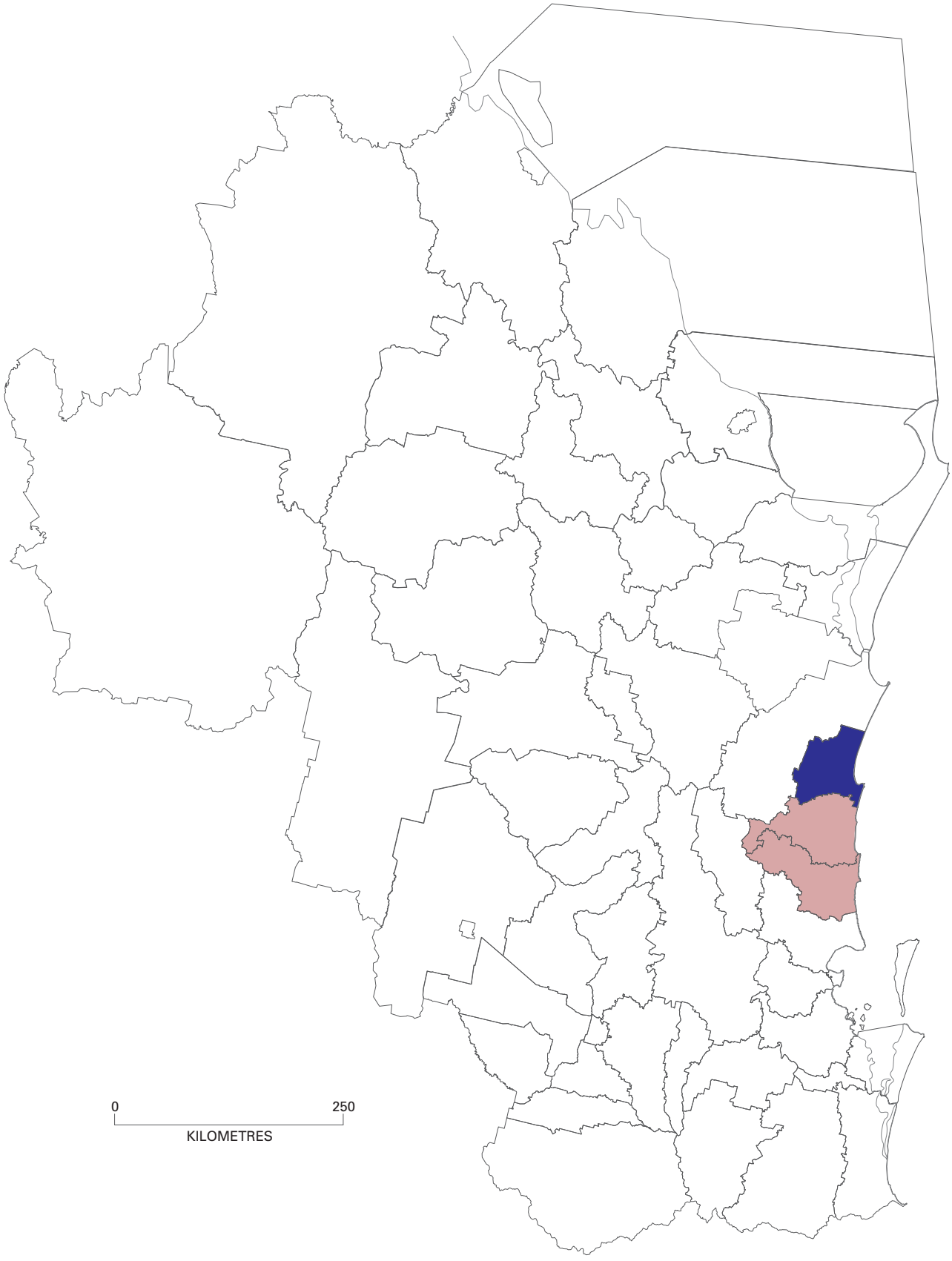
Noosa Regions:
(a) Moreton Region - ABS



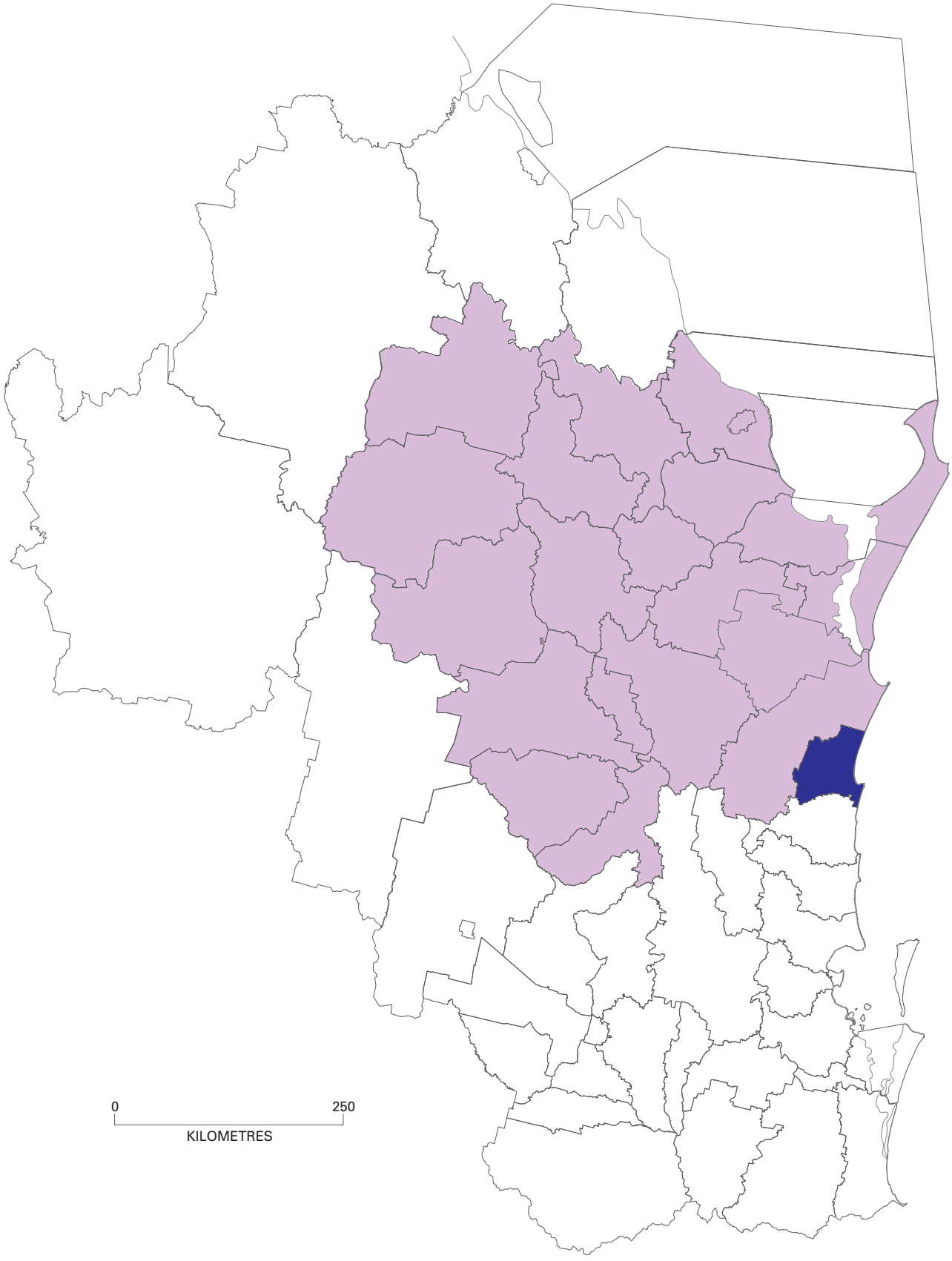
Noosa Regions:
(b) Sunshine Coast - Regional Development Organisation



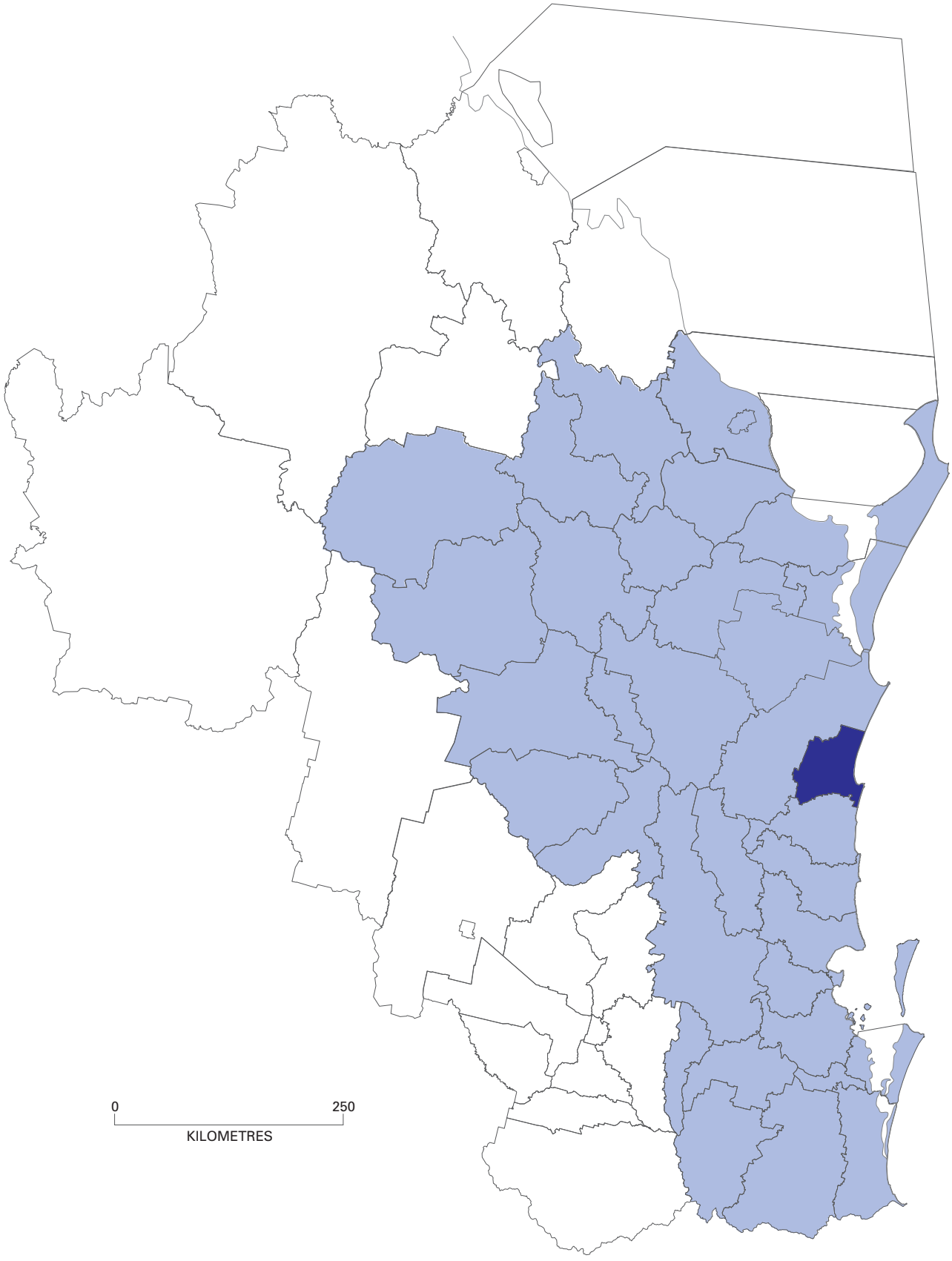
Noosa Regions:
(c) North & Wide Bay Burnett Team –
SEQ Planning Division, Planning Services, QDLGP



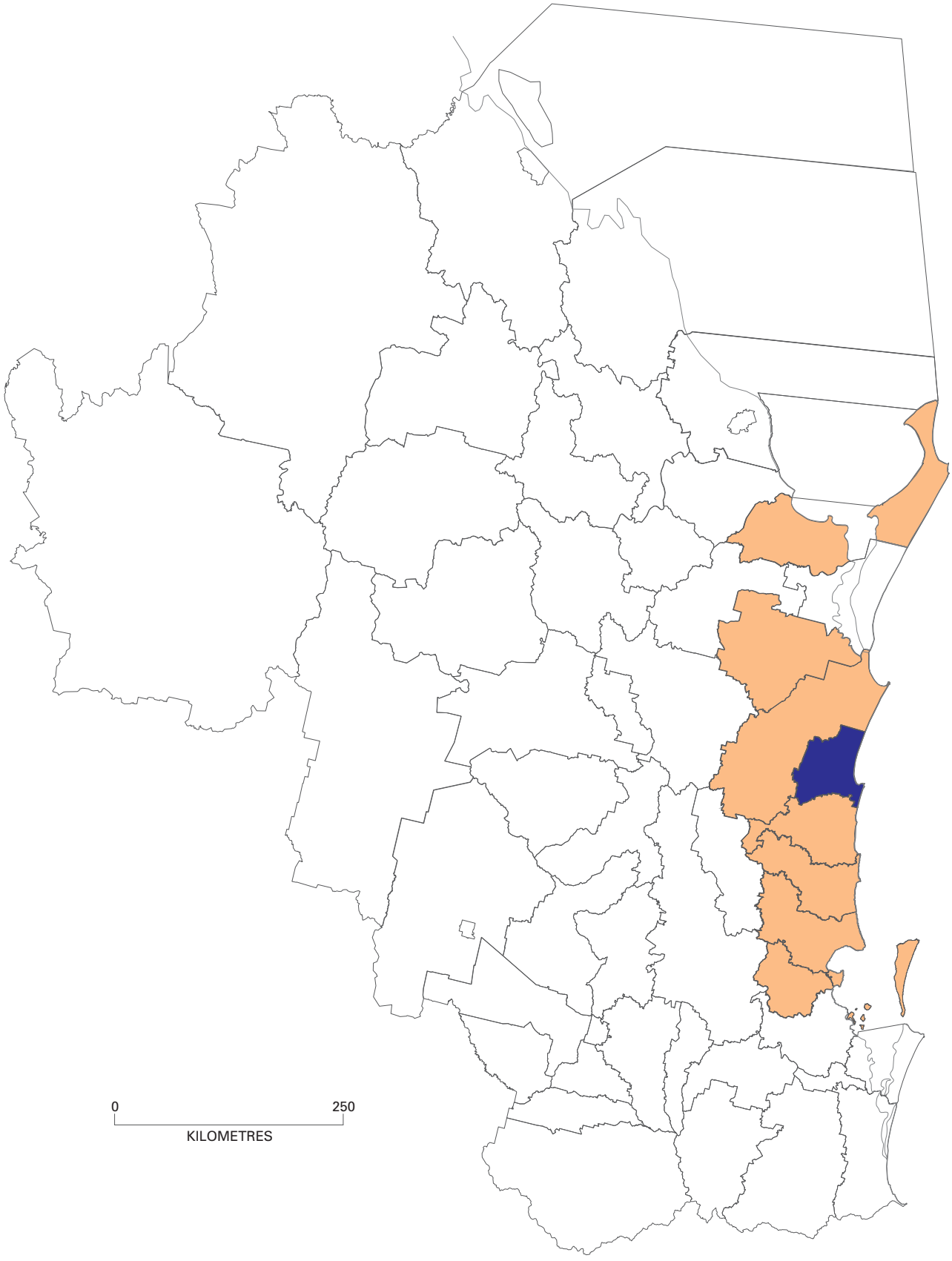
Noosa Regions:
(d) Sunshine Coast District - QEPA



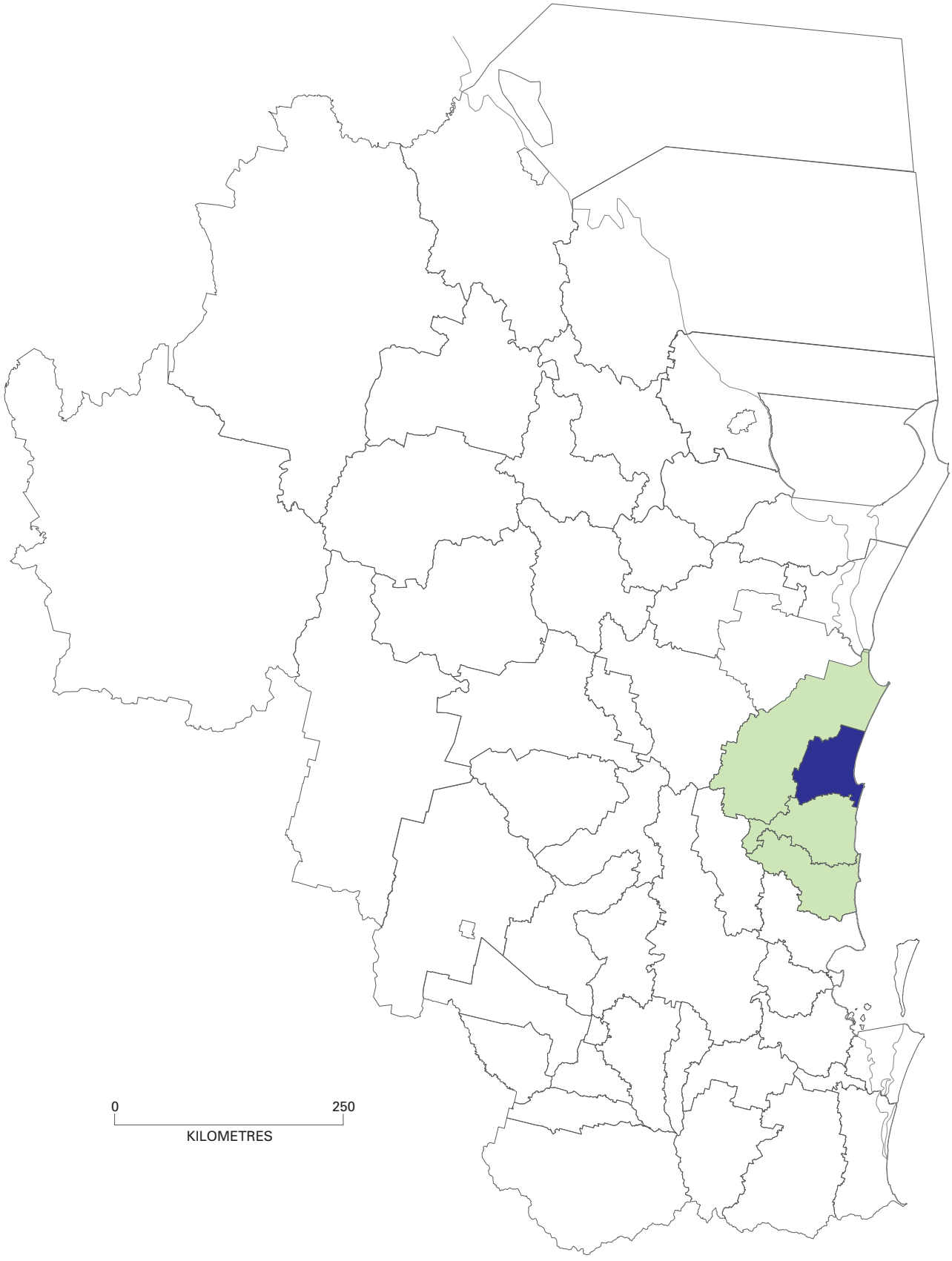
Noosa Regions:
(e) Wide Bay Burnett District – QEPA



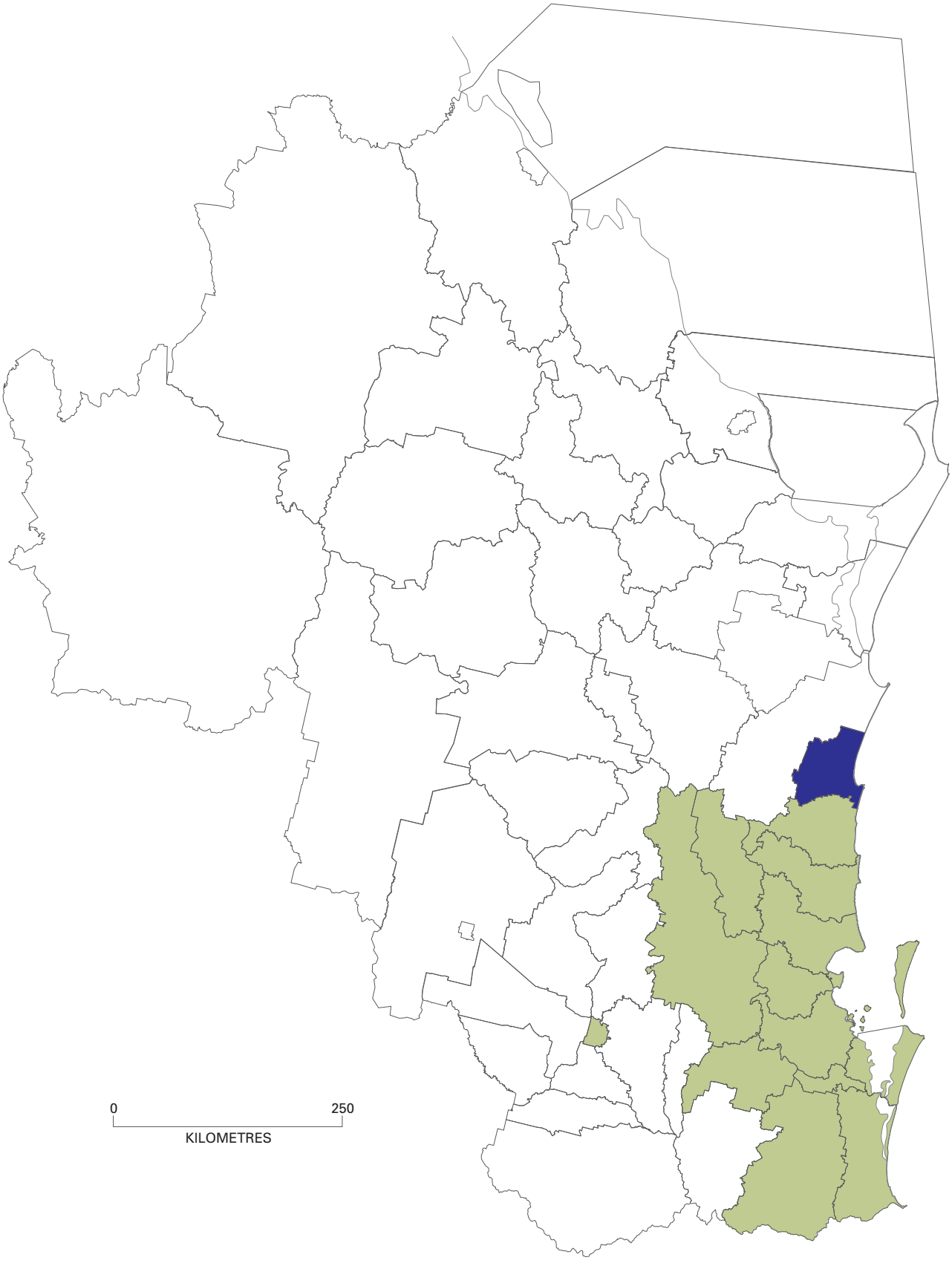
Noosa Regions:
(f) South East Queensland Branch - Local Government Managers



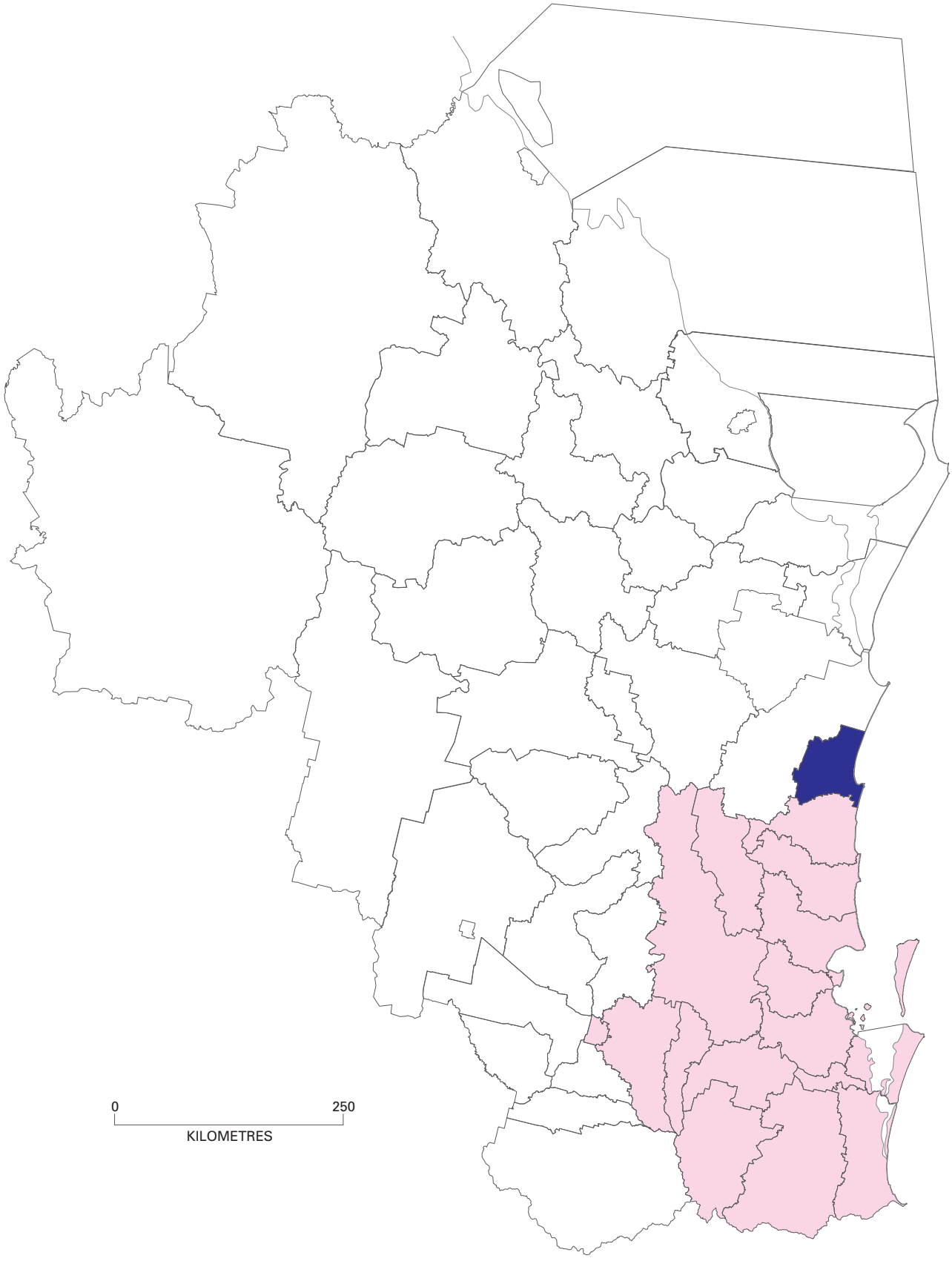
Noosa Regions:
(g) Sunshine Coast/Wide Bay Group - AIEH



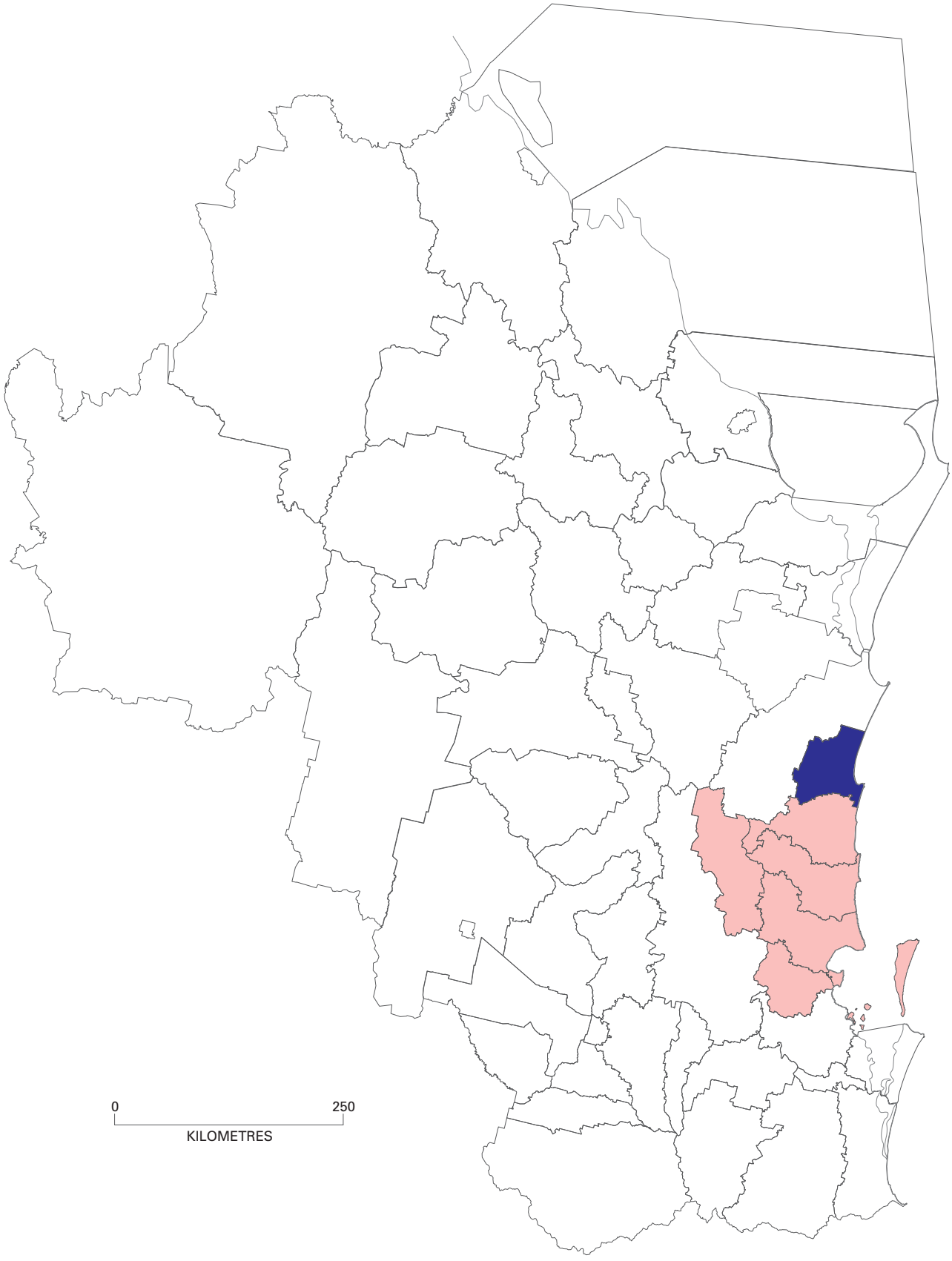
Noosa Regions:
(h) Sunshine Coast Branch - Royal Australian Planning Institute



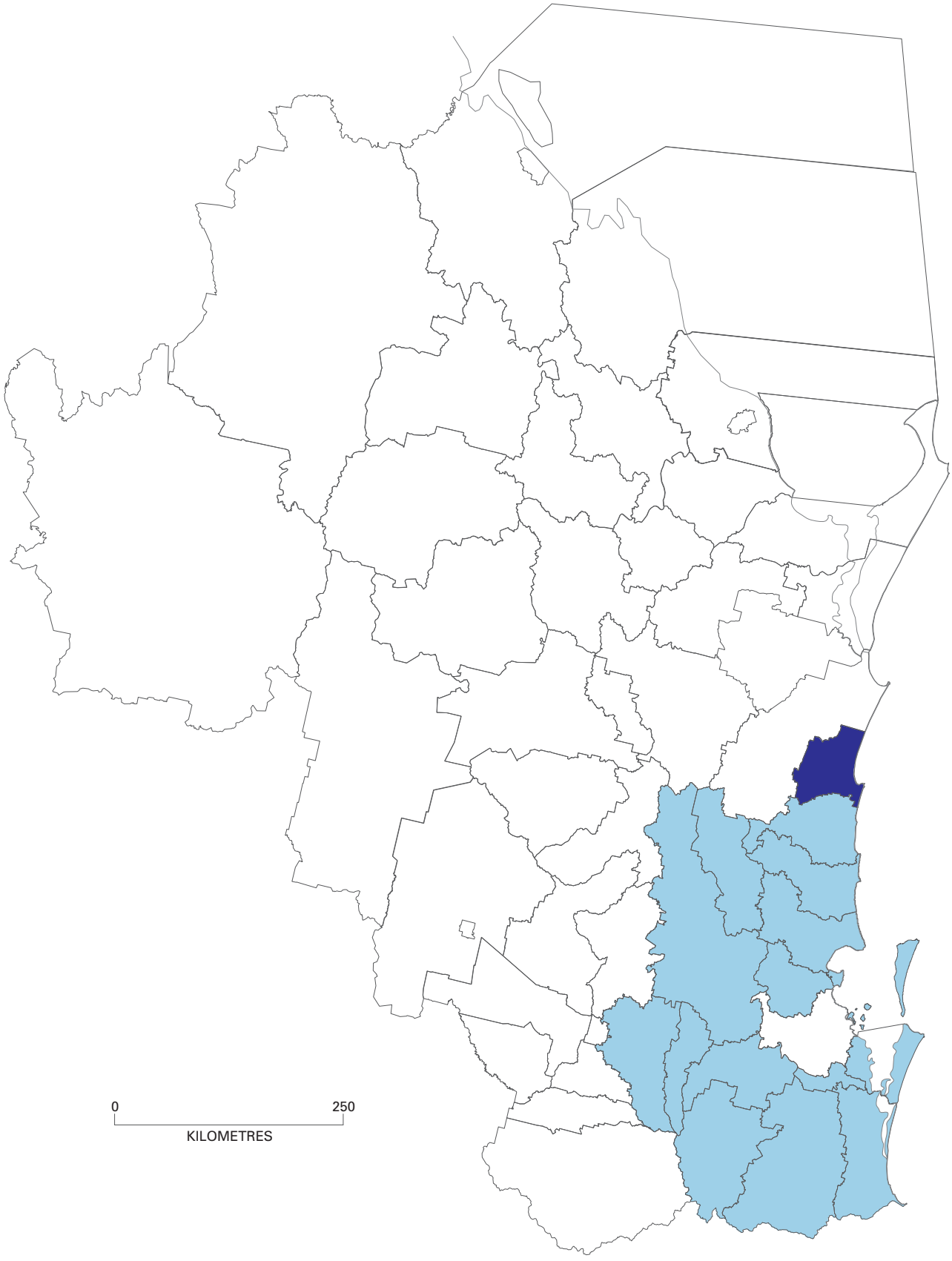
Noosa Regions:
(i) South East Branch - Local Government Services



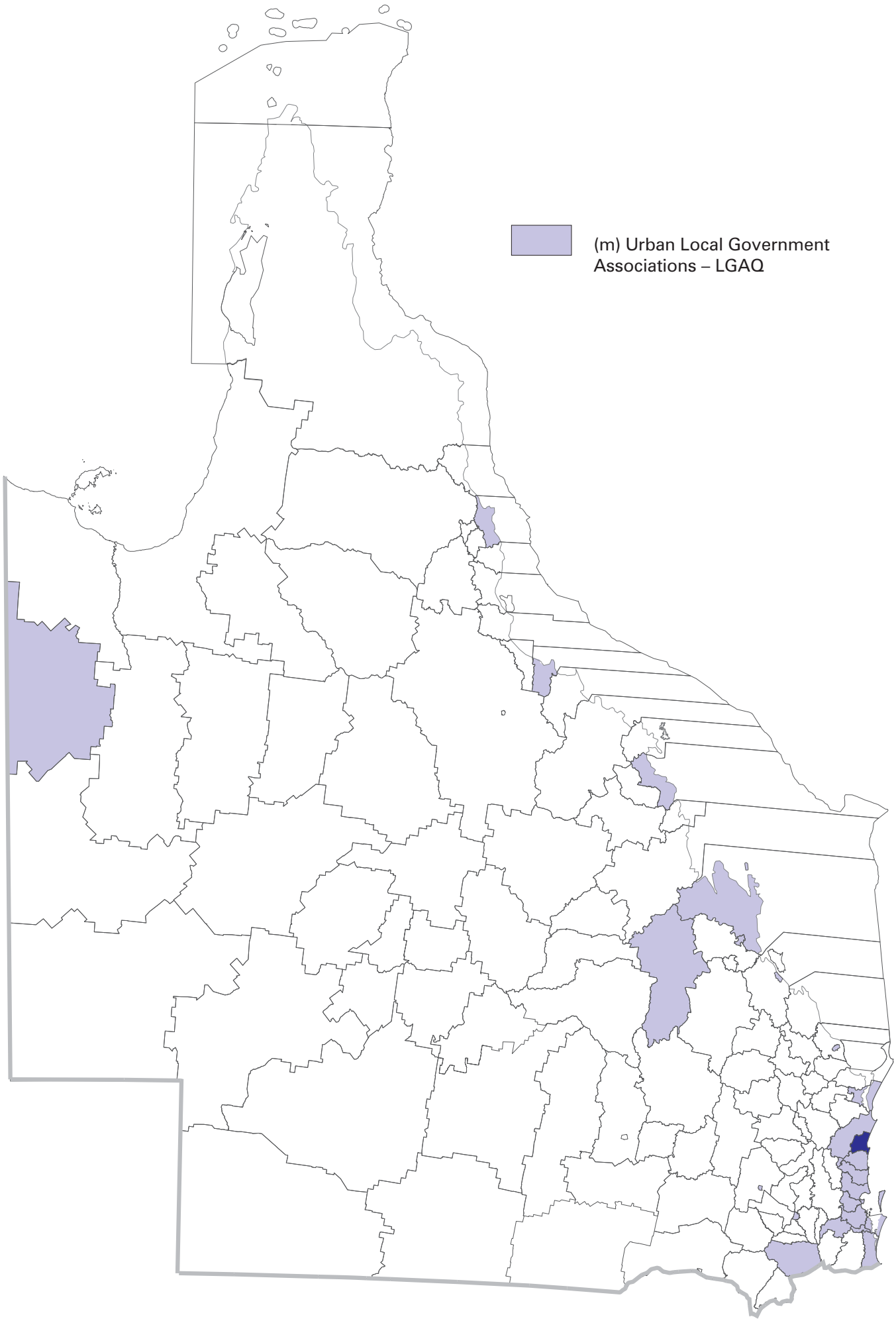
Noosa Regions:
(j) South East Queensland Regional Organisation of Councils



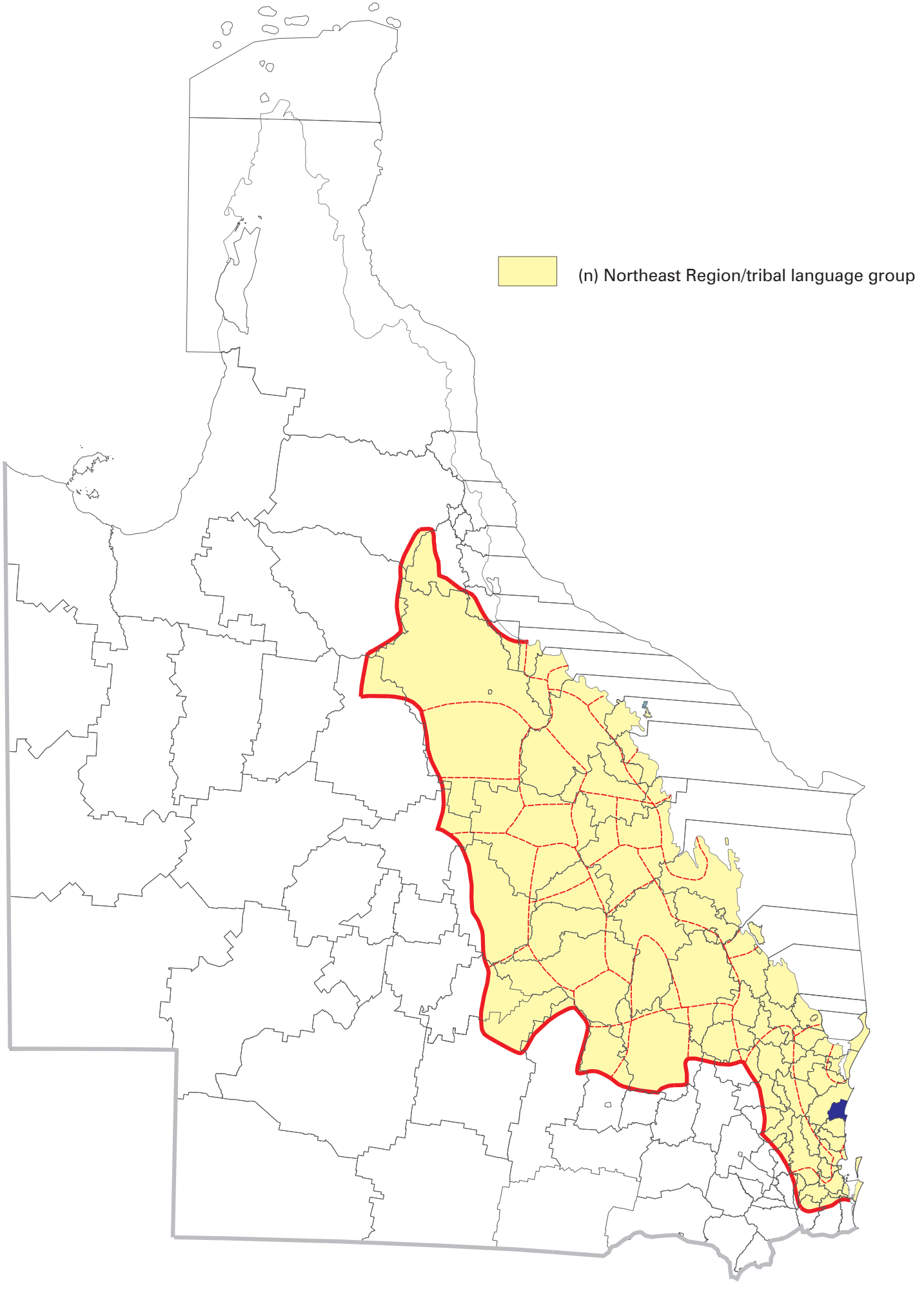
Noosa Regions:
(k) NORSROC



Noosa Regions:
(I) South East District - LGAQ

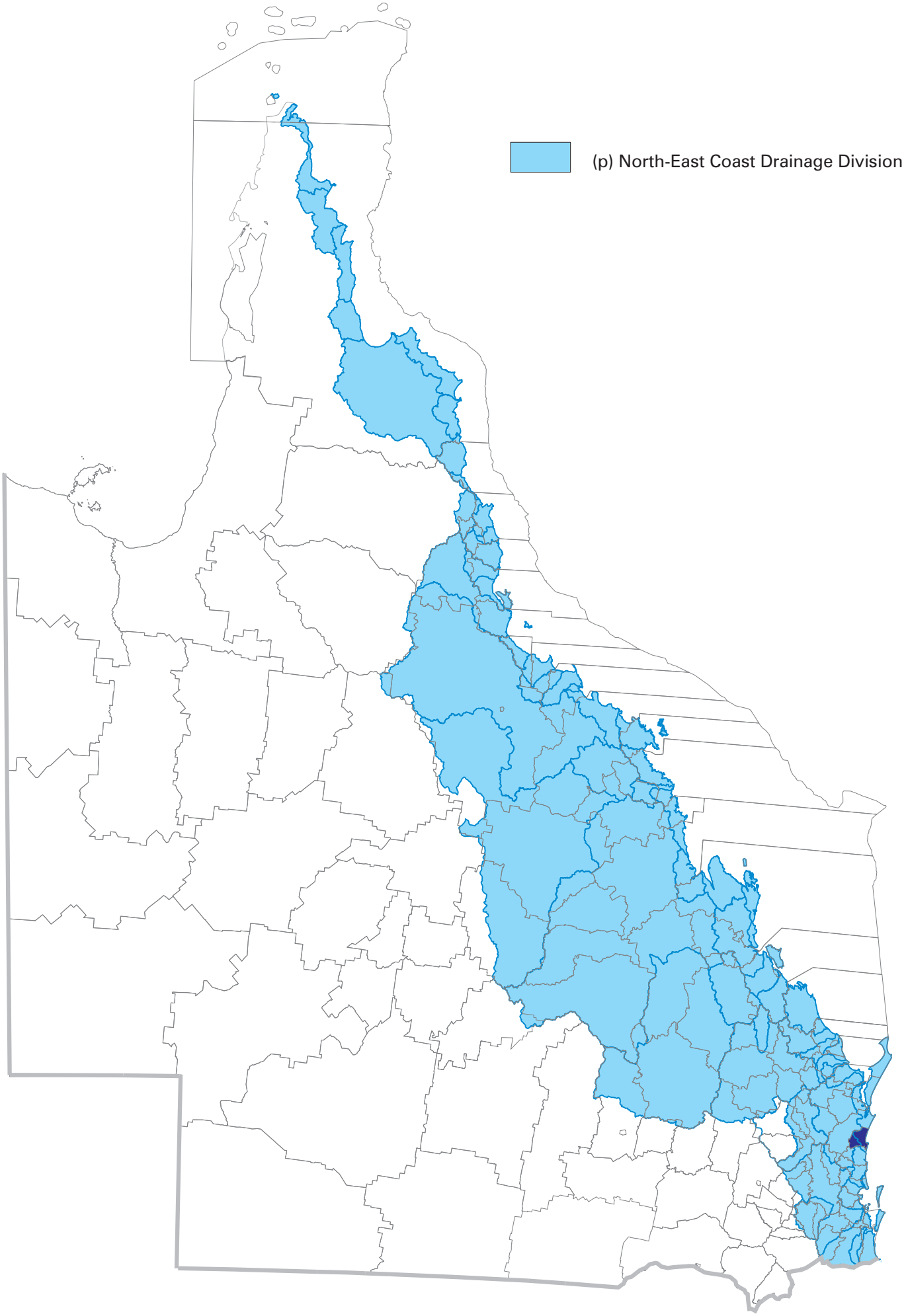


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0
250
KILOMETRES
Noosa Regions:
(o) Bio-diversity areas



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Clearly, each of these 'regions' operates from a justifiable individual rationality. However an overall effect is to confound the *inside-out* development of robust regional identities for LGs. This impact is conceptualised as regional dissonance in this thesis.

The lack of coherent, integrated institutions at the regional level in much of Australia also has the potential to restrict the effectiveness of regions as a focus for *outside-in* SG or FG environmental initiatives. This doesn't seem to worry the FG particularly though, as its current institutional structure locates its National Office of Local Government within its broader Department of Transport and Regional Services, thus clearly showing a stronger identification with regions than with the LGs within them. In response to these issues, this thesis uses regions as explanatory variables in both its outside-in and inside-out studies, and analyses the impact of regional organisation in LG delivery of environmental and other outcomes. The broader theme of defining groups of LGs on the basis of their shared features is continued in the next section.

2.7 An intergovernmental typology of local governments

Many authors and agencies use typologies of LGs to assist their understanding of LG issues, and to allow comparative analysis of LG workings. The most accessible version of such groupings is in the names of LGs themselves. All Australian LG names include a local identity (for example, Noosa), together with a description of the type of LG (including *shires, cities, towns* and *municipalities* and others). However, these types lack consistency both within and across state boundaries. More rigorous classifications use features such as population, area, accessibility and economic activity to group LGs. However the existing typologies have had limited value for this thesis. This is partly because of the large number of categories compared to the samples of LGs that could be included in this study. It is also because the substantive focus of the thesis required a typology that would support analysis of environmental capacity. It proved most useful to develop a new but simple typology with a focus on intergovernmental relations. This section briefly reviews two well-accepted classifications that assisted the development of the intergovernmental typology which it also describes.

The Australian Classification of Local Governments (ACLG) is probably the most widely recognised, modern typology of Australian LGs. The ACLG was first published

in 1994, and includes all of the LGs that receive Financial Assistance Grants annually from the FG via the SGs. Although the ACLG is not used to determine the level of grant, LGs are grouped by ACLG to help compare grant outcomes between similarly classified LGs (NOLG 2001. p.161). ACLG is a three-stage classification in which each LG is first grouped as either urban or rural, then into a subcategory for the type of urban or rural LG, and finally into population sizes. There are 22 categories of LG in the ACLG.

ACLG is one of two main typologies currently used by the National Office of Local Government. The second is published as a series of maps that are shaded to represent relative accessibility and remoteness of LGs, according to road distances from four different categories of service centres (NOLG 2001. Maps). The capital cities are shown as highly accessible on these maps, with regional centres, particularly on the eastern seaboard also relatively accessible. The extensive deserts, and rangelands in central, northern and western Australia are less accessible, with the exception of some major cities and towns.

The intergovernmental typology is simpler, although less rigorously defined than either ACLG or the accessibility and remoteness classification. It consists of only five types, based on LG identity and closeness to SG agencies. These analytical categories are defined in Table 2.7. Table 2.8 shows the ACLG system and compares it to the intergovernmental typology that is used in this thesis.

Table 2.7 Analytical categories for the intergovernmental typology of LG

Categories	Definitions
Intergovernmental typology of LG	A simple classification of Australian LG based on LG identity and closeness to state government agencies.
Capital city	The built-up area in the city in which state and commonwealth parliaments are based. Includes the LGs governing the central business district and those surrounding areas that do not have their own discrete business centres.
Capital fringe	Includes LGs in areas surrounding capital cities and are usually areas with their own distinct business centres.
Other centre	Includes city and town LGs that are widely considered to be major centres for regions or districts. Several regional offices of state government departments are located in each other centre.
Indigenous	A LG with mostly indigenous councillors, servicing a predominantly indigenous community.
Other LG	Any LG that is not a capital city, capital fringe, other centre or indigenous LG.

Source: Appendix 1. Thesis category map.

Table 2.8 Australian Classification of LGs and Intergovernmental Typology

Australian Classification of Local Governments						Numbers in an Intergovernmental typology				
Step 1	**Step 2**	**Step 3**	**Identifiers**	**Cate - gory**	**#**					
Urban (U)						**Cap'l City**	**Cap'l Fringe**	**Other Centre**	**Other LG**	**Indig-enous**
	Capital City (C)			UCC	7	7	-	-	-	-
Population more than 20,000	Metro-politan Developed (D)	Small (S) Medium (M) Large (L) Very Large (V)	Up to 30,000 30,001-70,000 70,001-120,000 >120,001	UDS UD M UDL UDV	21 25 23 20	18 23 19 11	2 2 4 9	1 - - -	- - - -	- - - -
Or Population density more than 30 people per sq km	Regional Towns/ City (R) Part of an urban centre, pop'n less than 100,000 mostly urban.	Small (S) Medium (M) Large (L) Very Large (V)	Up to 30,000 30,001-70,000 70,001-120,000 >120,001	URS UR M URL URV	95 35 10 5	2 - - -	2 3 - -	32 32 10 5	28 - - -	31 - - -
Or 90% Or more of LG population is urban.	Fringe (F) A dev'ing LG on the margin of a dev'ped or regional urban centre.	Small (S) Medium (M) Large (L) Very Large (V)	Up to 30,000 30,001-70,000 70,001-120,000 >120,001	UFS UFM UFL UFV	8 16 10 13	- 1 1 -	3 14 9 13	- - - -	5 1 - -	
Rural (R)										
An LG with a population less than 20,000	Significant Growth (SG) Average annual population growth more than 3%, population more than 5,000 and not remote.	Not applicable		RSG	13	-	-	-	13	
And Population density less than 30 people per sq km	Agricultura l (A)	Small (S) Medium (M) Large (L) Very Large (V)	Up to 2,000 2,001-5,000 5,001-10,000 >10,001	RAS RA M RAL RAV	76 99 72 62	- - - -	- - - -	- - - 4	76 99 72 58	
And Less than 90% of LGA population is urban	Remote (T)	Extra Small (X) Small (S) Medium (M) Large (L)	Up to 400 401-1,000 1,001-3000 >3,001-20,000	RTX RTS RTM RTL	46 33 28 12	- - - -	- - - -	- - - 3	11 10 20 9	35 23 8 -
Totals for Intergovernmental Typology					**729**	**82**	**61**	**87**	**402**	**97**

Source: NOLG 1999-2000. pp.161-164.

Table 2.8 shows a fair degree of congruence between ACLG and the intergovernmental typology, but with some notable exceptions. One is that ACLG includes fewer LGs as *capital cities*, with only the LG from the central business district of each state capital included in ACLG. The intergovernmental classification instead recognises capitals as all of those that are involved in governing the densely populated areas of capital cities.

This is to provide parity in comparing LGs in states where one governs the entire capital city (Queensland, Tasmania and the Northern Territory), and the remainder, where very many LGs cover the equivalent metropolitan centre. The *fringe* LGs in both classifications are also often congruent, but while ACLG fringe LGs may surround any major centre those in the intergovernmental typology surround only the capital cities.

The category of *other centre* in the intergovernmental typology is most closely linked to the ACLG category of regional towns and cities but this type also has much in common with the accessibility and remoteness classification. The ACLG categories use population data to distinguish classes while the intergovernmental typology sees other centres as the places where SGs locate their regional offices, which are often also the most accessible dispersed areas of the states. These were the hardest to identify and classification was based on the author's observation while travelling through Australia and through contact with SGs and LGs operating in these areas.

An *indigenous* category is included in the intergovernmental typology but not in ACLG. The definition for this type allows inclusion of the Queensland and South Australian indigenous LGs that are incorporated under separate legislation to that of the remaining LGs in those states. It also includes the predominantly indigenous Northern Territory LGs even when their statutory systems are equivalent to those of non-indigenous communities.

The remaining category of *other LGs* includes all of the remaining LGs in Australia. This type clearly oversimplifies the diversity of this final, largest group. The main reason for not splitting this group any further lay in the difficulty in finding LGs within it that were attempting to deliver beneficial environmental outcomes. These LGs are also facing many current amalgamations so their structure is also currently becoming more homogenous. This issue is dealt with in depth in Chapter 7, which deals with the sample selection for the *inside-out* study of LG environmental attempts.

Since this is a new classification, it seemed worthwhile undertaking a brief comparative analysis of LG features using it. Figure 2.3 is a map of Australian LGs, showing the location of each LGs of each type. Some comparative similarities and differences are immediately apparent and include larger geographic sizes of LGs in the more extensive states, and the tight clusters of compact LGs in the capital fringe and capital city categories. Other centres are also often geographically small, especially in coastal areas. Note that while every attempt has been made at an accurate classification, this typology is in draft form only and some LGs may best be included in a different type that the one

on the map. The author accepts full responsibility for this, and further use of this typology beyond this thesis should recognise the possible need to amend some classes.

A quantitative analysis of the typology enables further scrutiny of LG features, and was achieved using statistical analysis of published data on on LG populations, expenditure[5], and geographic size. The *Australian Guide to Local Government* (Information Australia 2000) publishes a nearly complete, and fully updated set of these data quarterly. This was the best source of comparative, quantitative data on LG features that might impact on their environmental capacity, and that was gathered for the population of Australian LGs, using a nationally consistent methodology. The Australian National University's Statistical Consulting Unit[6] assisted this process, suggesting the conversion of the data to a logarithmic scale for analysis, and drawing up graphs allowing four-dimensional analysis of the LG types. Unfortunately, the data were not available for the Queensland and South Australian indigenous LGs, and so the graphs do not show indigenous LGs as a separate type.

Figures 2.4 a-d are the graphical output from this analysis. Each Australian LG appears as a point on each graph. LG types are represented by the letters indicated in the key, to enable comparisons between the types mentioned above. LGs from each state also appear in a different colour, allowing for interstate comparisons of LGs. The two axes of each graph are the final two dimensions, dealing with geographic area, population and expenditure, pairwise in turn. Note that indigenous LGs are not identified in the graphs, since the full data were not available for those LGs. This analysis also suggested analytical categories to succinctly describe the key differences between LGs of different types. These are noted together with definitions for the categories in Table 2.9.

Table 2.9 Analytical categories to describe types of local governments

Categories	Definitions
Local government features	Descriptors of LG features for which quantified data are readily available.
Population	The number of residents in a LG.
Populous	LGs with a greater-then-median resident population. Includes most of the

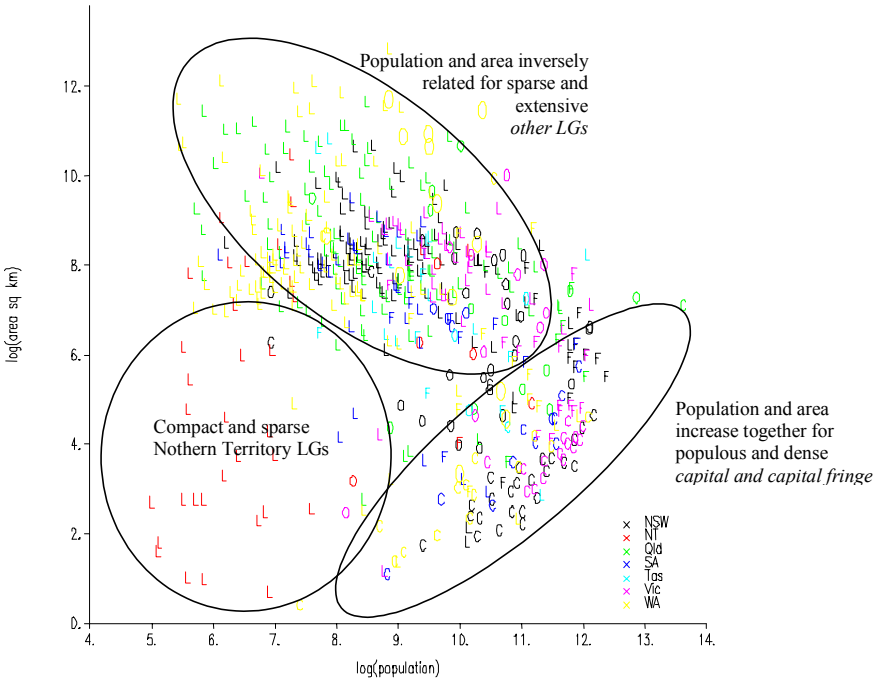
[5] Note that the Guide also provides data on total income and rate content as well as expenditure. The distributions of each of these financial measures are relatively similar, so only one was selected for this exercise. Expenditure was chosen since it has the most direct impact on the resources that any LG has available to allocate to environmental and other services.

[6] Thanks specifically to Ross Cunningham and Christine Donnelly.

	capital city, capital fringe and other centres.
Sparse	LGs with a less-than-median resident population. Includes most of the indigenous and other LGs.
Area	The geographic land area covered by a LG.
Extensive	LGs with a greater-than-median geographic area. Includes most of the other LGs and some of the other centres and capital fringe LGs.
Compact	LGs with a less-then-median geographic area. Includes most of the capital city and capital fringe LGs and some of the other centres.
Expenditure	The total amount spent by a LG annually.
Rich	LGs with greater-than-median annual expenditure. Includes all of the capital city LGs and most of the capital fringe LGs and other centres.
Poor	LGs with less-than-median annual expenditure. Includes all of the indigenous LGs and most of the other centres.

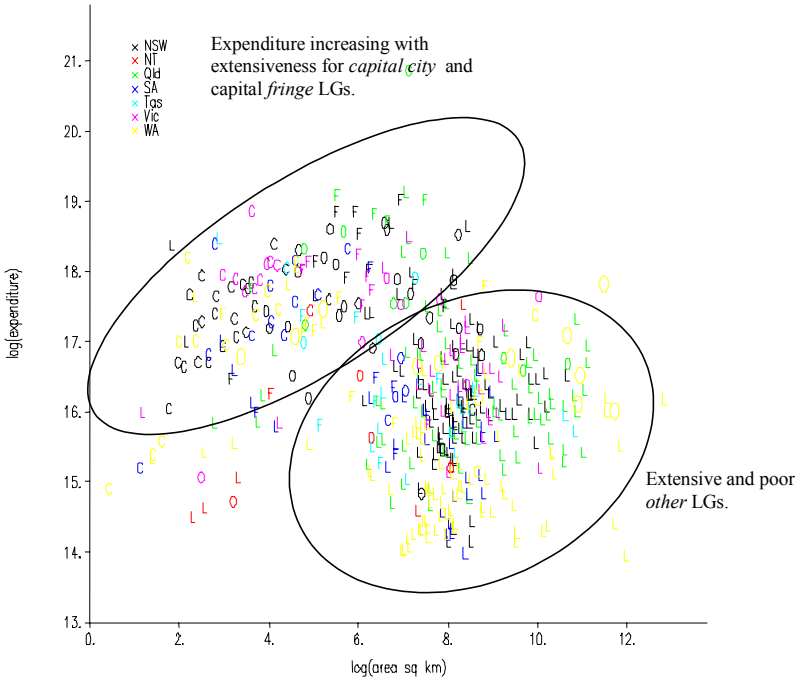
Source: Appendix 1. Thesis category map.

Figure 2.4a Local government population by area



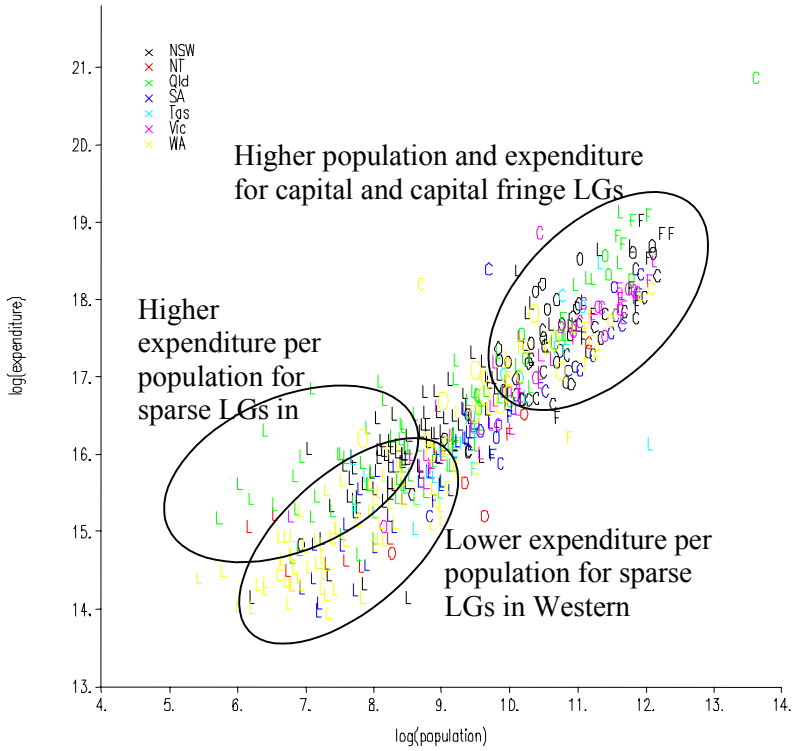
Key: C = Capital City. F = Capital Fringe O = Other Centre L = Other LG
Source: Information Australia 2000.

Figure 2.4b Local government area by expenditure



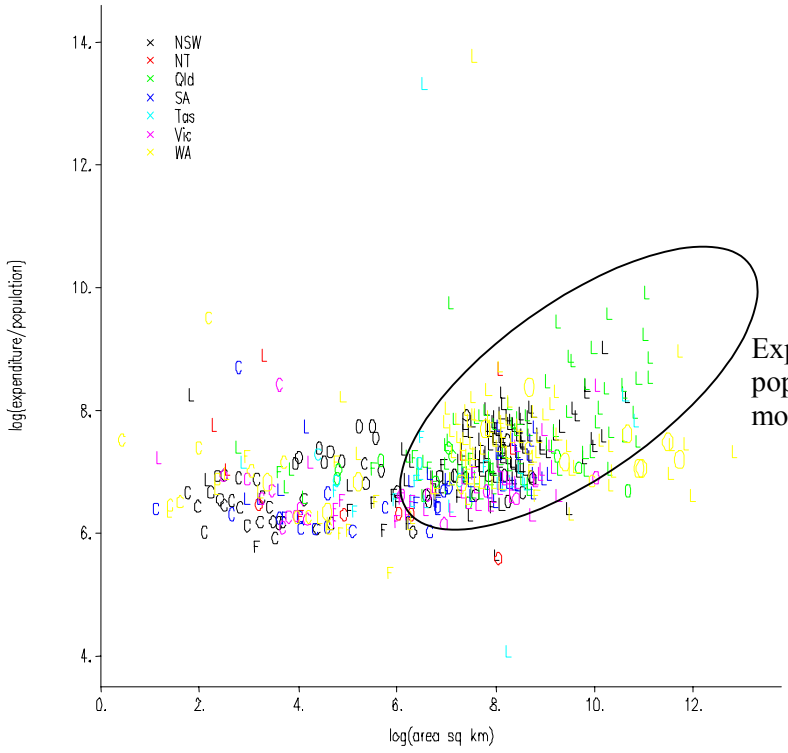
Key: C = Capital City. F = Capital Fringe O = Other Centre L = Other LG
Source: Information Australia 2000.

Figure 2.4c Local government population by expenditure



Key: C = Capital City. F = Capital Fringe O = Other Centre L = Other LG
Source: Information Australia 2000.

Figure 2.4d Local government area by population and expenditure



Key: C = Capital City. F = Capital Fringe O = Other Centre L = Other LG
Source: Information Australia 2000.

Figure 2.4a shows the relationships between LG area and population. *Other LGs* in the Northern Territory LGs are the clear outliers here, being the only group that are both sparse and compact. This demonstrates a unique feature of the LG system in the Northern Territory, where rural and remote LGs govern little more than the area of their small towns, rather than the extensive rangelands in between, as with LGs in all other states. Two distinct patterns can be discerned for the remaining LGs. The *capital city* and *capital fringe* LGs are mostly found in the lower right hand corner of the graph, indicating that they are both *populous* and *dense*, and that among this group, population increases with extensiveness. *Other LGs* and *other centres* demonstrate the opposite patterns, being mostly up the top left and centre of the graph, with populations tending to decrease as area increases. This pattern is particularly apparent for the Queensland and Western Australian *other LGs*, which have very *extensive* areas and *sparse* populations compared with the rest of Australia. Queensland also provides the two LGs that are the clearest outliers in terms of population. Brisbane and Gold Coast City Councils have populations well above those of any other Australian LGs.

Figure 2.4b shows the relationship between LG area and expenditure. Again there are distinctive patterns within and between both LG type and state. The *other LGs* are shown as both *extensive* and *poor* compared to all other types, being clustered in the lower right corner of the graph. It is the Western Australian and Queensland *other LGs* that make up most of the *poorest*, most *extensive* group. Among the *capital city* and *capital fringe* LGs clustered on the left of the graph, there is some evidence that *expenditure* increases with *extensiveness*. Again, Brisbane City Council is a significant outlier on the graph, being easily the *richest* LG in Australia.

Figure 2.4c shows LG expenditure by population. This graph shows clearly that LG expenditure increases with population throughout Australia. This shows the impact of the Federal Assistance Grants and other SG and FG funding directed towards LGs, which use population as a key factor to determine funding levels. It also suggests that greater populations can provide a greater rate base. Also note that in this graph an important difference between the Queensland and Western Australian LGs in the *poor*, *sparse* group is evident. That is that the *sparse other* LGs from Queensland tend to be *richer* than their Western Australian counterparts. Again, Brisbane City Council is the overall outlier, being Australia's *richest*, most *populous* LG.

The strength of the overall relationship in Figure 2.4c provides the opportunity to derive a new, combined variable of expenditure by population, or per capita expenditure,

which can be graphed against LG area. The new information provided by Figure 2.3d is that among the most *extensive* LGs, per capita *richness* increases slightly with *extensiveness*. The exception here is Western Australia, where per capita *richness* remains fairly consistent regardless of area. Taking this graph together with 2.4b, we can conclude that for the most part, LG richness and population increase together, but that per capita *richness* is higher for many of the most *extensive* LGs of each type. Tasmania has the most variation in this graph as it contains the LGs with both the highest and lowest per capita areas, both of which have fairly average areas. This is the only graph where Brisbane City Council is fairly average, since both its per capita expenditure and area are around the median.

The typology is also used in subsequent chapters to explore the degree to which the LGs selected for the thesis research are representative of other LGs that have not been included in the samples. The results of this analysis are presented in Chapters 5 and 7, which present the detailed methodologies for each of the two major studies.

2.8 Analysing Local Government Policy Processes

This section discusses contributions from the academic literature providing theoretical insights into issues described above. Few academic works make serious efforts to answer fundamental questions about the nature, structure or operation of LG and its work. LG roles are often ignored, or seriously downplayed in many texts on Australian governments, political systems and environmental issues. When LG is mentioned, many scholars respond to its diversity and complexity by providing untested generalisations from limited case studies, or by avoiding serious theoretical debates (Mowbray 1997). Others restrict their theories about LG operation to outside-in analysis based on the scope of State and Federal Government legislation and policies affecting them.

Despite the relative scarcity of academic literature on LG, some of the recurring themes from policy and institutional studies literature provide insights into LG environmental capacity. This thesis does not aim to cover all of the detail from relevant academic discourses, since its problem-focused approach and interdisciplinary nature make that beyond the scope of the thesis. Instead, this section discusses the relevant themes and indicates how the thesis addresses the issues raised.

LGs fulfil the accepted definitions of institutions, and that literature therefore provides some insights for this research. Institutions are underlying, durable patterns of rules and

behaviours (Dovers, 2001. P.5). They allow organised and collective efforts toward common concerns and the achievement of social goals (Henningham 1995). Governing institutions, such as LGs and the other spheres, establish and operate particular systems of laws and customs to control and regulate relations between themselves, those that they govern and other institutions. Although they are enduring, institutions also constantly change, and this change is constrained by the patterns of operation that have built up over time. Change is encouraged through processes such as variation and selection, problem solving, contagion and turnover. Patterns such as Lindblom's 'science of muddling through' are certainly features of LG operation. (see Lindblom 1959; Considine 1994, pp. 73-74; Conacher and Conacher 2000. p.101; Gregory 1989). However because land use planning, infrastructure management and other LG roles are directly attached to existing land uses, such models may have even more application than for SG or FG policies which are often abstracted from specific environments.

Some authors have argued that human systems would be more sustainable if they adopted more features of ecosystems. Such ecologically rational institutions would exhibit systems for negative feedback, coordination, robustness and flexibility or resilience (Dryzek 1987). Such institutions are not apparent in Australia, and Dovers argues that institutional responses to environmental problems are constrained by policy adhocery and amnesia. Australia's institutional arrangements have engendered patterns of unsustainable behaviour that are highly resistant to change. He argues that improved institutional capacity to adapt toward improved environmental performance requires greater persistence, information sensitivity, inclusion, purposefulness, flexibility, policy making and learning towards sustainability. Further, the weakness of Australia's current institutional arrangements for sustainability are a fundamental constraint that affects LG as much as any other institution or agent (Dovers 1999, p. 89 and 2001).

While this thesis readily accepts that institutional arrangements affecting LG lack sufficient design for sustainability, it does contend that the specific nature and operation of these arrangements is not yet well understood. In particular, the direct connections between LGs and their communities and environments are unique, and potentially important in influencing their capacity to lead shifts towards sustainability. These could make for higher levels of coordination, negative feedback, flexibility and information sensitivity than is found in other spheres of government. However data that are readily available on LG do not support analysis of this, especially not consistently from the inside-out. These issues helped lead to the grounded theory approach to the research,

and the design of novel research methods to support analysis of such issues and relationships.

It is also well accepted that the actors within institutions play important roles in shaping their own operation. Actor networks are an important driver of this, and are described as "the informal and semi-formal linkages between individuals and groups in the same policy system" (Considine 1994, p. 103). Actors involved in LG delivery of beneficial environmental outcomes may be found in any role within a LG. They will certainly also be found in LGAs and SGs, and may also be any other LG stakeholders. Some features of LG could mean that LG actor networks operate differently than in other Australian institutions. The relatively close associations between the legislature and executive roles within LGs, low level of political party affiliations, and strong relationships with local interest groups (all discussed above) could each be influential. These institutional features might increase LG effectiveness in delivering beneficial environmental outcomes by reducing some barriers that are strong within other governing institutions. This thesis addresses these issues by inducing analytical categories for interviewees perspectives on LG, roles within LGs, and for the different types of LGs. Each such category has been introduced in this chapter, to support their use as explanatory variables for analysing LG roles and effectiveness in delivering beneficial environmental outcomes in the remainder of the thesis.

The possibility that non-democratic actions might be supported by a blurring of barriers within LG institutions also needs to be considered, particularly because there are widespread perceptions that such problems occur often in LG. For instance, fictional LG mayors from Australian popular culture are regularly portrayed as corruptly over-riding executive processes for development approval, as demonstrated recently in the serial *Sea Change* (Cox and Knight 1998-2000) and movie *Muriel's Wedding* (Hogan 1994). This research is more interested in understanding avenues for beneficial environmental outcomes, than on highlighting instances of the negative alternatives (while also aiming not to bias the analysis towards overly positive interpretations). Again, the analytical categories of perspective, role and LG type all aimed to provide a basis for exploring these sensitive issues in context, while preserving anonymity where appropriate.

Processes of policy development and agenda setting are a common topic in academic literature on SGs and FGs. Many theorists emphasise the roles of policy determinants, such as shifts in technology, economics, ideology, and lobbying by stakeholders, on the process of agenda setting (see Howlett and Ramesh 1995; Jenkins 1990). The resulting

models usually fail to incorporate agenda setting in local contexts. For instance, industry peak bodies lobby on behalf of their members in setting SG and FG agendas. But business operators tend to liaise directly with LGs, especially in remote areas. These individual operators may be more significant than their peak bodies in setting policy agendas there, so that these relationships contribute strongly to incremental, rather than 'rational' policy implementation (see Lindblom 1959). Similar issues can also lead to differences between the political agendas of individual LGs and their LGAs. This suggests that there may be specific issues driving the policies of individual LGs, that never feature in state-level agenda setting. Sensitivity to local agenda setting processes and contexts is clearly important in studies of LG capacity to deliver beneficial environmental outcomes. The inside-out study that is presented in Chapters 6 and 7 develops a set of *context continuums* in order to record and analyse these types of issues. The continuums record the scale, origins and flexibility of LG attempts to deliver beneficial environmental outcomes, to allow analysis of the influence of these variables.

Various authors have considered the question of which range of powers is most appropriate for LG. The argument that political power and policy choices should be devolved as far as is administratively feasible has many supporters. This approach is purported to enhance accountability, by connecting policy making with its implementation and impact (Jones and Stewart 1985). Others argue that it has proven difficult to demonstrate that LG is inherently more accountable than central governments (Boston 1988). The argument that LG should have powers only where the benefits of this exceed all other institutional arrangements has many supporters (Ladd and Doolittle 1982). In practice, this can be hard to determine. These debates also raise the issue of optimal revenue sources for devolved functions. Variations in local need and ability to pay for services, as well as consistency of service delivery with broad policy objectives make this a difficult area (Scott 1988). This again emphasises the need for widely applicable methods and measures for comparing, and potentially improving, the substantive outcomes that are delivered by LGs.

The above discussion raises the possibility that SG policies implemented by LGs may fail to deliver the expected outcomes. Policies can also fail by bringing about a situation with worse problems than those that they originally set out to solve. In cases where state and local priorities differ, both types of policy failure could readily occur. The implementation process could then lead to escalation or displacement of the problem, over-deterrence or unintentional enticements, spillovers, perverse incentives,

opportunity costs or other problems (Grabovsky 1995). Lack of funding for environmental mandates is a common and relevant form of policy failure (Cimitile et al. 1997; Weiland 1988). This certainly constrains the effectiveness of LG environmental work. But financial limitations do not always stop LGs from delivering beneficial environmental outcomes, and sometimes other problems, or combinations of constraints feature strongly in LG failure to enhance environmental values. Both the inside-out and outside-in methods developed in this thesis are sensitive to a range of sources of policy failure, aiming to provide insights, and possible policy solutions that go beyond the "begging bowl" approach to addressing LG policy failure (see Bradby and Pearce 1997). Again, the problems stemming from Australia's inability to consistently analyse the substantive outcomes delivered by LGs from either an outside-in or inside-out perspective are apparent.

A final problem is that policy analysis such as that in the academic literature and in this thesis, is rarely read or acted on by policy makers. Such analyses usually lack the immediate relevance to pressing problems facing those actors. Since few academic papers specifically address LG environmental issues, or do so in a practical way, LG environmental managers are even less likely than many other policy makers to read the academic literature about these issues (Lindblom 1959; May 1992; Mowbray 1997). The thesis has tried to address this problem by focusing from the start on producing research that is directly useful to LG practitioners, and by developing methods to meet this objective. The simple, quick and flexible environmental risk assessment method (Chapter 5) and the stories and graphs from the case studies (Chapter 7) are products of this approach. The ongoing involvement of LG practitioners throughout the research process and the interactive CD-Rom of the thesis and research findings to be provided to all contributors are attempts to enable further use of both the specific findings and the broader analysis.

2.9 Conclusion

LG is a fundamental sphere of government, with a longer history in Australia than any other sphere. The institution has been subject to many changes over recent decades, and there is no indication that these are set to slow down.

Major frontiers of LG include the new work being done, new ways of doing it, and greater accountability mechanisms, combined with greater flexibility. Recent LG

reforms have resulted in fewer, larger LGs, with wider general competence powers and budgets that appear constantly to be more stretched. Yet there are few effective measures of LG service delivery. Those few measures that are collected and reported at the SG level have an administrative focus on financial matters and the timing of decisions. The accepted measures are also each defined from the outside-in. The FG recognises the absence of consistent performance indicators for LGs and reports annually on progress towards such indicators, and on its own progress in delivering funds to LGs, although not on the substantive outcomes resulting from that funding. No inside-out measures have yet been proposed that can measure the substantive outcomes delivered by LGs, although LGs are formally committed to excellence in service delivery through a range of inside-out initiatives.

The various government documents these matters enjoys little support from academic discourses, which tend to ignore, downplay or oversimplify LG issues. Few academic texts focus explicitly on LG, compare these across different contexts, or consider inside-out perspectives in their analysis. This leaves major gaps in existing theories related to LG capacity to deliver environmental or any other types of outcomes. The next chapter extends this discussion on LG generally, into a focus on existing discourses on LG environmental capacity in particular, thus laying the specific groundwork for the original research presented later in the thesis.

Chapter 3. Australian local government and the environment

3.1 Introduction

Every environmental issue is a local environmental issue. Even when those issues also capture the attention of SGs, the FG or regional organisations, the LGs in which they are located always have a profound and enduring interest that is worthy of consideration by all other spheres and stakeholders. This chapter explores LG environmental work in Australia and develops three main themes. The first is that LG is a critically important player in environmental issues within Australia. The second is that despite the major environmental responsibilities of LG, the statutory context for LG decision making and action is limited, often imposing major constraints on LG potential to drive fundamental environmental improvements. Thirdly, few consistent and meaningful indicators about LG environmental work are available, and where indicators exist, they generally consider administrative rather than substantive impacts. The chapter is structured to support the development of these three themes. In addition, much of the discussion within the text is supported by the case studies presented in the inside-out research, and these are referred to in footnotes where relevant.

The chapter starts by presenting perspectives on LG environmental roles and responsibilities originating from international through to local scales. This section locates the origins of and discusses dilemmas associated with many well-known environmental initiatives involving LG. Section 3.3 presents information on LG environmental finance, and compares this to the environmental accounts of the other spheres of government. LGs spend more on the environment than any other sphere of government in Australia, so this section again demonstrates LGs' environmental significance. Section 3.3 also defines three focal areas of LG environmental work. These analytical categories are then developed in the rest of the chapter and applied throughout the remainder of the thesis. The focus areas are environmental planning (Section 3.4), management (Section 3.5) and protection (Section 3.6). These sections describe the roles and responsibilities of each focus area in different contexts. Formal roles and responsibilities for each focus issue are discussed for different Australian

states. These sections also deal with the local-state antinomy by addressing both inside-out and outside-in perspectives. This chapter continues the thesis' literature review in setting the broader context for the original research on pollution prevention that is the focus of Chapters 5 and 6, and the case studies addressing each focal area that are presented in Appendix 4 and discussed in Chapters 7 and 8.

3.2 Spheres of understanding

All spheres of government have formally recognised the critical environmental roles played by LG. LGs' central role in environmental matters are most famously recognised in the international sphere through the United Nation's Local Agenda 21 (LA21) initiative. This was initiated at the 1992 United Nations conference on environment and development (Rio Earth Summit). Among the conference outcomes was the challenge for LGs to produce a LA21 for their area, that is cognisant of broader environmental priorities. In contemporary Australia, the term LA21 can refer to any integrated, strategic environmental initiative with a local focus. However LA21 is not always the force behind such initiatives[1].

LA21 has both outside-in and inside-out aspects, and LA21 initiatives have often tried to integrate these. In Australia, and in many other nations, off-the-shelf models for developing LA21 are provided to LGs by the other spheres. These outside-in publications emphasise the need for LGs to work from the inside-out, looking within their local area to identify and develop, manage or preserve the unique environmental values there. For instance, Australia's LA21 model suggests five action areas, comprising: preparing the ground; building partnerships; determining vision, goals, targets and indicators; creating a local action planning document; and implementing, reporting, monitoring and reviewing (Cotter and Hannon 1999). In this way, LA21 is supposed to "provide a framework for bringing together disparate actions into a coherent strategy which is focused on making the operations of the council and community more sustainable" (Whittaker, 1996. p.15). LA21 models are written to enable practically all of a LGs activities to be incorporated into its LA21. But LG activities can just as easily proceed in the absence of the LA21 framework, and there are also many other frameworks designed to strategically integrate LG work. These include

[1] See for example case studies Q7, Q10, W2, W4, V1.

the corporate plans and other overarching policy documents that LGs in Australia are statutorily required to develop. So why would LGs choose to adopt the LA21 framework?

The LA21 initiative has successfully harnessed LG efforts towards beneficial environmental outcomes in many nations, and by 1996, 1500 LGs in 69 countries were working on LA21s. Australian LGs however have lagged behind other countries in developing LA21s. In 1996, only 16% of Australian LGs were formally committed to LA21 in contrast to over 75% in the United Kingdom. Comparative analysis suggested two key issues might underpin the differences. First, it seemed that LG commitment to LA21 was strongly correlated to outside-in stimuli. SG and FG encouragement and support for LA21 have been relatively weak in much of Australia while the United Kingdom, and other countries with higher uptakes had provided greater outside-in incentives and support. Second, many LGs suggest that the LA21 mandate was too wide-reaching for the set of powers currently held by Australian LGs (Whittaker, 1996).

At the national level several formal statements address that set of environmental roles and powers that are held, or might ideally be held by LG. The most widely recognised FG-initiated statements expressing general environmental roles for LG have been the *Intergovernmental Agreement on the Environment* (IGAE) (HoG 1992) and the *National Strategy for Ecologically Sustainable Development* (ESDSC 1992). The Keating government's *Commonwealth-Local Government Accord* also addressed environmental matters, but enjoyed limited promotion since it was not supported by the Howard government, elected soon after its acceptance and commencement (Keating and Plumridge 1995). Issue-specific programs such as the *National Greenhouse Strategy* have also specifically addressed LG environmental roles and powers (C of A 1998. Module 3). ALGA has endorsed each of these statements on behalf of all Australian LGs and they are also formally endorsed by the other spheres of government. The structure of Australia's federal system, in which LG statutory roles are proscribed by the SGs, means that these agreements take the form of principles, rather than enabling legislation or legally binding obligations. So as with LA21, any action to support these principles at a local level is purely voluntary. The FG institutional structure also downplays connections between the outer and inner spheres. There is no federal LG department, with the National Office for LG instead located within the Commonwealth Department of Transport and Regional Services.

National level agreements are consistent in their recognition of LG's inherent and significant environmental roles and responsibilities within local areas. They also recognise LGs' interests beyond their local areas through cooperation with other LGs and other spheres. Within these agreements ALGA indicates that LGs undertake to develop policies and manage their environments consistently with many comprehensive principles such as ecologically sustainable development, intergenerational equity, and the precautionary principle, and relevant international agreements. The agreements focus on the need for all spheres to work effectively together, expressing this as a need to divide roles effectively between the spheres, to avoid duplication, and ensure that powers match with responsibilities. But there is a far greater emphasis on LGs acting consistently with broader policy agendas, than on the larger spheres acknowledging local issues. For instance, where the *IGAE* dedicates 12 sections to the resolution of intergovernmental problems between SGs and the FG, only one section – committing the SGs to consult with LG before delegating responsibilities to them - addresses state-local relations (HoG 1992, S's2.5.3-2.5.5.4 and S.1.12).

The implicit question of LG capacity to meet its undertakings under these agreements is addressed in ALGA's *National Agenda for Australian LG*. This statement has been updated and agreed by LGs at ALGA's annual conference each year since 1994. The National Agenda reconfirms LG commitment to the various national and international obligations referred to in the other agreements, and the entire document has a proactive and progressive approach to LG roles. But in contrast to the outside-in approach taken in those agreements, the *National Agenda's* inside-out perspective is instructive about the constraints facing LG in meeting its obligations. It states for instance that LG "must be an equal partner in the development and implementation of national environment policy. The IGAE offered an important step forward but there has been little progress since in effectively involving LG" (ALGA 2000 S. 8.5). And "in accepting greater devolution of responsibilities for local and regional planning and environmental management (where appropriate in partnership with the community and other spheres of government) LG requires greater financial support from Federal, State and Territory Governments to resource those responsibilities, and particularly to achieve outcomes sought as part of national agendas" (S. 8.4). With the SGs ultimately responsible for establishing LG statutory frameworks these statements demonstrate how LG has proactively negotiated for adequate conditions to enable them to deliver effectively on the strategies of outer spheres of government.

Such conditions are not always provided, either in terms of consultation to ensure adequate legislation or financial means for implementation. A general problem is that even when funds are provided they are not guaranteed for the life of an environmental initiative. The current Howard government's funding of its Natural Heritage Trust through its part-sale of Telstra is a classic example. An example of statutory gaps is provided by the independent research into LG environmental capacity in *Beyond Roads, Rates and Rubbish* (Binning, Young and Cripps 1999), *Opportunity Denied* (Cripps, Binning and Young 1999), and *Conservation Hindered* (Binning and Young 1999). These reports each have a national focus, and use a state-by-state analysis of LG statutory capacity to conserve native vegetation. These publications highlight some statutory shortfalls to LG nature conservation capacity, including the inability of LGs in many states to raise environmental levies, and statutory constraints to offering rate rebates or to buy and sell land for conservation purposes (Cripps, Binning and Young 1999). The major differences between SGs in allocating environmental roles to LGs make this approach valuable in explaining the context for LG nature conservation in each state. The contrast between the limited statutory powers ascribed to LGs for nature conservation and the sweeping general competency powers suggested in the introductions to LG Acts[2] highlights a major challenge facing LGs. Such gaps between the general responsibilities and the specific powers ascribed to LG by SG are common beyond nature conservation roles.

The problem of regional dissonance, characterised by fluid regional boundaries and initiatives (discussed in Chapter 2) certainly constrains the development of regional perspectives on LG environmental work. This is also coupled with important differences in environmental values and aspirations of different regions across Australia. In this context, Australia's recent environmental indicators projects have helped to progress understanding of the constraints and opportunities for regional environmental governance. These federally funded initiatives stemming from the state of environment reporting recommendations in the *National Strategy for Ecologically Sustainable Development* (ESDSC 1992) were funded by the FG environment department - Environment Australia - and coordinated by ALGA. The initiative saw six pilot regions (one from each state) selected and funded to develop regional environmental indicators,

[2] See table 2.4 in the previous chapter

which were then analysed with view to developing nationally consistent environmental indicators appropriate to the needs of local environmental managers.

The regional environmental indicators project was a major attempt to design substantive environmental indicators for LGs from the inside-out. The final report confirmed the absence of universal, reliable, high-quality or readily available environmental data currently monitored at the local level (Alexandra, Higgins and White 1998p. 46). But it was optimistic that national indicators could be developed. It suggested that they might "be arranged in 'suites' calculated to appeal to community groups and potential data users who may have no history of monitoring involvement but who may find this form of presentation attractive for commercial, management, educational or aesthetic reasons" (p. 57). This vision for integrated inside-out and outside-in environmental information generation and knowledge management is laudable, but effective implementation of the ideas remains elusive, and some challenges in maintaining momentum are already apparent[3]. The report also noted plethora of environmental management strategies and plans affecting regions is noted in the final report from this process, with 18 identified for Gippsland in Victoria, and 54 for South West Western Australia, excluding LG plans and policies (pp. 22-24). In light of such challenges, the *Environmental Indicators for national state of the environment reporting: local and community uses* observes that indicators and monitoring processes and the resulting data must be sufficiently robust to survive institutional transitions (p. 18).

LG perspectives on LG environmental roles have been voiced in many recent publications, forums and arrangements in Australia. Several of these are linked to Environs Australia, which identifies as a "national association of people working in LG management and local sustainability" (Osmond and Ray 1996. Inside cover). Based in Melbourne, and formerly named the Municipal Conservation Association, Environs Australia faces challenges in achieving prominence and relevance to LGs outside of Victoria and to LG elected officials who are more closely linked to the LGAs. However Environs Australia has been the prominent LG environmental organisation recognised by outside agencies such as Environment Australia, successfully tendering for many of their major contracts targeting LG. These have included CouncilNet, Australia's first LG electronic environmental information service and many of the LA21 contracts,

[3] See case study W5 on the South West Western Australian experience.

including running training programs and developing off-the-shelf models (Cotter and Hannon. 1999). The association's approach is proactive, positive and opportunistic about LG officers and managers' potential to achieve beneficial environmental outcomes, even in times of major structural reforms, resource shortages and dubious political will (see for example Osmond and Ray 1996: Williams 1989).

National representation and articulation of LG environmental issues has also been provided by the network of Environmental Resource Officers (EROs) which is funded by Environment Australia but located in each LGA throughout Australia. The exception was the National ERO position, which was based at Environs Australia until 2000, when lobbying by ALGA and within Environment Australia saw the position relocated to ALGA's Canberra office. The external funding of the ERO positions has ensured that even the most poorly-resourced LGAs have maintained a full-time environmental position for about a decade. Several of the EROs have stayed in those positions for many years, and have become highly knowledgeable and influential in LG environmental issues throughout their states. These positions are certainly an example of effective integration of inside-out and outside-in perspectives on LG environmental issues that have assisted LG environmental efforts.

Closer in from these national representatives of LG environmental issues are the individual perspectives of LG officers, managers, councillors, and the community activists who work with them. In discussing environmental challenges and successes, they typically express sentiments such as hope, passion and pragmatism, linking these to the enduring nature of their continual connection to their local places. This thesis works to discover theories about to better explain this perspective, but this section closes with some pertinent quotes from inside LG and local environments. The CEO of the City of Fremantle articulates the never-ending challenges that face successful environmental managers in LG.

> "with popularity comes pressure: more people, more cars more construction, more pollution, more competition for resources and with all this comes more chance of stuffing up all the good things that made you popular in the first place. That, in a nutshell, is the challenge of sustainability" (Glickman 1996, p. 27).

A local environmental activist expresses a more defensive stance against the sources of these types of challenges.

> "I consider that most people are at a turning point. Support for land care is very high. People are taking pride in where they live, not seeing it as 'cheap land'. Government and developers

are having increasing difficulty in justifying 'progress' that doesn't match the expectations of society" (Bradby 1988. p.103).

Such grounded expectations are rarely explored, and are perhaps not even understood by other spheres of government. But these stories often also look outwards to the responsibilities of other spheres, and "touch on the opportunities that a respectful, person-centred approach can offer in the fields of education, health and the delivery of public-services generally" (Sirolli. 1995. p.xv). Some LG spokespeople go even further, and Mayor Breda Cass of Ireland's City of South Dublin received deafening applause from about a thousand (mostly) LG participants at the *Pathways to Sustainability* conference plenary session when she stated:

> "from my point of view the problem is that at its centre, the state is hollow. It has to dip into LG's bucket to show that it is relevant. So its really in competition with us. We are the ones who are really delivering, and we have to make sure that our own voices are heard" (Cass. 1997. Unpublished).

This section has presented perspectives on LG environmental roles and responsibilities at all scales from international to local, each clearly indicating the significance of those roles. This is also clearly apparent when government financing of environmental issues is considered, as in the next section.

3.3 Financing, framing and focusing

The fiscal imbalance between spheres of Australian governments is well known. LG income and expenditure is far less than that of the SGs, which in turn is far less than that of the FG. Recent research has shown that despite this overall financial inequity, LG spends substantially more on the environment than either the FG or SGs both in proportional and absolute terms (Trewin 2000). However Australian LG roles and therefore the scope of this thesis extend beyond the analytical categories of environmental protection and natural resource management that are used in that analysis. Because of that, this section both presents published information about LG environmental spending, and also proposes the simple alternative framework of environmental planning, management and protection as three focal areas of LG environmental work that are applied in the rest of the thesis.

Note that data from two financial years are reported together in this section, because the necessary information was not available for a single financial year. 1998-99

figures were available for LG and FG environmental data, but not for general government expenditure, or for SG environmental expenditure. The total and comparative expenditure for those has little variation between subsequent years, so the overall patterns discussed here hold, even though the exact figures must be considered indicative only.

Figure 3.1a shows total government expenditure for each sphere. Figure 3.1b shows the total environmental expenditure by each sphere of government in Australia. The graphs clearly shows that the total budget of each sphere of government is inversely related to its overall contribution to environmental expenditure. LG has by far the smallest proportion of the national budget, with only 4.5 per cent of government expenditure. Yet it contributes about 53 per cent of environmental expenditure. In contrast, the FG has over 56 per cent of the total budget but contributes only 10 per cent of government environmental expenditure in Australia. The state governments overall and environmental budgets lie in between these two extremes.

Several points need to be made about the environmental expenditure data presented here. First, there are many difficulties in accounting accurately for the amounts spent on the environment by each sphere of government. General issues such as accounting for private and public costs and benefits, built and natural capital assets and economic and non-economic values are challenges for LG environmental accounting as much as for any other sphere of government or other agency (Miley and Read 2000). In addition, considerable amounts are transferred between the spheres, so that spending by one sphere is income for another, but does not translate into substantive beneficial environmental outcomes until it is spent again by that second sphere. For example in 1998-99 the FG and SGs paid $175 million in grants to LG for environment related activities. In the same year, LGs paid $146 million back to the FG and SGs as fees for environment related activities. This meant that LG's had repaid 83% of the environmental revenue they received from the other spheres (Trewin 2000. p.11). Such transfers also entail significant administrative costs, so the net value to LG of environmental finance from the other spheres was most likely less than the $29 million suggested by these figures.

Figure 3.1a Total government expenditure by sphere

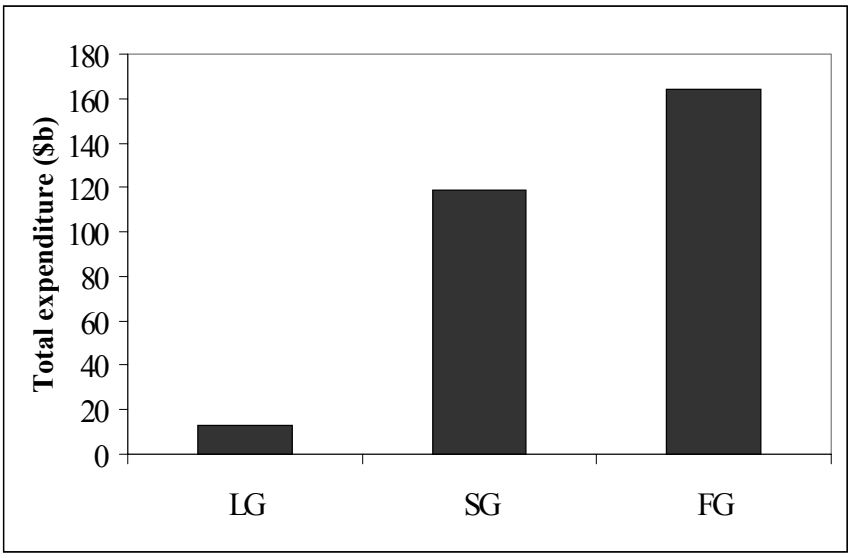
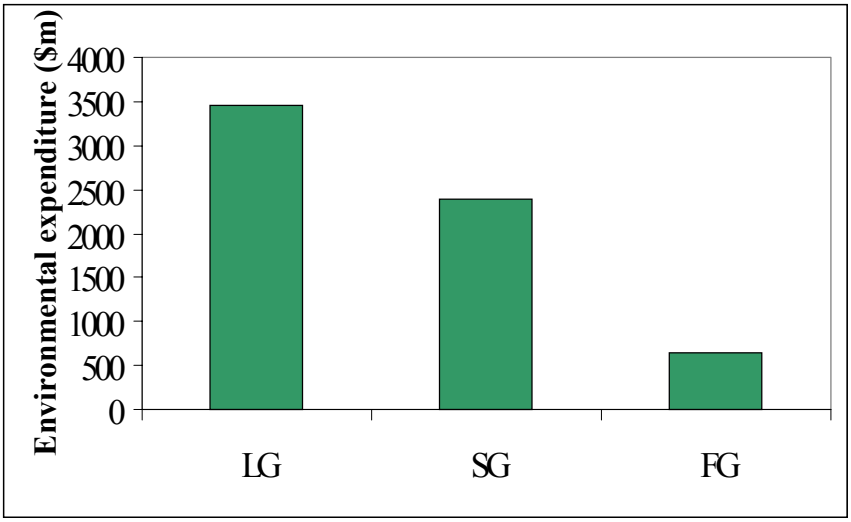


Figure 3.1b Government environment expenditure by sphere



Notes:

- LG has 4.5% of total government expenditure.
- SG has 38.7% of total government expenditure.
- FG. Has 56.8% of total government expenditure.

- LG contributes 53% of government environment expenditure.
- SG contributes 37% of total government environment expenditure.
- FG contributes 10% of environment expenditure.

- Environment is 27% of LG's total expenditure.
- Environment is 2% of SG's total expenditure.
- Environment is 0.4% of FG's total expenditure

Sources: LG environmental data – 1998-99 Trewin 2000. p.2. Current and capital expenditure.
SG environmental data – 1999-00 Trewin 2001. p.16. Expenditure by relevant departments.
FG environmental data – 1998-99 C of A 1999. p.8. EA expenditure plus NHT funded by AFFA.
All general finance data – 1999-00 Searle 2000 in NOLG 2001, p. 8.

The FG environmental data were calculated as the expenditure of the several FG agencies with primary environmental responsibilities. The major environmental department is Environment Australia (EA) with the Department of Agriculture,

Forestry, Fisheries – Australia (AFFA) also involved in environmental work. Many other smaller government bodies and statutory authorities with specific environmental responsibilities are funded through the accounts of these departments. For instance the National Greenhouse Office, Australian Heritage Commission, Great Barrier Reef Marine Park Authority and Parks Australia and Wildlife Australia are all funded through EA and are all included in the environmental expenditure estimate in Figure 3.1 (C of A 1999). The Natural Heritage Trust (NHT), which was set up using money from the part-sale of Telstra provides the major new environmental budget initiated by the Howard FG. NHT funding is distributed by both EA and AFFA. The FG calculates its own environmental expenditure as the summation of EA's annual expenditure and AFFA's NHT expenditure was also included in the estimate of FG environmental expenditure, consistent with the FG's own calculations of its environmental accounts. In 1998-99 the total of this expenditure was just over $650 million (C of A 1999. p.8).

The best available estimate of SG environmental expenditure was from the recent Australian Bureau of Statistics publication *Australia's environment: issues and trends: 2001*. This compiled the expenditure by the key environmental and natural resource management departments in each state. Some departments with environmental responsibilities were omitted from this ABS estimate, but this is largely balanced by the inclusion of some departments that also undertake work that is less closely linked to the environment (Trewin 2001. p.16).

In 2000 the Australian Bureau of Statistics published summaries of LG environmental expenditures and revenues for the first time. This was in response to requests by LGs, LGAs and others for national information on LG environmental finance. The framework used to gather and present the data included two main types of expenditure considered to have an impact on the environment. These were *environmental protection* and *natural resource management.* These two broad categories were also used relatively consistently in the estimates for the other spheres. However the categories exclude some important areas of government work with important environmental implications and in which LGs play a major role. Most importantly, strategic land-use planning is not included in the estimates. Yet land-use planning is a key environmental work area for LGs in all states, regardless of the extent of LG statutory capacity in this area (see Section 3.4 below). In addition, many SGs combine their LG and planning portfolios into the same department, so there are strong functional links between LGs and planning throughout Australia. Waste reuse and

recycling are also increasing environmental responsibility areas for Australian LGs and were not explicitly included in the categories.

Figure 3.2 shows the categories of environmental work that are considered to be part of environmental protection and natural resource management in the Australian estimates of LG environmental expenditure. It also shows how these fit into an alternative, simple analytical framework for describing the focus areas of LG environmental work. This framework comprises environmental planning, management and protection. The apparent overlap between environmental planning and management is a result of some of the United Nations categories including both types of work (United Nations categories from Trewin 2000 and 2001). The proposed categories appear to be mutually exclusive in practice, despite the apparent overlap here. The three proposed analytical categories are defined in Table 3.1.

Figure 3.2 Analytical categories for LG environmental work

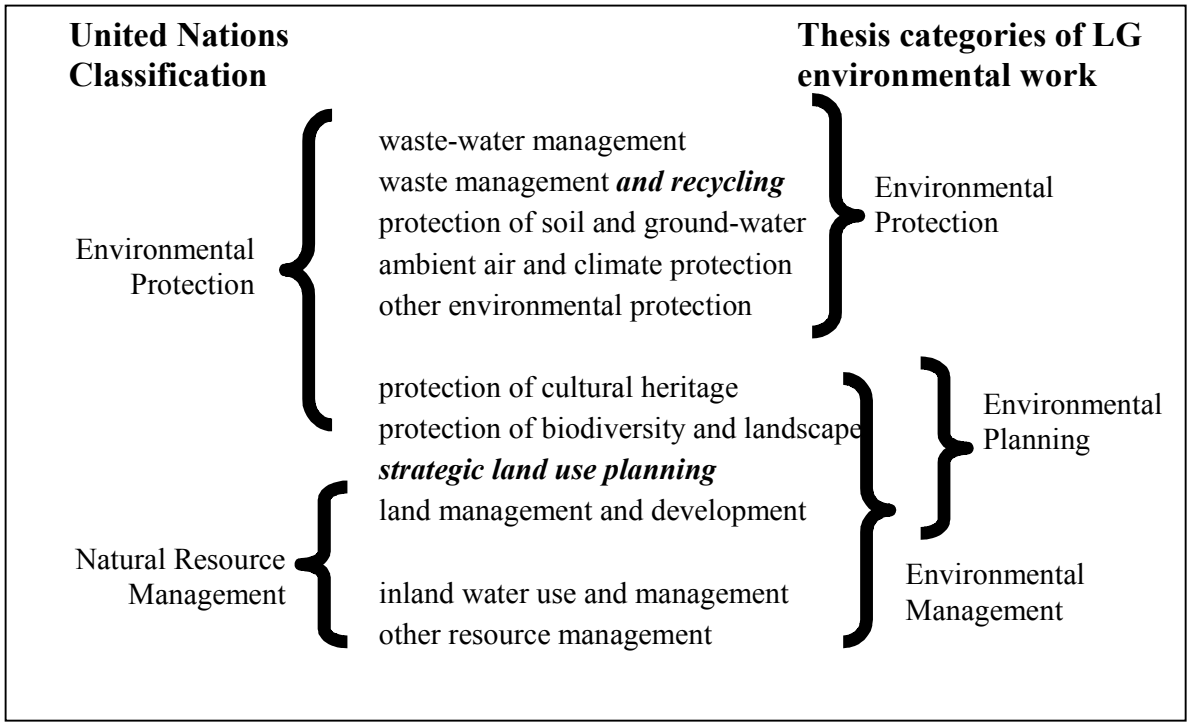


Table 3.1 Analytical categories for environmental planning, management and protection

Category	Definition
LG environmental focus areas	Discrete areas of LG environmental work, based on the purpose of the activity.
Environmental planning	Any activity that establishes the future land-uses for an area. Includes strategic land-use planning, development control, development assessment, environmental impact assessment and infrastructure design.
Environmental management	Any activity contributing to the day-to-day use or maintenance of environmental values. Includes retaining and supporting biodiversity, building and operating basic infrastructure.
Environmental protection	Any activity dealing with the unwanted by-products of environmental management activities. Includes all pollution prevention, waste management and recycling activities.

Source: Appendix 1. Thesis analytical categories

The next three sections discuss Australian LG capacity in each of the three proposed categories of environmental planning, management and protection. Each section locates its discussion at the interface between LG and the SG, and summarises LG statutory roles and responsibilities for different states and other contexts.

3.4 Environmental planning

Environmental planning is a key aspect of government environmental work since it determines long-term land uses, and thus defines which environmental values are eroded, protected or developed over time. Many enduring environmental problems are the result of poor planning decisions in the past, while sound environmental planning can provide for effective environmental management over the long-term. This section considers the problems, potential and processes of environmental planning by Australian LG.

Environmental planning is inherently integrated. Features such as the locations of different types of buildings, widths of roads and the layout of developments affect the ecology, community livability, economic potential and many other environmental values of an area. Similarly, the physical layout of surrounding areas also impact on each locale, creating further connections. Problems associated with poor environmental planning that fails to take account of this have long been recognised in Australia. For instance, in 1900 an outbreak of plague in Sydney's oldest suburbs led to demands for

better environmental planning. According to a contemporary commentator, Sydney's "hilly contours, its narrow streets, its huddled plan, the comparative inaccessibility of its harbour front, the want of adequate means of communication and of transportation between its outlying boundaries on the north, south, west and east" were choking a potentially great city (Fitzgerald 1908 in Spearritt and Demarco 1988, p. 4). Even today, Sydney's LGs rarely manage to think and act strategically in their land use planning (Sproats 2001, p. 5).

At its best, environmental planning is a purposeful and strategic activity for ensuring that desired values are retained and developed. Many recent initiatives from a variety of origins have aimed to broaden the conceptual scope of planning in Australia so that environmental values that were previously not considered can instead be nurtured. For instance, a Brisbane resident whose home was in the path of a proposed freeway became creatively involved in the broader issues of environmental planning, helped stop the freeway, and has become a leading advocate of traffic-calming in its broadest sense. On the basis of lessons from inside his local area, Engwicht now argues that urban planning throughout Australia needs to support the quality of life of residents, through designs that maximise exchange between people and minimise travel (1989 and 1992). The relationships between Australian land-use systems, car-dependence and resulting poor community livability and high fuel-energy use have also been tackled by a range of academics (Newman and Kenworthy 1989).

Strategic environmental planning processes are enacted in SG and territory legislation and have several consistent elements Australia-wide. They include:

- a strategic plan, establishing patterns for development and retention of desired values,
- a planning scheme, including a record of actual land uses, indicating land ownership and activities that may or may not be carried out on specific land parcels, and conditions governing such activities,
- processes for referring development applications to interested agencies,
- development control options with potential to restrict certain activities, in order to protect other desired values,
- systems for affecting land use changes, which recognise strategic planning goals and provide for review, appeal and enforcement of decisions, and
- public input to the planning process, including consultation on strategic plans, public access to information on planning schemes, and opportunities to object to

land use changes (for detailed discussions on land use and environmental planning in Australian contexts see Conacher and Conacher 2000, Bruce 1988 and Sulman 1921).

The LA21 initiative discussed earlier is one of many from the outer spheres of government, aiming to encourage LGs to consider broad and inter-related issues in the full range of their planning exercises. Other national programs that have encouraged the clear expression of such environmental goals throughout all elements of the planning process include Local Approvals Review Planning (LARP) and Integrated Local Area Planning (ILAP). These initiatives involving all spheres of government have sought to increase the strategic nature of planning to achieve goals such as balancing different objectives, maximising resource efficiency, and recognising the growing responsibilities of LG (Sansom 1993. pp.5-6).

LA21, LARP and ILAP are part of a national shift that is increasing LG roles and responsibilities in strategic environmental planning. The shift is formalised in Australia's planning laws, which have been substantially amended or entirely replaced by most state and territory governments over the last 10 years. The changes have extended the roles of LGs and of integrated strategic planning, supported by increased formal processes for community input into plan development. But while these changes have the potential to increase community knowledge about planning issues, and possibly to improve relationships involved in planning, they do not ensure that planning processes result in substantive environmental improvements. Current planning laws are listed in Table 3.2, along with summary information about appeal provisions and the responsibility for developing strategic plans.

Table 3.2 Planning Legislation in Australia

State/Territory, Act	Appeals	Strategic Plans
Queensland *Integrated Planning Act 1997* (QG 1997)	Planning and Environment Court (Chapter 4)	Developed by LG, but consistent with State Planning Policies (Chapter 2, part 1)
Northern Territory *Northern Territory Planning Act 1999* (NTG 1999)	Land and Mining Tribunal (S. 108). Then a conference if unresolved.	Planning Schemes developed by the Northern Territory Government (S. 10, 11).
Western Australia *Town Planning and Development Act 1928* (WAG 1928)	"Appeals may be made to the Minister or to the Appeal Tribunal, but the commencement of an appeal to one extinguishes any right of appeal to the other" (S. 39. See also S. 8A)	Town planning schemes may be prepared by the SG or LG. LG planning schemes can refer to any land within or adjacent to their area. In developing planning schemes, LGs myust consult public authorities and people that are likely to be affected by it. The Minister is responsible for approving planning schemes. (S. 6) (See also WAPC 1997.)
South Australia *South Australian Development Act 1993* (SAG 1993a)	The Environment, Resources and Development Court (S. 86).	The Minister is responsible for *The Planning Strategy*. *Development Plans* are the responsibility of the Minister, but LGs can initiate amendments (S. 25).
Victoria *Planning and Environment Act 1987* (VG 1987)	S. 39. Victorian Civil and Administrative Tribunal	S. 7. Planning schemes must include and separately specify state standard provisions and local provisions. If there appears to be an inconsistency between different provisions of a planning scheme, it must be read as far as practical to resolve the inconsistency. "The state standard provisions prevail over the local provisions, and a specific control over land prevails over a municipal strategic statement or any strategic plan, policy statement, code or guideline in the planning scheme" (S7.4bii). Planning schemes are structured in accordance with the *Planning and Environment (Planning Schemes) Act 1996.*
Tasmania *Land Use Planning and Approvals Act 1993* (TG 1993)	S. 61.1. Appeals to Appeal Tribunal.	LG (councils) are planning authorities. Planning authorities may initiate the preparation of a draft planning schemes, or be directed to do so by the Planning Commission, with the approval of the Minister. Such a direction may require a LG to prepare a draft planning scheme jointly with one or more LGs if the Commission considers that this would promote a regional approach to planning (S. 22). Draft planning schemes must be approved by the Minister before coming into operation (S. 29)
New South Wales *Environmental Planning and Assessment Act 1979,* as amended by *Environmental Planning and Assessment Amendment Act 1999* (NSWG 1999)	Appeals and enforcement matters to Land and Environment Court. (Division 8 and others.)	Part 3, Divisions 1-4 deal with environmental plans, which may be initiated and developed at the state, regional or local level. State Planning Policies are approved by the Governor, Regional Environmental Plans by the Minister, and Local Environmental Plans by the Director-General. Where there are inconsistencies between any of these plans, the most recent plan prevails, but state or regional plans prevail if they expressly say so (S. 36).
Australian Capital Territory *Land (Planning and Environment) Act 1991* (ACTG 1991)	The Territory Government is the LG.	The Territory Government has the full flexibility to implement, amend or replace the Act.

Note: all legislation is presented as in force September 2001.

The issues of appeals and the responsibility for developing strategic plans are highlighted in Table 3.2 because they are areas where LGs identify central inherent roles for themselves from inside of local areas, whether or not these have been statutorily provided from outside. LG views on the *Northern Territory Planning Act 1999* and its predecessor *The Planning Act 1993* provide a pertinent example since under the 1993 Act LG had very limited statutory involvement in environmental planning. The Territory Government had responsibility for planning schemes and development assessment and the processes had very limited requirements for consultation with LG and no requirements to incorporate LG views into decisions (see James. 1998). It was standard practice for LGs to know little about major developments that were planned and approved for their areas, yet to then be responsible for installing and maintaining the infrastructure required to support them, even if it had been so poorly planned for local conditions as to be unworkable[4].

In addition, appeals by developers who had had applications rejected were decided by the typically pro-development Planning Ministers, who nearly always decided them in favour of the developers. The 1998 Mayor (President) of Litchfield Shire (now an independent member of the new Northern Territory Labour government) summed up the issue as follows.

> "The main constraint is definitely having no planning controls. We just don't have planning power. There definitely are bad planning decisions made and we just have to wear them. To me that's wrong … and a bit hypocritical. To have a say in your own community you must have control of planning. Or you are really just a façade as a Council." (Wood. 1998. Unpublished).

The new *Northern Territory Planning Act 1999* has not fully addressed LG concerns. It directs appeals to the Land and Mining Tribunal, but only marginally increased LG powers in environmental planning. Meanwhile, the former Country Liberal Party government continued to encourage developments of dubious sustainability, consistent for instance, with a projected population of over a million people for the Darwin region within a century. Such initiatives largely ignored the many important ecological and geological constraints to development that already face the population of fewer than 100,000 (see Blandy and Forbes. 1998).

[4] See case studies T2, T4 and T5.

In most other jurisdictions, LGs have formal responsibilities in strategic planning that run parallel to those of the SG. However in each case, the SG legislation establishes the state-level plans as prevailing over local strategic plans in the case of inconsistencies (Table 3.2). These state-level plans can be problematic for LGs since they nearly always apply to regional, rather than local areas, and can impose institutional relationships that don't make sense to LGs, even when they make environmental sense[5]. It must be noted though that regional strategic plans do not necessarily drive development as has been the case in the Northern Territory. SG strategic planning documents are sometimes conservation-oriented and this can help LGs to balance local development interests with broader sustainability objectives[6].

While strategic planning processes promote desired environmental values in particular places, development control plans (DCPs) focus on restricting specified land use changes. LGs in most jurisdictions have the statutory capacity to propose DCPs, and there are many Australian examples of sustainability objectives being achieved through these mechanisms[7]. But the processes are fairly arduous and time-consuming, involving community consultation, public notification of the proposed plans and final approval by SGs. And developers have frequently demonstrated considerable creativity in getting around the restrictions in DCPs so that they can proceed with their intended developments.

Environmental impact assessments (EIAs) are another statutory mechanism for restricting unsustainable developments. Australia has EIA legislation at the FG level, and within each state and territory jurisdiction. In most states this is linked to the planning legislation, which prescribes classes of developments that automatically require an EIA, or require one when certain developments are proposed for sensitive areas. It is widely recognised however that EIAs do not ensure that environmentally sound decisions are made, but just that decision-makers are aware of environmental issues (see Harding 1998. pp.134-145; Conacher and Conacher 2000. Ch.11; Harvey 1998).

Although they were not included in the table above, the accountability requirements that are now built into most Australian planning laws also deserve some comment. Many SGs have responded to developer demands for planning certainty by

[5] See case studies W5 and V8. .

[6] See case studies Q2 and W6.

[7] See case studies Q4 and Q11.

clarifying planning referral processes and tightening up the timeframes within which planning decisions need to be made. The *Queensland Integrated Planning Act 1997* for instance establishes a comprehensive Integrated Development Assessment System for this purpose, also requiring most planning decisions to be completed within specified time frames, depending on the complexity of the decisions (Chapter 3). LG success in achieving these processes and timeframes must also be regularly reported to the SG, and this is considered to be a key measure of implementation effectiveness. However the reporting clearly has an administrative rather than a substantive focus, as no mention is made of the quality of planning decisions or of their effective consideration and accommodation of environmental values.

In summary, environmental planning is a key issue underpinning LG capacity to deliver beneficial environmental outcomes. Statutory changes over recent years have increased LG planning roles and responsibilities, but state-level jurisdictions have retained much of the final decision making about particular developments. And while modern laws have increased accountability in planning, the main mechanisms for this focus on administrative indicators rather than substantive impacts, with some mechanisms to increase knowledge and improve community relationship by way of planning processes.

3.5 Environmental Management

There is an appealing logic to the view that environmental management is the core of LG environmental business in the long-term. After all, effective planning processes should result in environments that need day-to-day management rather than repeated planning, and state-of-the art environmental protection systems should reduce waste and pollution problems so that they are largely addressed during activities, rather than as an add-on. This section focuses on LG environmental management, specifically on what is managed and the strategies that have been required of, or adopted recently by Australian LGs to increase both effectiveness and efficiency in that management.

LGs and their advocates identify a broad range of inherent environmental management roles for LGs. These include:

- biodiversity and native ecosystem conservation,
- parks and open space,
- weed and feral animal control,

- fire, flood and other disaster risks,
- transport and service corridors,
- energy management,
- environmental and visual amenity,
- physical, natural resources,
- avenues for community involvement, and
- environmental legislation and policy (see LGTCQ 1989; Brown 1997; Berwick and Thorman 1999; Williams 1989; Osmond and Ray 1996).

At present a strong focus on making environmental management more efficient, effective, integrated, and strategic is common within and beyond LG. The adoption of competitive reforms and the development of integrated environmental management systems are two approaches that have strongly influenced Australian LGs towards these goals in recent years that are discussed further now.

The requirement by the FG and SGs for LGs to take on National Competition Policy reforms was mentioned briefly in Chapter 2. The advent of competitive tendering of LG services has required LGs across Australia to reconsider what they do, why and how they do it and whether their efficiency and cost-effectiveness could be improved. But environmental management poses special problems for competitive reforms. For instance, environmental values such as ecosystem health and biodiversity are unique, constantly changing and often subjective or difficult to measure, making it hard to establish performance indicators for contractors (Couston. 1995). Secondly, the environmental management operations of many LGs are often so small as to lack the economies of scale needed to affect substantial savings (LGAQ. 1997c). Third, while nothing in the National Competition Policy reforms directly discourages environmental sustainability, this is not a focus of the initiative, and can readily be lost in its economic focus. For instance private operators working for a profit can be contracted to protect the environment during their operations but will not necessarily work in the public interest in this way unless required to do so.

One example of these issues being addressed from inside LG is *Attending to the environment: a manual for contract specifications,* which was written LG officers and published by Environs Australia. The manual includes a model environmental code, intended to be applied to all tendering conducted by a council, regardless of whether it has obvious environmental impacts. The manual presents an extensive environmental

specifications checklist that LGs are encouraged to work through to ensure that all potential environmental management issues are included in contracts. Finally, it includes several model contracts that clearly define environmentally responsible behaviour for contractors (Osmond and Ray 1996). Such initiatives take up the challenge of improving efficiency of service delivery while also trying to ensure excellence in environmental management. The immediate impacts of these initiatives are the administrative contracts, but if these are successful, substantive beneficial environmental outcomes will follow.

Initiatives in environmental management systems (EMSs) focus on the effectiveness and integration of environmental management more than its efficiency. These have gained momentum since EMS certification became available with the publication of *ISO14001: 1996 – Environmental management systems – specifications with guidance for use* (Standards Australia). The formal EMS process includes initiatives such as the development of environmental policies and their endorsement by top management, auditing and tracking the organisation's activities to ensure sound environmental management, ensuring ongoing training and awareness of environmental issues, monitoring and documenting progress and reviewing environmental management outcomes (Standards Australia 1996).

There is no statutory requirement for LGs or any other organisations to strive for ISO14001 certification, or to go through this comprehensive and time-consuming process. For LGs, there is also unlikely to be any competitive advantage in undertaking ISO14001 certification, since there is no evidence that people or businesses will opt to locate themselves in a specific LG on the basis of its EMS certification. Despite this, several proactive LGs have embarked on ISO14001 processes and a few have completed their certification. ALGA is supporting this development with its ISO14001 guide to assist LGs through the meticulous process. The ALGA model argues that benefits for LGs include achieving more structured approaches to managing and delivering on environmental policies, defining tasks and responsibilities, helping to achieve beneficial environmental outcomes, greater operational control and potential efficiencies through forward planning and budgeting. ALGA suggests that an EMS can also improve relations with regulatory authorities, local communities, staff and other agencies (Sheldon (ed.) 1996). Note though that the intensive reporting processes for these EMS' are largely administrative, focusing on the operation rather than the environmental outcomes of the systems that they put in place.

A noteworthy pattern in these examples is that LG environmental management initiatives extend well beyond their statutory responsibilities. These statutory responsibilities are spelt out in a plethora of Acts in each state. In 1989 the Local Government Training Council of Queensland discussed LG environmental management responsibilities deriving from 21 SG and FG statutes, but many more could be identified for each jurisdiction. Additional non-statutory, or optional roles are promoted by publications such as the *National local government biodiversity strategy* (Berwick and Thorman. 1999), *Protecting local heritage places* (AHC. 1998), *Choosing and using environmental indicators* (Heath. 1999) and *Turning the tide: integrated local area management for Australia's coastal zone* (Brown. 1994). Such publications identify a range of issues as central to improving LG environmental management. Their impacts might be administrative, substantive or involve shifts in either knowledge or relationships. They include:

- awareness, training and education,
- LG resourcing,
- regional partnerships and planning,
- legislative frameworks, and
- information and monitoring (Berwick and Thorman. 1999. pp. 3-4).

3.6 Environmental protection

Environmental protection includes both waste management and pollution prevention activities. Links between these activities have increased in recent years, as contemporary environmental protection legislation has highlighted the risk of pollution from traditional landfills. LGs long-standing role in waste collection and disposal has also been extended into comprehensive recycling and waste avoidance measures, a shift that has strong community support. LG formal roles as pollution prevention regulators are also increasing, although there is considerable variation in these roles between states. FG targets for competitive reforms, waste avoidance and pollution prevention have driven many these changes from the outside, while diminishing availability of landfill sites and increased understanding of waste issues have led LGs to reconsider their waste systems from within.

Traditional approaches to waste management by LGs involved unsorted waste collection and disposal of mixed wastes to landfill sites, which were usually simply

holes in the ground. Over time, the availability of areas for such holes has reduced, especially in cities where land is most costly and where most waste is generated. Scientific knowledge about groundwater and other pollution risks from landfills has also increased, and SGs and the FG have encouraged LG understanding of these issues while pollution prevention laws have increased LG liability for any pollution incidents. Such statutory shifts have some origins in Australia's *National Strategy for Ecologically Sustainable Development* which inspired more holistic and integrated environmental protection legislation in many state (ESDSC 1992).

Australia's *National waste minimisation and recycling strategy* (CEPA 1992) was also highly influential in shifting waste management thinking and practices in Australia. The strategy identified a hiearchy of waste management priorities (the waste hierarchy) which in order of importance are waste:

- avoidance,
- reduction,
- reuse,
- recycling/reclamation,
- treatement, and
- disposal.

The other main influence on LGs of this strategy was its adoption of a national target of a 50% reduction of waste to landfill by the year 2000. The strategy did not clearly state a baseline for this reduction, and most states adopted 1994 as the base year in establishing their targets since this was when the SG responses were formalised. SGs typically adopted these targets into their statutory framework for waste management, and passed on the responsibility for the waste reduction to LGs (Healey. 1996. pp.28-30). This courageously substantive goal has been achieved by some LGs with many other rising to the challenge[8], but the overall failure to achieve the target is most likely behind the lack of statewide and national reporting of outcomes.

New waste management and pollution prevention laws have also increased the focus on the disposal of hazardous wastes. These have link to the National Pollutant Inventory, which indicates the relative toxicity of various wastes and sets thresholds for reporting and managing these. Wastes listed on the Inventory are commonly identified as 'regulated wastes' in SG environmental protection legislation, and the movement of

[8] See case studies Q9 and W2.

large quantities is controlled by 'waste tracking systems', while their disposal in approved waste facilities is required.

LGs have traditionally contracted out many waste management roles, especially kerbside waste pickups and other waste transport. But the combined changes to regulated waste management, waste reduction targets, waste tracking systems, and competitive reforms have brought in new opportunities and incentives for LGs to increase the roles of private operators in waste management. LGs now increasingly contract private companies to design, build, own and operate many waste systems[9]. However the development of waste management as a viable competitive industry is still hampered by many factors including:

- very low profit margins and unstable markets for recyclable or reusable waste (waste after all, is rubbish),
- refusal by many waste producers to pay adequately for waste disposal, which is exacerbated in this large country, by the ready availability of spaces for illegal waste dumping,
- challenges of ensuring that waste producers sort wastes to avoid contamination, which is difficult since it involves time and effort by waste producers, for no direct benefit, while failure to sort is often undetectable during waste pickups, and
- the cost, effort and inherent difficulties of complying with justifiably strict pollution prevention requirements for regulated wastes.

In Victoria, the Kennet SG which had amalgamated LGs and brought in compulsory competitive tendering, assisted LG transitions to better waste management with a new statutory authority called *Ecorecycle Victoria*. Ecorecycle is funded through a compulsory levy on landfill wastes in Victoria, and assists Victorian LGs in achieving waste reduction targets. The information, training and off-the-shelf models provided by Ecorecycle extend the waste hierarchy through their strategic focus on buying recycled products. With this approach, LG's use their buying-power to support businesses that use recycled materials in their products. In doing so, they aim to create markets for recycled products, deliver viable recycling systems, create jobs and economic

[9] See case studies Q9, W2.

development opportunities through new markets and encourage manufacturers to use recycled materials (Chaplin and Kenny 2000)[10].

A feature of LG waste management roles is that it both regulates waste activities of its contractors and local businesses and has its own waste activities regulated by SG. This dual role also occurs in pollution prevention activities. LGs in all states face environmental protection requirements in relation to their sewage treatment plants, landfills and other operations. In many states they also regulate pollution. Sometimes the pollution prevention roles devolved to LGs are restricted to supposedly 'minor' issues such as noise pollution and litter management. Noise problems however generate many community complaints that can be highly intransigent, and both of these issues are costly for LGs.

Table 3.3 lists Australia's current SG environmental protection legislation and indicates the delegations and devolutions to LGs that have occurred under these acts. Some jurisdictions, such as the Northern Territory, South and Western Australia prescribe very limited regulatory roles for LGs. In others, such as Queensland, Tasmania and New South Wales, LGs act more as partners to the SG regulatory authorities. LG regulatory roles are greatest in Queensland, where LGs are responsible for the administration and enforcement of over 10,000 environmental authorities, which is more than three times the number issued by the SG. Queensland environmental protection arrangements are the focus of Chapters 5 and 6[11].

[10] See case studies V3, V4.

[11] See also case studies Q1, Q3, Q5 and Q8.

Table 3.3 Environmental Protection Legislation in Australia

State/Territory, Act	Devolution/ Delegation to LG	Flexibility
Queensland *Environmental Protection Act 1994*	Specified environmentally relevant activities are devolved or delegated to LGs (S. 196, 197.)	Licence conditions, enforcement policies and all other administration and action is determined by the administering authority. In the case of devolved activities, this is the LG (S. l96). LGs are subject to environmental licensing of their own activities and must comply with licence conditions and other requirements.
Northern Territory *Waste Management and Pollution Control Act 1998*	None. LG officers could receive delegations from the CEO of the administering agency (S. 70).	LGs are subject to environmental licensing of their own activities and must comply with licence conditions and other requirements.
Western Australia *Environmental Protection Act 1985*	None. LG officers could receive delegations from the CEO of the Environmental Protection Authority under Ss. 24 and 25, or under S. 87 be appointed as authorised persons.	Since there is no specified role in administering the Act, there is no flexibility. Any potential delegations or appointments would be limited to the specified terms and conditions, for instance under S. 87. LGs are subject to environmental licensing of their own activities and must comply with licence conditions and other requirements.
South Australia *Environmental Protection Act 1993* (SAG 1993b)	Environmental Protection Authority has 6 members, one with LG experience, and chosen by the LG Association of South Australia. (S. 12).	The Environmental Protection Authority is required to consult with LG in performing its functions (S. 13.2.b). LGs could receive delegations under S. 115. LGs are subject to environmental licensing of their own activities and must comply with licence conditions and other requirements.
Victoria *Environment Protection Act 1970*	Permits for septic systems (S. 53M). LGs may be declared to be a waste management regions (S. 50E). Enforcement of noise pollution provisions from residential premises. (S. 48A)	The Act enables the establishment of regional waste management groups with significant LG involvement and flexibility (for example S. 50H). LGs are subject to environmental licensing of their own activities and must comply with licence conditions and other requirements.
Tasmania *Environmental Management and Pollution Control Act 1994*	Councils can appoint LG officers to be council officers under the Act (S. 21). They can then issue environmental protection notices for Level 1 activities, and undertake relevant enforcement actions. (S. 44.2).	LGs have the flexibility of SG officers, for the enforcement of Level 1 activities, and any other delegations (S. 92). In accordance with the provisions of the Local Government Act 1993, a council may impose fees in relation to any function or service carried out by the council under this Act. (S. 103, commenced 14 July 2000). These powers are linked to the *Land Use Planning and Approvals Act.* LGs are subject to environmental licensing of their own activities and must comply with licence conditions and other requirements.
New South Wales *Pollution Control Act 1970.* As amended by various acts, including the *Pollution Control Amendment (Load-Based Licensing) Act 1997.*	LGs are the appropriate regulatory authorities for most non-scheduled activities in their local areas (S. 6). The Minister can direct LGs to refer licensing functions back to the Environmental Protection Authority (S. 318).	LGs have considerable flexibility for enforcement in relation to non-scheduled activities. For instance, they can order pollution clean-ups by owners or occupiers of property (S. 91), either orally or in writing (S. 93). The can also direct people carrying out potentially polluting actions to take a range of actions to prevent pollution (S. 96). LGs are subject to environmental licensing of their own activities and must comply with licence conditions and other requirements.
Australian Capital Territory *Environmental Protection Act 1997*	The Territory Government is the LG.	The Territory Government has the full flexibility to implement, amend or replace the Act.

Note: all legislation is presented as in force September 2001.

LG performance in pollution prevention impacts are measured using administrative indicators, while steps are also being taken to provide knowledge-based outcomes. For instance in Queensland, LGs must report annually on the administrative matters of the number of environmental authorities they issue and enforcement actions they undertake. Community knowledge is promoted through public notification of licence applications and the maintenance of public records of licence conditions including allowable pollution emissions (QG 1994. Ss.42, 213, 214, 217). Substantive outcomes are not specifically reported in any formal requirements.

3.7 Conclusion

LGs are highly significant in planning, managing and protecting Australia's environment. Although LGs have less than 5% of Australia's total government budget, their environmental expenditure is over 50% of the total. LGs important environmental roles are recognised by all spheres of government, and these have been formalised at international, national, state and local levels. Environmental roles differ between states and environmental initiatives originate from both inside and outside of LG. This chapter has described LGs statutory context for delivering beneficial environmental outcomes, suggesting that SG laws impose limitations as well as opportunities for LG environmental capacity. It has also argued that administrative impacts receive more attention than substantive outcomes in reports of LG environmental performance, especially in the reporting systems imposed by SGs.

The next chapter describes the methods used in the thesis to gather original data on the substantive outcomes achieved by LGs in environmental planning, management and protection.

Chapter 4. Research processes and methods

4.1 Introduction

Previous chapters have introduced substantive issues about Australian LG and the context within which it performs its environmental functions. They have also discussed the local-state antinomy, arguing that LG's simultaneous but contradictory SG and locally-derived authority and interests impact on its environmental and other work. This chapter gives an overview of the methods used in the overall thesis to discover and explore that antinomy and other grounded theories about LG capacity to deliver beneficial environmental outcomes. The chapter starts with an overview of the methodological and theoretical bases for the thesis research as a whole. Section 4.2 also introduces the remaining sections on scientific inquiry, grounded theory, action research and the other methodological approaches that are used throughout the thesis.

Note that Section 4.5 presents the methods that were used to identify the antinomy of LG, and that the section also includes the results of the original research undertaken using those methods. Although it is unusual to present findings in a methods chapter, this is done because it is the simplest and most logical location for that work.

4.2 Methods overview

Several methods were integrated to explore this complex research topic. This did not occur in a simple sequence, but through an action learning process involving many separate, smaller but interconnected projects. Figure 4.1 summarises the overall research process. This diagram identifies eight empirical projects stemming from the major thesis questions, and leading into the final synthesis. It also shows the sequencing of the projects, and their relationship to one another and to the local-state antinomy.

The projects' engagement with the local-state antinomy is shown through their horizontal arrangement. The Queensland benchmarking study on the far right of the diagram was a predominantly outside-in study that measured the environmental and other outcomes from LG and SG implementation of the Queensland *Environmental Protection Act 1994*. The three projects on the left of the figure involved case study research and primarily explored inside-out perspectives on LG environmental issues.

The remaining four projects involved varying degrees of integration between inside-out and outside-in perspectives.

Projects are arranged vertically according to when they were undertaken. The timeline on the right hand side gives more detail about the timing of this sequence. Some projects were undertaken simultaneously while others flowed directly into one another. All of this provided many opportunities for the learning from early projects to feed into subsequent ones. The arrows in the diagram show the strongest linkages between separate projects.

These flows and sequences also depict the action research cycles that were involved in this research. Action research is a method and approach to learning where a researcher is directly involved in a change process involving cycles of planning, action, observation and reflection that each build on previous cycles (Zuber-Skerritt. 1991. pp. 11-14). Action research is discussed further in Section 4.6 below, but at this stage it is worth noting that each of the component projects involved all four stages and the thesis process as a whole also followed the action research cycle. Figure 4.1 uses coloured text to show which of the individual projects primarily assisted the planning, action, observation and reflection stages of the overall thesis.

Figure 4.2 lists the methods used in this thesis research and the relationships between them. As with the previous figure, this has the predominantly inside-out analysis on the left and outside-in analysis on the right. The shaded rows show the research methods that were used in specific projects, rather than applied across the thesis as a whole. Many of these were also indicated in Figure 4.1. For the sake of brevity, the case study and comparative analysis that was undertaken together is referred to as ‘case study’ work in the text, and ‘environmental risk assessment’ refers to both that research and the gap analysis that was used with it. The surrounding rows in Figure 4.2 show the broader methodologies that flow through the whole thesis and tie these other methods together. Such a conscious use of multiple, complimentary methods to investigate a complex problem has been suggested by theorists from various environmental and social disciplines and is termed methodological pluralism (Caldwell. 1988: Norgaard. 1989).

Figure 4.1 Action research cycles

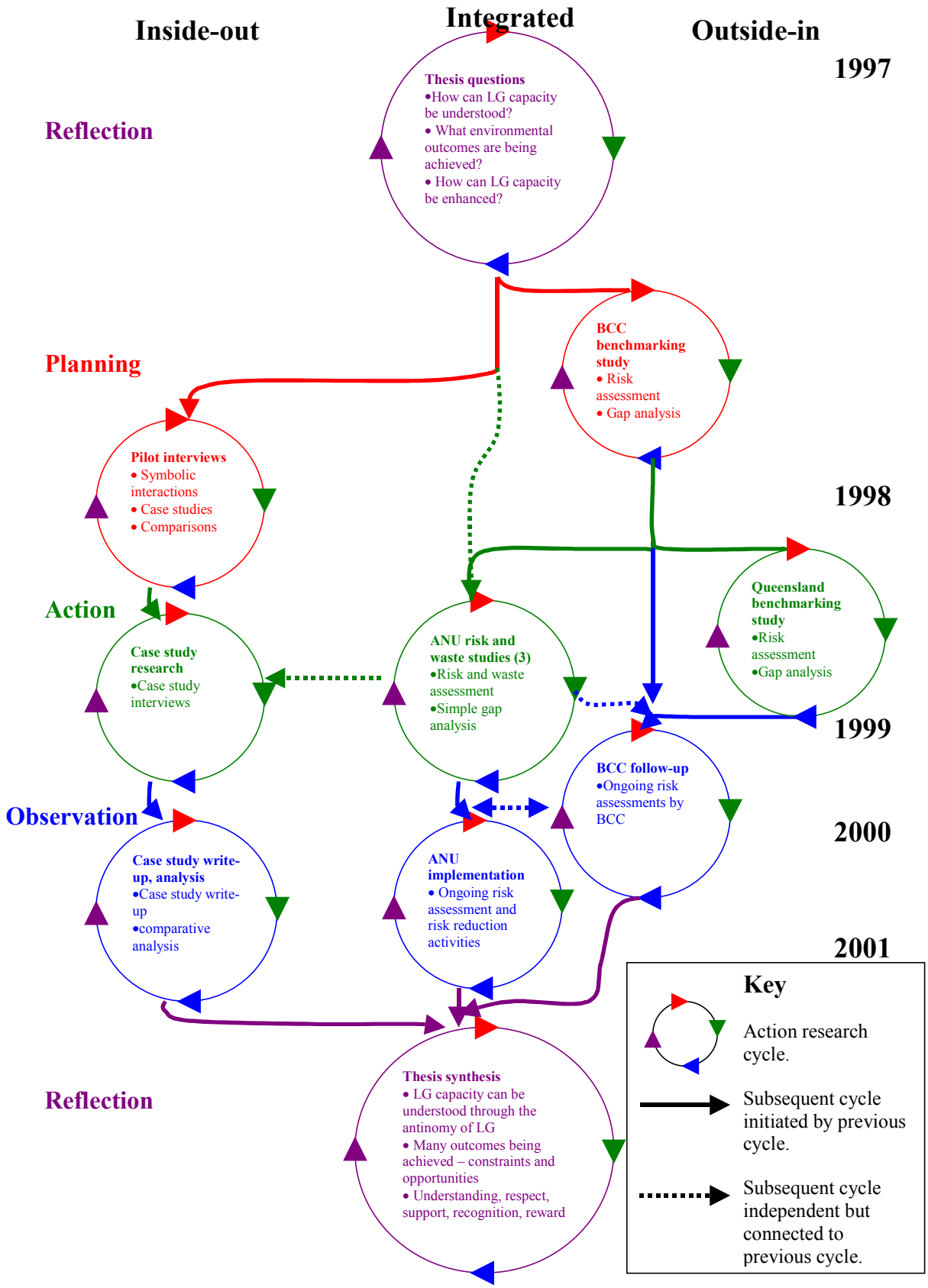


Figure 4.2 Relationships between research methods

<table>
<tr><td colspan="4">Inside-out studies Outside-in studies</td></tr>
<tr><td colspan="2">Qualitative analysis</td><td colspan="2">Quantitative analysis</td></tr>
<tr><td>Case study analysis</td><td>Comparative analysis</td><td>Gap analysis of responses to legislation</td><td>Environmental risk assessment</td></tr>
<tr><td colspan="4">Action research</td></tr>
<tr><td colspan="4">The local-state antinomy - Symbolic interactions between state and local governments</td></tr>
<tr><td colspan="4">Grounded theory methods</td></tr>
<tr><td colspan="4">Scientific inquiry</td></tr>
</table>

The remaining sections are structured around the elements of Figure 4.2, working from the bottom to the top. Section 4.3 discusses scientific methods as a general basis for the thesis' research. Section 4.4 discusses grounded theory methods, which also run through the entire research effort. Section 4.5 presents the grounded theory work that led to the adoption of the local-state antinomy as a central thesis focus. This original research also drew on ideas about the symbolic interactions that occur between individuals and institutions. Section 4.6 introduces action research methods as a third general method underpinning the whole research effort. Section 4.7 briefly introduces the remaining methods used in each of the component projects, focusing on how these work together to provide insights into the local-state antinomy, and its capacity to deliver beneficial environmental outcomes. These are only described briefly here since they are presented in detail in Chapters 5 and 7. Finally, the chapter discusses the strategies adopted for pulling the separate projects and theoretical contributions together through synthesis, analysis and reporting of findings.

4.3 Scientific inquiry

Previous chapters have made the point that there are major shortfalls in current knowledge about Australian LG and its environmental work. Most of the literature that is available on this topic is from government sources, rather than from academic texts. Neither of these bodies of literature have used formal scientific inquiry to investigate Australian LG and its environmental work as an integrated research topic. Certainly, none have attempted a comprehensive analysis that integrates inside-out and outside-in perspectives. The paucity of existing, rigorously derived scientific knowledge about LG environmental work brings about a need to consider the scientific underpinnings of this research, and how it proposes to produce good scientific findings. This section briefly reviews some of the fundamentals of scientific inquiry, focusing on the development and use of analytical categories and theories for progressing understanding of phenomena such as the environmental outcomes delivered by Australian LG.

Debates from the philosophy of science have not fully resolved the exact nature or purpose of science, but there are strong recurring themes. Scientific inquiry essentially aims to increase human understanding of the universe, making it intelligible by describing, defining, and predicting phenomena. Much science has an underlying theory of truth, intending for scientific study to bring humans closer to a real understanding of the universe. It is widely considered that current scientific knowledge is closer to the truth than in the past. Science involves the systematic study of people and their environments, to produce general theories and laws from reproducible observations and measurements of events and parameters. Scientific inquiry progresses through the development of disciplines, each of which form and reform various demarcated bodies of knowledge into coherent theories which are published in the scientific literature (Bullock, Stallybrass et al. 1988; Kincaid 1996).

These disciplines and the scientific literature are sources of analytical categories and theories to explain phenomena, and it is important for scientists to refer to and build on this literature so that knowledge can develop coherently. This thesis fits into social and environmental science disciplines generally, the policy, policy implementation and environmental risk sciences in particular. However the literature from these disciplines has gaps in its existing analytical categories for explaining LG and its environmental work. When theories fail to adequately explain observed phenomena in this way there is a need to apply scientific methods to induce new categories and novel theories.

Induction is the creative process of inferring general conclusions from discrete facts. Inductive processes are distinguished from the converse activity of deduction, which is the logical process of reasoning specific conclusions from general tenets. Induction is the main process used in empirical studies, which are based on observations rather than on prior theories. This thesis makes extensive use of inductive processes and they deserve some special comment.

Two forms of induction have been identified, and both are used in this thesis. In enumerative induction, statistical generalisations are developed from sampled cases chosen to represent their populations. Good scientific theories can only result from enumerative induction when the selected categories are meaningful in explaining the broader phenomena being studied. Chapters 5 and 6 use enumerative induction to discover relationships between environmental protection efforts and outcomes. Analytic induction seeks to develop universal statements containing the essential features of phenomena or the causes of social occurrences. The terms and definitions for the analytical categories that have already been presented in this thesis are the results of analytic induction. Good analytically induced categories need to be meaningful, mutually exclusive and complete. As with enumerative induction, categories are meaningful when they help explain the broader phenomenon being studied. When categories are mutually exclusive no example fits into more than one category. Categories are complete when all examples fit into a category (Manning. 1987. pp.457-60: Bailey and Morgan. 1966. pp.67-68). Analytic induction is the most fundamental scientific method applied in the research and findings presented in Chapters 7 and 8, and the methods have aimed to achieve these essential criteria for good categories.

The creative strength of induction is constrained by inherent challenges that need to be understood and managed if sound analytical categories are to be induced. Most centrally, inductive generalisations cannot be proven, and will be falsified by any contrary observation. When falsification occurs, categories and theories need to be amended to make their generalisations more accurate. This thesis addresses this by highlighting areas where contrary observations have led to the amendment of categories and theories or have been addressed in some other way.

Many of the categories developed in this thesis also contain subcategories or variables that describe different types or levels of the phenomena being described. When the differences involve no ranking or ordering these are categorical variables.

Most of the categories that have been defined so far are this type[1]. Others have a natural order although no absolute zero value and are called ordinal variables. None of this type of category have been introduced yet, but the case studies discussed in Chapters 7 and 8 contain ordinal variables for the scale, flexibility and origins of environmental initiatives and for their ecological, social and economic outcomes. When the subcategories display both a natural order and a zero value they are ratio variables. The environmental risk ratings and gap analyses for responses to initiatives are presented as ratio variables.

This brings up another important difference between these categories and variables since some quantify parts of phenomena while others describe them qualitatively. Many scientists, and especially those outside of the social sciences consider quantitative data to be more rigorous, accurate or systematic than qualitative data. Even in the social sciences, many theorists work hard to quantify their qualitative data for ease of analysis or clarity of findings (see Manning. 1987: Strauss and Corbin. 1990. Ch2: Babbie. 1989. Ch.13). This thesis does not aim solely for quantitative data or analysis, or consider that it is more valuable than qualitative analysis. Consequently the approach taken here is to quantify and statistically analyse the ratio variables since to do so is logical, practical and meaningful. Published ratio data for LG population, expenditure and area have already been graphed to show patterns in the categorical variable of LG type. The ordinal variables in the case studies are presented visually throughout appendix four and analysed qualitatively in Chapter 8. Categorical variables are only quantified to expose patterns between variables, while qualitative analysis is used to develop explanations and find meaning in the data. As a result, the outside-in study is predominantly quantitative and the inside-out study mainly qualitative but both studies use and present both types of data and analysis.

There are also well-recognised distinctions between explanatory and response variables. The former are variables relating to the context of phenomena that influence how they change or how change affects them. Examples within this study include the LG types, and the perspectives and roles of individuals working on local environmental issues. Response variables describe the changes that occur and are influenced by explanatory variables. Examples include the types and effectiveness of environmental outcomes that result from LG efforts.

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[1] The broad categories have appeared as the shaded top lines of tables, while the categorical variables have appeared

Another distinction of significance to both the environmental and social sciences is between reductionist and holistic approaches to scientific inquiry. The approaches described above have reductionist features they focus on breaking phenomena down into their component parts by defining and comparing analytical categories. Critiques of reductionism argue that complex, whole, and especially living systems are greater than the sums of their parts, and cannot be fully understood through studies that attempt to break them down into those parts for analysis. In contrast, holistic approaches consider whole systems in context of their environments (Quine. 1961: Bullock, Stallybrass and Trombley. 1988. pp.390, 731). This thesis accepts the holistic critique of reductionist analysis in general, and recognises that there may be gaps in the findings or flaws in the emphasis given to different points of the analysis because of the essentially reductionist approach that has been taken to a holistic problem. But it considers that this approach was needed since this field of study lacks sound analytical categories and other knowledge needed to map out and explore issues that have not yet been rigorously explained. Moreover, this research is problem-centred, practitioner-oriented, cross-disciplinary, methodologically varied and organised to expose the learning process, each of which are features of a holistic research process (Zuber-Skerritt. 1991. p.130: Miller and Parlett. 1974. ppii-iii).

Further, the synthesis in Chapter 9 attempts a holistic summary that aims to move beyond the reductionist approach taken up to that point. That synthesis also employs deductive logic in articulating theories to explain the relationships between the induced categories. In a scientific sense, Chapter 9 shifts the thesis from description to prediction by suggesting options for addressing the local-state antinomy and improving LG capacity to deliver beneficial environmental outcomes. Policy recommendations such as these are always predictions, even though their architects rarely acknowledge them as such (Dovers and Mobbs 1997).

This section has described how this thesis engages with scientific inquiry. The next section deals with a particular methodology that has underpinned theory development throughout all of the thesis research.

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in the subsequent rows.

4.4 Grounded theory methods

Theories are generalised statements that explain phenomena and are central products of scientific inquiry. Grounded theory methods systematically generate theory from data that itself is systematically generated by social science research (Glaser 1978). This section describes grounded theory methods and explains how they have been employed in this thesis.

Many social and other scientists undertake their work through the deductive processes of exploring, testing and trying to prove or disprove existing theories obtained from the academic literature. As their name suggests, grounded theory methods instead start with an area of study and allow the issues relevant to that study to emerge empirically through inductive processes. Existing academic literature is considered a minor input to grounded theory development, compared with direct observation. However grounded theorists do recommend the use of existing literature to stimulate sensitivity to analytical categories, as a secondary source of data, to stimulate questions, direct theoretical sampling and as a supplementary validation (Strauss and Corbin. 1990. p.35: Strauss 1987). Several analytical categories have already been presented in this text at the point when the academic literature relevant to them was discussed. However in most cases the terms arose through the application of grounded theory methods rather than having been adopted from the literature[2].

Research towards grounded theory starts by gathering data about the phenomena being studied. This is usually done through basic social science methods such as participant observation and interviews. Grounded theorists then use a series of techniques to identify, define and describe concepts and categories that are implicit in the data. The techniques involve asking and answering questions and making comparisons between observations. In this way, grounded theorists develop theoretical sensitivity by "taking apart an observation, a sentence, a paragraph and giving each discrete incident, idea or event, a name, something that stands for or represents a phenomenon" (Strauss and Corbin. 1990. p.63: Spradley 1980). The techniques aim to first discover, or induce categories by identifying phenomena and grouping concepts that seem to relate to the

[2] Citations were used to indicate those terms deriving from the academic literature. Sometimes the terms used in naming analytical categories will be familiar although their definitions are specific to this work. If they do not include citations, their definitions arose from the grounded theory methods. Examples are the categories of inherent and residual environmental risk that are introduced and discussed in chapter four.

same phenomena. Techniques to achieve this include the full transcription and analysis of initial field notes[3] (also using interview techniques, as in Kvale 1996). Next, researchers name broader categories, ideally in ways that are consistent with the terminology of the phenomena or appealing to participants in it. They also describe define and develop categories in terms of their properties and dimensions. Beyond that, grounded theory research moves to develop models describing the processes underlying the phenomena, iterating between inductive and deductive processes (Strauss and Corbin 1990).

Although the terminology differs, good grounded theories are judged similarly to good analytically induced theories. In grounded theory literature, completeness is referred to by the *fit* of the theory to the data. Grounded theories are also judged by their generality in applying to any relevant phenomena, which is similar to the mutually exclusive matching of data to categories discussed earlier. When the theories are meaningful, they are said to *work* in explaining what happened, predicting what will happen and interpreting what is happening in an area of inquiry. Other characteristics that appear in only some of the texts include modifiability to subsequent observations and control with regard to action toward phenomenon (Strauss and Corbin. 1990. pp. 23-24: Glaser. 1978. pp. 4-6).

Each of these criteria made grounded theory methods appealing as the underlying methodology for this research. But three other features made this the most appropriate method. First, the nature of the topic, and specifically the scarcity of previous broadly-based research in this area suggested a need to apply empirical methods to induce new theories. Grounded theory methods provide a systematic and effective approach in such circumstances. In addition, writers on the method claim that grounded theories are interesting and valuable to their subjects, who are also likely to remember and use them. This suggested that the use of grounded theory methods would help achieve the central research principle of producing findings that were directly valuable to LG environmental managers. Third, the best grounded theories are the product of creative, as well as analytical input from the researcher. This researcher enjoys creative processes, and the prospect of doing creative research was appealing.

Grounded theorists identify several criteria for assessing the empirical grounding of studies undertaken using these methods. These have provided guidance during the

[3] In this thesis, a key interview from each state was fully transcribed and analysed.

development of the thesis. Table 4.1 lists the criteria and states how the thesis went about trying to achieve them.

Table 4.1 Addressing criteria for empirical grounding of the thesis study

Criteria	How the thesis addresses the criteria
Are concepts and categories generated?	The local-state antinomy is a core concept that was obtained through grounded theory work (as discussed in Section 4.5 below). The full list of analytical categories is in Appendix 1 and every attempt was made to use each category consistently throughout the thesis.
Are the concepts systematically related? Are there many conceptual linkages and are the categories well developed? Do they have conceptual density?	Broad categories and their related categorical variables are presented together. The environmental risk assessments and case studies each present groups of categories such as 'environmental risk areas', 'responses to initiatives', 'context continuums', 'environmental outcomes' and others. These are each defined, and also linked together in visual and theoretical ways.
Is much variation built into the theory? Are these variations specifically linked to data?	The subsequent studies within the overall thesis research have each built considerable variation into the theories. In the environmental risk studies, contexts included Brisbane, Queensland and the Australian National University the environmental risk method was developed from an industry-specific to a generic format, and has been shown to work well in each context. The 34 case studies vary by state, environmental focus area, LG type and each context continuum, and all of the categories worked every time. Specificity in the case studies is achieved through the detailed lists of goals, processes, outcomes, drivers, constraints and the causes of ecological, economic and social change. The analysis explicitly generalises from the detail.
Are the broader conditions that affect the phenomenon under study built into its explanation?	Not only are the contexts and broader conditions described and presented in each study, but these also form part of the theoretical data. Discussions in chapter 5 provide this detail for the risk assessments while the stories, context continuums and categories for role, perspective, LG type and environmental focus area perform this function for the case studies.
Has process been taken into account?	The environmental risk assessments measured past and current environmental risk, and the extensions also use the method to set future environmental goals. The graphs for ecological, economic and social outcomes indicate changes before, during and after environmental attempts.
Do the theoretical findings seem significant and to what extent?	The discovery, articulation and exploration of the local-state antinomy has some significance for intergovernmental relations, although its impact is yet to be determined. Significant findings were demonstrated statistically in the environmental risk studies and environmental improvements have also resulted from the application of the risk assessment method in various contexts. Significance of the findings from the case study analysis are yet to be demonstrated.

Source: Strauss and Corbin. 1990. pp. 254-257

A feature of this written thesis is that the categories that were produced are generally presented in their final form. The reader is not meticulously led through the developmental stages for each category, although some of the key concepts and

categories receive this special attention. Categories whose development is specifically discussed include elements of the local-state antinomy (below), inherent and residual environmental risk (Chapter 5) and each of the case study components (Chapter 7). The development of other categories is not discussed in detail for the purpose of thesis brevity. For the remaining categories, most were drafted during the thesis planning stages (see Figure 4.1), early on in the research process. Later research stages refined them, put them to use in the action stages of extensive data gathering, and finalised them during the observation processes, where different projects were written up and presented to appropriate audiences. Each of these stages and processes gave ample opportunity to ensure that the categories fitted the data and worked in explaining phenomena to practitioners and academic audiences.

Finally, the increasing importance of qualitative data analysis software in grounded theory studies, and its use in this thesis deserves attention. Qualitative data analysis software has been developed to assist the exhaustive processes of comparing observations and developing, fitting and refitting categories and theories to the data, that are required in grounded theory and other social science research methods. Several software programs have been developed over the past decade or so, and contemporary programs such as N-Vivo[4] allow researchers to code data using draft analytical categories, and then explore and refine those categories. When data is extensive or complicated (as is the case here), these programs are very useful, since they allow speedy retrieval of all data relating to a specific category, and comparative analysis of those categories. Some authors identify risks associated with the use of such software. Over-use of the software without thoughtful consideration of the broader empirical methods can lead to neglect of those aspects of the methods that are poorly supported by the software, and this might lead to homogeneity in qualitative research and analysis (Lonkila. 1995: Coffey and Atkinson. 1996).

This thesis research has tried to avoid this problem by focusing primarily on the empirical methods, and drawing on the qualitative data analysis software for three discrete analytical tasks. The first is for inducing the local-state antinomy, as is discussed in the next section. The second is the exploration of SG and LG perceptions of the Queensland *Environmental Protection Act 1994* and its implementation. The third is the comparative analysis of the goals, processes outcomes, drivers and constraints in

[4] Developed by Qualitative Solutions and Research. Bundoora Victoria, Australia.

the case studies. In each case, the primary analytical categories had already been induced by analytic induction and grounded theory methods and N-Vivo was used to explore the variety of experiences expressed in the data. In this way, the software itself has not driven the data gathering or analysis process, but has assisted it where that seemed appropriate.

4.5 The antinomy of local government as symbolic interaction

This section presents methods and findings together, that led to the identification of the local-state antinomy, and its adoption as the central theme of the thesis. Findings are presented with the methods for simplicity, and because it is the most logical location for them.

Grounded theory methods allow the selective incorporation of existing theories and methods when empirical data suggest that they have relevance to a study. Symbolic interactionism is "the study of human beings interacting symbolically with one another and with themselves and in the process of that symbolic interaction making decisions and directing their streams of action" (Charon. 1992. p.147). This section outlines the key concepts from symbolic interactionism, describes how these ideas were applied to this thesis and in doing so explains the emergence of the concept of the local-state antinomy. This leads to the identification of elements of the local-state antinomy, which are later used as the structure for discussions of the findings from the inside-out and outside-in thesis studies.

Symbolic interactionism was suggested by G.H. Mead to explain key differences between humans and other animals (Strauss. 1964). Four main ideas summarise the whole perspective. First, symbolic interactionism focuses on the social interactions between people, rather than on the people themselves. Second, human action is caused both by social interactions and interactions within individuals who act according to how they define situations. Third, although past experiences and definitions of situations influence present interactions, people act in the present, primarily motivated by current circumstances. Fourth, people play active roles in freely defining the world in which we take action, assess our actions and those of others and redirect ourselves accordingly (Charon 1992. pp.23-24). Hence, humans interact with their own symbolic

interpretations of situations and other people, rather than directly with those other people. A symbol in this sense is defined as a stimulus that has learned meaning and value for people and the response to a symbol is in terms of its meaning and value rather than in terms of its physical stimulation of the sense organs" (Rose. 1962).

The concept of *perspective* is central to symbolic interactionism. For symbolic interactionists, perspectives are the conceptual frameworks held by individuals that shape all of their interactions. Perspectives are a *guide to* stimulus, and are distinguished from attitudes, which are *responses to* stimulus. Perspectives act like filters, sensitising individuals to parts of physical realities, desensitising them to others and helping individuals to make sense of the physical reality to which there is sensitisation (Charon. 1992. p.3).

Perspectives were of interest to this study even prior to its commencement. The author's formal role before starting this thesis research involved mediating between SG and LG practitioners about their different roles and processes for implementing and complying with SG legislation. It was primarily her frustration with the apparent inability of both groups to understand one another's most basic needs and issues that defined this research topic. Symbolic interactionism suggested a framework for some research that could be done within the context of the broader study and would explore these different perspectives on LG capacity to deliver beneficial environmental outcomes. Ideas from symbolic interactionism led to the development of a set of four questions that could be asked of people with apparently different perspectives on LG environmental work, to try to understand the specific issues to which LG and SG area sensitised and desensitised[5]. The questions were:

- What does SG *not understand* about LG;
- What does SG *understand* about LG;
- What does LG *not understand* about SG;
- What does LG *understand* about LG;

These questions gave respondents an opportunity to describe the issues to which they are sensitised, and those that they consider the other sphere of government to be desensitised to. The questions would establish the common understandings between the spheres of government when people from both spheres identified common issues that

[5] These four questions were first suggested by Dr. Helen Ross, a thesis supervisor.

they understood about one another. But more interestingly, the questions about what was not understood could expose intergovernmental interactions that are based on unshared symbols and that therefore fail to recognise important features or needs of the other sphere. Problems in symbolic interactions would be most strongly suggested when a highlighted issue for one sphere did not even feature in the understandings of the other sphere.

This strategy had appealing simplicity for understanding the different perspectives held by people who had worked only in LG or only in SG. But the results might be confounded by any interviewee with experience working in both spheres of government. The categories and analysis of perspectives needed to recognise that experience in both spheres could change an individual's perspective on both spheres. Hence, the category of a *mixed* perspective was induced, and defined so that it included all of the people who demonstrated sensitivity to the intergovernmental knowledge and knowledge gaps of both spheres. The definition of a mixed perspective also had to be meaningful, complete, mutually exclusive and based entirely on the explanatory variable of peoples' experience working in different roles, rather than on the response variable of their resultant understanding of SG and LG. The final definition for the mixed perspective is "*people with experience working in LG associations, or who have held formal LG roles and worked in at least one other sphere of government. Includes people who have worked in LG and regional, state or federal government*"[6]. Note that in this definition, experience working in a LGA includes experience as either an elected and appointed LGA official. This is because their responses to the questions suggested that either role involves such significant intergovernmental communication and negotiation that all LGA officials become sensitised to both LG and SG perspectives. However people's sensitivity to the other sphere did not appear to develop if they shifted between elected and appointed roles within LG, or worked for several LGs within one or several several states.

The results of this research strongly suggested that SG and LGs interact across the spheres on the basis of unshared symbols. Table 4.2 presents the results of the questions about LG and SG understandings about one another, identifying these as elements of the local-state antinomy. Each of these elements is explored in detail in the discussions on the thesis findings in Chapters 6, 8 and 9.

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[6] This definition is presented along with definitions of the other perspectives in Table 2.1 above.

Because the research is essentially focused on LG, the responses are grouped according to symbolic interactions of most significance to LGs. The column, headed *LG understandings (things that SGs don't understand)* summarises the things that people with LG and mixed perspectives identified as not being understood by SG, and which also were not identified as things that were understood from SG perspectives. The most commonly identified issues are at the top and the least common ones at the bottom. In most cases, related shared and SG understandings were also identified by interviewees. The row-headings summarise the overall issue being considered from each perspective. The numbers of responses in each cell, from each perspective is also included[7].

There are clear and strong patterns in the understandings that were revealed through these questions. Importantly, LG, SG and mixed perspectives effectively accounted for the variation in these responses. There were no observable patterns in the responses from individuals representing different states, types of LGs, roles within LG or SG, years of work experience or engagement with different environmental focus areas. This strongly suggests that the a LG perspective is a strong unifying concept in explaining LGs own capacity, and its actions in relation to other spheres of government and other agencies. This is a significant finding because many writers on the subject of LG argue that the high level of diversity between LGs makes it at best problematic and at worst meaningless to attempt to develop an understanding of LG as a whole (see Mowbray 1997).

[7] In addition, a table of the same name in Appendix 2 presents the full quotations together with the originating perspective of all responses incorporated in this table.

Table 4.2 Elements of the antinomy of local government

	Local government understandings (things that state governments don't understand)	Shared understandings	State government understandings (things that local governments don't understand)
Local government responsiveness to the community	LG is directly and immediately responsive to community demands. SG policies are a lower priority. [7:4:1]	LG has detailed knowledge of local issues and SG has some technical knowledge and broad information that LG lacks. SG has slower bureaucratic processes than LG. [0:1:0]	LG is sometimes unaware of or unresponsive to important, large-scale issues. [0:0:1]
Resource shortages	LGs are critically short of resources to attend to core business of meeting community demands. If SGs want their priorities attended to, then new resources must be provided. [6:2:0]	LG continually demands resources. [1:4:1]	SGs face resource shortages. These days there is more to do and less money to do it with. [0:0:1]
The potential for state/local government partnerships	LG offers SG opportunities such as the connection to people in the community and the ability to be involved at the coal face. [2:4:2]	Both spheres respect their different roles. There are effective informal partnerships between individuals, but poor relations between the spheres. [5:2:2]	LG is a creature of the state and could be wiped out by SG. SG sees LG as a delivery vehicle for its policies. [2:2:1]
Efficiency and effectiveness of service delivery	LG is very efficient, effective and flexible in service delivery. LG is relatively unburdened by bureaucracy and set up for action. The political feedback loop is tight if services fail. Its better to get a response slightly wrong than not to take action. [6:1:0]	LG does a good job of service delivery with limited resources. LG can deliver on some policies that the SG is incapable of achieving on its own. [2:4:0]	SG work necessarily involves bureaucratic processes and time lags. Its more important to get things right than to respond quickly. [3:0:0]
Local government leads the community	LG has influence in the local area, and can harness community and business support for initiatives. But it won't use this to progress SG priorities when LG has been left out of the policy process. [4:3:1]	There is a need to advocate and lobby within and between all spheres. [0:1:1]	SG spends more of its time and resources lobbying the FG than considering LG issues. [1:1:0]
The politics of local and state government institutions	The stimulus for LG political issues comes from the local area and doesn't follow neat party lines. The complex politics between professions in LG are also affected by SG legislation. [2:1:1]	Both spheres know that LG can cause political hassles for SG if pushed too far. So SG understands the costs of excluding LG from policy processes, if not the benefits of their inclusion. [0:4:1]	LG doesn't understand the party politics involved in SG or its financial priorities. [0:1:1]
The diversity between local governments	LGs in different places, of different sizes and resource-bases are very different. Understanding one LG does not give an understanding of LG generally. [2:1:0]	SG officials understand the LGs they work closely with, and LG officials understand the SG departments they work closely with. Some of them understand that their knowledge is limited. [1:1:0]	LGs that are a long way from capital cities, and from regional offices of SG departments have little knowledge of SG. [0:1:0]
The knowledge base of both spheres of government	LG is on everyone's mailing list and has a great general knowledge. SG is as out of touch with community and industry as it is with LG. [1:1:1]	SG has some technical information and expertise that LG lacks. It plays an important role setting broad policy directions for LG. [1:1:0]	Distance from an issue can provide a clear view of all of its parts and the ability to make unbiased decisions. [0:1:0]
The integration of policy that occurs in local government	LGs integrate SG policy. Departments only deal with single portfolios, whereas LGs deal with a whole suite of legislation and departments. SG doesn't understand the need to make its own policies consistent. [1:2:0]	- [0:0:0]	- [0:0:0]

The bracketed numbers indicate how many responses were received from each perspective in each cell in the following order (LG:mixed:SG). The centre row includes responses to both of the questions about things that LGs and SGs understand about one another. 6 LG, 3SG and 9 mixed perspectives are included.

The concept of the local-state antinomy is a theory generalising from these individual responses. It is based on an observed consistent contradiction between the unshared LG and SG understandings. One feature that is common to across the things that LG understands about itself but that SG doesn't understand is LG's perception of itself as a creature of local communities and places. Meanwhile, SG clearly understands LG as a creature of the state. Neither sphere understands the other's perspective on the origins and focus of LG authority, although people with mixed perspectives are aware of both points of view. The local-state antinomy formalises the observation of the contradictory nature of each sphere's perceptions of the another. As well as suggesting the local-state antinomy, the issues listed on the left column of Table 4.2 also provides nine substantive issues that are picked up in both inside-out and outside-in studies in later chapters.

4.6 Action research processes and products

Action research, and the action research cycles that make up this thesis project were mentioned briefly above. So far, the chapter has briefly covered the repeating cycles of planning, action, observation and reflection that characterise action research processes. This section expands on those early references in detailing how action research methods also run across the entire thesis project.

Figure 4.1 indicated four stages in every action research cycle and these require some discussion. The plan is generally considered to be the first stage. This stage looks forward to action in a flexible way that can cope with necessary changes. The action is deliberate, controlled, aim-oriented, and reflects on the plan for its rationale. The observation stage involves documenting the action process, including intended and unintended impacts, the constraints on action and how these affected the process. Reflection looks back over the learning that occurred in each stage (Zuber-Skerritt. 1991. p.111). Such reflection is clearly a useful input into any subsequent, related project and its benefits are maximised when reflective researchers stay involved.

The repeating cycles in an action research project is just one of its defining features. Other defining features are effectively summarised in the CRASP model. According to this, action research is:

- ***C****ritical* (and self-critical) collaborative enquiry by

- ***R**eflective* practitioners being
- ***A**ccountable* and making the results of their enquiry public,
- ***S**elf-evaluating* their practice and engaged in
- ***P**articipative* problem-solving and continuing professional development (Zuber-Skerritt 1991. p.2).

The CRASP model emphasises the practical and collaborative aspect of action research. Action researchers follow the premise that research is most useful and accessible when collaboration occurs between scientists and practitioners. This notion is taken a step further in conceptions of the "personal scientist" and the "reflective practitioner", which recognise that people in both roles can be most effective when they also draw from the others' role (Kelly. 1955 and Schon. 1983 respectively). These principles are reflected in the products as well as the processes of action research. Action research's founder Kurt Lewin argued that "there is nothing so practical as a good theory" (in Marrow. 1969. p.xi). As with grounded theory methods, this was appealing, since the thesis aimed to be of direct value to environmental management practitioners. It also helped to provide a conceptual link between this researcher's prior work and this thesis. That link is formalised in Figure 4.1 through the labeling of the research questions as 'reflection', recognising that the questions emerged from the end of a previous cycle in which this researcher was a practitioner.

The CRASP model also describes the public accountability of action research. Involvement in these processes requires the scientist-researcher to maintain an ongoing commitment and engagement with subjects, clients and projects. Action researchers present their results to their practitioner audiences, and adapt their projects according to the responses they receive. This accountability and ongoing contact has been achieved for each of the separate research projects, since written reports and/or presentations were provided to practitioners involved in each project. These appear in the final column of Table 4.3 below. In addition, the entire thesis will be provided to all contributing practitioners, thus initiating a new cycle.

The focus of Table 4.3 is on the products of each stage of the action research cycles presented in this thesis. As with the overall thesis process in Figure 4.1, this starts each project or cycle with reflection, indicating the specific learning from previous projects that was built into subsequent ones.

Table 4.3 Action research cycles in thesis research

Project/ Cycle	Reflection	Planning	Action	Observation	Reflection
Thesis questions (integrated, reflection)	• How can LG capacity be understood? • What environmental outcomes are being achieved? • How can LG capacity be enhanced?	• Consider inside-out, outside-in and integrated perspectives. • Focus broadly and in-depth. • Research principles	• Start outside-in and inside-out research. • Follow-up interest generated by research. • Interviews and projects.	•There is much that SG and LG does not understand about the other sphere. •Particularly that LG responds to local issues.	• Need to discover ways to learn and communicate across the antinomy. • *Introductory seminar*.
BCC benchmarking study (integrated, planning)	• Accountability to local operators. • Need to know environmental and other outcomes from BCC implementing EPA.	• Review implementation strategy. • Design study to assess outcomes from efforts. • Sample selection.	• 194 site inspections and interviews. • Cross-check risk ratings with inspectors. • Industry-specific version of CERAM[8].	•Analysis showed significant risk reductions. •Unequal compliance. •Varying responses to legislation.	• Published *BCC benchmarking study* and presented findings to inspectors. • Extension projects within BCC and across Queensland.
Queensland benchmarking study (outside-in, action)	• SG need to find out and report on outcomes from Queensland Environmental Protection Act.	• Negotiate scope with SG dept. • Environmental and other outcomes for environmentally relevant activities across Queensland.	• Environmental risk assessment. • Gap analysis of operator responses. • Develop generic version of CERAM.	•41% environmental risk reduction across Queensland. •Overall satisfaction with implementation but some problems.	• Need to address problems or the best practice operators are disadvantaged. • Published *Queensland study*.
BCC follow-up (integrated, observation)	• BCC also needs to assess its own compliance and move towards best practice. • CERAM promising.	• Train BCC inspectors in using CERAM. • Establish ongoing partnership with ANU for CERAM	• Apply CERAM for BCC activities. • Review results. • Develop process to address community responses.	•CERAM works across BCC activities and is useful for identifying priorities.	• There is value in extending the use of CERAM to other LGs and keeping it consistent. • *Presentations* and *training course*.
ANU risk and waste studies (integrated, action)	• ANU aims to achieve best practice environmental management. • Need to comply with ACT Environmental	• CERAM developed by this researcher and available for use on campus. • Establish ongoing partnership	• Site inspections annually to determine environmental risk and waste issues.	•Many low-level inherent risks. •Stormwater pollution issues never previously addressed.	• Three *annual environmental risk assessments* with presentations. • Campus-wide support for pollution

[8] CERAM – Comparative Environmental Risk Assessment Method. To be discussed further in chapter four.

	Protection Act.	with BCC for CERAM			solutions.
ANU implementation (integrated, observation)	• ANU aims to achieve best practice environmental management. • CERAM risk reports have identified priorities.	• Reduce likelihood of pollution through education. • Reduce consequences of pollution through infrastructure.	• Drain stenciling, brochure, poster, training sessions to educate about stormwater issues. • Sediment traps in key areas.	• Stormwater pollution issues never previously addressed but mostly simple and cost-effective to fix.	• *Conference paper* at Australian Tertiary Education Managers 2001 conference. • Solutions often simple.
Pilot Interviews (inside-out, planning)	• Different perspectives on and roles within LG associated with different views on environmental capacity. • Need methods to find out what matters to LG.	• Interview people from different roles and perspectives within LG. • Iterative interviews and analysis to discover categories.	• Initial case study model. • Develop, explore analytical categories during research.	• Many stories of LG attempts to deliver beneficial environmental outcomes. • Variation between stories described by analytical categories	• Thesis mid-term seminar. • Seeking examples of LG environmental attempts in different contexts.
Case study research (inside-out, action)	• Seeking examples of LG attempts to deliver beneficial environmental outcomes in different contexts. • Environmental strategist role especially important.	• Interview people from different roles and perspectives within LG. • Iterative interviews and analysis to discover categories.	• Field trip around Australia talking with LG people from many contexts • Develop, explore analytical categories during research.	• Many stories of LG attempts to deliver beneficial environmental outcomes. • Variation between stories described by analytical categories	• Analytical categories fit and work. • Presentations at *Northern Territory environment department* and *Busselton Shire*
Case study write-up (inside-out, observation)	• Case studies need to be accessible, include technical detail, interesting and analytical.	• Design four-page design with stories, pictures, analytical categories.	• Write up all case studies in consistent format. • Liaise with LG practitioners to finalise cases.	• Case study format works. 34 of 38 case studies are returned with suggested changes and approval to publish.	• *34 case studies* with approval to publish. • Most co-authored by LG environment practitioners.
Thesis synthesis (integrated, reflection)	• Need to integrate the outside-in and inside-out studies. • Outside-in studies can also be case studies.	• Use N-Vivo for case study analysis. • Seek ways to communicate across antinomy.	• Write, redraft and finalise thesis. • Address antinomy and seek ways through it.	• Still need to ensure that findings are academically sound and accessible to practitioners.	• *PhD Thesis* and *interactive CD-Rom*. • Copies to be made for contributors.

It is worth noting that one of the techniques used to engage the interest of subjects and clients was the use of photographic images of the environmental issues investigated in the thesis. Although photographs are not necessarily unbiased images of

events and places, they are certainly accessible and inviting to wide audiences (Berger 1972). Every attempt was made to ensure that the photographs used in the case studies and risk assessments simply added to a reader's ability to conceptualise the environmental issues presented in the work. In this sense, the photographs were used to assist the action research process, but were not used as a specific research tool, or aid to analysis (see Wagner 1979).

4.7 Contrasts and commonalities

This chapter now moves away from the methodological and theoretical underpinnings of the entire thesis to briefly outline the methods that applied only to parts of the overall project. However the goal here is still to show how these are tied together towards common research goals. This section briefly contrasts key elements of the environmental risk assessment and comparative case study analysis. Next, it discusses the links between them and shows how the different approaches are made to work together.

The two major studies that make up this thesis have so far been contrasted in relation to their outside-in and inside-out approaches or their use of risk assessment or case study methods. Of course, each of these studies also made use of other methods such as gap analysis and comparative analysis. These details are discussed in Chapters 5 and 7. But there are also further differences between the two major studies that have not yet received explicit attention. These differences are summarised in Table 4.4. The italicised last dot-point in each cell also indicates the areas within each study where these differences are less pronounced. These last points show some of the overlaps between the studies that also help to tie them together within the overall thesis.

The separate projects also have other linkages. Firstly, as was stated above, each of the analytical categories that are developed in the thesis are used consistently throughout it. So categories for perspective, role, LG type, and the environmental focus area of environmental protection are all used consistently in both the risk assessments and case studies. Secondly, as was also mentioned, nine substantive issues that have already emerged about the local-state antinomy are explored in both studies, and in the thesis synthesis.

Table 4.4 Contrasting the environmental risk assessment and case study analysis

	Environmental risk assessment	Case study analysis
Addressing the antinomy	***Outside-in*** • Primary analytical categories derived from SG legislation (Environmental Protection Act), and implementation strategies. • Substantive details discussed in interviews are consistent across local government areas. • *But open-ended questions also sought responses to the legislation from LG perspectives.*	***Inside-out*** • Primary analytical categories established through grounded theory methods, aiming to find elements that are present in every attempt to deliver an environmental outcome. • Substantive issues discussed in interviews were specific to each individual local government and attempt. • *But some of the individual case studies present outside-in environmental initiatives.*
Research ownership	***Consultancy*** • Clients defined research goals and approved strategies and processes. • Researcher tendered for the work, aiming for sound methods that meet client's needs. • Findings 'owned' by client. May be withheld from the public arena or further publication. • Research findings put to immediate use by client agencies. • *But contracts allowed further publication of these research findings in consultation with funding agencies*	***Independent*** • Researcher defines research goals, strategies and processes with reference to the research itself. • Researcher or their institution funds the work, aiming for academic publications. • Findings 'owned' by the researcher and published in academic literature. • Research potentially lacks direct practical application. • *But interviewees not the researcher defined the case study topics and focus.*
Perspectives and Roles	***Other, LG and SG perspectives*** • Most interviews conducted with business operators ('other' perspective). Specific questions for LG and SG authorised persons implementing the legislation. • Local government interviewees all held environmental health officers roles.	***Predominantly LG perspectives*** • Most interviewees had a LG perspective. Some had 'mixed' and 'other' perspectives and one was SG. LG input always sought, even if interviewee was not LG. • Each role within local government represented among the informants (elected representatives, managers, officers)
Data type	***Quantitative*** • Variables are expressed in numeric terms wherever meaningful and practical. • *But analytical categories were initially developed using policies, legislation and interview data. The scales are ordinal, using comparisons rather than absolute values.*	***Qualitative*** • Variables are described, compared and grouped into categories according to similar characteristics • *But graphs of ecological, economic and social outcomes, and context continuums use ordinal scales.*
Analytical methods	***Statistical techniques*** • Statistical analysis is used to determine significant differences between sets of variables. • *But logic and knowledge of industry and pollution issues were used to identify groupings of activities by 'sector' and so on.*	***Qualitative data analysis techniques*** • Qualitative data analysis software used to find patterns of drivers, constraints, and outcomes and relate these to the contexts in which they occur. • *But schematic representations were used to describe several variables.*
Sampling Strategies	***Stratified random sampling*** • Explanatory variables about local governments used to support random selection of local governments for inclusion in the study. • *All of the LGs taking part in the studies were attempting to deliver beneficial environmental outcomes – even if this was only because SG legislation required them to.*	***Informant-driven sampling*** • Only local governments undertaking environmental initiatives were included as case studies. These were identified through interviews and other means. • *In some cases it was an individual within the LG, rather than the LG as a whole that was making the attempt to deliver an environmental outcome.*

A third major linkage is achieved by using both methods to describe and analyse the implementation of the Queensland *Environmental Protection Act 1994*. Case study Q1 is on Queensland LG implementation of that Act, so this case study has much the same scope as the Queensland benchmarking study – the most outside-in of all of the thesis projects. Case study Q3 covers Brisbane City Council's implementation of that Act, which was the project in which the environmental risk assessment method was first developed. Case studies Q5 and Q8 deal with environmental protection act implementation by two 'other' LGs. Case study A1 on the Australian National University's environmental management efforts is another element of the broader environmental risk study that is also presented in case study format. This intentional overlapping of the methods aimed to give readers insight into the effectiveness of the translation of complex, in-depth problems into simplified summaries in the shorter case studies. Every one of the case studies is necessarily a simplification of equally complex issues, yet the case study method appears sufficiently robust and flexible to adequately summarise key elements of any LG environmental attempt.

4.8 Conclusions

Many research methods are used in the eight individual projects that are grouped into the two major studies make up this overall thesis. Some methods underpin the entire research effort, and they include scientific methods generally, grounded theory methods and action research. The local-state antinomy is a concept underpinning the whole thesis, and it was developed partly through insights from symbolic interactionism. The various research methods and topics are also tied together by presenting aspects of the risk assessments as case studies using the standard format. This plurality of research methods work together to in discovering, exploring and explaining the local-state antinomy in Australia, and through it, LG capacity to deliver beneficial environmental outcomes.

This chapter concludes part one of the thesis. Next, the thesis shifts its focus to detailed descriptions and presentations of the thesis' original research and its results.

Part 2

Methods and findings from two studies

Chapter 5. Environmental risk study methods[1]

5.1 Introduction

The *Queensland Environmental Protection Act 1994* (EPA) (QG 1994) is SG legislation, requiring major environmental efforts by LGs. The EPA heralded major changes in Queensland's statutory and institutional arrangements for pollution prevention. It extended their previous focus on large activities with point source pollution impacts from pipes and smoke-stacks, to thousands of small operations with risks of non-point source pollution. This was largely achieved through the devolution of the administration and enforcement of over 10,000 new environmental protection licences to Queensland LGs. This devolution relied on the development of effective partnerships between LG and SG agencies across the state. The progress towards such partnerships varied between Queensland regions and was marred by poor publicity, slow completion of statutory details and the differing priorities of SGs and LGs. (Note that for the purpose of this chapter, the *regions* referred to are the formal DoE regions, defined as they were in 1998).

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[1] Much of this material has appeared in other forms and publications, although it has been refocused for this thesis. Consultancy reports from which this material has been drawn include: Wild River, S. 1997. *Brisbane City Council (BCC) environmental benchmarking study: a report into environmental and related outcomes from Brisbane City Council's 1995-97 implementation of the Queensland Environmental Protection Act 1994;* Wild River, S. et. al. 1998. *Statewide benchmarking study into environmental and other impacts of the Queensland Environmental Protection Act 1994 for environmentally relevant activities;* Wild River 1998, 2000, 2001 and 2002. *Australian National University environmental risk report and waste snapshot.* Contractual arrangements were made for its subsequent publication here. Academic papers that have included some of this material include Wild River, S. 2001. "Comparative environmental risk assessment: a practical and applied method" *Australian Journal of Environmental Management.* And Wild River, S. 2001. "Tackling corporate environmental risk: a practical and applied approach". Paper at *ATEM/AAPPA. Conference.* This author was the main author of each of these documents, but others also need to be acknowledged for aspects of the method development. Ian Christesen, of BCC was an early initiator of this work. Several BCC officers assisted by confirming the practical validity of the environmental risk ratings. Laura Hahn, formerly of Mary Maher and Associates helped to develop the generic risk assessment method from an industry-specific approach. Ross Cunningham was a tireless source of insight and practical suggestions for translating the quantitative method into useful analysis and findings. ANU and BCC have adopted this method as their corporate environmental risk assessment and management tool. Hence, some of the material has also been incorporated into training and policy documents within both institutions. Su Wild River undertook 238 of the 410 site inspections and interviews included in the Queensland study dataset. Laura Hahn undertook 63 site inspections and interviews, Greg Miller 56 and Geoff Renouf 53.

But despite these problems, significant environmental improvements were achieved through the efforts of SG and LG administering authorities. The study that is presented in this and the following chapter report a 41 per cent environmental risk reduction over the first three years of the EPA's operation. But there were also clear indications of serious implications from many of the implementation problems. Inconsistent requirements and enforcement, high costs of licence and compliance, and continual changes to the regulatory regime were among the problems that threatened the long-term success of this initiative.

This chapter provides details on the EPA and its early implementation in Queensland[2] and describes the methods used in the benchmarking studies that assessed its early environmental and other outcomes. These were largely quantitative studies, that were undertaken as consultancy projects for Brisbane City Council (BCC) and later the Department of Environment (DoE[3]). Findings from the study are reported in Chapter 6.

5.2 Outside-in perspective: background to the *Queensland Environmental Protection Act 1994*

The EPA is a predominantly outside-in environmental initiative, developed and authorised by the Queensland SG and requiring many actions by LGs, industry, and to a lesser extent, the community. This section discusses the EPA from a broad perspective, focusing on the SG sphere.

The EPA commenced in March 1995 replacing several ineffective, outdated laws dealing with pollution control. The *Clean Air Act 1963* for example, had its first successful prosecution in 1995, after it had been replaced by the EPA. A handful of

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[2] The chapter provides an insider's perspective on these issues, since the author worked as the Local Government Liaison Officer for the Queensland Department of Environment during the early years. In that role she oversaw the devolution of the new environmental licences to LGs, providing information, training, advice, assistance and policy development to LG and SG agencies across Queensland. She established and chaired Devolution Working Groups across Queensland and managed the development of the Environmental Protection Support Kit and other initiatives that aimed to assist LG implementation and encourage intergovernmental partnerships and consistency. It was her frustration in this role that led to this thesis.

[3] This was the Department's name at the time of the Queensland Benchmarking Study. For simplicity, DoE is used consistently in this thesis to refer to actions and publications by that Department, despite some of these having originated earlier, while it was the Department of Environment and Heritage, and some later, when it became the Queensland Environmental Protection Authority.

prosecutions succeeded under the *Clean Water Act 1971*, but these involved very low maximum fines for a limited range of offences. These were also highly difficult to prove in a court of law. Clearly, Queensland's pollution management Acts neither discouraged, nor punished polluters enough to address the State's growing environmental protection problems (Robson, 1994)[4].

The new EPA's object is to "protect Queensland's environment while allowing for development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends (ecologically sustainable development)" (S.3[5]). It defines the environment broadly to encompass ecosystems and their constituent parts including people and communities, all natural and physical resources, qualities and characteristics of locations and social, economic, aesthetic and conditions affected by these (S.8). Its focus is on retaining environmental values by reducing environmental harm due to the release of contaminants into the environment (Ss. 9, 10, 14). The EPA establishes a general environmental duty, whereby "a person must not carry out any activity that causes or is likely to cause, environmental harm unless the person takes all reasonable and practicable measures to prevent or minimise the harm" (S. 36). The structure and content of the legislation effectively establishes an onus of responsibility on potential polluters to demonstrate sound environmental management, rather than requiring regulators to demonstrate the occurrence of environmental harm. Another important feature is that the EPA applies equally to the public as to the private sector so that government agencies face equivalent requirements to commercial enterprises (Vincent 1994).

While the general environmental duty affects everyone in Queensland, its influence has been minor compared with the requirement for environmentally relevant activities (ERAs) to obtain and comply with environmental authorities. At the time of the Benchmarking Studies, ERAs were defined in the *Environmental Protection (Interim) Regulation 1995.* Activities are listed as ERAs if it is likely that contaminants will or may be released into the environment when operations are carried out and that the release of the contaminant will or may cause environmental harm (S. 38). There are two types of environmental authorities. Environmental approvals are for short-term activities or those with the least potential to cause harm. Environmental licences are

[4] Other sources include internal departmental documents and interviews with a crown solicitor.

[5] When section numbers only are quoted in this Chapter, they are from the EPA. References to the *Environmental Protection (Interim) Regulation 1995* are indicated.

required for ongoing activities and those with higher pollution risks. ERAs requiring licences included around 500 premises with pipes, stacks or other point sources of pollution into the environment that had previously been licensed under the *Clean Air Act 1963* and *Water Act 1971* together with more than 13,000 additional operations. (DoE 1994-5, 1995-6, 1996-7).

This regulatory effort is shared between State and local government, by way of a significant devolution of environmental management responsibilities. The administration and enforcement of environmental authorities for 28 ERA-types, or over 10,000 operations, was devolved to local governments by the first Regulation. The administration and enforcement of several ERAs was also delegated to other more specialist state agencies (Primary Industries for cattle feedlots and Minerals and Energy for mining) (DoE 1994-5, 1995-6, 1996-7). The numbers of ERAs operating in each DoE region are listed in Tables 5.1a and 5.1b. This also shows the broad categories of ERAs that were used to stratify the study sample (see Section 5.5). (The table also shows the number of operations in each broad ERA category that were included in the sample, as discussed further in Section 5.5 below).

The environmental authorities provided a focus for negotiating environmental management practices between administering authorities and ERA operators. For the first time, they also provided administering authorities with budgets for inspecting, advising and, if necessary, enforcing environmental requirements for thousands of potentially polluting operations across Queensland.

Table 5.1a Population of licensed non-devolved ERAs by region

ERA #s	Description	FN	N	CC	SW	SE	CO	Total	Sample
1-4	**Agricultural Activities**	28	23	16	29	12	2	**120**	**4**
5-12	**Chemical, coal and petroleum products**	15	92	58	29	120	2	**316**	**24**
13-14	**Community infrastructure and services**	52	75	75	62	106	9	**379**	**20**
15-17	**Electricity, gas and water supply activities**	7	32	44	37	84	1	**205**	**6**
18-21	**Extractive activities and mining**	44	116	75	53	201	23	**513**	**7**
22-28	**Fabricated metal product activities**	27	32	61	33	62	19	**235**	**-**
29-37	**Food processing**	11	15	27	22	71	1	**147**	**10**
38-39	**Land development and construction**	0	0	1	0	0	0	**1**	**1**
40-42	**Metal products activities**	8	19	18	7	48	3	**108**	**2**
43-55	**Miscellaneous activities**	9	8	23	20	42	5	**107**	**2**
56-62	**Non-metallic mineral product manufacture**	4	16	7	9	33	5	**74**	**-**
63	**Recreational sporting activities**	0	0	0	0	1	0	**1**	**-**
64-66	**Sawmilling, woodchip, and wood prod man**	1	9	45	36	55	2	**148**	**12**
67-72	**Transport and maritime services**	14	43	25	4	26	2	**114**	**4**
73-76	**Waste disposal**	54	60	79	79	98	11	**381**	**17**
77-81	**Waste recycling and reprocessing**	3	13	6	2	25	0	**49**	**4**
82-83	**Waste transport**	25	21	25	13	66	7	**157**	**3**
84-85	**Regulated waste treatment and storage**	14	18	23	21	56	1	**133**	**2**
Totals		**316**	**593**	**609**	**466**	**1006**	**93**	**3,183**	**118**

Sources: Wild River 1998. Compiled from doE and Department of Primary Industries Public Registers

Note: does not include 498 ERA licences administered by the Department of Minerals and Energy

FN = Far Northern Region N = Northern Region CC = Central Coast Region

SW = South West Region SE = South East Region CO = DOE Central Office

Table 5.1b Population of licensed devolved ERAs by region

ERA		FN	N	CC	SW	SE	Total	Sample
22	**Abrasive Blasting**	9	47	28	19	160	57	16
23 & 25	**Boiler Making/Engineering and Metal Forming**	121	252	237	237	1,873	522	75
24	**Metal Surface Coating**	23	88	71	118	622	322	6
26	**Metal Recovery - including automotive recycling**	18	44	45	36	282	139	38
28	**Motor Vehicle Workshop**	371	664	736	729	5,944	3,444	106
SP/ PB	**Spray Painting and Panel Beating**	21	70	66	73	504	734	39
60	**Concrete Batching**	31	36	61	43	304	133	29
All other devolved ERAs		71	88	20	56	588	823	**-**
Total		**665**	**1,289**	**1,264**	**1,311**	**6,213**	**10,742**	**309**

LGs generally didn't distinguish between ERAs 23 and 25 and neither did the Benchmarking Studies. They did distinguish between general metal recovery and automotive recycling, and this distinction was continued through into the analysis.

Sources: Wild River 1998a. Compiled from 1995, 95-96 and 96-97 EP Act Annual Reports.

The outside-in initiatives also included many efforts to establish partnerships between SG and LG for implementing the EPA. LG had been identified as a key stakeholder throughout the consultation process and action was taken by the SG to address many expressed LG needs. Recognising LGs different priorities in licensing smaller operations, the SG gave LG almost complete autonomy and flexibility in setting environmental authority conditions and undertaking enforcement. A LG Liaison Officer position was established and retained for over 10 years in DoE's Central Office and an LG Unit operated for a few years. The SG arranged the development of a database called the Local Government Environmental Management System (LOGEMS) to support the environmental licensing. LOGEMS was designed to work on any LG computer system and was provided free, with training and other information to all LGs (see DoE 1995a, 1995b, 1995c; QG 1995b). There was also a $1.5 million grant to assist LG establishment of administrative systems for the new devolved licences. Lists of ERAs identified from an extensive *Yellow Pages* search were also issued. Guidelines and Environmental News sheets covering topics such as enforcement, due diligence, environmental licensing and the EPA in general were written in plain english and provided to LGs for distribution.

A five-volume Environmental Protection Support Kit was issued to each LG, and it contained all of these resources and more. Training in EPA implementation was provided in regional centres across the state and an Environmental Health Officer from most LGs attended the training. Devolution Working Groups were established and supported by the SG for over 10 years. These were supported by each of DoE's regional and district offices and the Local Government Liaison Officer and provided a forum for partnerships at the regional level.

Commencement problems

These new opportunities also brought several major challenges during the early implementation. The problems were due to practical difficulties and political sensitivities of various kinds. Their impact was to slow implementation, and sometimes to frustrate the development of a fair, consistent and effective system for environmental protection in Queensland. This section describes these challenges and how the SG and DoE worked to overcome them. Figure 5.1 is a timeline of key events in the

development and implementation of the EPA, and supports the discussion in this section.

The SG context for EPA development and implementation was highly turbulent. The new Act was initiated under Queensland's first labor government after 22 years of National Party governance, mostly under controversial premier Joh Bjelke Petersen. Environment Minister Molly Robson led the latter EPA through its development and commencement, but was voted out just afterwards in the 1995 state election, and replaced briefly by former school-teacher and trade union leader Tom Barton. Although Labor originally retained office in that election, the result was overturned following a bi-election in Mundingburra (near Townsville) where the votes of absent army personnel had been lost. The election of a national party member to that seat, followed by the endorsement of the Coalition by independent Liz Cunningham led saw Brian Littleproud instated as Environment Minister with the policy of reducing the EPA's impact on small business. These upheavals at the political level combined with practical problems encountered during the policy process to create slippage in the policy development and implementation program. So aspects of the EPA were commenced when they were politically acceptable, rather than in a strictly practical order.

Practical problems were based on difficulties defining ERA categories, setting appropriate compliance standards and establishing workable systems for enforcement and incentives.

It proved difficult to define ERA categories because of the enormous statewide variation within them. This problem was partly solved by including many subcategories for ERAs of different sizes, and therefore different inherent environmental risk. Some activities were declared as ERAs, but would not require environmental authorities from the commencement of the EPA because they proved too contentious. This included two potential devolved ERAs that would have significantly increased LG environmental power to address the environmental impacts of development. ERAs 38 and 39 (land develoment and construction of premises or engineering structures) were to require LG approvals, but the potential for overlap with the anticipated new Integrated Planning Act was considered too problematic and those ERAs were repeatedly postponed (QG 1995. S.5, ERAs 38, 39).

The Environmental Protection Policies (EPPs) were another important element of the EPA statutory system that was not commenced until years later. Stakeholders had expected these to establish detailed compliance requirements. In their place, national

standards for environmental values were adopted, but no system was initially available to link licence conditions or other compliance standards to these broad criteria (QG 1995. Ss.66-73). By the time the EPPs were finalised and commenced, most licences and conditions had been issued, so their impact on the licensing system was minimal.

Flexible enforcement options and incentives were built into the EPA and Regulations during its extensive public consultation phase (Ricketts 1994). Many of these were not fully provided at the commencement of the legislation. One mechanism that was provided from the start was the Environmental Management Program (EMP). Operators who could not achieve compliance could negotiate such a program to provide legal protection with time to achieve compliance. On-the-spot fines were proposed for small-scale environmental offences, but over five years passed from the EPAs commencement before this statutory tool was generally available. Incentive licensing was also proposed during consultation, but took several years to commence and a consistent approach has never been established statewide (Section 5.3 discusses these issues further).

Figure 5.1 Timeline of key events in development and early implementation of the *Queensland Environmental Protection Act 1994.*

- **1991-92**
  - First consultation to prepare the EP Act:
    - 10,000 kits containing Public Consultation Papers distributed;
    - first draft schedule of premises to be licensed (ERAs) under the EPA distributed;
    - scoping draft of proposed Environmental Protection Policies for Water, Air and Noise;
    - 60 meetings, attended by over 1,100 people, in 32 locations around Queensland and
    - Key stakeholders working group established, with industry, local government and commnty reps.
- **1992-93**
  - Major drafting of proposed EP Act.
- **1993-94:**
  - Major consultation on proposed EP Act with industry, local government and community.
  - Development, publication and distribution of guidelines to support the proposed EP Act, including:
    - Enforcement;
    - Environmental management programs and; and
    - Environmental due diligence.
  - 1st $500,000 grant to local governments to assist system development to support EP Act.
- **1994-95**
  - Environmental Protection Bill introduced, September 1994;
  - Environmental Protection Act passed, December 1994;
  - Commencement of EP Act and Regulation, March 1995;
  - Protocol for state and local government partnership in implementing EP Act signed;
  - Fee relief system for devolved activities. Government subsidised licence fees for first year;
  - Discussion Draft of Environmental Protection (Water) Policy, 1995;
  - Discussion Draft of Environmental Protection (Air) Policy, 1995;
  - 2nd $500,000 grant to local governments to assist system development to support EP Act;
  - Environmental Protection Support Kit developed and distributed to administering authorities;
  - Industry-specific Operators Environmental Guidelines, licence checklists and other resources developed and provided to all administering authorities (predominantly by DoE and BCC);
  - 1st Environmental Management Programs commenced;
  - 1st EP Order issued; and
  - 1st EP Act prosecution commenced.
- **1995-96**
  - Ministerial Advisory Committee established;
  - Discussion Draft of EP (Noise) Policy, 1996;
  - EP (Interim Waste) Regulation, May 1996;
  - Updating and re-signing of Protocol for state and local government partnership for EP Act;
  - Moratorium on licence actions and continuation of fee relief system for additional 4 months;
  - 3rd and final $500,000 grant to Local Governments to assist system development to support EP Act; and
  - Completion of first successful prosecution by South East Region DoE.
- **1996-97**
  - EP Council of Queensland established;
  - 1st incentive licences issued by South East Queensland local governments;
  - EPA amended three times;
  - EP Regulation amended four times;
  - EP (Water) Policy commenced;
  - EP (Noise) Policy commenced; and
  - BCC Benchmarking Study shows outcomes achieved by EPA, including 41% environmental risk reduction in first three years of implementation.
- **1997-98**
  - EP (Air) Policy commenced;
  - On-the-spot fine trial commenced by selected DoE offices and Local Governments;
  - Contaminated Land Act brought into EP Act framework;
  - 1st code of practice recognised under the EP Act, for Agriculture;
  - EP Regulation 1998 replaces Interim Regulation (redefining some ERAs); and
  - EP Act Statewide Benchmarking Study.

Adapted from Wild River et al 1998,

Sources: Compiled from QG 1994: QG 1995a and b: DoE 1995-98: DoE 1995a, b and c: DoE 1997: and personal communication.

5.3 Inside-out perspectives: local government issues and state government responses

This section explores LG initiatives and responses related to the EPA from an inside-out perspective. These are described in chronological order according to when commencement problems occurred and were resolved. Elements of the local-state antinomy are italicised throughout the section, in order to tie this discussion strongly to the thesis' broader investigation (see Table 4.2). Figure 5.1 supports this discussion by providing a timeline of key events in the development and implementation of the EPA.

Some LGs were highly supportive of the EPA, and had been closely involved in its development since initial consultation started in the early 1990s and this assisted the development of *partnerships between LG and SG*. The South East Queensland Devolution Working Group formed around this time, and met regularly for over four years as part of the preparation and problem solving for the new legislation. The group was chaired by the DoE LG Liaison Officer and included representatives from the LGA of Queensland, BCC, and managers and officers from a diverse set of LGs from South East Queensland. Many of the LGs were large, had hundreds of ERAs in their local areas, and many were public advocates of environmental initiatives. These LGs knew they would need to hire extra staff to implement the EPA, and were preparing for the new legislation years before it commenced. This group had been so involved in the policy process that they were committed to it, despite the many problems that they faced during its commencement. When implementation problems emerged, one DoE response was to set up similar working groups in each Queensland region, to provide opportunities for SG and LG implementing officials to identify and resolve problems consistently within the region.

As well as their devolved responsibilities as Administering Authorities, LGs are affected under the EPA as ERA operators. The *resource* implications of this were the initial source of conflict between LG and SG over the EPA. All licence fees were initially set by way of the SG *Environmental Protection Interim Regulation 1995*, supposedly at user pays levels. The idea was that both SG and LG administering authorities could then recover the costs of their licensing programs through the fees they charged. LGs received details about the licence fees through the EPA training programs. At this stage, the LG representatives realised that LGs faced high licence fees, largely

because many of them operated so many ERAs. The worst affected were the *other LGs* who are the poorest, most extensive and sparse in Queensland[6]. These LGs often service several small towns, each of which had its own small sewage treatment plant ($500-$15,210 annual licence fee), water treatment plant ($1,580 fee) and landfill ($500-10,000 fee). Many LGs in country areas calculated total licence fees of over $100,000 under the proposed system. For some of them, this nearly matched their entire rate-base. This issue received immediate, sensationalist newspaper coverage (see Waugh 1994[7]). These calculations galvanised much LG opinion against the EPA. As a result, despite its formal support for the EPA, and its history of involvement in it, the LGA of Queensland had to publicly oppose this aspect of the EP Act, and negotiate for changes (Collie 1994).

In response to LG concerns about this issue, DoE developed Integrated Environmental Management System (IEMS) licences, which allowed ERA operators (including LGs) to combine their individual licences within an environmental management system. IEMS licence applications had to demonstrate how each activity would comply, and had also to meet four additional criteria. These were modeled on the International Standards for environmental management systems and included pollution monitoring, staff training and awareness, environmental and energy audits and waste prevention, treatment and disposal (QG 1995a S. 42). Although this meant additional work for the LGs, this could resolve LG *resource problems*, since the licence fee for combined activities was only the cost of the single highest individual licence within them (QG 1995a, S. 48).

The licence fees facing the activities whose environmental licences were devolved for administration by LGs were another major hurdle because of LGs *responsiveness to the community*. Most of the devolved licence fees were set at $500 in the draft EP Regulation. The fees were opposed by many ERA operators even in the relatively wealthy South East, but in regions that had faced nearly a decade of drought, and in other places with constrained economic activity, the set fees were unacceptably high. On hearing of the fees, many small businesses formed action groups to oppose the entire EPA, and LGs were often quick to side with the local businesses, and again oppose the EPA (see Van Ballegooyen 1995, Hanson 1995, Local councils taking action

[6] See Figure 2.4.

[7] Where practical, the obscure newspaper articles referenced in this section are presented in Appendix 2: Research/ Newspaper articles on the accompanying CD-Rom.

1995). Some LGs were by now so frustrated that they attempted to *lead* local industry groups to oppose to the EPA even when local businesses supported it (Bugden 1995). The SG again responded in favour of potential licensees, and arranged to pay the devolved licence fees on behalf of small businesses for the first 15 months of EP Act implementation (see Morley 1995, Smith 1995). The total cost to SG was over $7 million. These fee relief payments were sufficient incentive for most LGs to find, inspect and licence most of their local ERAs, but left them with the problem of administering the licences and charging the fees in subsequent years.

Small business opposition to paying the full fees remained strong across Queensland, so that by the time the SG stopped annual fee payments on their behalf, it had implemented provisions enabling LGs to set their own fee schedules. Although it was SG policy to develop a statewide incentive licence system, with reduced fees for good environmental performers, the details of the system had not yet been finalised. The resulting licence fee system was, and remains highly inconsistent between LGs, even between adjoining LGs within cooperative regions. Many LGs whose local businesses strenuously opposed the fees have opted to charge no annual fee, or a very minimal one. Meanwhile, environmentally proactive LGs have developed incentive licence systems, with varying degrees of consistency with other LGs. Without environmental protection budgets, the LGs with low fees need to either subsidise their EP efforts from rates, or to reduce those efforts. Those implementing incentive licence schemes have been frustrated by the lack of a consistent system.

Implementation issues posed substantial new challenges for LGs as they attempted to *lead* and *respond* to local environmental protection efforts through their EPA implementation. One problem was that the inherent flexibility of the EP Act meant that the steps needed to achieve compliance were difficult to determine both in their roles as operators and regulators. It was also often unclear which operations required licences, and different LGs adopted their own policies about some ERA classifications. Sometimes LGs used the ambiguity to target polluting activities as ERAs while omitting similar, but non-polluting ones rather than adhering primarily to the ERA categories. This worked to slightly expand the types of operations over which some LGs exerted environmental protection powers, but even the most liberal definitions still excluded many local polluters. The resulting differences in the ERAs recognised by different (and often neighbouring) LGs, was partly overcome by the regional partnerships encouraged

by the Devolution Working Groups. DoE also used the Environmental Protection Support Kit to clarify ERA definitions[8].

The Support Kit was initially produced with generic model licences and industry guidelines developed by the SG. LG quickly *responded to business community* complaints that these were to complicated, and sought more *efficient and effective* alternatives. BCC and some other South East Queensland LGs had worked with local business leaders to develop simple, industry-specific Operators Environmental Guidelines (OEGs) and model licences. The rights to distribute these were bought by DoE and the BCC models were distributed to all LGs through the Support Kit.

This initiative assisted LG licensing but also caused some problems due to *the diversity between LGs*. A few of the model licence conditions adopted by BCC following local consultation turned out to be only appropriate for the bigger cities, and not to the majority of LG areas. BCC's requirement that spray painters install spray booths with filtration systems was a good example. Spray booths for car repairs typically cost around $20,000 to install, but are more expensive if booths are larger or if they use better filtration systems. BCC had adopted its spray booth policy after local consultation and an independent assessment of the pollution impacts of spray painting, which showed that between 3,000 and 13,000 Brisbane residents were potentially affected by the overspray (Envirotest. 1995a. p.86). Many LGs misunderstood that this model policy was not a statutory obligation under the SG legislation. As a result the environmental licences issued to many remote spray painters with low turnovers and minimal environmental impacts included requirements to install spray booths and these were sometimes impractical and seemed overly costly in relation to the environmental impacts they would control. These types of problems continued to fuel business opposition to the EPA, and LGs often sided with industry, blaming the SG for the problems (*You do the explaining Council could tell EPA* 1995, Council Showing Concern at Implications of Environment Act 1995*, Workshops sought for new Act* 1995*)*.

The EPA problems faced by indigenous LGs differed from those for LGs generally. Aboriginal and Islander LGs in Queensland have no statutory powers to charge rates, and obtain all of their income from (mostly tied) grants and subsidies. They lacked budgets to pay the new licence fees, to upgrade facilities to comply with

[8] Based on interviews during benchmarking studies, and priori involvement with Devolution Working Groups.

EPA requirements or to develop IEMSs. As a result, a meeting that was arranged by DoE to inform Aboriginal Community Councils about the new requirements concluded with a unanimous vote that those LGs would refuse to even apply for the licences, in protest at their inability to fund improvements to overloaded and non-complying infrastructure (Zlotkowski 1995).

However, despite many issues that undermined the early implementation of the EPA, many LG officials and ERA operators also publicly supported the new legislation. Many insisted that the Act itself, and requirements for compliance, were not only reasonable but also potentially beneficial to businesses and LG (Bugden 1995; Business responds well to introduction of Environment Protection licensing 1995; McCarthy 1996; Weston 1995). Together, these statutes, policies, guidelines, licences and other actions appeared to be delivering some beneficial environmental outcomes, and BCC and later DoE initiated a project to measure these and the other impacts of the EPA.

5.4 Benchmarking study overview

The environmental and other outcomes of the EPA were a key driving force behind this overall thesis, and some early thesis research helped to develop a project to investigate these outcomes. Pilot interviews posed the question of what LG environmental issues might benefit from some independent research. Several interviewees suggested that a valuable research project would:

- Involve a representative sample of ERAs, sufficient to allow statistical analysis of results,
- Inspect those ERAs and determine the environmental changes that had resulted from their efforts to comply with the EPA,
- Analyse changes to the risk of environmental harm arising from those ERAs, and
- Evaluate industry responses to pollution prevention initiatives.

As well as suggesting the study, BCC managers issued a consultancy brief, inviting proposals to carry out the research project. This researcher was the successful applicant for the project, together with Ross Cunningham from the ANU Statistical Consulting Unit. The resulting project (referred to henceforth as the BCC Benchmarking Study) involved environmental risk assessments and interviews of 8 industry sectors at 193 sites, representing 80 per cent of total devolved ERAs in

Brisbane. The BCC Benchmarking Study results showed that significant environmental risk reductions had been achieved by ERAs licensed by BCC over the first two years of implementation. However the changes differed by industry sector, and many operators were unhappy with aspects of the EPA structure and implementation. As well as being presented to BCC managers and officers, these findings were supplied to the Environmental Protection Council of Queensland (EPCQ) which was "the peak body advising the Minister on environmental issues" (DoE. 1997. p.i).

The EPCQ responded to the BCC Benchmarking Study by initiating a similar, state-level study (henceforth the Queensland Benchmarking Study). This researcher lodged the successful bid for that project along with a team of nine others who worked in technical roles[9].

Part of the benefit of this researcher having undertaken both Benchmarking studies was the capacity to build the BCC results into the statewide study. Although there was nearly a year's difference between the first and second studies, this mattered little, as BCC had started its implementation program earlier than most administering authorities, so the stage in implementation was similar between the two studies. Because the two studies were merged in the Queensland Benchmarking Studies, the discussions in both this and the following chapter focus only on that larger study, except when otherwise indicated.

[9] This again included Ross Cunningham, together with Christine Donnelly, both from the Statistical Consulting Unit. Laura Hahn of a Brisbane-based environmental management consultancy (*Mary Maher & Associates*) provided project management support, assisted in developing the generic version of the risk assessment method and was one of three other environmental risk assessors involved in the project. Greg Miller and Geoff Renouf, both from Brisbane-based *Envirotest* made up the remainder of the risk assessment team. Database design was by Bernadette McNevin, and administrative support was provided by Elizabeth Stanmore of Mary Maher & Associates while Meg Dickson performed data entry. The entire project was peer reviewed by Trevor Brown from Hyder Consulting before submission to DoE. Within this large team, this researcher was practically and ultimately responsible for the entire project, leading all negotiations with DoE, directing all analysis and writing the entire report. As with the BCC Benchmarking Study, part of the negotiations involved ensuring the author's right to independently publish the findings in this thesis.

5.5 Obtaining and stratified random sample[10]

This section describes the variables that were used to derive a stratified random sample of licensed ERAs to support the statistical analysis of findings for the Queensland Benchmarking Study. It also outlines features of other explanatory variables that could not be used in sampling, but which were haphazardly distributed across the sample, and could therefore also used in the analysis.

There were four distinct populations that required stratified random sampling for the Queensland Benchmarking Study. These were LGs, devolved ERAs, non-devolved ERAs and LG-operated ERAs. Different sampling strategies were used for each population. The first step for all populations was to determine which ERAs would be included in the study. To maximise variation and therefore representativeness, at least one ERA-type was included from each broad category. Usually the individual ERA-type with the greatest population was included. Where a category had significant variation within it in relation to the other explanatory variables, more ERAs were selected to represent that variety.

The selection of LGs for participation in the Study proceeded through a sample stratification strategy that took account of region, size, approach to environmental regulation and LG type. Note that at this relatively early stage in the thesis research, the variable of *LG type* was only defined in the nominal terms of a LG's identity as a shire, city or town[11]. In practice, the process of LG selection involved a sorting of all LGs into the different levels of each variable, then manually selecting the mix which best represented the overall mix of local governments, and which was practical within project constraints. So when two LGs with similar features were selected, the one that was most accessible for the project was selected. Table 5.2 lists the population and

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[10] The sample selection process involved this researcher together with some others. This researcher suggested all of the sampling and stratification explanatory variables and criteria and developed the data set used for sample selection. DoE officials approved the suggestions and provided details of available explanatory variables for non-devolved activities. The sampled LGs provided details on enforcement and incentives for their devolved ERAs. Ross Cunningham and Christine Donnelly of the ANU Statistical Consulting Unit selected the stratified random sample using statistical methods and the data set developed by this researcher. This chapter presents only a summary of the sample selection process. The full details are available in the Queensland Benchmarking Study report - Wild River et al 1998. This is provided in Appendix 3 on the accompanying CD-Rom.

[11] It was the explanatory power of this variable that led to the development of the intergovernmental typology during the Benchmarking Study analysis.

sample spread of local governments across the levels for each issue. Figures 5.2 a to d show the graphs of LG expenditure, population and geographic size, similar to those in Figure 2.4. LGs represented by an *R* were included in the final sample and this an indication its representativeness. Figure 5.3 is a map showing the locations and areas of the selected LGs.

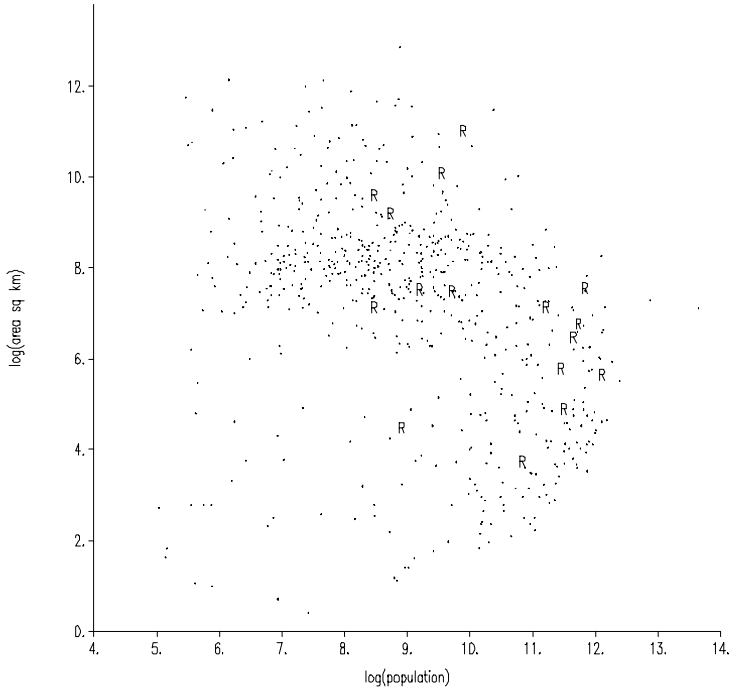
Table 5.2 Local Government Selection

Issue	Description	Levels	Population	Sample
Region	DoE region in which the local government is located	Far North (FN)	13	2
		North (N)	21	2
		Central Coast (CC)	32	0
		South West (SW)	44	6
		South East (SE)	15	7
Size	Size of local government, based on the number of devolved ERAs in the local area	Small (<20 ERAs)	80	5
		Medium (20-80 ERAs)	34	6
		Large (>80 ERAs)	11	6
Approach	Local government approach to administering the EP Act, based on systems in place to support EP Act (graded or incentive licence system, officer employed for EP Act) and structuring of EP Act features into organisational structures (commitment to cost recovery under EP Act, EP Act roles recognised in organisation structure).	Low (no systems or structures)	106	7
		Medium (any of the systems)	10	4
		High (either structural indicator, probably also with systems in place)	9	6
Type	Type of local government	Shire	104	9
		City or town	21	8
Inter-governmental typology	This typology is a contribution of this thesis. It was developed following the Benchmarking Study and was therefore not used in LG selection, but is listed here because of its use in the analysis, and its applicability to the broader thesis.	Capital city	1	1
		Capital fringe	5	4
		Other centre	13	4
		Other LG	106	8
		Indigenous	31	0

Notes: Central Coast local governments were not included due to practical constraints.

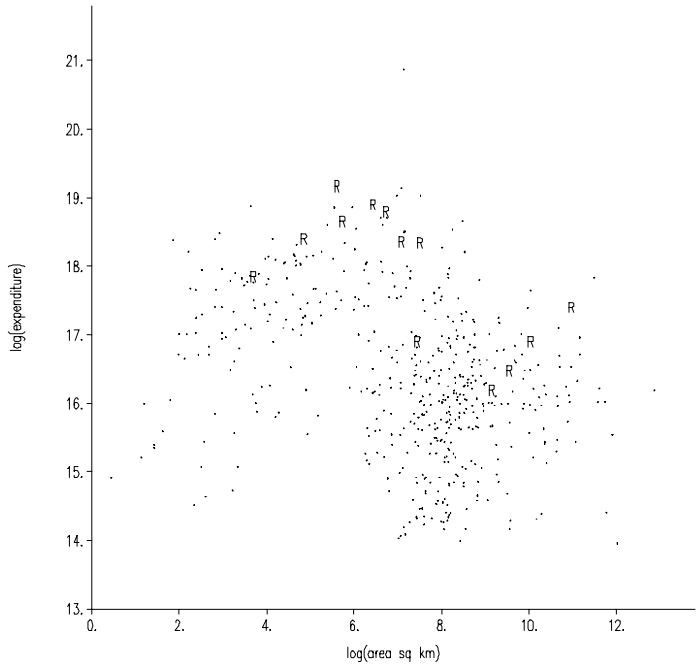
Indigenous LGs were not included on instruction from DoE because they had little involvement with the EPA.

Figure 5.2 a Sampled local governments, population by area



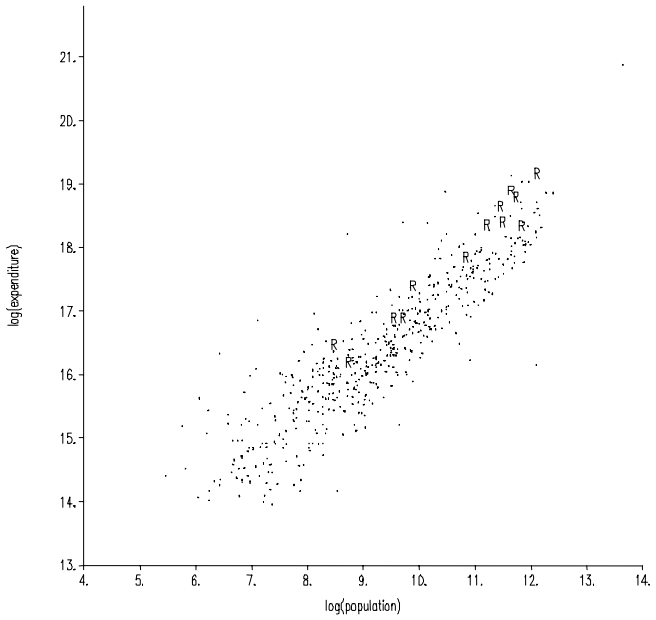
R = LGs selected for risk assessment Source: Information Australia 2000.

Figure 5.2b Sampled local governments, area by expenditure



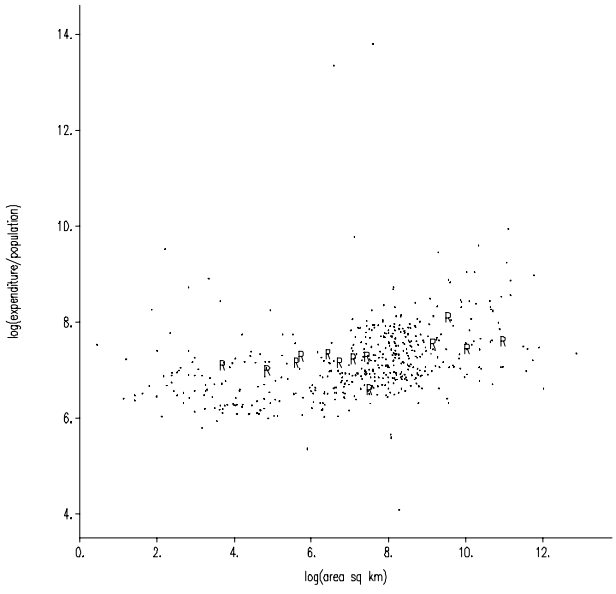
R = LGs selected for risk assessment Source: Information Australia 2000.

Figure 5.2c Sampled local governments, population by expenditure



R = LGs selected for risk assessment Source: Information Australia 2000.

Figure 5.2d Sampled local governments, area by population and expenditure



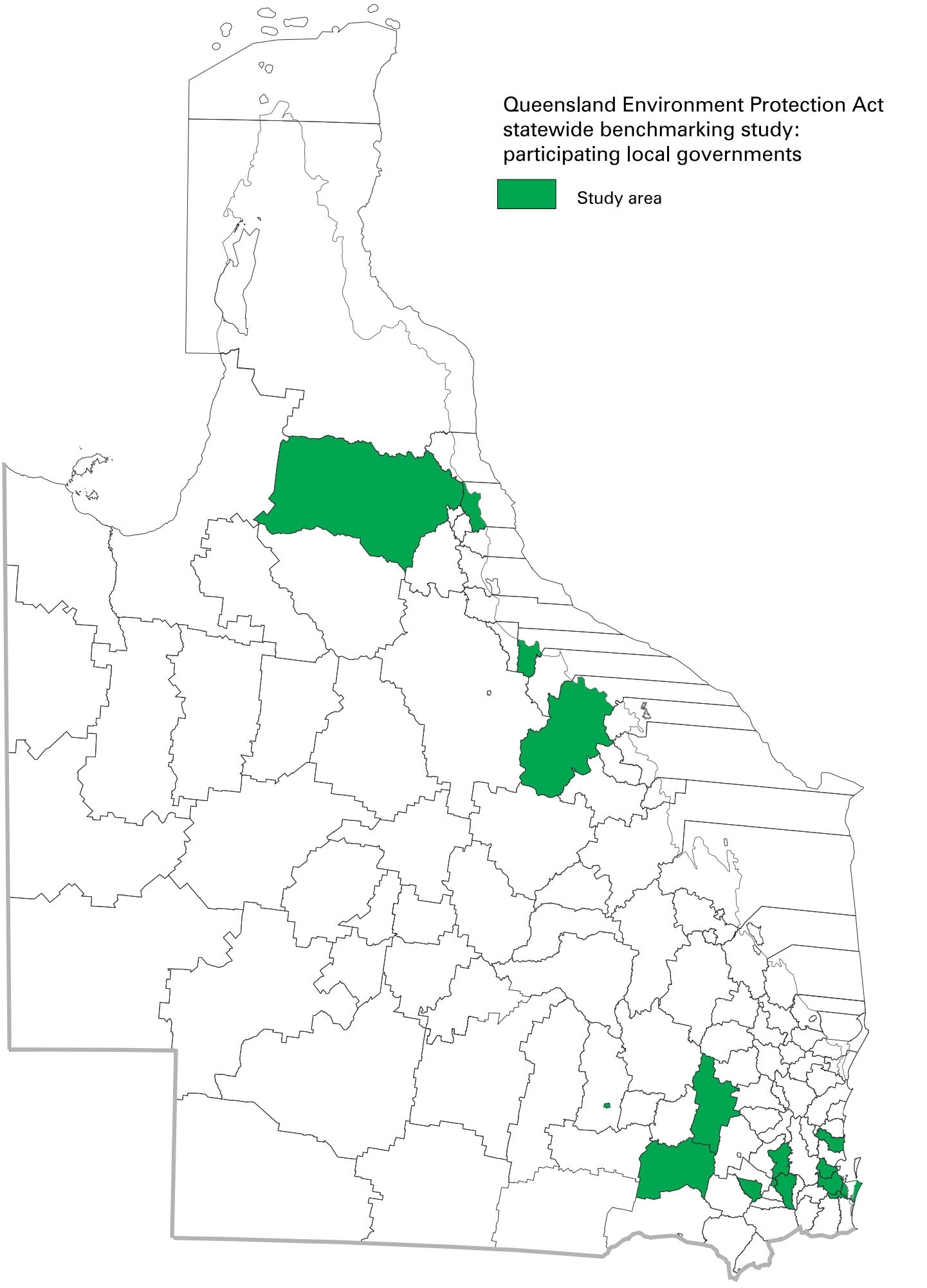
R = LGs selected for risk assessment Source: Information Australia 2000.

Devolved ERAs were selected by authorised persons from within each of the selected LGs, under instruction from this researcher. The researcher estimated the population of ERAs for each using the EPA annual reports. The statisticians working on the project generated a set of random numbers that this researcher then applied to the ERA listings. The LG authorised persons then identified matching ERAs and provided their details to the researcher. Businesses that had received incentive licences or enforcement action were always included in addition to the other selected operations.

DoE provided a digital database of all non-devolved ERAs to assist their selection. The chosen individual ERA-types were extracted from the overall database, and a range of explanatory variables identified to assist sample stratification. Stratifying variables included ERA-type, DoE region, whether the activities were individual or IEMS licences and whether the operation had experience with enforcement through either an EMP or Environmental Protection Order. As in the selection of LGs, accessibility for the study was also considered, and those operations that it was impractical to visit were swapped for others with similar characteristics.

Since LG-operated ERAs were non-devolved ERAs, many were selected through this process. But only the ones operated by the selected LGs were included in the study. So when a non-sampled LG's operation was selected for the study, it was replaced by a similar one operated by a selected LG.

Figure 5.4 shows the processes involved in this sampling. Table 5.3 lists all of the explanatory variables that were used in both sampling and data analysis. This table also indicates the different subcategories within each variable.



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Table 5.3 Population and Sample Characteristics by Characterising Variables

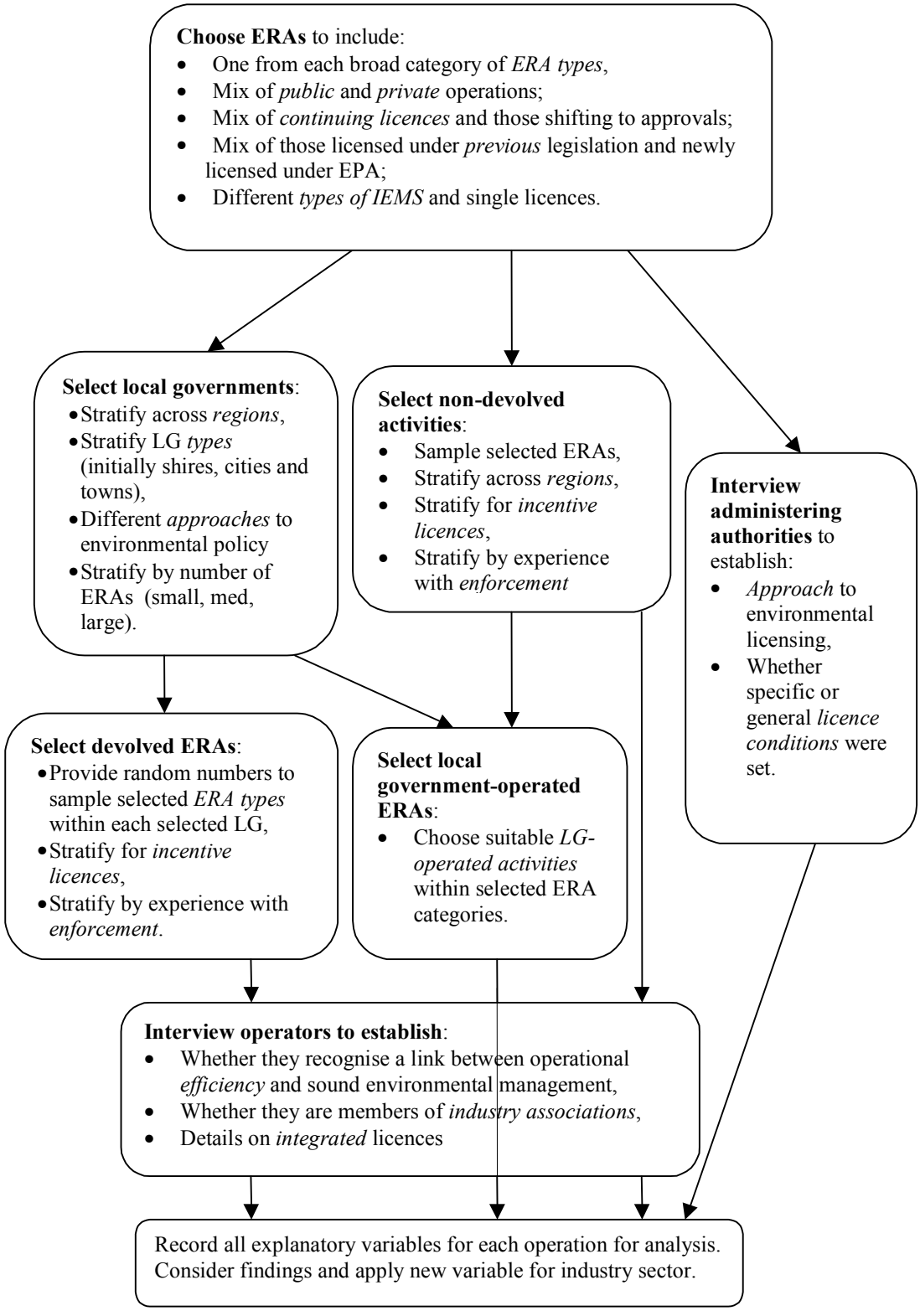
Characterising Variable	Description	Levels	Population	Sample
Variables used in selecting which ERAs to include				
Previously licensed	Whether the activity was required to be licensed under the repealed *Clean Air or WaterAct*.	Not licensed under old envt legislation (No) Licensed under old envt legislation (Yes)	N/A	334 76
Public Ownership	Whether the activity is publicly or privately owned and operated	Privately owned (No) Publicly owned (Yes)	N/A	361 49
Continuing Level 1	Whether the activity continues as Level 1 as a result of the *EP Regulation 1998*	Dropping to Level 2 under 1998 Regulation (No) Staying Level 1 (Yes)	N/A	86 324
Variables used in stratified random sampling				
ERA type and groad category	At least one specific ERA-type was included from each broad category.	18 broad categories. 29 individual ERA types in final set.	13859	409
Region	DoE region in which the activity is located	Far North (FN) North (N) Central Coast (CC) South West (SW) South East (SE) Central Office (CO)	981 1882 1807 1664 7219 93	30 35 10 66 263[12] 6
Devolved/ non-devolved	Whether the activity is devolved, or administered by state government	Non-devolved (No) Devolved (Yes)	3183 10,676	118 309
Experience with enforcement (EMP/EPO)	Whether the activity has had an EMP (voluntary or required), or an Environmental Protection Order.	Has not had EMP or EPO (No) Has had EMP or EPO (Yes)	13,404 455	387 23
Variables established during interviews with administering authorities				
Approach of Administering Authority (also used to sample LGs)	What approach the administering authority perceives it has brought to its implementation program (from the triangulation survey)	High level approach (High) Moderate level (Med) Low level approach (Low)	N/A	239 139 30
Specific Conditions	What type of licence conditions are applied by the administering authority (triangulation survey)	Conditions flexible (No) Conditions specific (Yes)	N/A	379 31
Variables established during interviews with operators				
IEMS	Whether the activity is an IEMS or non IEMS licence holder.	Single licence (No) IEMS (Yes)	N/A	321 87
Licence Type (level of integration)	Licence type based on auditors perceptions of the major differences and similarities between activities. A composite variable separating devolved and non-devolved activities, and IEMS.	Multi-site IEMS (1) Single site IEMS (2) Non-devolved non IEMS (3) Unaffiliated devolved (4) Affiliated devolved (5) Local Government IEMS (6)	N/A	14 33 36 247 38 40
Fee Relief	What level of licence fee is being paid by the operator.	Full scheduled fee Standard reduction Incentive (green) licence	N/A	316 52 41
Industry Association	Whether the activity is in an industry association.	Not in association (No) In association (Yes)	N/A	164 246
Variables induced during subsequent analysis, and applied to existing sample				
Recognises Environment/ efficiency link	Whether an operator recognises that efficiency gains can be achieved through better environmental practice	Recognises env/eff link (Yes) Doesn't recognise env/eff link (No)	N/A	103 115
Industry sector	Describes the operation's sector in terms of a cycle of resource transformation from raw material to waste.	Primary production Refinement Manufacture Servicing Waste	N/A	24 26 83 230 47

Source: adapted from Wild River et al 1998.

Note: N/A = data not available. Note that totals do not always sum to 410 because levels of some variables were not known.

[12] Includes 193 records from BCC Benchmarking Study

Figure 5.4 Process for sampling and establishing explanatory variables



Source: compiled from Wild River et al. 1998.

5.6 Developing the Comparative Environmental Risk Assessment Method

This section describes the development and operation of the Comparative Environmental Risk Assessment Method (CERAM) that was used to determine environmental outcomes from the EPA.

Although the EPA does not explicitly refer to environmental risk, there are strong links between the Act's regulatory framework and environmental risk in general. Risk assessment and management consider both the *probability* and potential *consequences* of occurrences with negative environmental impacts (see Standards Australia 1999). The EPA reflects these concepts in both its environmental authority and enforcement provisions. It defines occurrences with negative environmental impact as causing environmental harm (S.119). Industry types requiring licences or approvals are prescribed as ERAs by the *Environmental Protection Regulation 1995* on the basis that contaminants are likely to be released into the environment when the activities are carried out, and that environmental harm may result. Thus the licensing system considers both the likelihood and consequences of environmental harm (S.38). Similarly with enforcement, the EPA prescribes offences for placing contaminants where they may reasonably be expected to cause environmental harm. Offences are more serious when contaminants are released into the environment, thereby increasing the likelihood of environmental harm and the magnitude of the prescribed EPA penalties increase with the consequences of the contamination (Part 10).

Concepts of *inherent* and *residual* environmental risk are also implicit in the regulatory detail of the EPA's environmental authority system. Table 5.4 provides CERAM's definitions for these terms. The ERAs whose administration and enforcement was devolved to local governments had been selected for their generally lower inherent risk than those licensed by the state. The devolved ERAs rarely involved regular, point source pollution, but instead store and use relatively small quantities of relatively benign contaminants. The state government retains responsibility for the activities with higher inherent risk which often have point source pollution outlets, and use comparatively more destructive contaminants. Differences in residual environmental risk are recognised by the incentive licence systems. These reward good operators by reducing the scheduled licence fee when environmental management

infrastructure and practices reduce both the likelihood and consequences of environmental harm occurring as a result of the ERA.

Table 5.4 Categories for environmental risk

Category	Definition
Environmental risk	The likelihood and consequences of environmental harm resulting from an activity.
Inherent environmental risk	The likelihood and consequences of environmental harm from an activity conducted considering only short to medium term production expediency
Residual environmental risk	The likelihood and consequences of environmental harm occurring, taking account of risk management measures.

Source: Appendix 1. Thesis category map.

Together, these features provide a sound basis for using an environmental risk framework to assess the environmental outcomes from the EPA. Indeed, BCC explicitly acknowledge the link between environmental risk analysis and the EPA by adopting key elements of the *Australian/New Zealand Risk Management Standard* in their ground-breaking incentive licensing system. This and other influential initiatives led to CERAM's development.

The methods used in the BCC benchmarking study were to focus on practical environmental issues, be developed with reference to the EPA and its objects, and to BCC's implementation program. The starting points for developing the method were the industry-specific *Operators Environmental Guidelines* (OEGs) that BCC had produced to explain the EPA requirements to each type of ERA. The OEGs had been developed by committees made up of BCC staff, relevant industry peak bodies, and selected local operators. The OEGs describe *industry practices that pose a risk of environmental harm*. These are categorised as environmental hazards in this thesis. As indicated before, the OEGs also describe simple environmental management systems for ensuring compliance and offer suggestions for best practice environmental management (see BCC 1995-98). Industry-specific environmental hazards might or might not be present at an individual ERA, and the effectiveness of associated environmental management systems may also vary between ERAs. The environmental licences issued by BCC, had been closely linked to the OEGs, requiring operators to meet the management standards described there for each environmental hazard present on a site.

A generic example of a hazard is provided by chemical storage. Most ERAs store, use and dispose of hazardous liquids as part of their operation. Common practice prior to the EPA commonly involved insecure chemical storage above stormwater drains. The OEGs established the standard that such chemicals be stored securely, preferably under cover, and within a bunded[13] area sufficient to hold 150% of the volume of the largest single container of liquid stored there. Materials to safely clean up any spills were also required (BCC 1995-98). This pollution prevention practice would generally reduce both the likelihood of stormwater pollution occurring, and the consequences of any spills that occurred.

Figure 5.5 shows common chemical storage practices before and after these requirements were imposed through the environmental licences. The inherent risk is similar in both photographs, but the residual risk is equal to the inherent risk in the Figure 5.5a chemical storage. In contrast, both the likelihood and consequences of environmental harm in the Figure 5.5b example of bunded, covered and separated wastes.

The first version of CERAM used an industry-specific checklist based on the OEGs to record the presence of specific environmental hazards on a site, and whether the pollution prevention systems recommended by the OEGs were in place for each. The code also indicated which pollution prevention systems had been installed as a result of the EPA. The cost of the improvement could also be recorded, along with operator responses to pollution prevention initiatives (see Section 5.8). After completing over 100 site inspections, the author reviewed the data that had been recorded to that point, and the various policy and statutory documents relating to the EPA, aiming to find a way to quantify the results. A solution was offered by BCC's incentive licence system and its adaptation of the risk management table from the *Australian/New Zealand Risk Management Standard*. The table was being used to qualitatively assess the degree to which an activity's pollution prevention systems were reducing either the likelihood, consequences, or both, of environmental harm.

[13] A bund is a barrier or other structure designed to stop the movement of liquids.

Figure 5.5 Inherent and residual environmental risk and risk reduction through bunding



Figure 5.5a. Chemical storage with poor environmental management. Inherent environmental risk is equal to residual environmental risk.



Figure 5.5b. Equivalent chemical storage with best practice environmental management. Inherent environmental risk is about one quarter that of inherent risk.

Table 5.5 is the CERAM environmental risk table. Table 5.6 gives the definitions of the levels of likelihood and consequences of environmental risks. It proved relatively simple to describe the risk of environmental harm occurring from ERA hazards using the definitions of likelihood and consequences of environmental harm that might result from them. This can readily be done both for the inherent risk (considering the features of the hazards involved in the ERA itself and ignoring the pollution prevention systems), and for residual risk (taking account of those systems). Having described both dimensions of each hazard, both inherent and actual risk of an activity can be located within the risk table. However it is worth noting that individual hazards are often easier to place on a bottom-to-right diagonal, than in an individual cell, since an individual hazard will frequently be less likely to cause a major event, and more likely to cause a minor one.

Table 5.5 CERAM Environmental Risk Table

LIKELIHOOD	CONSEQUENCES				
	5	**4**	**3**	**2**	**1**
A (almost certain)	128 (E)	64 (VH)	32 (H)	16 (M)	8 (M)
B (likely)	64 (VH)	32 (H)	16 (M)	8 (M)	4 (L)
C (moderate)	32 (H)	16 (M)	8 (M)	4 (L)	2 (N)
D (Unlikely)	16 (M)	8 (M)	4 (L)	2 (L)	1 (N)
E (Rare)	8 (M)	4 (L)	2 (N)	1 (N)	0 (N)

N = Negligible L = Low M = Moderate H = High

VH = Very High E = Extreme

Source: Standards Australia 1999. As adapted by Wild River 1997 and BCC 2001.

Table 5.6 Likelihood and Consequence Definitions and Ratings

Likelihood (How likely is the event to occur)			**Consequence** (Significance of associated environmental impact)		
Rating		**Definition**	**Rating**		**Definition**
A	**Almost certain**	The event is expected to occur in most circumstances	**5**	Catastrophic	Disaster with potential to lead to collapse
B	**Likely**	The event probably will occur in most circumstances (e.g. weekly to monthly).	**4**	Major	Critical event, which with proper management , will be endured
C	**Moderate**	The event should occurs at some time ie. once in a while.	**3**	Severe	Significant event, which can be managed under normal procedures
D	**Unlikely**	The event could occur at some time	**2**	Minor	Consequences can be readily absorbed but management effort is still required to minimize impacts
E	**Rarely**	The event may occur only in exceptional circumstances.	**1**	Negligible	Not worth worrying about

Source: Standards Australia 1999. As adapted by Wild River 1997 and BCC 2001.

The key innovation in CERAM's amendment of the risk table from its equivalent in the *Risk Management Standard* is that the qualitative risk ratings in the table have been augmented by the addition of a numeric risk score. The scale in the table ranges from 0 to 128, with risk scores being equal along the bottom-to-right

diagonals. A step down in either likelihood or consequences involves halving of the risk score, so a step down in both results in a risk rating that is one quarter of the original score. This pattern was applied based on the assessment that the practices recommended in the OEGs could readily reduce residual environmental risk from an industry practice to half, quarter or even less of its inherent risk. This assessment was made by this researcher, and checked with BCC's pollution prevention officers who had been conducting EPA site inspections and issuing licences. The relationship between environmental risk scores throughout the table was therefore adopted through experience and collaboration, rather than through direct measurement of environmental harm. Note that the zero in the scale does not imply the complete absence of an environmental hazard but instead, it implies that environmental risk of a zero-rated hazard is so small as to be negligible in comparison with other risks, given present knowledge.

The industry-specific checklists that were used in the BCC Benchmarking Study proved too unwieldy to develop for each ERA that would be included in the Queensland Study. The solution was to develop a generic version. The key to developing CERAM into a generic environmental risk assessment method was provided by the distinction between different environmental values – or environmental risk areas - as defined in Environmental Protection Policies, rather than the different types of industry practices, as in the OEGs. A new, generic risk checklist instead grouped general examples of potentially polluting industrial practices into the environmental risk areas that they threatened. Environmental risk areas are defined in Table 5.7 below, together with examples for each.

Using the generic version of CERAM, risk assessors inspect a site and consider each environmental risk area in turn, observing practices and questioning the site manager about the likelihood of emission of various types of contaminants. Each industry practice that posed an environmental risk is assessed in relation to its inherent and residual risk. The CERAM checklist includes indicative levels for inherent likelihood and consequences of contamination from typical hazards but the risk assessor decides on the appropriate level for each site. The assessor then considers the pollution prevention practices applied to each hazard and estimates whether and by how much each has reduced either the likelihood or consequences (or both) of contamination. This is again recorded for each industry practice on each site. Recent or planned changes pollution to prevention practices can also be recorded. Having completed a site

inspection, the risk assessor uses the table to determine the risk scores for each environmental risk area and for the site as a whole. This gives an opportunity to recheck the accuracy of the assessment, by comparing the scores for different risk areas on the site, and for different sites with similar practices.

Table 5.7 Categories and examples for environmental risk areas

Category	Definition	Examples
Environmental risk area	The type of environmental values that are likely to be affected by a potentially polluting industry practice.	-
Surface water	Point source release of contaminants to surface waters	Discharge of secondary treated sewage into the ocean via a pipe
Groundwater	Release of contaminants to groundwater	Leakage of contaminants from underground petroleum bulk storage tanks
Stormwater	Release of contaminated stormwater off site	Spilt grease and waste oil left on uncovered (eg outside) sealed area
Fugitive Air	Non-point source release of contaminants to the atmosphere (other than odour)	Two-paint paint sprayed outside or dust from unsealed roads
Point Source Air	Release of contaminants into the atmosphere via a chimney or other stack	Emissions from a sugar mill, abattoir, or refinery chimney
Odour	Offensive smell migrating off site	Offensive smell drifting through residential area from tannery
Noise	Emission of noise	Noise from the compressors at a sewage treatment plant disturbing neighbouring resident
Site Contamination	Release of contaminants to land	Waste slag from abrasive blasting left on soil
Waste	Any gas, liquid, solid or energy (or a combination of wastes) that is surplus to, or unwanted from , any industrial, commercial, domestic or other activity, whether or not of value.	Sump oil removed from a car, and stored

Source: Wild River et al 1998[14].

[14] Categories and definitions also in Appendix 1: Thesis category map.

5.7 Lessons from other approaches to environmental risk assessment

Environmental risk assessment must always address a suite of practical issues that can constrain both its accuracy and application. The issues include challenges in obtaining accurate scientific findings, high costs of detailed assessments, the resulting need to screen activities before conducting risk assessments, the translation of risk assessment into risk management and mismatches between public perception and findings just to name a few. This section discusses some issues that pose major difficulties for other environmental risk assessment methods, but which have been resolved by CERAM for practical purposes.

Rigorous environmental risk assessment usually seeks to predict accurately the environmental harm that might result from possible pollution events. Such assessments require extensive information about the contaminants that might be involved and ecological information about the surrounding environment and its capacity to absorb or recover from contamination. Not only are the costs of such intensive studies prohibitive, but the findings are also unlikely to be conclusive because of complexities in the receiving environment and the combinations of chemicals that might be involved (see Sullivan and Hunt 1999).

CERAM bypasses this problem altogether by focusing on the types of processes and contaminants used in operations and the management practices applied to prevent pollution rather than the ecological and public health impacts that might result. Using the risk assessment table, the assessor's general knowledge of industrial pollution issues and the context of an individual site, CERAM estimates the magnitude, rather than the ecological detail of an environmental risk. The efforts already made to ensure that OEGs, environmental licences and other pollution prevention initiatives target key pollution issues, are a valuable background for CERAM risk assessments. The five points on the scales for both likelihood and consequences of contamination are sufficiently spaced to ensure robust and repeatable assessments are made[15]. The

[15] This was demonstrated by comparing the risk scores allocated by the four risk assessors involved in the Queensland statewide benchmarking study. Statistical analysis showed a consistent application by and between the assessors, based on a range of explanatory variables. There is not the scope here to detail that analysis, which the author intends to address in future publications.

exponential rise in risk scores reflecting increasing likelihood and consequences also provide sufficient accuracy in distinguishing different risk levels so that appropriate management decisions can follow. In practice, this means that trained CERAM risk assessors will reliably assign the same risk scores to the same hazards, and that the low risk issues will be clearly and consistently distinguished from high risks using comparative analysis techniques.

The cost and complexity of environmental risk assessment usually makes it impractical to apply the methods at all possible pollution sites. Screening to ensure that risk assessments target those activities with the highest inherent risks is a common response to this problem (see Sullivan 1998). In contrast to other methods, CERAM is quick and simple even at large, complex sites, where CERAM's checklist can be completed in a matter of hours. Part of CERAM's contribution to environmental risk assessment is its ability to perform such screening to rigorously ensure that detailed risk assessments target activities with demonstrably high inherent environmental risks and on those whose residual risks are unacceptably high in proportion to their inherent risks. Both groups can be encouraged or required to implement sound pollution prevention practices, as described in OEGs or equivalent industry environmental standards.

Mismatches between public perceptions and scientific assessments of environmental risk can also inhibit the effectiveness of risk management efforts (see Slovic 1991). CERAM does not solve this problem, but addresses it through simple procedures, coupled with a transparent assessment of different environmental risk areas. These were defined consistently with Queensland's (draft and final) Environmental Protection Policies. So in calculating the total inherent and residual risk score for an activity, the scores can also be summed separately for air, water, noise, site contamination, or practices that will lead to resource wastage rather than recycling. Each environmental risk area is weighted equally, but reporting can highlight risks by the different areas, and therefore highlight the issues where public perceptions differ from a rigorous assessment.

5.8 Assessing other outcomes

As well as measuring environmental risk and risk reductions, the Benchmarking Studies assessed operator responses to pollution-prevention initiatives. A simple 'gap analysis' method was used for this purpose. This gap analysis worked by exploring the 'importance' and 'effectiveness' of various initiatives for information, licensing

requirements, incentives, enforcement and policy development. Operators were asked a series of questions related to each initiative. In each case they were asked to rate the initiative's general importance for environmental protection efforts, and then its effectiveness in driving that operator's environmental improvements. This was done on a scale of one to five, where five was critically important or completely effective, and one totally unimportant or ineffective. Using this method, a 'gap' between the importance and effectiveness rating indicates dissatisfaction with the initiative. This provided the Studies with the capacity to analyse the relationship between environmental outcomes and operator responses, as well as the responses themselves.

Table 5.8 lists the questions that were included in the gap analysis. These are grouped into five main areas, that were derived through inductive analysis of aspects of BCC's pollution prevention initiatives and those used across Queensland as a whole. Operators were also encouraged to provide open-ended comments about any aspects of the EPA, and these also supported inductive analysis for grouping the individual questions within these main areas. In particular, the first proposed grouping included issues relating to inspectors in the enforcement initiative. However it was clear from the open-ended responses that operators valued the information they received from these inspectors, and rarely recognised them as performing an enforcement role. Three of the questions were used to define explanatory variables. Operators' responses to the question about recognising links between environmental management and efficiency were later used to derive the explanatory variable of 'environment/efficiency link'. They were also asked whether they were members of industry associations, and asked to confirm whether, and what type of IEMS licence they had (see Table 5.3 above).

Operators were also asked to estimate the amount of money they had already spent complying with the EPA, and the amount they currently had budgeted to meet their new environmental requirements. They were generally easily able to answer these questions, since they were all too aware of the compliance cost to their businesses.

These questions that were asked of operators were further augmented by a 'triangulation' survey that was used with administering authorities. This survey was the research tool used to determine the approach of each administering authority to environmental licensing and whether they issued specific or general licence conditions. The survey also posed other questions that are reported in Chapter 6. These were:

- What are the best things for administering authorities about the EPA?
- What are the worst things for administering authorities about the EPA?

- What are the main benefits of the IEMS licences? And
- What are the main costs of the IEMS licences?

Because these questions were asked of people with both SG and LG perspectives, and therefore potentially different perceptions, the questions enabled analysis of these issues in relation to the local-state antinomy.

Table 5.8 Response to initiatives questions

Statements and broad initiative	Questions
Information	
The government has developed guidelines and codes of practice spelling out environmental goals and standards.	How important has this information been? How effective was it in explaining changes you needed to make?
Government inspectors give feedback about environmental performance of licensed activities.	How important has this feedback been? How effective was it in explaining changes you needed to make?
Are you a member of an industry association? Which one? *If yes to industry association*	How important is information you receive from your industry association in explaining your environmental responsibilities? How effective has it been in explaining your environmental responsibilities?
The EPA has had a lot of media attention over the last few years.	How important has this information been in telling you about the EPA? How effective was it in encouraging you to support the EPA?
Licence structure and conditions	
The government has worked to make the licence application and renewal forms simple, easy to use and valuable to you.	How important is it that these forms are simple and useful? How effective has the government been in making them simple and useful.
Your environmental licence sets out conditions that aim to reduce the risk of pollution from your workshop.	How important is it that these conditions are clear, achievable and enforceable? How effective are they in being clear, achievable and enforceable?
IEMS status	Do you have an IEMS licence? (If yes) are all of the activities on the one site, or on different sites?
If IEMS. Your integrated licence gives you a licence fee reduction but requires a comprehensive environmental management system.	How important is this licence structure for recognising and reducing environmental risk? How effective is the IEMS process in helping you to identify and reduce environmental risks?
Enforcement	
The government is committed to enforcing environmental laws consistently across all industry sectors.	How important is this consistent enforcement? How effective has the government been in ensuring that all industries are equally affected?
The EPA carries high penalties, including possible imprisonment for serious environmental offences.	How important are strict laws like this? How effective are the high penalties in encouraging good environmental performance?
The EPA also gives protection to operators who report pollution incidents.	How important is this protection in helping you to work with the government to reduce pollution? How effective has the protection been?
Incentives	
The government has introduced licence fee reductions for operators with low environmental risk.	How important are these licence fee reductions? How effective are they in encouraging and rewarding good environmental performance?
Measures that protect the environment can also increase efficiency in the workplace.	How important are these efficiency gains in encouraging you to improve your environmental practices? How effective are environmental initiatives in reducing costs?
Many people prefer to use services with good environmental performance.	How important has this been for your business? How effective is improving environmental performance in attracting and keeping customers?
Scope and focus of environmental	**regulation**
The EPA targets businesses with high pollution potential.	How important is it that the Act focuses attention on operations with high pollution risk? How effective is the Act in achieving this focus?
(f renting)	How important is it that the landlord installs complying infrastructure? Is your landlord installing infrastructure that will help you comply?
Different government departments and LGs are working together to implement the EPA.	How important is effective coordination between government agencies? How effective have the different agencies been in consistently administering the EPA?
The EPA encourages recycling and safe waste disposal.	How important is it that there are options for recycling waste? How effective are these options?

Source: Queensland Benchmarking Study survey.

5.9 From assessment to management

Although CERAM was initially developed to assist administering authorities to benchmark the effectiveness of their implementation of the EPA, it was quickly also shown to have value in assisting local authorities' own environmental management. Immediately after the completion of the Queensland Benchmarking Study, both BCC and the Australian National University (ANU) began using the generic version of CERAM to assess and compare the environmental risk of activities that they operate. In this regard, the ANU was acting as a 'local authority', being the sphere of legitimate authority that was closest to the people and environment at the university. BCC and ANU were so satisfied with early results from their assessments that they have both now adopted CERAM as their main corporate environmental risk assessment and management method.

ANU and BCC's use of CERAM for their own environmental risk management presented opportunities for this researcher to engage in new action research cycles with those authorities. They also helped to inspire case studies Q3 Brisbane City Council - leading by example with environmental protection and A1 – ANU environment management planning, although both case studies take a broader perspective, rather than limiting their focus to the use of CERAM. Beneficial environmental outcomes have also resulted in both cases.

The BCC and ANU adoption of CERAM demonstrates that it has value from inside-out perspectives, as well as the outside-in perspectives that were the focus of the Queensland Benchmarking Study. This suggests that CERAM has the potential to integrate between the two sides of the local-state antinomy. CERAM's apparent value for both sides of the antinomy derives from its development and simultaneous grounding in both SG legislation and LG implementation systems. This approach of learning from both spheres will be addressed further in the thesis synthesis in Chapter 9. However the outside-in study of LG implementation of SG legislation is the main topic of Chapters 5 and 6, and the thesis now returns to that focus, rather than CERAM's integrating potential.

5.10 Conclusions

This chapter has introduced the methods used in the thesis' major outside-in study. It detailed the statutory, political and practical contexts for LG implementation of the EPA and discussed LG and SG pollution prevention initiatives. It discussed the issues that were expected to contribute to variation in the environmental outcomes from the EPA and outlined the stratified random sampling process that would enable statistical analysis of environmental risk, risk reduction, and operator responses to pollution prevention initiatives, in relation to 14 explanatory variables. It also described the development and application of CERAM, which can be used to quantify and compare inherent and residual environmental risks. Chapter 6 reports on the findings from the Queensland Benchmarking Study, and its implications for the local-state antinomy.

Chapter 6. Environmental risk study findings[1]

6.1 Introduction

The Brisbane City and Queensland benchmarking studies enabled analysis of the environmental and other outcomes from the Queensland *Environmental Protection Act 1994*. This was an attempt by the Queensland SG to deliver beneficial environmental outcomes, through and with LGs. This chapter presents the findings from the studies in relation to elements the local-state antinomy. Table 6.1 below provides the structure and focus for the discussion in the rest of the chapter. In the left hand side column, the table lists each element of the local-state antinomy that was introduced in Table 4.2. Responses to the triangulation survey that was conducted with EPA authorised persons about the best and worst things about the EPA are also included. Sections of the chapter then take each element of the antinomy in turn and present the quantitative findings associated with that element, based on the emergent issues from Table 6.1. This approach was adopted for the purpose of clarity, since many of the findings relate to several of the antinomy elements.

This chapter presents that subset of findings from the Brisbane and Queensland benchmarking studies that give most insight into the local-state antinomy. It is important to note that while the EPA was a largely outside-in initiative, this study incorporates perspectives from inside and outside LG. It is an integrated study of an outside-in initiative[2].

[1] All of the statistical analysis presented in this chapter was performed by Ross Cunningham and Christine Donnelly from the Australian National University Statistical Consulting Unit. The thesis author was responsible for presenting the data in an appropriate format, deciding which issues were to be explored in the analysis interpreting and writing up all of the findings. The data set and graphs in this chapter are included in Appendix 3.

[2] Other detailed findings, including the statistical analysis are presented the Brisbane and Queensland Benchmarking Study reports. These are included in Appendix 3 on the accompanying CD-Rom.

Table 6.1 Environmental Protection Act - best and worst things for administering authorities

Elements of the antinomy	Best things	Worst things
LG leading and responding to the community	The impetus, powers and opportunities to bring about better environmental performance in the local area.	Legislation is inconsistent, incomplete, and constantly changing without its problems being fixed. It is hard to convince industry that it's worth it.
Resource shortages	The user-pays principle is a sound basis for the costs associated with the EPA.	Administrative, licence and compliance costs are unjustifiably high.
The potential for SG/LG partnerships	The support network through devolution working groups and informal communication with DoE.	LGs not treated evenly across Queensland and not enough recognition of LG as a legitimate government.
Efficiency and effectiveness of service delivery	Well structured legislation with flexibility in some areas and reasonable time frames for administrative procedures.	Administrative processes are unwieldy and impractical.
The politics of LG and SG institutions	The EPA brings an awareness of environmental protection issues and a stimulus for LGs to improve their own environmental performance.	Inconsistency in policy approach between DoE central and regional offices. Difficult for EHOs to advise the rest of council on the EPA without all of the regulatory components in place.
The knowledge base of both spheres of government	The EPA and associated regulations, guidelines and policies provide impetus and information to support environmental protection.	Insufficient and ambiguous information, with inappropriate standards were provided. This meant that inspectors could apply inconsistent requirements.
The diversity between LGs	The EPA's equal treatment of polluting activities throughout Queensland, with the capacity for flexibility when needed.	Operators in remote and poor areas are unable to afford licence fees and compliance costs.
The integration of policy that occurs in LG	The EPA is useful in integrating trade waste management, ozone depleting substances and waste legislation with environmental issues generally.	Inconsistencies between regional implementation and which activities are clearly included in the legislation. This means that pollution prevention outcomes are inconsistent.

Source: Triangulation survey. Queensland Benchmarking Study. Previously unpublished[3].

The quantitative findings in this chapter are presented in several ways. Graphs showing environmental risk findings that were statistically significant are presented along with the probabilities of incorrectly claiming a significant outcome. This 'p' value was estimated separately for inherent, 1995 and 1998 environmental risk, as indicated in

[3] Appendix 3 also presents the detailed survey responses that led to the summaries in Table 6.1.

the key to each graph. Environmental risk reductions were also statistically analysed[4], and text references to these reductions include the associated 'p' values. CERAM's logarithmic scale meant that there was very great variation between environmental risk scores, and so these are converted to their natural logarithms for the purposes of the analysis and graphical representation. Statistical analysis was also used to determine differences in responses to pollution prevention initiatives. Graphs of these findings are not presented, but the 'p' value is included in the text references to specific findings.

The responses to initiatives are presented graphically in two different ways. Figure 6.7 presents the mean responses to each of the initiatives questions, ranking these from most to least important. In the four other graphs showing responses to initiatives, individual responses are grouped according to whether respondents considered the initiatives to be:

- both important and effective (both scores over three),
- important but ineffective (importance over three and effectiveness three or less),
- neither (both scores three),
- unimportant but effective (importance three or less and effectiveness over three), or
- unimportant and ineffective (both less than three).

The percentage of respondents in each category is shown by the bars the graphs. None of these graphs are directly linked to the statistical analysis, so 'p' values are not shown. Where statistically different responses were found between operator responses to initiatives, these are reported in the text.

Finally, graphs are also used to summarise some of the open-ended responses made by operators during the interviews. The categories in each of these graphs are summary statements induced from the comments, and expressed as positive comments about the EPA and its implementation, such as 'compliance cost effective'. The graph then indicates the number of respondents who volunteered either the positive viewpoint, or its negative counterpart.

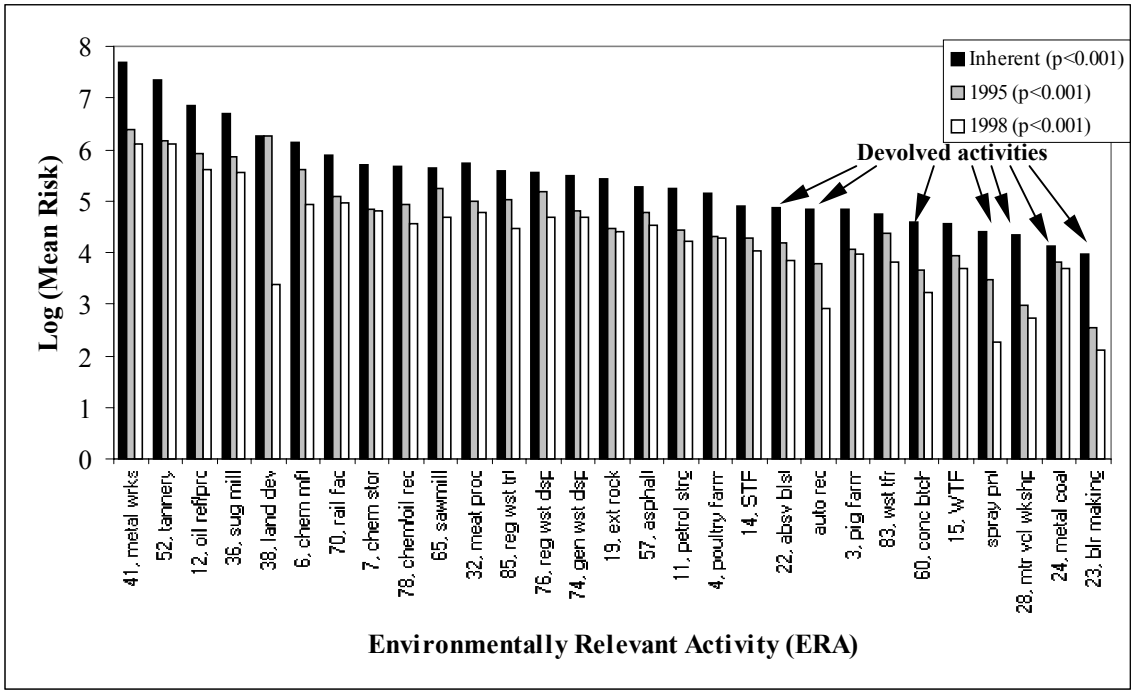
[4] Risk reductions were calculated as *Risk Reduction = Log (1995 Environmental Risk – 1998 Environmental Risk)*. A discussion of this calculation is in Section 3.3.4 of the Queensland Benchmarking Study Scientific Report on Detailed Methods and Findings in Appendix 3.

6.2 Local government leading and responding to the community

The elements of the local-state antinomy shown in Table 4.2 include LG leading the community, and LG responding to the community as two separate elements. However the findings from the benchmarking studies did not support analysis along these lines because of the outside-in nature of the EPA initiative. Certainly, the EPA enabled LGs to lead parts of their local business communities towards better environmental protection outcomes. But LGs were constrained in responding to business communities demands for more equitable application of the legislation, since the SG was responsible for the legislation and for amending it to better address emerging problems. For this reason, this section combines issues associated with LGs' leadership, and their responsiveness to the ERA operators and the broader business community.

A key finding from the Queensland Benchmarking Study was that significant environmental risk reductions were achieved by all of the surveyed ERAs and industry sectors, throughout Queensland ($p<0.001$). Overall, environmental risk among the surveyed operations was reduced by 41 per cent over the first three years of EPA implementation. Figure 6.1 shows inherent, 1995 and 1998 environmental risk for each of the surveyed ERAs. The graph also shows significant differences in the inherent environmental risk between ERAs, and that the devolved activities include most of the ERAs with the lowest inherent risks. Differences in the degree of environmental risk reductions between ERAs are also apparent, with some activities such as land development, spray painting and automotive recycling showing very significant risk reductions between 1995 and 1998. Others, such as metal surface coating, rock extraction and poultry farming demonstrated lower environmental risk reductions ($p<0.001$).

Figure 6.1 Environmental risk by Environmentally Relevant Activity



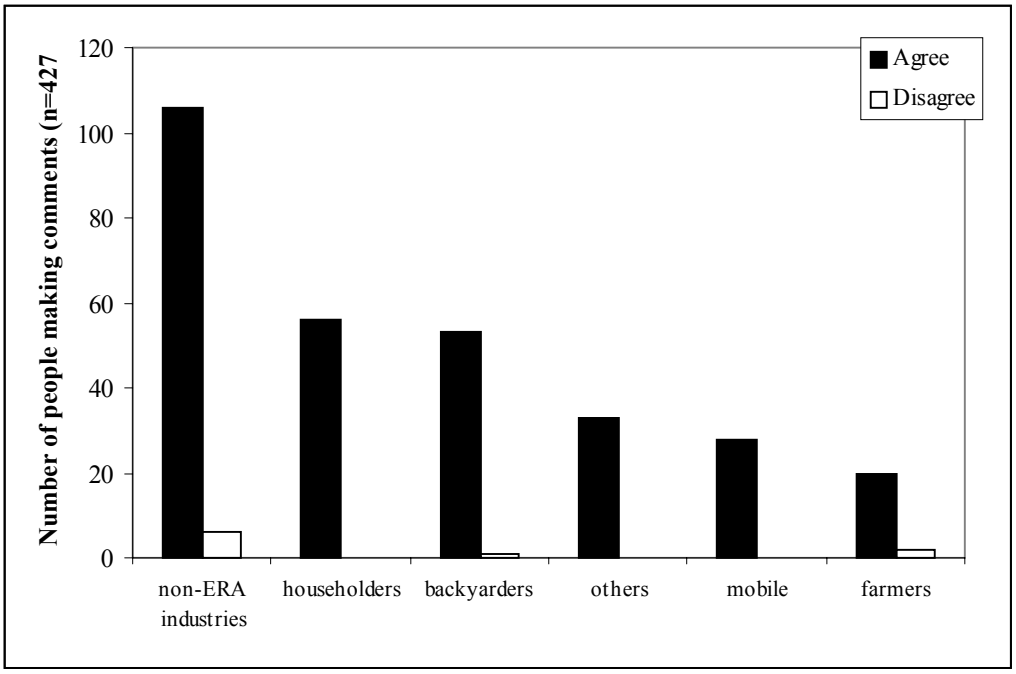
Source: Queensland statewide benchmarking study database

LG capacity to respond to business community concerns about the EPA was limited by the definitions of ERAs provided in the *Environmental Protection (Interim) Regulation 1995*. Devolution had provided LGs with all of the powers of the EPA, but only for the devolved ERAs. They had no new environmental protection powers over non-ERAs. In early implementation, it very quickly became apparent that many non-ERAs in local areas had similar pollution problems to the devolved ERAs. In addition, some individual ERAs had fewer pollution risks than some of the non-ERAs. The definitions of many ERAs were often ambiguous, so that it was difficult to tell whether an operation was an ERA or not. As a result of these issues, LGs were restricted from addressing some obvious pollution issues in their local areas, while focusing their attention on a restricted set of premises.

Figure 6.2 shows the open-ended comments that were made by operators about non-complying non-ERAs. These comments stem from the problem discussed in Section 5.3, whereby the ERA list failed to effectively include all of the most troublesome local polluters, or to exclude businesses with minimal pollution risks. This perceived inequality was a major source of anger and frustration among licensed ERAs, who generally had little patience with the statutory limitations to a more equitable system. Three major groups are clearly identified here as causing frustration to the ERA

licence holders. These included businesses with similar pollution risks to ERAs, but which were not ERAs under the EP Regulation, and activities that would have been classified as ERAs if they had operated from an industrial estate, rather than commercially or non-commercially from operators' homes.

Figure 6.2 Operator open-ended comments about observed non-compliance



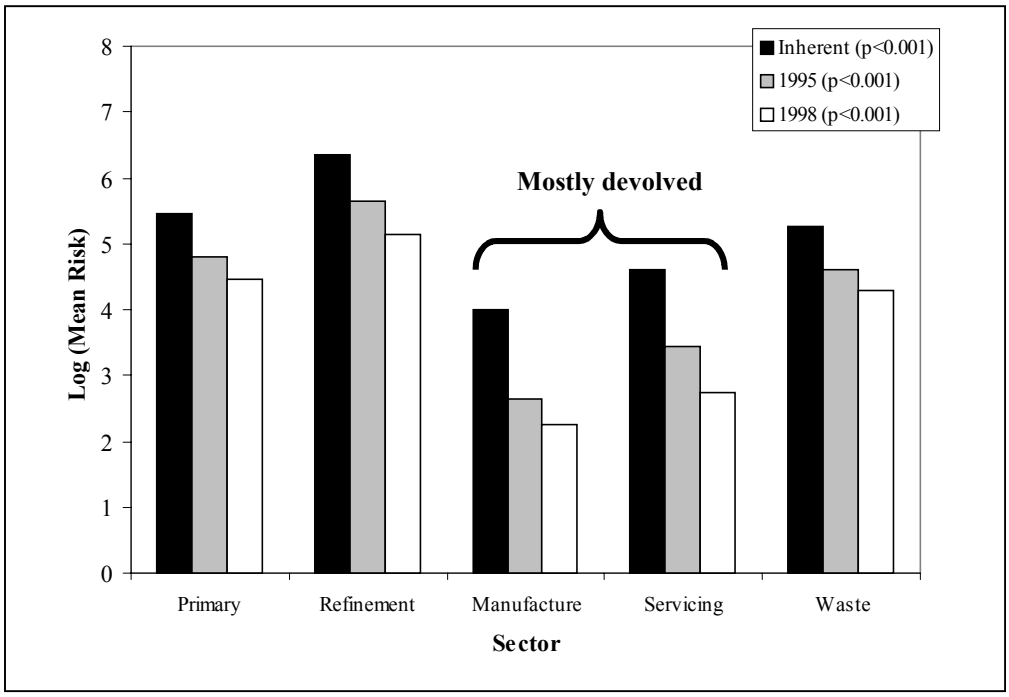
Source: Queensland statewide benchmarking study database

Many of these problems could well have been avoided. The system in Queensland would have been better if LGs had full environmental protection powers for all activities whose pollution impacts focused in their local areas, and where those impacts were relatively minor in the statewide context. LGs would also benefit from a simple, robust and consistent method for defining which activities required ongoing attention, and might therefore be required to hold environmental authorities. However any such system would also need to meet SG requirements for statutory tools, clarity and certainty. The results of this research suggest options for designing such a system.

Some insights towards this came from some further analysis, conducted after the Queensland Benchmarking Study report was complete. After careful scrutiny of the environmental risk findings by ERAs, this author recognised that the patterns in inherent risk seemed to fit into natural groupings with a more solid theoretical basis than the ERA categories. It seemed that industry sectors could be defined in terms of the transition of materials from natural resources through finished products, to wastes, and

that the patterns of environmental risk would be different for each sector. Figure 6.3 shows the results of that analysis, and confirms that these broader industry sectors effectively describe patterns in environmental risk ($p<0.001$). A further observation was that the devolved activities form natural groups, since most are within the 'manufacturing' and 'servicing' sectors that also have the lowest inherent environmental risks. This analysis suggests a sound logic in designing a devolution program that passes environmental protection responsibilities for manufacturing and servicing sectors to LGs. However this would also be too simplistic, since some manufacturers and servicing operations have such low environmental risks that they don't warrant environmental licensing.

Figure 6.3. Environmental risk by sector.



Source: Queensland statewide benchmarking study database

CERAM – the methodology that was developed for the benchmarking studies, provides a possible solution to this problem. CERAM inspections in most manufacturing and servicing operations take around 20 minutes to complete, and are simple, robust and transparent. The resulting numeric inherent and actual environmental risk ratings provide possible anchors for environmental authority policies. For instance, the mean inherent environmental risk in the manufacturing sector is 54 CERAM

environmental risk units[5]. Regulations or policies could set this as a level of inherent risk requiring environmental licensing, regardless of the type of operation.

Environmental regulation of particular operations could also consider their residual risk. This could be done using either absolute or proportional values for residual environmental risk. Using absolute values, activities with a residual environmental risk of (for instance) more than 12 CERAM units might require environmental authorities. Using the proportional approach, activities with a residual environmental risk of over 25 per cent might require authorities. Both suggested cut-offs reflect the observed patterns from the Benchmarking Studies. In both cases licenses might be swapped for one-off approvals once a compliance target had been reached. Since the Benchmarking Studies were completed, both the Australian National University and Brisbane City Council have used CERAM in this way in identifying and addressing their environmental risk issues (see Wild River 2002 for example)[6].

Obviously, various practical, political and legal issues would need to be addressed before such ideas could be put to action. The key point here has been to outline the constraints faced by LGs in responding to community concerns about environmental protection matters. In particular, restrictive ERA categories that formed the boundaries of devolution restricted LG capacity to lead many local polluters towards better environmental management, or to avoid undue attention on ERAs with low pollution risks. Possible solutions to these problems, that empower LGs to act effectively and consistently to reduce local pollution appear possible. If explored, these could increase LG capacity to deliver beneficial environmental outcomes.

6.3 Resource shortages

Two key resource issues were raised by the early implementation of the EPA and highlighted in the benchmarking studies. These are compliance costs and licence fees, and they are discussed in this section.

A high proportion of operators had to invest to comply with the new environmental protection requirements under the EPA. This data was gathered by asking operators how much they had already invested, and how much they currently had

[5] Inverse the natural logarithm of the graphed risk score.

[6] In Appendix 3

budgeted, in order to meet their EPA compliance requirements. The data were analysed in relation to the licence type, and there were significant differences between licence types, both in terms of the likelihood and amount of investment ($p<0.001$ in both cases). Table 6.2 shows the percentage of operators of each licence type who invested to comply, the sample mean investment and the upper and lower confidence limits on that investment. These compliance costs were far higher than the licence fees for many business in during early EPA implementation. The associated inherent environmental risks and 1995 and 1998 residual risks for each licence type are shown in Figure 6.4, and these largely correspond with the mean investment, in that higher risk activities spent more on compliance than those with less risks.

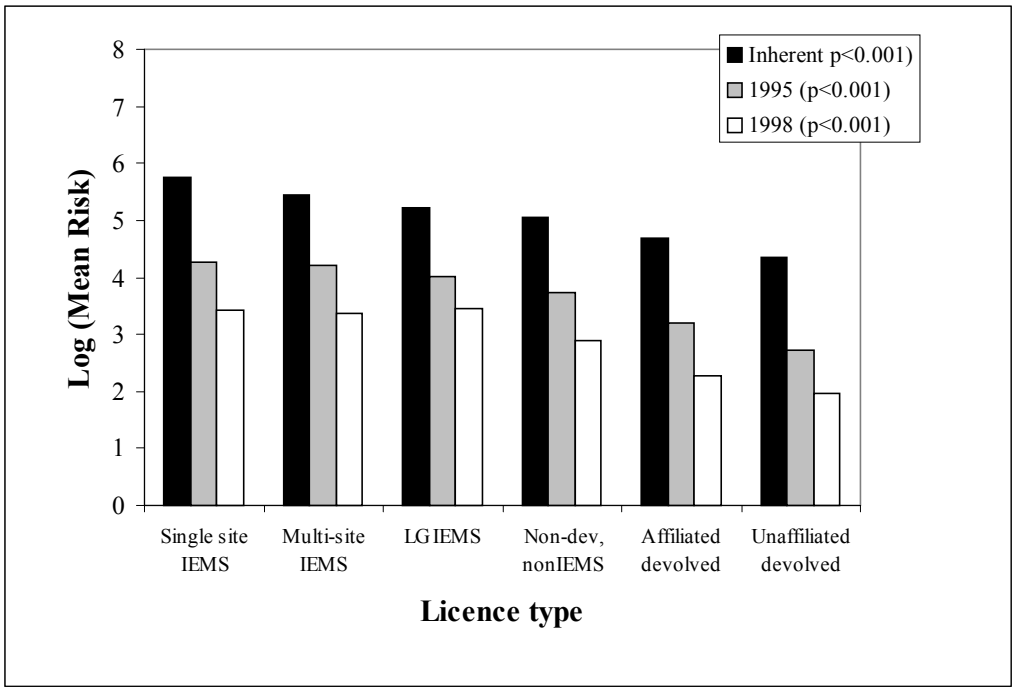
Table 6.2 Environmental Investment and Budget Due to EPA

Licence Type (Level of Integration)	% Invest-ing	Sample Mean Investment ($)		% Budget-ing	Sample Mean Budget ($)	
		Lower confidence limit	Upper confidence limit		Lower confidence limit	Upper confidence limit
Multi-site IEMS	79	**23,800**		43	**80,900**	
		6,400	88,000		11,700	560,700
Single site IEMS	88	**185,200**		30	**243,400**	
		82,800	414,200		50,100	1,182,300
Non-devolved non-IEMS	67	**29,900**		14	**97,900**	
		12,400	72,600		11,700	816,100
Non-affiliated devolved activites	39	**3,400**		9	**5,700**	
		2,200	5,300		1,300	25,600
Affiliated devolved activities	68	**8,700**		14	**51,400**	
		3,700	20,300		3,300	795,400
Local Government IEMS (per site)	57	**49,600**		28	**216,600**	
		20,100	122,400		51,900	905,000

Note: Confidence limits relate only to that percentage of operators within each licence type who invested to comply, or have current environmental protection budgets. Of those investing, 95 per cent invested or budgeted between the upper and lower confidence limits.

Source: Queensland statewide benchmarking study database

Figure 6.4 Environmental risk by licence type



Source: Queensland statewide benchmarking study database

The compliance costs involving LGs and the devolved ERAs warrant some further comment. Devolved unaffiliated activities are those devolved operations that are not part of a franchise or other business group. This is by far the most numerous licence type, and it also had the both lowest likelihood of investing and the lowest mean investment. Many of these operators managed to deliver environmental risk reductions at no cost, since the changes they had to make were often simple and minor. Although this study did not investigate the issue, reports from LG authorised persons during early implementation suggested that around 70 per cent of these operators had not previously understood the difference between the stormwater and sewerage drains that left their premises[7]. Because of this, significant reductions in stormwater pollution could usually be achieved simply by shifting a waste stream from one drain to another, often at no cost. Many of these operators were also required to provide a bunded, covered area for liquid wastes. But they were often able to build their own new infrastructure with no reported financial outlays. The results here reflect the discussions and negotiations between LG authorised persons and local business people who worked together to find practical and cost-effective solutions to problems that had not previously been

[7] Reported at Devolution Working Groups throughout Queensland over the first two years of EPA implementation.

understood by operators. The franchised devolved ERAs often had similarly simple changes to make, but sometimes faced higher costs due to additional standards set by their parent companies.

The relatively low percentage of LG IEMS making investments and amount of investment compared with other IEMS reflects the study methods that considered each LG ERA activity separately, rather than the IEMS as a whole, as was the case with the two other IEMS categories. The overall compliance costs facing each LG were certainly on par with the other IEMS licence holders. The relatively high budgets compared with past investments reflects both the necessity of fitting new LG investment into regular government budget cycles, and also the slow SG completion of new requirements for landfills and other waste facilities. This restricted LG investment in better waste systems in the short term, while they waited for the information to be made available. The lack of information was a source of frustration, and public authorities (mainly LGs) were more frustrated with the information provided by administering authorities (in this case SG), than were private operators ($p<0.04$). Thus LGs were relatively successful in helping to minimise the compliance costs of many devolved activities, but faced difficulties in determining their own compliance requirements, due to the limited information provided by the SG in early EPA implementation.

The environmental investment findings were also linked with the environmental risk reductions during data analysis. The results included the induction of a relationship between investment and risk reduction. The results of analysis showed that:

$$\textit{Cost of environmental risk} \propto \textit{risk}^{1.5}$$

Another way to describe this relationship is that:

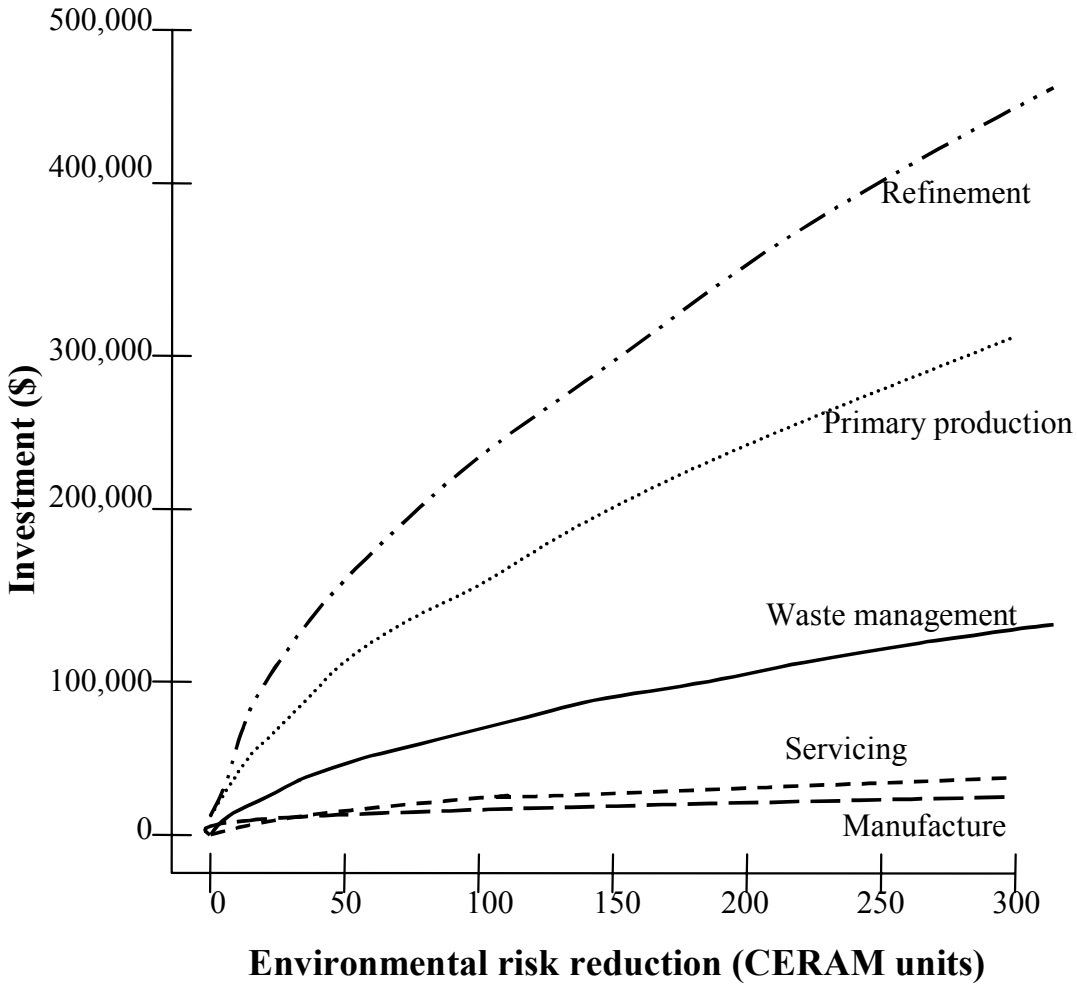
$$\textit{Log cost} = \textit{constant} + 1.5 \log \textit{risk}$$

Where the constant changes with industry type (see Figure 6.5 below).

This means that as a general rule, a 1 per cent reduction in environmental risk will add 1.5% into baseline environmental compliance costs. The exact amount of cost and risk reduction varies depending on which part of the scale is being used (how high or low the baseline costs or risks are). For example, if an operator spent $10,000 and had managed to decrease their environmental risk by 10 per cent, then increasing their risk reduction by an additional 1 per cent would require an additional $150 (1.5 per cent) in expenditure. Knowledge of this relationship between cost and risk could assist

administering authorities or businesses in estimating the likely costs of changes to compliance requirements. To help make this finding more generally applicable, sets of risk and cost multipliers were calculated for each of the generic industry sectors identified in Figure 6.3. Figure 6.5 shows the relationship between cost and risk for each of those industry sectors, and tables to assist calculation for individual operations are presented in Appendix 3[8].

Figure 6.5 Relationships between cost and risk for different industry sectors



Source: Queensland statewide benchmarking study database

[8] See Appendix 3.

Licence fees were the second major resource issue facing ERA operators. Three strategies for reducing the burden of licence fees for operators were outlined in the previous chapter. These were the IEMS licence system for operators of multiple ERAs (discussed further in Section 6.6), the fee relief payments whereby the SG paid devolved activity licence fees for more than a year in early implementation, and the fee relief systems that could be developed and applied by administering authorities.

The fee relief payments made by SG to LG in lieu of devolved activity licence fees certainly eased both LGs and devolved activity operators into the EPA licensing system. But once an activity was identified by LG as an ERA, and issued with an environmental licence, an ongoing licensing arrangement was established, and LGs had to decide what fees to charge in later years. Table 6.3 shows patterns of LG licence fee reductions that were finally adopted by LGs for devolved activities. The table identifies three main sources of variation in licence fees, based on the findings from triangulation survey interviews. The standard reduction noted here occurred when a LG reduced all devolved licence fees, regardless of the level of compliance that was achieved. Local population, approach to environmental regulation and the health of the local economy all influenced the licence fee decisions made by LGs. Licence fees were often as low as zero for sparse LGs, with moderate or low-level approaches to environmental protection and in areas with depressed local economies.

Table 6.3 Patterns of Local Government Licence Fee Reductions

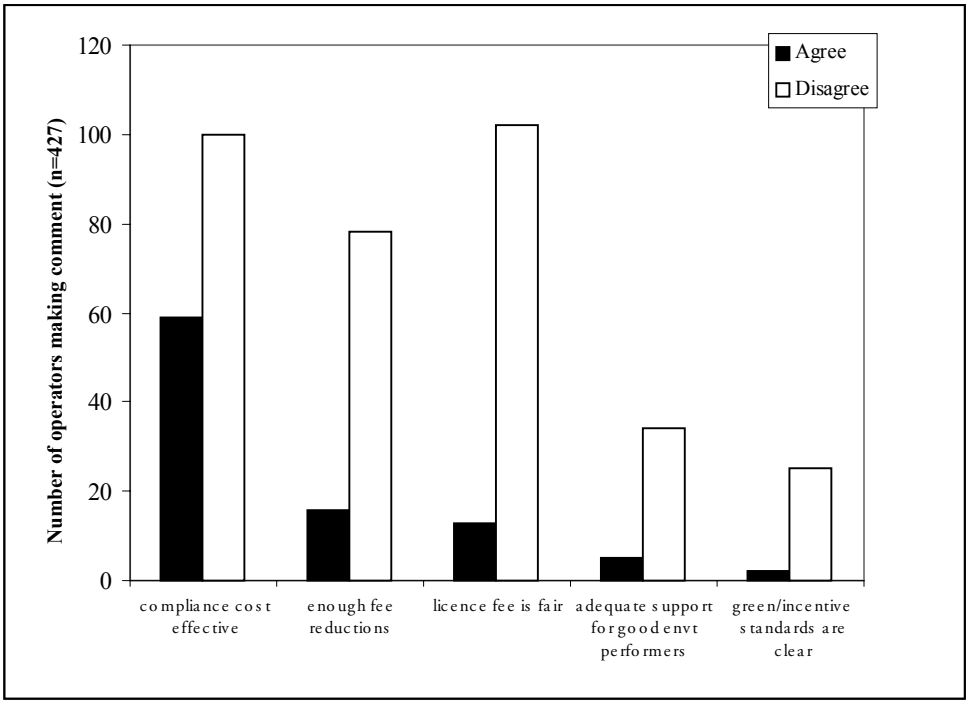
	Full Scheduled Fee	**Standard Reduction**	**Incentive Licence**
Populous Councils	Often	Rarely	Sometimes
Sparse Councils	Rarely	Often	Rarely
High Level Approach	Sometimes	Rarely	Often
Moderate Level Approach	Often	Sometimes	Sometimes
Minimal Level Approach	Rarely	Often	Never
Local Economy OK[9]	Sometimes	Sometimes	Sometimes
Depressed Local Economy	Rarely	Often	Rarely

Source: Queensland Benchmarking Study triangulation survey results.

[9] Local economic conditions estimated on the basis of comments from administering authority representatives and local business people surveyed.

Interestingly, although no devolved activities paid fees in the first year, and although afterwards most received some sort of licence fee reduction, it was still common for operators to consider that the licence fees were too high. This is problematic for environmental regulation, since the licence fee provides the budget for LG environmental protection efforts in Queensland. When no or low fees are charged, the devolution program becomes an unfunded new statutory burden for LGs. Figure 6.6 shows operators' open ended comments about both compliance costs and licence fees. Negative comments outweighed positive comments in each case. But a greater willingness to pay compliance costs, rather than licence fees is suggested. There is also a disturbing suggestion that the incentive systems, intended to reward good operators, were not clear and since few commented on them, they may also not be accessible or particularly rewarding.

Figure 6.6 Operator comments about the costs of environmental protection



Source: Queensland statewide benchmarking study database

The lessons from the benchmarking studies about resource shortages hinge on the balance between financial costs and practical outcomes. Operators certainly demonstrated a willingness and ability to pay for environmental improvements. But they were far less happy to outlay finances to support administrative systems, including the licence administration system.

6.4 The potential for partnerships between state and local governments

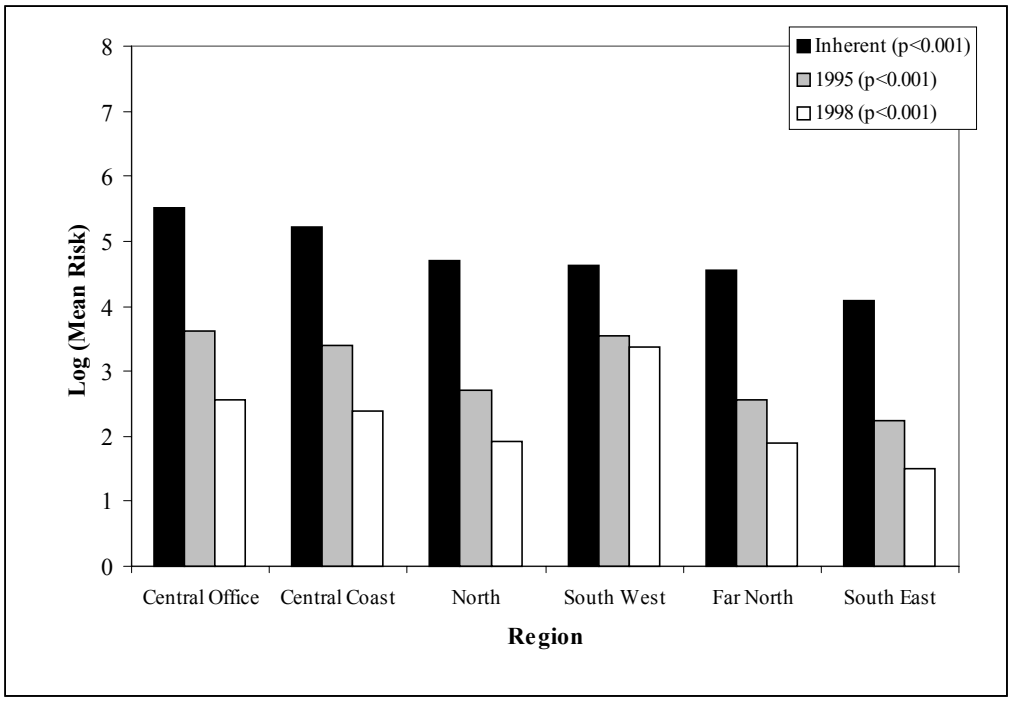
One of the most surprising outcomes from the Queensland Benchmarking Study was that there was no evidence that LGs and SG administering authorities had achieved different outcomes under the EPA. This was both in relation to environmental risk reductions, and also other responses to pollution prevention initiatives. This finding was directly counter to this researcher's prediction that LGs would deliver greater beneficial environmental outcomes, and more positive responses to initiatives because of their closeness to communities and environments. Similarly, there was no evidence of any differences in environmental risk reductions between public (mostly LG) and private operators.

Instead of these anticipated differences, significant differences in inherent environmental risk, residual risk in 1995 and 1998, and environmental risk reductions were found between the five different regions of Queensland. Activities licensed by Central Office, which included all those which operated across regions, were also significantly different. This suggests that instead of LG and SG operating as completely autonomous spheres, they had worked in partnership within the regions, delivering consistent outcomes across the spheres. Figure 6.7 shows these findings.

Different responses to pollution prevention initiatives were also apparent between regions. Environmental risk reductions in the South West region for instance, were lower than those in the South East. There were also different responses to pollution prevention initiatives between these regions. Dissatisfaction with enforcement, incentives and the clarity of licences were lower in the South West than in the South East ($p<0.001$, $p< 0.04$ and $p<0.005$ respectively). A brief discussion of the implementation strategies used in these two regions will help explain how these regional patterns emerged and what lessons may be learned from them[10].

[10] These two regions were also chosen for this discussion because of the inherent contrasts that are discussed, and because they are the ones where this researcher did most of her environmental risk assessments and interviews for this project, and so had greatest insight into the broader regional context and issues.

Figure 6.7 Environmental risk by region



Source: Queensland statewide benchmarking study database.

The South West Region is the most extensive of the five DoE Regions, and has a sparse population, and great distances between its many small to medium urban centres, minimising direct competition between firms. Agricultural activities make up much of the region's economy and the South West had been economically depressed for many years due to the impacts of a serious extended drought. EPA implementation had an uphill battle in the South West, with media attention, and various other public information sources focusing on perceived negative aspects of new environmental protection laws. Despite this, the Queensland Benchmarking Study found a strong sense in the South West that ERA operators have a great personal concern for environmental protection. In open-ended responses to the survey questions, many argued that their small, dispersed communities are more closely linked to, and knowledgable about local environmental conditions than operators in larger population centres.

In recognition of these regional conditions, LG and SG administering authorities within the region adopted 'low' to 'medium' level approaches to administering the EPA. For example, IEMS licensing by the SG South West Regional office was a gradual process, allowing extra time for operators to develop IEMS, compared to the processes in other regions. Most LGs in the South West Region also charge far less than the annual licence fee in the EP Regulation, with some administering authorities

charging no fee at all, or a nominal fee. These strategies were discussed in the regional Devolution Working Group, so authorised persons from all of the LGs and the DoE were aware of their relatively similar approach. In the small communities that characterise the South West Region there are often very few of any ERA type in any particular town, so competition between firms is limited and retention of the services provided by each operator is valued. Authorised persons tend to have good knowledge of local businesses, and have tended to favour direct contact on site over written information about compliance requirements and licence conditions.

In contrast, the South East Region is the most compact and populous region. Direct competition between most types of activities is a feature in South East Queensland. South East Queensland has been among the fastest growing regions in Australia in terms of population for some time, and has had relatively favourable economic conditions compared with the South West. With hundreds of ERAs to licence, authorised persons in the South East rarely have personal knowledge of all local ERA operators. There was a focus on written licence conditions and guidelines for communication between operators and authorised persons.

LG and SG administering authorities in South East Region generally took a 'high' level approach to implementing the EP Act. Tough standards were set, and administering authorities place a high emphasis on consistency of these standards across local boundaries. Again, all of these issues were regularly discussed in the regional Devolution Working Group, so different LGs were aware of the approach being taken by one another.

The Benchmarking Study findings address the question of which approach was most successful. The approach taken in the South East delivered greater beneficial environmental outcomes in the short term, but left operators more frustrated with pollution prevention initiatives. In the long term, it seems likely that the approach in the South West may maintain positive relationships between government and industry and may therefore encourage gradual but substantial environmental improvements in the long term. The strategies may have left operators equally satisfied had the entire statutory system been in place from the start, so that they could have been convinced that the EPA was being implemented and enforced equitably.

Two main lessons emerge about the potential for partnerships between SG and LG spheres of government. First, it is clear that LG and SG can both be sensitive to regional needs, and can work consistently together for regional beneficial environmental

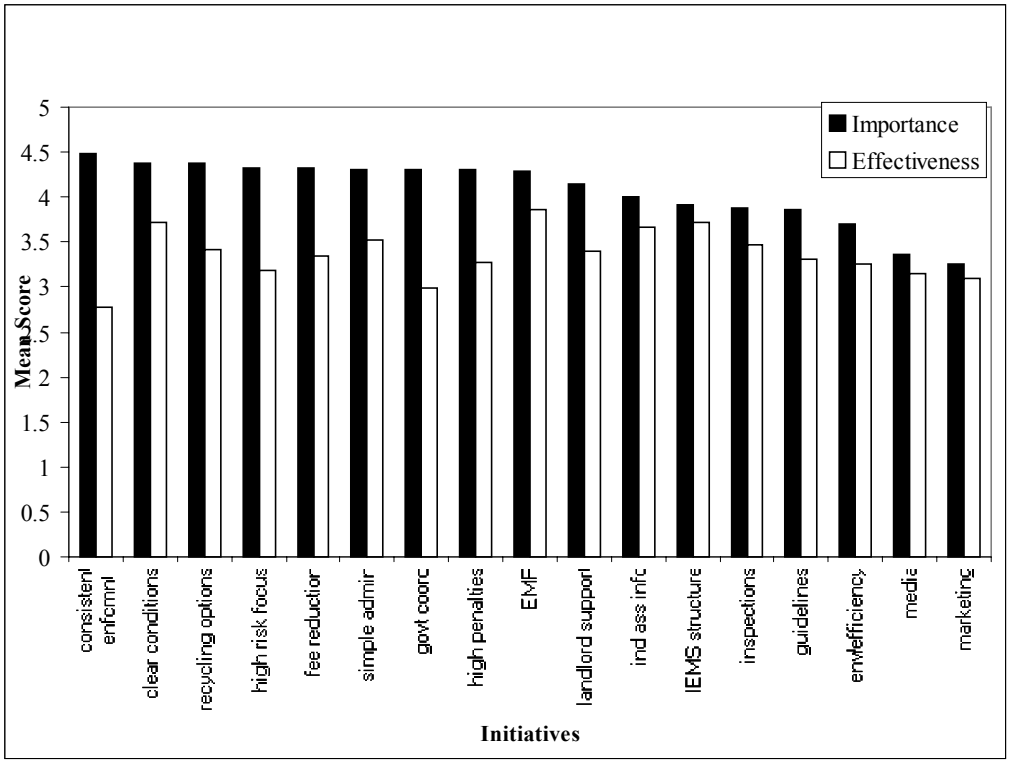
outcomes. There are strong potential benefits for industry-government relations and environmental improvements when sufficient flexibility is built into a statutory system to support regional variations in implementation strategies. Consistent outcomes between regions may be a less important goal in the short term than sensitivity to legitimate regional issues. Second, problems can occur when the pace of reforms outstrips the availability of statutory tools, and long-term benefits may be gained when both spheres remain sensitive to their impacts.

6.5 Efficiency and effectiveness of service delivery

The significant beneficial environmental outcomes achieved under the EPA are an important measure of the effectiveness of the legislation and its implementation by both LG and SG. This section also identifies vast improvements in the success of environmental enforcement actions compared with previous legislation. However despite the successes, ERA operators maintained negative perceptions of the efficiency and effectiveness of these aspects of the EPA. Operators also doubted the effectiveness of EPA incentive systems.

Figure 6.8 shows the mean responses to all survey questions about operator responses to initiatives. This indicates that most of the initiatives were considered important by operators, since most had mean importance ratings of over four, and all were over three. Operators were less positive about the effectiveness of the initiatives, although some still had mean scores of over four. Interestingly, consistent enforcement was considered both the most important and the least effective initiative. Many of the initiatives aiming to provide incentives and rewards for good environmental performers were considered neither important nor effective. For instance, harnessing marketing advantages as a result of good environmental performance was considered the least important initiative, since most operators rejected even the possibility that this had occurred. This again reinforces the comments reported in the previous section, that the systems for incentives and rewards were generally ineffective in supporting good environmental performers.

Figure 6.8 Operator views on the importance and effectiveness of all initiatives



Source: Queensland statewide benchmarking study database

Operator identification of consistent enforcement as the least effective initiative is perplexing, since enforcement of the EPA was far more successful than under previous environmental protection legislation. Whereas previous legislation had resulted in only a handful of successful prosecutions over 30 years (see Section 5.2 above), the first three years of EPA implementation saw 21 successful prosecutions completed. Table 6.4 outlines the offences, which type of administering authority brought the charges, in which region, whether a conviction and prison sentence in default were imposed, and the levels of fines and costs charged. This list shows that successful prosecutions stemmed from many of the EPA's provisions, including breaches of licence conditions, causing environmental harm, and the new offences under the EPA, of leaving contaminants where they might cause harm.

Table 6.4 Summary of EPA prosecutions to June 1998

Offence	Nature of Offence	AA	Reg-ion	C	D	Fine ($)	Costs ($)
S39, Carrying out a Level 1 activity without licence	Transporting regulated waste	Do	FN	✔	-	4,000	500
	High risk waste storage	E	CC	✔	-	5,000	*
		Do					
		E					
S70, Breach of licence conditions	Poor storage of contaminants	LG	SE	✔	-	2,000	-
	Waste transport wrong vehicle	Do	SE	-	-	8,000	1,376
		E					
S112, Wilfully contravening EP Order	High risk waste storage	Do	CC	✔	✔	5,000	*
	Piggery discharge to creek	E	SW	-	-	10,000	55
		DP					
		I					
S119, Wilfully contravening EP Order	High risk storage toxic waste	Do	SE	✔	✔	*	*
		E					
S120, Unlawfully causing serious environmental harm	Release refrigerant gas to atmosphere (2 defendants)	Do	SE	-	-	20,000	2,335
		E	SE	-	✔	1,000	55
		Do					
		E					
S121, Unlawfully causing material environmental harm	1,500-2,000L oil to storm water	LG	SE	✔	-	10,000	13,552
	10,000L sewage to mountain	Do	FN	✔	✔	25,000	8,512
	High risk waste storage	E	CC	✔	✔	5,000	15,727
	2-300KL organic waste to river	Do	SE	-	-	1,000	21,178
	Discharge pesticides to water	E	SE	-	-	30,000	21,139
		Do					
		E					
		Do					
		E					
S123, Unlawfully causing an environmental nuisance	Odours from gelatin factory	Do	SE	✔	-	50,000	24,219
	Nuisance from dust offence	E	SE	-	-	12,500	4,355
		Do					
		E					
S126, Placing contaminant where it could reasonably be expected to cause environmental harm	Waste water to stormwater	Do	SE	✔	-	7,500	576
	Fuel/water mix to stormwater	E	SE	✔	-	2,000	1,166
	High risk storage toxic waste	LG	SE	✔	-	10,000	80,000
	Syphoning fuel mixture to road	Do	CC	✔	-	200	285
	Waste boxes stored in gully, rain washed waste to river	E	FN	-	-	1,000	1,057
		Do					
		E					
		Do					
		E					

AA = Administering Authority, DoE = Department of Environment,

LG = Local Government, DPI = Department of Primary Industries

C = Conviction possible ✔ = Conviction applied, - = No Conviction

D = Imprisonment in default possible ✔ = Imprisonment in default applied - =No Imprisonment

= costs recorded under other Section covered in same court action

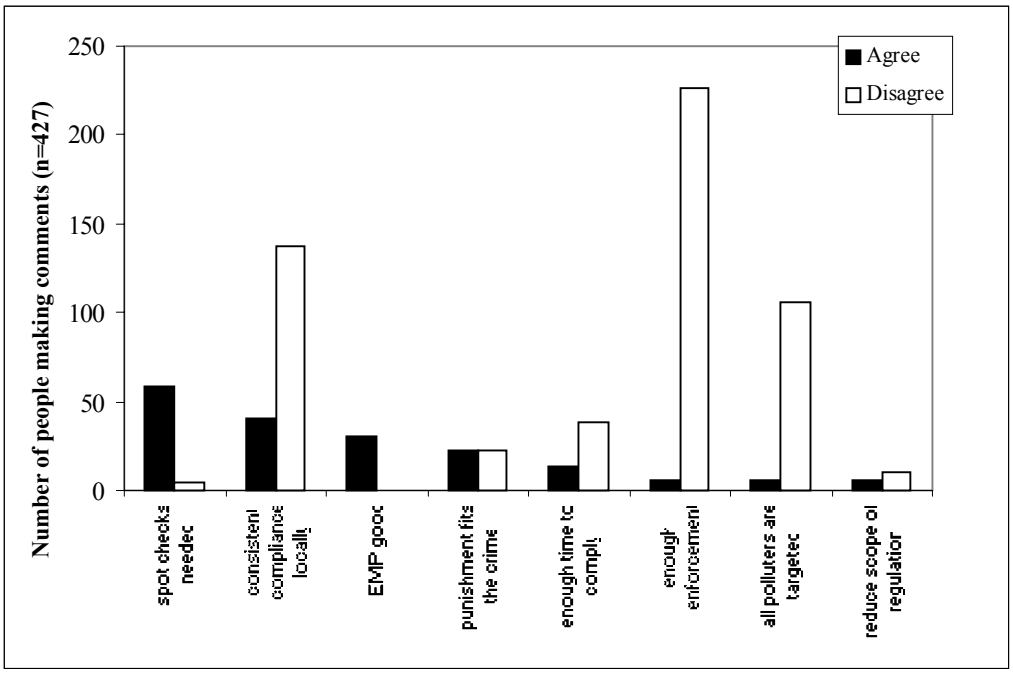
Source: Wild River et al 1998. From DoE internal documents made available for the Benchmarking Studies.

It is worth noting that only three out of the 21 successful prosecutions were by LGs. This is the result of LGs generally preferring to use lower-level enforcement options than the SG. This makes sense, because the pollution incidents dealt with by LG

tend to be less significant than those involving the non-devolved activities. However, as has been previously mentioned, the on-the-spot fines that were intended as the EPA's low-level enforcement mechanism were slow to be commenced, and at the time of the Benchmarking Study, had only been made available to three LGs, on a trial basis. Note that even for these three, and later for the remainder, the on-the-spot fines would only be made available to LG for dealing with the devolved ERAs, so that the many non-licensed polluters mentioned in Section 6.2 would still escape LG enforcement action.

Figure 6.9 shows some of the open-ended comments that were made in this context. The comments are overwhelmingly negative about enforcement, although the Environmental Management Programs received strong support from those who had experienced that system. It is remarkable that more than half of the interviewed operators wanted more enforcement, demonstrating a clear willingness to abide by the environmental protection laws, so long as they are fair and effective.

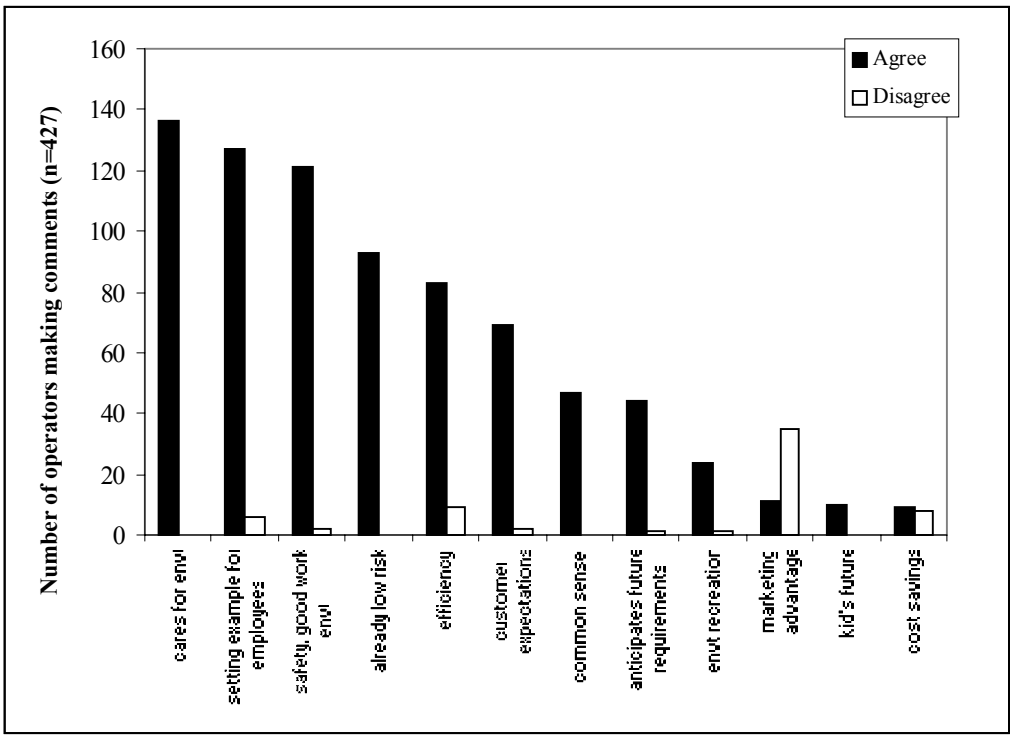
Figure 6.9 Operator comments about enforcement



Source: Queensland statewide benchmarking study database

The second issue suggested by Figure 6.8 was that reward and incentive systems were not delivering the intended benefits for operators. Open-ended comments about why operators took steps to avoid polluting give some insight into this, as shown in Figure 6.10.

Figure 6.10 Operator comments about reasons to not pollute



Source: Queensland statewide benchmarking study database

The EPA incentive systems had focused on two main incentive and reward opportunities that were perceived by administering authorities. One was that marketing advantages would flow to businesses who were could show their customers a *green* licence, or other evidence of their environmentally responsible behaviour. Instead, operators holding green licences reported that customers were predominantly not interested and disagreed with the notion of a marketing advantage. The second administering authority view on incentives and rewards drew on *cleaner production* ideas, suggesting that cost savings might result from good environmental performance. Again, this was rejected, since the high costs of compliance, and even higher costs associated with achieving best practice, generally meant that operating costs of the best performers increased. Because the enforcement systems were not fully effective in punishing operators who were not complying, these extra costs could not be passed on to customers, or they might take their business elsewhere, often to a non-complying competitor[11]. This suggests that neither of the standard approaches to incentives was

[11] This claim was made repeatedly during the benchmarking study site inspections, and shows up in the graph under disagreements with the notion of a 'marketing advantage'. The problem was also observed twice by this researcher,

particularly effective in encouraging or rewarding good environmental performers. Licence fee reductions were a third approach, but as was discussed above, the prevalence of standard reductions (where all operators received reduced fees), meant that this was not particularly effective as an incentive to reduce pollution. Further, where incentive systems were in place, the costs of achieving best practice were generally far higher than the licence fee saved, and so this was not cost effective on its own, and would not, on its own, encourage best practice environmental management.

Despite the apparent failure of the intended incentive and reward systems, many operators did go beyond basic compliance, and adopt extremely good environmental practices. Figure 6.10 shows some of the reasons that operators chose to do this, and in so doing, suggests alternative approaches that administering authorities may use to encourage good environmental performance. The most common reasons for not polluting generally fall into two classes. Some, such as caring for the environment and wanting to instil good work practices in employees, stem from the personal ethics of operators. These are difficult for governments to influence, and it is not clear how these might be used to improve EPA implementation initiatives. The remainder recognise a link between good environmental practices, and generally good work practices. The recognition that environmentally sound work environments are also safe and efficient work environments that conform with common sense practices extends the thinking behind cleaner production. Administering authorities may have success in encouraging good environmental performance if they focus on its broader benefits across all work practices, rather than just to potential cost savings.

Taken together, these findings show that the LG and SG were effective in enforcing the EPA to the extent that they were empowered to do so. But their effectiveness was constrained by the lack of appropriate low-level enforcement powers, which would also have provided the most efficient enforcement tool. Better publicity of the successful prosecutions may have helped to convince operators that the EPA was being effectively enforced. Effectiveness of incentives may have been enhanced if the broader benefits of good environmental performance provided a focus for administering authority, in addition to the potential for cost savings.

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when potential clients received job quotes from 'green' licence holders, but indicated that a nearby business had quoted a lower price. In both, the competitor's premises had previously been inspected and found to be operating at a much lower compliance level.

6.6 The politics of local government institutions

Some insights into the politics of LG institutions are suggested by Benchmarking Study findings. These relate to the roles of different professions with LG, and the practical versus administrative outcomes from IEMS licences. The discussion is supported by LG answers to triangulation survey questions about the costs and benefits of IEMS licences, summarised in Table 6.5.

Table 6.5 Benefits and costs to LGs of the IEMS licence arrangements

	IEMS Benefits	IEMS Costs
Practical resources	Licence fee reductions gained by combining all licences. Further cost savings if existing LG staff develop the IEMS themselves, but this could create challenges for professional hierarchies.	IEMS are costly to develop. Generally, the cost of developing the IEMS was greater than the individual licence fees would have been in the short term.
Processes	Process helps to identify and manage risks in a cohesive and strategic way.	The IEMS guidelines are too complex, confusing and unwieldy. This is so much so that it risks being left on the shelf, rather than being of practical benefit.
Outcomes	Overall environmental management of council activities, and a system that provides guidance and protection.	The process of developing an IEMS takes resources away from actually delivering environmental benefits. Many of the solutions were already in place.
Licence structures	Having one overall scheme for potentially polluting activities and the capacity to centralise environmental management information, licence fees and conditions.	The resulting licence conditions are too bureaucratic in some cases. LGs are more interested in practical outcomes.

Source: Triangulation survey. Queensland Benchmarking Study. Previously unpublished[12].

One of the main costs of IEMS licences is in the financial outlays made by most LGs during their development. Environmental Health Officers were the professionals within LGs who were most knowledgeable about the EPA, having attended training programs and worked to licence devolved ERAs. This made them a logical group to develop LG IEMS. But although they were often responsible for landfill management, the Environmental Health Officers were rarely in charge of other LG-operated ERAs such as sewerage treatment plants, water treatment plants or workshops, which are generally run by LG engineers. If LG Environmental Health Officers developed the IEMS licence, this could give a impression that they had some authority in the operation of infrastructure, equipment and processes about which they knew little. This was problematic since engineers are typically considered to be of higher status within LG

[12] Quotations leading to these summary statements are included in full in Appendix 3.

than Environmental Health Officers[13]. Problems like this, combined with perceived complexity of IEMS licences led many LGs to pay external consultants thousands of dollars to develop their IEMS.

A second problem with the IEMS licences was exacerbated by their development by external consultants. This was the risk that the processes and outcomes may better fulfil the administrative goal of obtaining a licence than the substantive goal of improving environmental performance. Comments made in the triangulation survey, and summarised in Table 6.5 suggested that this potential problem often manifested. This conflicted with a LG political priority of delivering practical services in a cost-effective manner. The problem was further enhanced when licence conditions imposed by the SG were perceived as bureaucratic and unwieldy, since this shifted the IEMS licences even further from their ideal status as practical tools for environmental management.

The first lesson on LG politics is that hierarchies operating with LGs may influence the processes or outcomes of SG initiatives in surprising and subtle ways. Sensitivity to the professional politics within LGs might enhance practical outcomes from SG initiatives. The second lesson also suggests a need for SG sensitivity, this time to the practical focus of LG, and the benefits of developing simple systems that avoid unnecessary bureaucracy. Where this is not done, practical outcomes may be elusive, while financial costs to LGs can be high.

6.7 The diversity between local governments

State level environmental legislation necessarily faces a dilemma in achieving consistency with flexibility if it is also to respect the diversity between LGs. If requirements or implementation are inconsistent throughout the state, then 'pollution havens' could emerge with polluters strategically locating their operations where enforcement is less likely. But inherent variations in population densities, economic activity and environmental values can also justify a flexible approach that allows for different compliance practices matched to the different settings. This section reports on the finding that inherent and residual environmental risk differed between different LG

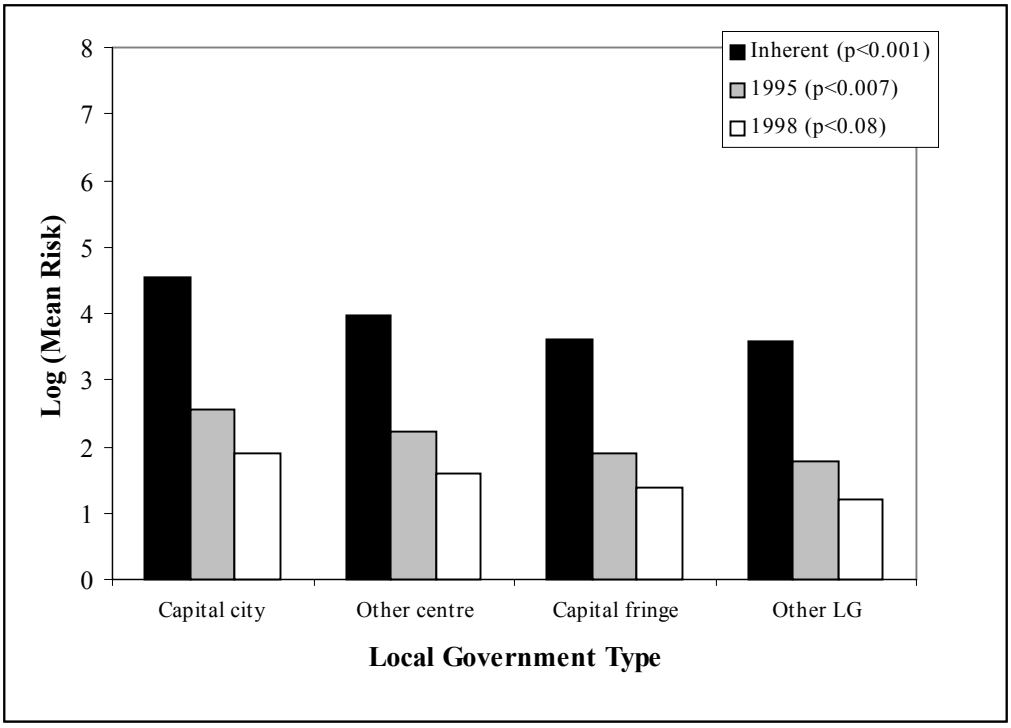
[13] This view of the LG hierarchy was expressed repeatedly in Devolution Working Group Meetings, as well as during Benchmarking Study interviews. It is also implicitly expressed in the average wages of the different professions, which are typically higher for engineers than for Environmental Health Officers.

types. It argues that different compliance standards are justified in these different settings, so long as the beneficial environmental outcomes are consistent, and that defining those outcomes is a key and achievable challenge.

The intergovernmental typology that was introduced in Chapter 2 is a powerful explanatory variable for describing environmental management differences between the different LG types. Figure 6.11 demonstrates this. Inherent environmental risk was highest in the capital city of Brisbane, followed by the other centres, capital fringe and other LGs. This suggests that operations with the greatest potential to pollute are concentrated in the areas of Queensland with highest population densities. Evidence for this is particularly strong, since the South East Region, which includes Brisbane and the surrounding capital fringe LGs had the lowest inherent risk of all regions, suggesting major inherent risk discrepancies between the capital and capital fringe LG types. Together, these findings strongly suggest that Brisbane houses the highest risk activities.

One implication is that it seems unlikely that serious pollution havens may form in remote areas, since these findings suggest a demand for higher inherent risk activities to locate in population centres. Environmental risk reduction was also greatest in the capital city and other centres, demonstrating that the operations in densely populated areas were willing and able to make significant environmental risk reductions ($p<0.001$).

Figure 6.11 Environmental risk by local government type (intergovernmental typology)



Source: Queensland statewide benchmarking study database

On-site inspections conducted by this researcher and other risk assessors in different regions also showed variations in environmental compliance requirements imposed by administering authorities in contrasting settings. Often the compliance requirements in the capital city and other centres were more highly engineered, and resulted in visually obvious environmental risk reductions. However the CERAM assessment that considered the likelihood and seriousness of potential environmental harm concluded that many of the less intensive pollution solutions in rural areas were equally effective, because of the context in which they were located.

Figure 6.12 demonstrates some of these differences. Each of the five photographs shows a bunded area for either waste or fuel storage that was assessed as complying with EPA requirements by the relevant administering authority, and that had a low residual risk according to CERAM. The photographs are from a range of regions, LG types and environmental contexts and show how different solutions may be acceptable in different settings. For instance 6.12a shows a waste area that is bunded and within a workshop building, and where all liquid wastes are meticulously separated. Such separation would be hard to justify in settings outside the capital, where recyclers

are not available for all of the wastes that are separated in 6.12a. The dirt bunding shown in 6.12c would not be acceptable in the capital city or capital fringe areas, which have high rainfall, and permeable soils. But this is located in a very isolated, low rainfall area on cracking clay soils which are nearly impermeable, but which shift, and would thus crack concrete bunds fairly quickly[14]. In this setting, dirt bunding is probably the optimal approach. Of course, compliance standards also depend on the type of contaminants involved. The triple-bunded chemical manufacturing plant in 6.12d uses highly toxic chemicals and would need this level of environmental protection even though it is located in an isolated area with low rainfall.

[14] Soil permeability confirmed by numerous authorised persons and operators who told detailed stories of the flooding problems they encounter due to the impermeability of the soils.

Figure 6.12 Compliant bunding in different environmental contexts



6.11a. Full separation of wastes in bunded area within workshop. Capital City, South East.



6.11b. Large bunded area for multiple storage and forklift access. Other Centre, Central Coast.



6.11c. Dirt bunded fuel storage. Other LG, South West Region.



6.11d. Triple-bunded chemical manufacturing plant. Other centre, South West Region.



6.11e. Covered, locked, bunded fuel and other chemical storage. Other Centre. Northern Region.

Source: All photographs taken during site inspections for Benchmarking Studies. 6.11a, c and d by Wild River, S. 1998. 6.11b by Miller, G. 1998 (Envirotest). 6.11e by Hahn, L. 1998 (Mary Maher & Associates).

Many inherent features of both the ERAs and their environments are context-dependent, and highly varied across different settings. Different compliance standards are justified in these different settings and EPA flexibility was useful in supporting different approaches. Clearly, authorised persons need a knowledge of both the industries and the local or regional environmental settings if they are to make appropriate recommendations about compliance standards. If guidelines and model licence conditions developed in one area (for example Brisbane) are simply adopted in another (for instance the remote South West) then operators may face unjustifiably high costs in meeting standards that are inappropriate for their setting.

6.8 The knowledge base of both spheres

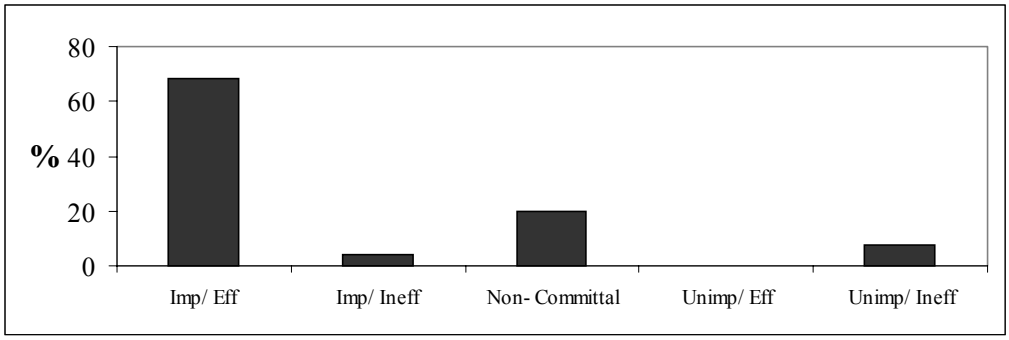
Prior to the EPA, LG Environmental Health Officers often had fairly limited knowledge of industrial pollution issues, and faced a steep learning curve during early EPA implementation. As was stated in Chapter 5, they were assisted in this by the provision of industry-specific guidelines, developed by BCC in consultation with local business leaders and industry associations representing each devolved ERA. This section deals with the effectiveness of that knowledge base.

The Benchmarking Study survey contained three questions about the importance and effectiveness of environmental protection information provided to ERA operators. These dealt with the information provided by industry associations to their members (which were only answered by those members), inspections by authorised persons and written guidelines. Results suggested some differences in operator responses to these (although they were not statistically analysed). Figures 6.13 to 6.15 show operator responses to these questions. Nearly 70 per cent of industry association members found the information provided by them to be both important and effective. Inspections were the next most successful information source, with nearly 60 per cent of respondents considering them to be both important and effective. Only half of the respondents found the written guidelines to be both important and effective, while nearly 20 per cent considered them important but ineffective.

The open-ended comments made about information sources shed some light on these differences, and are presented in Figure 6.16. These suggest that inspectors may be helpful in assisting operators with environmental protection advice, even if they are not especially knowledgeable about technical details of the industry sectors. Many respondents found the guidelines to be unclear, containing insufficient technical detail, or being too inconsistent for their needs. It is worth noting that the differences here seemed to be compounded by other factors not addressed in the Benchmarking Studies. For instance, literacy levels appeared to be low amongst many devolved ERA operators, so even the best written guidelines may not have been useful for many. This could explain why the inspectors were sometimes considered to be helpful, even when they were not knowledgeable. Countering this though, the many negative comments about relations between administering authorities and operators though, suggest that visits from inspections were not always helpful.

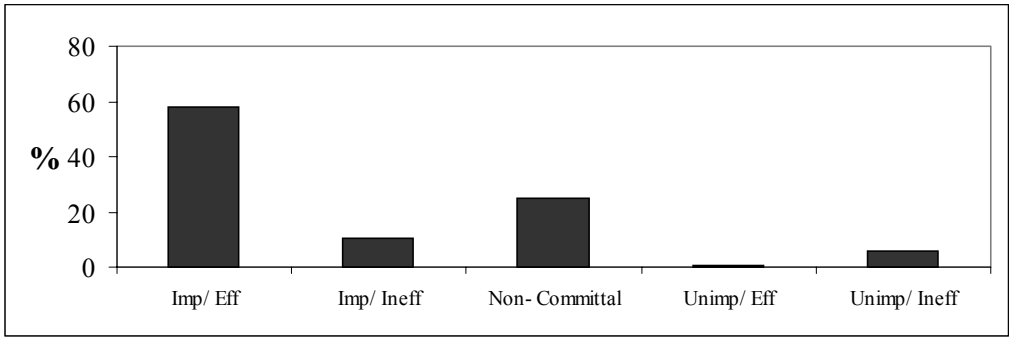
The lessons from this section are that LG relations with industry can be positive when the LG officers strive to be helpful, even if they lack some technical knowledge, but also that such technical knowledge is extremely valuable. Written guidelines may have limited value for operators compared with direct contact with inspectors.

Figure 6.13 Operator views on importance and effectiveness of information from industry associations (members only).



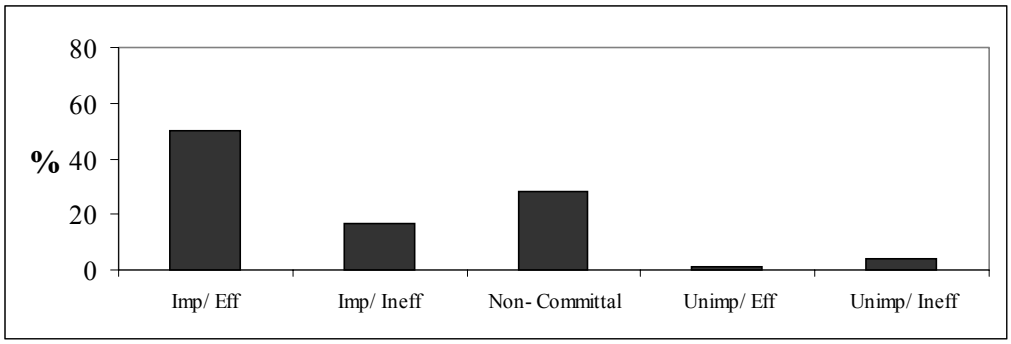
Source: Queensland statewide benchmarking study database.

Figure 6.14 Operator views on importance and effectiveness of inspections as a source of pollution prevention information.



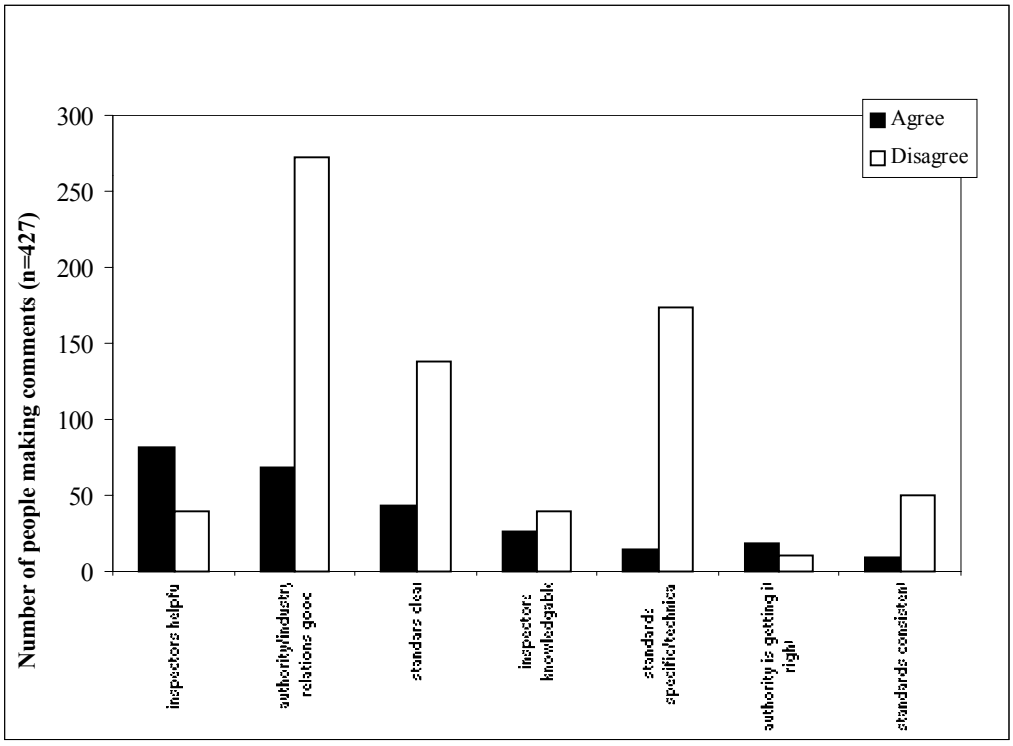
Source: Queensland statewide benchmarking study database.

Figure 6.15 Operator views on importance and effectiveness of written guidelines as a source of information about pollution prevention



Source: Queensland statewide benchmarking study database.

Figure 6.16 Comments about sources of information



Source: Queensland statewide benchmarking study database.

6.9 The integration of policy that occurs in local governments

The benchmarking studies did not specifically investigate the relationships between the EPA and other policy or legislation. But the difficulties that governments have in integrating related legislation was evident on some individual sites that were included in the studies. This section uses one particular example from Brisbane to elaborate these issues.

Figure 6.17 shows an automotive repair shop that was operating in a densely populated suburb of Brisbane at the time of the Brisbane Benchmarking Study. The operation had been running successfully on that site for over 50 years, and the current owner had worked there for over 25 years. The business held a niche market, servicing predominantly one make of car for a loyal clientele. It represented the owners life work and superannuation, as he intended to eventually retire and sell it on.

Before the commencement of the EPA, the operation was already facing difficulties under (Queensland's previous) Planning Act. The operation adjoined blocks on a busy street which is zoned to allow equivalent industrial and commercial premises. But the site on which the operation is located has recently been rezoned for residential purposes (see 6.17a, b and d), since the street it fronts is otherwise residential. This means that under the Planning Act it was classified as a 'lawful non-conforming premises', meaning that it could continue operating despite the zoning conflict, but that it could never expand or extend its operation, or be redeveloped into another commercial operation.

When the operation was licensed under the EPA, its licence conditions stated that it would require a bunded wash-bay and other upgrades to prevent pollution. However because of its 'lawful non-conforming' status, it was unable to make these improvements, leaving it as non-compliant under the EPA (see 6.17c). At the time of the Benchmarking Study inspection, the business was going through a court case to try to find a way to continue operating. In the process of preparing the case, the owner had approached all residential neighbours, obtaining letters of support from each to allow it to continue operation. The outcome of the court case is not known to this researcher, but similar problems also affected many other operations across Queensland.

The lesson here is about how individual operations may be (more or less) acceptable under several pieces of SG legislation and also in the eyes of the wider community, but conflicts between legislation may leave no viable option for their continuation. These problems are often not even recognised, or can seem minor when viewed from a SG perspective, but when they affect the life plans of responsible operators, but they can seem significant to a sphere of government that is concerned with the wellbeing of individuals within the community. In some cases, and particularly when a community relies heavily on a non-complying operation, this type of conflict may lead a LG to try to find ways to keep an operation viable, even if that requires imperfect application of SG legislation. Such an approach however is obviously problematic for the LG, since other businesses in the local area may then demand special consideration for their own problems, and problems may multiply.

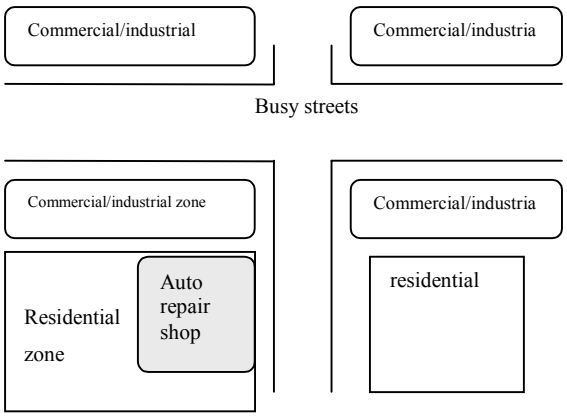
Figure 6.17 Automotive repair shop facing compliance problems from the integration of Planning and Environmental Protection Acts.





Above: 6.17a. Proximity to residential dwellings.
Right: 6.17b. Proximity to other industrial sheds.
Below: 6.17c. Area intended for roofed wash-bay.
Below right: 6.17d. Operation location compared with other commercial/industrial and residential zones.





Source: compiled from interview and photographs obtained with express permission by Su Wild River, during Brisbane City Council Benchmarking Study.

6.10 Conclusions

The Brisbane City and Queensland Benchmarking Studies provide many insights into the workings of the local-state antinomy in Queensland. The studies suggest that the EPA enabled LG to lead parts of the business community towards good environmental practices, but involved constraints to LG capacity to respond to demands for broader applications of environmental requirements. While compliance costs were high, operators showed a willingness to pay in order to achieve practical improvements to their operations, but were less happy to pay licence fees or other costs that appeared to have a purely administrative outcome. LG and SG showed a capacity to work in effective partnerships within regions, since there were no differences in implementation

outcomes between the spheres, but significant differences between regions. Implementation was generally fairly efficient and effective, but the lack of low-level enforcement options certainly constrained this, as well as restricting business satisfaction with the effectiveness of enforcement. IEMS licences were a challenge to LG, partly because of the politics operating between professions within LGs. The IEMS system as it was presented to LGs often encouraged them to use external consultants rather than LG insiders to develop their IEMS, and this again may have restricted its practical benefits. Knowledge about industry sectors that was contained in guidelines had value, but this was limited compared with assistance from authorised persons, which was again restricted when their knowledge of industries was limited. Such knowledge was also best if it took account of regional differences in environmental contexts that could justify different compliance standards in different places. And finally, some conflicts between the EPA and other legislation threatened responsible operators, and could potentially lead to LGs seeking to support individual operators, rather than prioritising consistent application of SG legislation.

All in all though, LG implementation of the EPA was highly successful, with SG and LG together delivering a 41 per cent environmental risk reduction over the first three years, and most pollution prevention initiatives being considered both important and effective. Clearly, LG can be an effective creature of the state in its capacity to implement SG environmental legislation.

Chapter 7. Comparative case study methods

7.1 Introduction

The next two chapters report on an Australia-wide study of locally-defined environmental issues. The goal here was to learn what types of issues are important to LGs, and what happens when people work to tackle those issues at the local level. This was in recognition of the inherent limitations of studies aiming to determine LG effectiveness in implementing state or federal government environmental requirements. The critical limitation of these is their implicit assumption that such requirements are a key focus of local environmental efforts, and that other issues in the local context can safely be ignored.

This study instead focuses on those local contextual issues. The opportunity this provides is to look beyond the analytical confines of the many individual outside-in initiatives defined by state and federal governments, to discover the features of environmental problems that are locally significant. These might be interesting and important in their own right, and could also influence the impact of the outside-in initiatives. It was also thought that there might be patterns in the locally-significant issues, that could be analysed across LGs, to develop a general understanding of local environmental problems and solutions.

The approach taken for this research was to develop a method that was sufficiently general and flexible so that it could record key components of any LG attempt to deliver an environmental outcome. But the method also had to be consistent enough to enable comparative analysis of issues across many vastly different settings. In this way, the research can provide all spheres of government with insights into local government capacity to deliver beneficial environmental outcomes, and how that capacity could be improved, while also being directly useful to LG practitioners.

The result is best described as a comparative case study methodology. Case studies of local government attempts to deliver beneficial environmental outcomes were gathered to provide the detail needed to make sense of the local perspectives and issues. But case study information was recorded and reported in a consistent manner, designed to maximise the potential for comparative analysis. Combining case study and comparative analysis also has the potential to draw on the richness and flexibility of the

former together with the consistent and rigorous analysis provided by the latter. In doing so, the method also seeks to avoid the static, isolation of most case study analysis and the lack of detail in most comparative methods (see Doyle and Kellow. 1995. And Jenkins. 1990).

This chapter describes the development and use of the comparative case study methods. Section 7.2 outlines the defining features of the case study research and briefly discusses how these are expressed in the methods. Section 7.3 explains how the methods were developed. In doing so, it focuses on case study elements that were consistently present, and that therefore formed the major theoretical categories for analysis. Section 7.4 describes the selection and examination of 34 cases of LG attempts to deliver beneficial environmental outcomes. It explains the techniques used to explore a full range of LG experiences in attempting to deliver beneficial environmental outcomes. Finally, Section 7.5 describes the issues addressed during the write-up and analysis of the case studies.

As was stated earlier, although they represent a major original research effort for this thesis and a large, original, primary data set, the case studies themselves are not contained within the main text. All 34 are presented as stand-alone documents in Appendix 4. Whereas this chapter describes the design, format and collection of the case studies, the next chapter analyses the findings from the entire set. Both chapters frequently refer to specific case studies using a code that is described in the following section. The reader is strongly encouraged to read much of the case study material that is referred to in the text.

Before moving on, it is necessary to define the analytical category of a LG *attempt to deliver an environmental outcome*. This is an effort that is made to deliver an environmental outcome, which involves a LG. They might be initiated and championed by an individual within or outside LG, or by LGs as a whole. They all involve a locally-significant environmental problem, goals for addressing the problem, and efforts to achieve the goals. For simplicity, these are referred to simply as *attempts* in the remainder of this thesis. Note that attempts are a broader category to local (inside-out) environmental *initiatives*, which are those efforts to deliver beneficial environmental outcomes that originate in the local area. Thus, the study of local attempts can also include the implementation of state or federal government environmental programs, where these address locally-significant issues.

7.2 Defining features of the comparative case study research

This section focuses on the features of the comparative case studies that define this research, and distinguish it from the environmental risk assessment research that was discussed in the previous two chapters. As was noted in Chapter 4 the key differences between the benchmarking studies and comparative case studies include the latter's inside-out analysis, independence, predominantly local government perspectives, qualitative data and analytical techniques and informant-driven sampling strategies. These features are discussed in turn below.

The concept of 'inside-out' analysis has been touched on briefly before but is central to the research that is described in the remainder of the thesis. This inside-out analysis of local government attempts to deliver beneficial environmental outcomes aims to learn *what is happening* in local areas, from local perspectives. The research was conducted through interviews with people working with local governments to solve local environmental problems. Each interviewee defined the topic for their case study, then described key elements of each environmental problem, and their attempt to solve it. This approach meant that locally-significant issues predominate in the case studies, and that externally-driven state and federal government initiatives are considered only when they were influential in the local context.

The second defining feature is that the research conducted for the comparative case studies was fully independent, since profits from other completed projects were used to fund the methodology development, fieldwork, write-up and analysis. The fieldwork alone cost more than $15,000, since it involved travel throughout Australia in a Kombi-van. Figure 7.1 below shows the local government areas in which case studies are located. Over $10,000 in funding for this journey came from the profits from the environmental risk assessment consultancy projects. A payment made by Land and Water Resources Research and Development Corporation (now Land & Water Australia) for a paper similar to Chapter 3 of this thesis also contributed $5,000. The remaining fieldwork and other costs were supported by a $3,000 student grant from the Centre for Resource and Environmental Studies. None of these payments were conditional on any involvement or input into the research from the funding bodies.

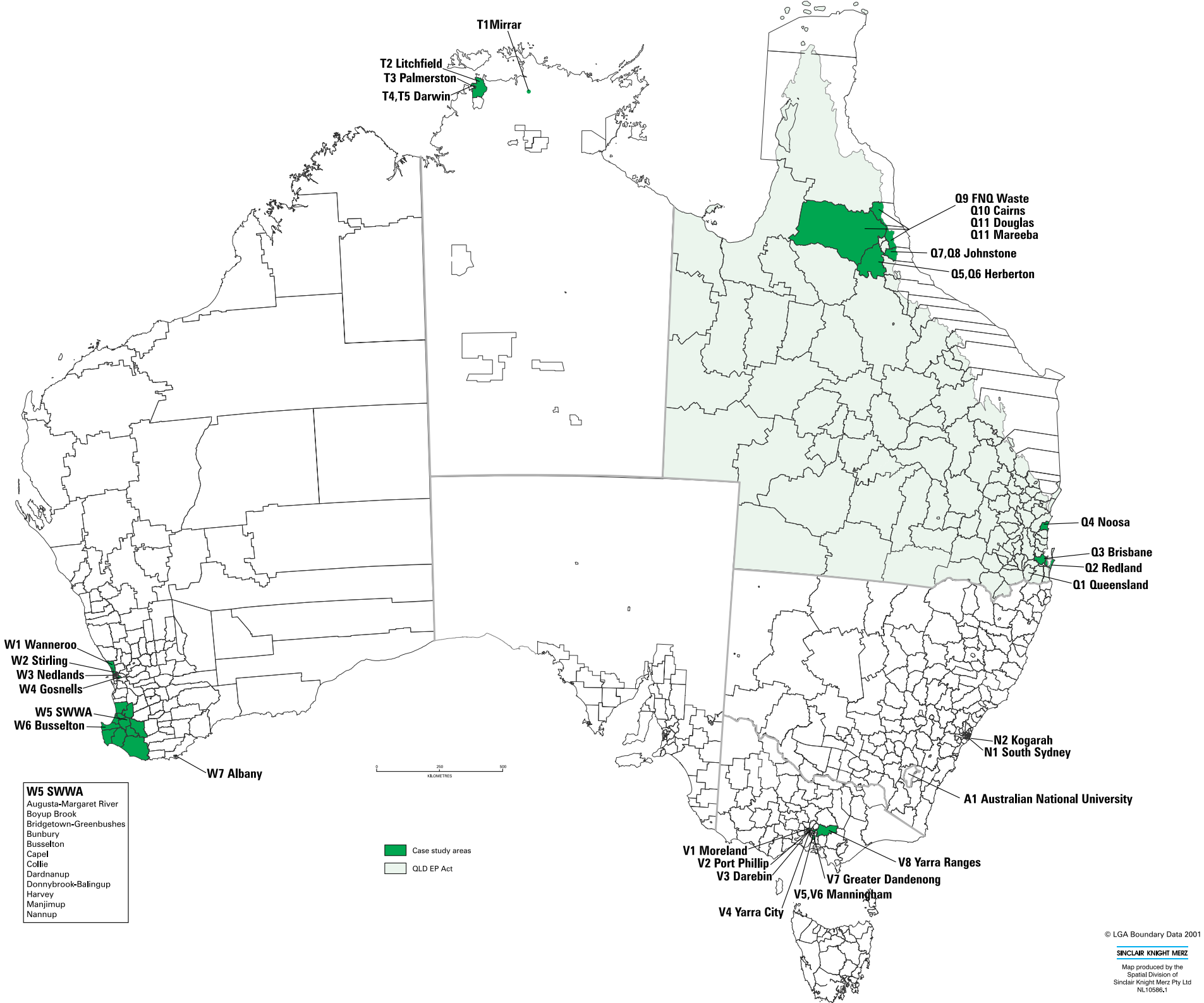
The case study codes are also evident from Figure 7.1. Note that each case study has both an alphabetic and numeric code. The former indicates which state of Australia the case study relates to. As you can see on the map, Queensland case studies start with 'Q', Northern Territory ones with 'T' and so on. The numeric code simply counts the case studies in an anti-clockwise direction around each state. This both provides a simple coding system, and also means that, starting with Queensland and moving anti-clockwise around Australia, the case studies are numbered in roughly the order in which they were researched.

The third feature of the comparative case studies is their use of qualitative data. The data used in the analysis include the descriptions of the drivers, constraints and other common elements of the case studies, expressed in words rather than numbers. Two aspects of the work involved schematic representations of issues. Although these could conceivably be represented numerically, they were categorised and analysed qualitatively. These and other features of the methodology are detailed in Section 7.3.

A fourth defining feature of the case studies was that most of the interviewees had a LG perspective on the environmental problems they were trying to solve. Most had spent their careers working exclusively for LGs. Many had also mixed these experiences with work for LG associations or other spheres of government, thus bringing a broader perspective to the local issues they were tackling. Some interviewees had never worked for government, and one was a state government employee. This range of predominantly LG interviewees contrasts with the environmental risk assessments, in which most of the interviewees were business operators. These perspectives and roles are dealt with further in section 7.3 below.

A fifth defining feature was the method that was used to select the comparative case studies. The sampling worked by identifying environmentally proactive LGs, or individual attempts being made by local governments, to achieve beneficial environmental outcomes. Again, this method is detailed in section 7.3.

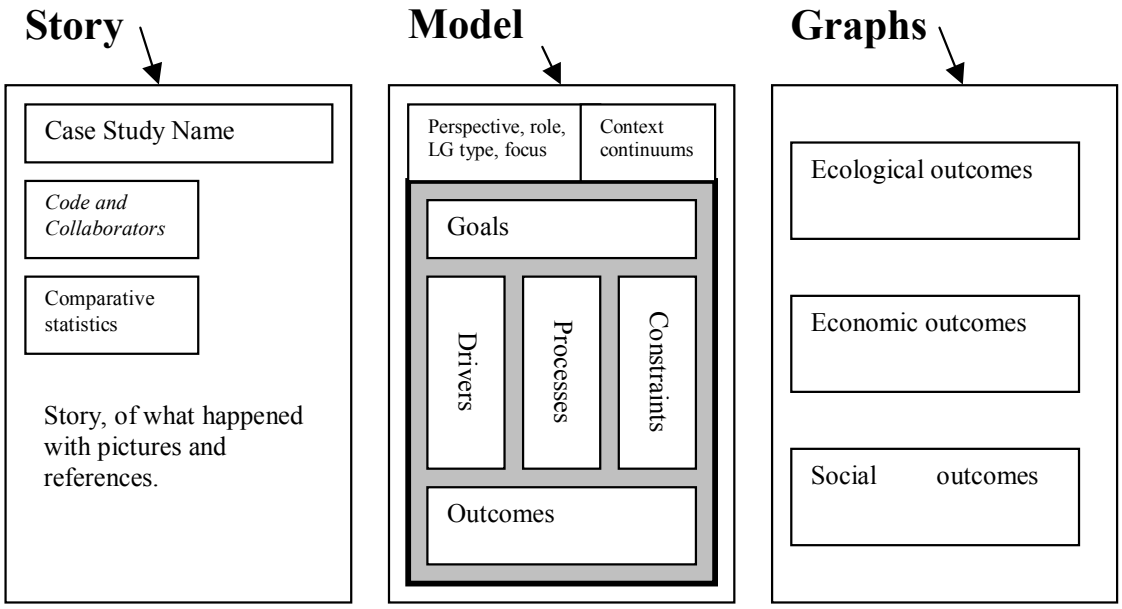
The qualitative method used to analyse the case studies is their final defining feature. This flows naturally from the qualitative nature of the data, and is covered in depth in section 7.5.


T1Mirrar
T2 Litchfield
T3 Palmerston
T4,T5 Darwin
Q9 FNQ Waste
Q10 Cairns
Q11 Douglas
Q11 Mareeba
Q7,Q8 Johnstone
Q5,Q6 Herberton
Q4 Noosa
Q3 Brisbane
Q2 Redland
Q1 Queensland
W1 Wanneroo
W2 Stirling
W3 Nedlands
W4 Gosnells
W5 SWWA
W6 Busselton
W7 Albany
N2 Kogarah
N1 South Sydney
A1 Australian National University
V1 Moreland
V2 Port Phillip
V3 Darebin
V4 Yarra City
V5,V6 Manningham
V7 Greater Dandenong
V8 Yarra Ranges
0 250 500
KILOMETRES
Case study areas
QLD EP Act
W5 SWWA
Augusta-Margaret River
Boyup Brook
Bridgetown-Greenbushes
Bunbury
Busselton
Capel
Collie
Dardnanup
Donnybrook-Balingup
Harvey
Manjimup
Nannup
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Spatial Division of
Sinclair Knight Merz Pty Ltd
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7.3 Developing and applying case study components

This section describes the aspects of the methodology that provides consistency between case studies, thereby allowing for easy comparative analysis of issues. The general approach was to use inductive analysis to discover common elements to the case studies, and then to design a format for recording case study issues consistently, using those elements. The case study elements were finally grouped into three main sections, they being a story, a model and a set of graphs. Figure 7.2 shows these features, which are also discussed in turn below.

Figure 7.2 Elements of comparative case studies method



Story

This component of the case studies aims to bring them to life, and make them accessible to any audience. The story is essentially a plain English description of what happened in the attempt to deliver an environmental outcome. Photographs and other visual images are included in the stories to further increase their accessibility to readers. The stories also aim to include sufficient technical details and references to enable readers to take on the ideas of the case studies, and where relevant, to adapt them to their own work.

The first part of each story is the case study name. The name tries to encapsulate the essence of the local government attempt to deliver an environmental outcome. Each case study interview began with the question "have you been involved in a local government attempt to deliver an environmental outcome?" People who had were then asked what the attempt was. A very brief discussion was always sufficient to decide on the case study name that was then used as the focal point for the rest of the interview.

The code was added later on for reference purposes. For simplicity and consistency, these each start with an alphabetic code that refers to the state within which the attempt was made. The second part of each code is a number. These were assigned by working anti-clockwise around Australia, as shown in Figure 7.1. Starting from Queensland, the numbers are roughly aligned with the order in which the case studies were collected. The assignment of alphabetic codes for each state is also apparent from the map.

The code section of the story also indicates case study authorship. In each case, interviewees were asked whether they wanted to be represented as joint authors. This was intended as a respectful way to acknowledge the primary importance of the information they provided. It also aimed to encourage collaboration to ensure case study accuracy. It was further intended to encourage interviewee ownership of the case studies so that they would help to write up the case study as an interesting, and valuable document. When an interviewee had moved on from the case study local government between the interview and the drafting of the case study, or had not been employed there at all, a current official of that local government was also sought for input to the case study. Many interviewees readily accepted the offer of joint-authorship. Others declined for professional or political reasons, because of a need to distance themselves from participation in, and review of the case study. Although they declined to be acknowledged, these people usually still made comments to improve the accuracy of the case studies.

The story itself was written succinctly, trying to fit all of the detail onto just two A4 sheets of paper. This was so that each case study would be a short, accessible and consistent document. In a couple of cases, the review by joint authors or interviewees pushed the page length over two pages.

Model

The model is fundamental to the case studies analysis, and was the first component to be developed. In some ways, the model re-tells the story, since it contains much of the same information. But in addition, the model provides a consistent structure for reporting case study information, aiming to maximise the potential for transparent, consistent, comparative analysis across the cases. The model achieves this using analytical categories that were discovered during the research. Each category *fitted* all of the case study data, in that each could be readily filled for each case study. The categories also *worked* in explaining important features of each case study.

Some of the analytical categories that make up the model were used in sampling, and as characterising variables, and these included the interviewee *perspective*, *role*, the local government *type* and the environmental *focus area* for each case study. These categories are discussed in section 7.4, which focuses on case study selection. Three analytical categories for context were described using schematic representations. These covered the *scale*, *origins* and *flexibility* of each case study. These categories are defined in Table 7.1, and are discussed in turn below. Finally, the model maps out the *goals*, *processes, outcomes, drivers* and constraints for each case study. Again, discussions on these follow and definitions are provided in the table. The interview questions used to elicit responses about each category are also included in the table, although in the interviews, the term *attempt* was replaced with a short description of the case study itself.

Table 7.1 Analytical categories in the comparative case study model

Component	Definition
Context continuums	Schematic representations used to describe the contextual issues that influence attempts. Any specific attempt may occur at any one point on a context continuum, or across a range on the continuum.
Scale	The geographic extent of the attempt. Scales range from less than local, including small parts of a local government area, to international. *"what was the scale of the attempt? Was it just within this LG, or did it extend further than that?"*
Origins	Where the stimulus of the attempt is from. The range is the same as for *scale*. *"where did the idea for the attempt originate? Within this LG, or from outside?"*
Flexibility	How much choice the LG had in deciding how to progress with the attempt. The range is from none to full. *"what level of flexibility was there in this attempt? Could you decide how you went about it yourself, or were constrained in some way?"*
Attempts	Efforts that made to deliver an environmental outcome. LG attempts might be initiated and championed by an individuals within or outside the LG or by the LG as a whole.
Goals	The purpose of an attempt. The range of intended outcomes, established at the start of the attempt, or emerging as the attempt progressed. *"what were the goals that you aimed to achieve?"*
Processes	The important steps on the way to achieving outcomes. *"what were the important processes that you went through in achieving the goals?"*
Outcomes	The achievements resulting from the attempt. *"what were the outcomes from the attempt? What did you achieve?"*
Drivers	A force causing or assisting an attempt. "*What were the drivers, that helped you with the attempt?"*
Constraints	A confinement or restraint that hinders an attempt. *"What were the constraints that made it harder to achieve the attempt?"*

Source: Appendix 1. Thesis category map.

The context continuums describe influences on the attempts that could be consistently described along continuous scales, but that provided the background issues that would rarely be identified as either drivers or constraints. The idea was to discover whether contextual features could influence the success of environmental attempts.

For instance, every attempt has a physical location, where efforts to achieve beneficial environmental outcomes are focused. These locations might be small areas within local areas, whole LG areas, river catchments, or even international settings. Were LGs more likely to deliver environmental benefits when their work focused on local issues? Similarly, each attempt originates somewhere, whether that be the local conservation group, or the United Nations. Did attempts with local origins have a better

chance of winning and keeping local support? Finally, attempts were conducted with varying degrees of flexibility. Sometimes LGs must implement state government regulations to the letter, and sometimes they have complete flexibility to decide what to do and how to do it, being accountable only to local electorates. Did LG flexibility help the delivery of beneficial environmental outcomes?

Of the three final context continuums, only scale was finally included as it was originally described. *Flexibility* was originally defined as *discretion,* but was changed because the term *flexibility* worked better for respondents, and had an almost identical meaning to the original term. The third context continuum was initially defined as *activities,* which tried to describe the importance of the issue to LGs. This continuum ranged from *core* to *peripheral* activities. It did not work for interviewees, because of the shifting nature of LG responsibilities, including their core business and optional initiatives. The implementation of the *Queensland Environmental Protection Act 1994* provides a good example of roles that would have been entirely peripheral in 1993, but which had become core for most Queensland LGs by 1995. In other cases, when LGs initiate an optional local environmental initiative, local residents often firmly demand that such efforts be maintained, thus quickly making them into core activities. Conversely, the historically core activity of waste collection is increasingly being outsourced by LGs around Australia, and has become peripheral in many cases. This analytical category was dropped in favor of *origins*, which focuses on the stable source, rather than the shifting status of initiatives.

It was thought at first that attempts would be noted as points along the context continuums. This proved impossible in most cases, and led to the discovery that these contextual issues operate instead as ranges. For instance, the implementation of the *Queensland Environmental Protection Act 1994* (case study Q1) occurs at the smaller-than-local scale, because most licence holders operate out of a business premises in a local area. However the scale is also local, since each LG implements the Act. This logic continues right up to the national scale, since the Act itself is part of Queensland's implementation of the *National Strategy for Ecologically Sustainable Development* (ESDSC 1992) and other national–level obligations. The idea of marking both a focal point, and a range on the context continuums was explored, but still proved difficult to achieve.

In their final form, the context continuums prove relatively easy to define and record, and they fitted and worked well for most interviewees and case studies.

However the nature of the analytical categories themselves, and the large ranges identified for them in case studies pose many problems for analysis. These are discussed below in section 5.

The remaining categories in the model provide the substantive information about the attempts themselves. These elements are the *goals, processes, outcomes, drivers* and *constraints* involved in LG attempts to deliver beneficial environmental outcomes. These were defined in Table 7.1, and are also fairly self-explanatory. The information for these case study categories was simply listed as a series of dot-points during the interview. Other than *goals*, each category was defined during the initial case study interviews, and each fitted the data, and worked in describing different features sufficiently wall to have been retained in its original form.

The category of *goals* was initially defined as *internal resources*. However this did not work well for the respondents, causing confusion, because internal resources are frequently understood as drivers, processes or even outcomes. The category of *goals* was applied after case study interviews in far north Queensland, and solved these problems since it consistently drew out case study elements that were not reported in the other categories. The theoretical category of *goals* also appeared sound because it was very easy to later describe goals for those case studies that had initially recorded *internal resources.*

The category of *processes* also posed some problems since many *outcomes* were also *processes*. For instance, the implementation of an environmental management system is as much a process as an outcome. Despite this potential overlap between the categories, these were kept in their original form. This was partly because the categories did not appear to create confusion among the interviewees, so they clearly worked in describing the attempts. It was also because of the potential analytical value of making sense of outcomes that were processes.

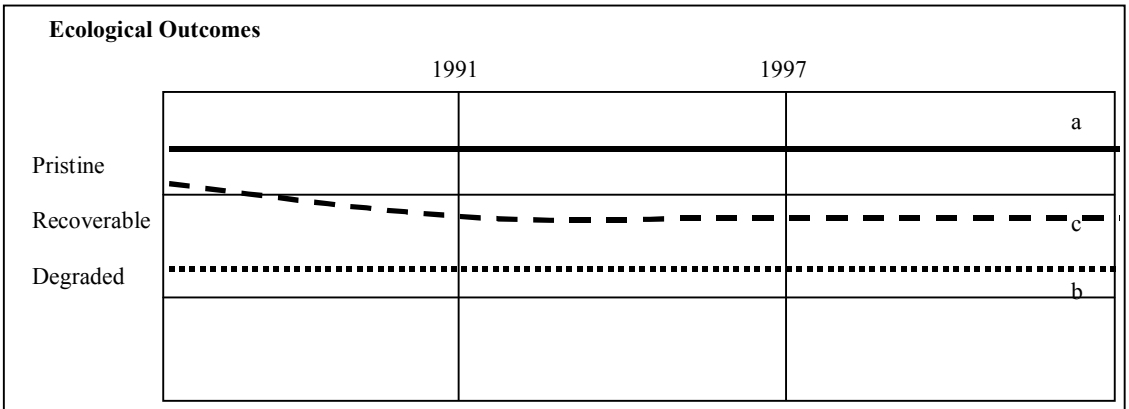
Graphs

The graphs are the final component of the comparative case study method. They provide a snapshot of local values affected by the environmental problem and attempt to solve it. They cover ecological, economic and social issues, each with a separate schematic representation of patterns of change through time. This section describes the format of the graphs. It also discusses the insights gained while developing that format for the graphs.

Many modern environmental analyses recognise ecological, economic and social values as separate, yet linked analytical categories. These include the now classic Brundtland Report's model for environmentally sustainable development (WCED 1987). More recently, the triple bottom line, ecological footprint, and other approaches (Elkington 1997: Wackernagel and Rees 1996) have developed methods for accounting for levels and changes to these values. The graphs presented in the case studies try to capture this critical information in a simple snapshot that can be readily understood.

Figure 7.3 below is the 'ecological values' graph, from case study Q7, *Developing the Johnstone Plan.* The explanatory text that accompanies the graph in the case study is also included. This graph is now used to aid discussion about key of the features of the graphs in general.

Figure 7.3 Ecological values graph from Case Study Q7: Developing the Johnstone Plan



Environmental values in Johnstone Shire include some pristine areas, some agriculture (predominantly sugar cane), and some areas subject to development pressure. The Johnstone Plan protects the pristine areas (a), and the capacity for continued agriculture in the Shire (b), and is reducing the environmental impacts of those developments that are still going ahead, while also limiting the possibility of further developments in some areas with high conservation values (c).

Source: Wild River. Case study Q7: Johnstone – developing the Johnstone Plan

First, note that the vertical axis is broken into three zones. While the stated values on this graph apply only to the 'ecological values' graphs, the structure is the same for the economic and social graphs as well. For each, the top zone indicates values of the highest possible values. The middle zone indicates moderate values, while the lowest shows poor performance. Definitions for each zone and value are described in Table 7.2 below.

Table 7.2 Environmental values, used in comparative case study graphs

Levels	Ecological	Economic	Social
High	**Pristine** Ecological systems are largely or entirely unchanged since European colonisation. Biodiversity and species richness are high, and ecosystems are intact and sustainable.	**Profitable** Economic systems are functioning well, and delivering strong and sustainable profits.	**Empowered** The community is ready and able to participate in decisions and actions that affect them. Community issues are addressed by decision makers, and the outcomes meet community needs.
Medium	**Recoverable** Ecological values have been altered from their original states. But ecological values such as good air and water quality, some native biodiversity and species richness still exist. Agricultural lands, rural residential areas and other semi-developed country is included.	**Cost-recovery** Economic systems are returning as much as they are costing. This is sufficient to continue running the existing economic systems, but provides no strong incentives for such action.	**Resilient** Community members are reasonably well informed about local policy decisions and issues that will affect them. However few have a real capacity to influence decisions, or ensure that government decisions address their needs.
Low	**Degraded** Ecological values are entirely altered from their original state. Few, if any native species are present, and the prospects of their return are slim. Industrial areas, waste sites, and inner-city areas are examples.	**Loss** The economic systems are costing more than they are earning. There is no benefit in continuing investment in these conditions.	**Disempowered** Community members know little of the policy decisions and actions taken by governments. They have no access to

Source: Appendix 1. Thesis category map.

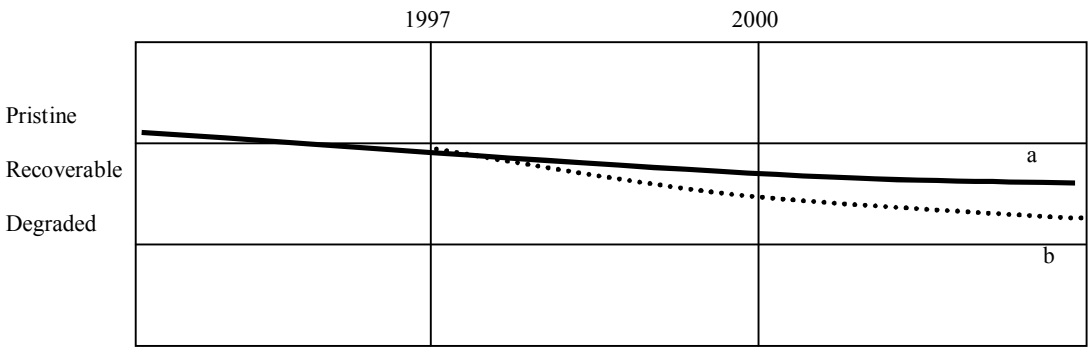
The horizontal axis shows the timing of environmental attempts. Again, there are three zones. The left-hand time frame shows the status and trends in environmental values that were present before the attempt, and is an indication of the context within which the attempt was made. The middle time frame shows changes to environmental values that took place during the attempt. The right-hand time frame looks ahead, and may show the current progress of the attempt, or the future outlook. The actual time-scale is particular to individual case studies, so the dates represent real milestones for each individual attempt. Where the attempt was still occurring at the time of the interview, the interview date was used as the second of these milestones.

As this graph shows, there may be one or several lines, since many levels of environmental values will usually occur simultaneously. In this case, the development

of the Johnstone Plan related to three separate sets of ecological values. Line 'a' shows that over the life of the Plan, the pristine ecological values in the Shire's protected areas were maintained. Line 'b' shows that ecological values in previously developed and farmed areas in the Shire have been similarly unaffected. Line 'c' relates to the impact of current developments in many parts of the shire. Such developments were gradually reducing ecological values, but the rate of that environmental degradation has been slowed down by the initiatives in the Plan.

Figure 7.4 shows the ecological values graph from case study Q10, *Cairns City Council Environment Plan.* This shows a graph where the ecological values are shown to split apart as a result of the attempt. Sometimes the graphs are shown in this way when different outcomes occur simultaneously, such as when some land is protected, and other land is developed. In this case, the lower line speculates on the likely future for environmental values in Cairns if the environmental plan had not been formulated. Speculative lines are consistently shown using the line format demonstrated by line 'b' in Figure 7.4.

Figure 7.4 Ecological values graph from Case Study Q10: Cairns City Council Environment Plan



The context for the environmental plan is of gradually (and sometimes quickly) degrading environmental values, in a region with high environmental values. The environment plan has a strong potential to reduce the rate of degradation of environmental values. Because many potential developments have existing approvals, the reduced degradation will be slow to eventuate in some areas (a). However, in the absence of the plan, local environmental degradation would have proceeded at pre-plan rates (b).

Source: Wild River Case study Q10: Cairns City Council Environment Plan

An important aspect of the multiple lines is that they were not part of the researcher's original design for the graphs, but emerged consistently during interviews. Informants would usually identify several different stakeholders, areas, or other

distinctions within a single graph without being asked to do so. This suggests strongly that values in environmental problems and attempts to solve them have different impacts, depending on what exactly is being measured. Consistent with the grounded theory framework of this research, no attempt was made to standardise or otherwise control the distinctions made by informants about different measures to use. Instead, the multiple lines are considered to be an interesting property for exploration during case study analysis and theory building.

As well as allowing multiple lines on the graphs, another change that occurred during the interview process was an amendment to the analytical category of social values. This category was initially described in terms of *vibrancy*. However the term did not fit with interviewees' ideas of the values that mattered to communities. *Empowerment* provided an alternative that fitted the data, and worked for interviewees.

Finally, it is important to note the importance of *perspective* in drawing up the graphs. Informants often clarified whether the perspective was their own, that of the LG, or some other perspective. They were asked to simply use their own perspective on the attempt, based on their perceptions of the issues. The following section details the different perspectives and roles that interviewees held, and how these were used to select and describe case studies and interviewees.

7.4 Selecting case studies and interviewees

Readers will recall that one of the defining features of the comparative case studies was that sampling worked by identifying environmentally proactive LGs, or individual attempts being made by LGs to achieve beneficial environmental outcomes. It did not randomly select LGs from an entire population, as in the environmental risk research. Similarly, interviewees were selected primarily for their interest in, and involvement with attempts. But although this excluded many, if not most LGs and LG officials from the potential sample, efforts were still made to ensure that the final selection covered a cross-section of Australian LG experiences. This section discusses the sampling process, and the analytical categories that were developed to assist and explain sample selection.

The decision to focus the case study research, and hence the sampling strategy, on LG attempts to deliver beneficial environmental outcomes was made during the early case study interviews in far north Queensland. Both Herberton and Johnstone Shires

were approached for interviews, because of known environmental initiatives (see case studies Q6 on regional cooperation and Q7 on the Johnstone Plan). But having made the effort to visit the Shires, it seemed worthwhile to also discuss other known, outside-in initiatives. So case studies dealing with those LGs implementation of the Queensland Environmental Protection Act 1994 were also conducted (see case studies Q8 and Q9). Although it was easy to use the comparative case study model to record implementation issues, this focus clearly did not appeal to interviewees, and did not provide the richness, novelty or variety of the LG-defined case study topics. So from then on, case study selection relied entirely on LG perceptions of key local issues. But a process was still needed to decide which LGs to approach for interviews.

There is no formal Australian database of LG attempts to deliver beneficial environmental outcomes, or of LG involvement in environmental work. So the information needed to sample environmentally proactive LGs had to be gathered from individuals who knew about their attempts. A key source of this information was the network of Environmental Resource Officers (EROs) in each state-based LGA. The research in each state usually started with an interview with the relevant ERO. These interviews involved discussions about which LGs in the state were doing interesting environmental work, and who in the LG was involved. Conferences provided a second source of information about environmentally proactive LGs, and the people involved in attempts. In particular, the *Pathways to Sustainability* conference, attended by this author in 1997 showcased many LG environmental initiatives (City of Newcastle 1997). And four of the Victorian case studies were researched in a single day, when Local Environs held a field trip to showcase outstanding LG environmental initiatives in Melbourne[1]. Finally, many interviewees suggested other LGs and individuals that were doing interesting environmental work.

Between them, these three main sources of information provided contact names in more LGs than could be covered by this research. There were three main ways in which this total set of possible case study LGs was reduced to a manageable number. The first two were the practical issues of visiting the case study sites, and arranging interviews. The third was the intention to include a spread of LG experiences. These sample selection issues are now discussed in turn.

[1] See case studies V1, V2, V3, V6 and V7 featuring Moreland, Manningham and Port Phillip.

Right from the start, this researcher considered it essential to conduct the research within each of the LG areas that case studies dealt with. This was for several reasons, including:

- That it seemed respectful to the interviewee to demonstrate interest in the case study by actually travelling to them to learn about it;
- It was assumed that there would be tangible details in most case studies that could only be understood through first hand experience in the area;
- Being there provided theoretical sensitivity to the common and contrasting features of case studies, that would have been difficult to grasp from a distance; and
- The photographs and locally-produced documents that provide the colour and technical detail in the case studies were only available in the local area.

The intention to visit each case study site meant that many of the LGs that involved in attempts to deliver beneficial environmental outcomes could not be included. For instance, in Western Australia, the interview with the ERO was held in Perth, after travelling through most of the state. This meant that the many interesting attempts being undertaken in northern Western Australia could not be included, since it was impractical to turn around and travel back to those areas. Similarly, no South Australian or Tasmanian case studies are presented, because of a lack of both time and money. So the sampling was restricted to those LGs involved in attempts, which could also be visited for an interview.

The need to arrange an interview worked to cull down the set of possible case studies, since these relied centrally on the expert knowledge of the people involved in the attempt. When a LG official could not be contacted, the attempts being made by that LG to deliver beneficial environmental outcomes were generally not included in this research. The main exception was in the Northern Territory. The ERO there highlighted planning problems as centrally important to LGs in the territory, since LGs lack statutory planning powers, yet suffer the consequences of poor decisions in the local area. Partly because of this lack of powers, it was difficult to find LG officials working on planning issues. However it was easy to find community activists who were angry about perceived planning problems, and were willing to discuss these as case studies. So three of the Northern Territory case studies were initially provided by people without experience working for LGs, with their accuracy later checked by LG officials who could be contacted to check these details.

Thirdly, those LGs that could be visited, and in which individuals involved in the attempts could be contacted, were selected aiming to provide a spread of interviewee perspectives, roles, and LG types. This was to ensure that the huge variety of LG environmental experiences could be recognised and analysed in the case study research. Developing and using these categories was a relatively complex process, which is discussed in some detail in the following subsections.

Developing and using the categories for perspective, role, LG type and environmental focus area

The analytical categories for perspective, role and LG type were developed during the research process, but variations were well enough understood to have also been useful in obtaining a diverse sample. This was achieved by reviewing the set of possible case study LGs that were involved in attempts to deliver beneficial environmental outcomes, and that were also practical to visit. Then the likely perspectives and roles of potential interviewees were assessed, along with the type of LG undertaking the attempt and the environmental focus area. The selected set were those that provided the greatest variation in perspective, role, type and focus and were also practical to visit. These characterising variables were defined in Chapters 2 and 3 (Tables 2.1, 2.3 and 3.1). Their development as characterising variables used in sampling and case study description is described here.

The category of *perspective* describes the point of view held by an interviewee on local environmental issues, based on their personal history of work experience with LGs and other agencies. In the early case study interviews, this category was described using a long, complicated listing of work experiences, and detailed descriptions of the types and locations of organisations with whom each interviewee had worked. The detail seemed to add little value, and the complex lists were replaced with the simple direct question “what positions have you held that have given you insight into LG capacity to deliver beneficial environmental outcomes”. Analysing the responses to these questions, and the type of case study issues highlighted by interviewees suggested the relatively simple set of subcategories to describe the different perspectives.

The final subcategories of *LG, mixed, state and federal government,* and *other* provide good insight into the breadth of working knowledge of an issue held by each

interviewee. For instance, those with *LG* perspectives usually had an excellent understanding of the workings of LGs, but might be frustrated about the failure of sate governments to respond to local needs. When an interviewee had a broader, *mixed* perspective, their understanding of both spheres of government seemed often to mediate this frustration, replacing it with a longer-term strategic approach to resolving big-picture issues.

LG *roles* were determined at the same time as *perspective*, using the responses to the same question. The category of LG role relates only to those interviewees with experience working in LGs, and so takes in only those with LG and mixed perspectives. This category separates interviewees into the major areas of responsibility within a LG. The major subcategories of *elected, manager* and *officer* show the separation of powers between the interviewees. Those in elected roles have legislative responsibilities for the LG. An interesting separation here was between mayors and other councillors. Managers and officers have executive powers, with managers operating at a higher level within the LG. Distinctions between Chief Executive Officers, as the most senior managers seemed pertinent in describing these roles, as did the separation between officers with and without environmentally-relevant roles.

The categories for *LG type* have been carried across from the results of the environmental risk studies that were discussed in the previous chapters. These have already been shown to explain much of the variation in LG population, expenditure and area (Section 2.7) and to help explain LG effectiveness in delivering beneficial environmental outcomes (Section 6.8). Because of this, LG type seemed likely to be relevant to the comparative case studies. The subcategory of *region* was added to the set of LG types, since some of the case studies cover several LG areas. In addition, the individual LGs population, expenditure and area were included as sub-categories, to support further refinement and analysis of this analytical category and the factors that affect it.

It was most common to hear of attempts being championed by people with LG perspectives, working as officers or managers in capital city LGs. The challenge with sampling was therefore to ensure that people with mixed and other perspectives, those in elected roles, and also that non-capital city LGs attempts were included in the sample. There was no goal of researching state or federal government attempts, and so no efforts were made to sample officials from those spheres of government.

Selecting specific case studies also aimed to achieve a range of environmental *focus areas* within each state and LG type. Again, this was fairly easy to achieve, as the environmental initiatives that were suggested as possible case studies by LGA officers and others were generally fairly evenly distributed across the three focus areas. Despite this, it was not practical to obtain case studies of each focus area from each state.

Describing the sample using perspective, role, LG type and focus area

Although relatively informal processes were used in the sampling process, the result is fairly well balanced. Tables 7.3 demonstrate this by showing the total number of perspectives, roles and LG types that are represented in the case studies. Table 5.5 breaks these totals down by state, demonstrating that the sample is also fairly well balanced by state. (The notes below the tables explain apparent inconsistencies in the totals).

Figures 7.5a-d show that the sample also covers much of the variation in LGs generally. The case study LGs are shown in the graphs by the symbol ‘c’. The graphs show that the sample was fairly representative of LGs in general, in relation to expenditure, population and extensiveness, as well as expenditure/population. The main exception to this is that none of the most extensive or poorest LGs were sampled. Attempts were made to find case studies amongst those LGs, but no outstanding attempts were found amongst those LGs. It seems likely that the most extensive and poorest LGs have difficulty funding and/or promoting attempts to deliver beneficial environmental outcomes. However, as this research did not directly ask why LGs sometimes don’t make environmental attempts, further research would be needed to confirm this proposition.

Tables 7.3a Perspectives, roles and LG types represented in the case studies

Perspectives	Totals
Local government	26
Mixed	7
State/federal govt	1
Other	9
Total perspectives in interviews	**43**

Roles	Totals
Councillor (Mayor)	8 (6)
Manager (CEO)	10 (1)
Officer (envt)	16 (16)
Total LG + mixed roles	**34**

LG Types	Totals
Capital city	10
Capital fringe	7
Other centre	6
Other LG	5
Region	5
Double-up	4
Total Case Studies	**37**

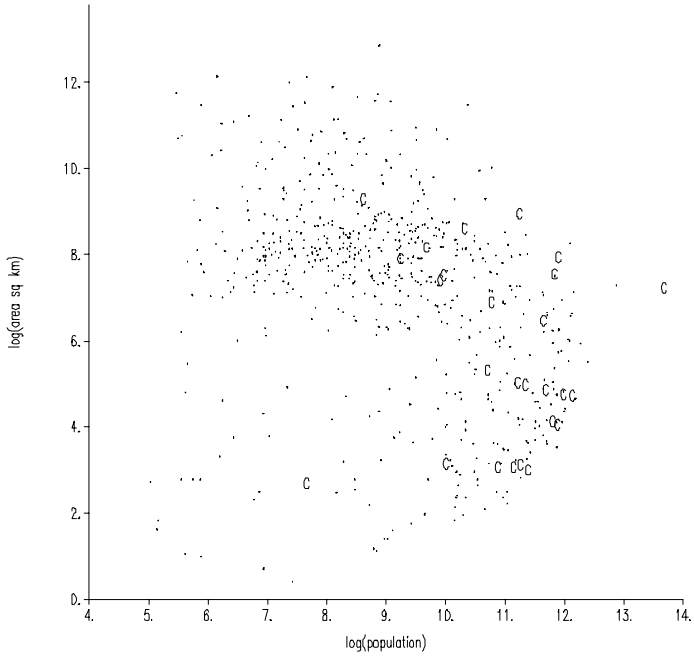
Table 7.3b Perspective, roles, LG type and environmental focus area by state

	Queens-land	Northern Territory	Western Australia	Victoria	New South Wales	Australian Capital Territory	Totals
Perspectives							
Local government	8	1	7	8	2	-	26
Mixed	3	1	1	1	-	1	7
State/federal govt	-	-	1	-	-	-	1
Other	-	5	1	2	1	-	9
Totals	**11**	**7**	**10**	**11**	**3**	**1**	**43**
Roles							
Councillor (Mayor)	4 (3)	1 (1)	1 (1)	2 (1)	-	-	8 (6)
Manager (CEO)	6 (1)	-	3	1	-	-	10 (1)
Officer (envt)	1 (1)	2 (2)	4 (4)	7 (7)	2 (2)	-	16 (16)
Totals	**11**	**2**	**8**	**10**	**2**	**-**	**34**
LG types							
Capital city	1	1	2	4	2	-	10
Capital fringe	1	1	2	3	0	-	7
Other centre	2	1	3	-	-	-	6
Other LG	3	1	-	-	-	1	5
Region	3	-	1	-	1	-	5
Double-up	1	1	-	2	-	-	4
Total case studies	**11**	**5**	**8**	**9**	**3**	**1**	**37**
Focus area							
Plannning	4	3	1	2	-	-	10
Management	2	2	4	4	2	1	15
Protection	5	-	2	2	-	-	9
Totals	**11**	**5**	**7**	**8**	**2**	**1**	**34**

Notes about the counting.

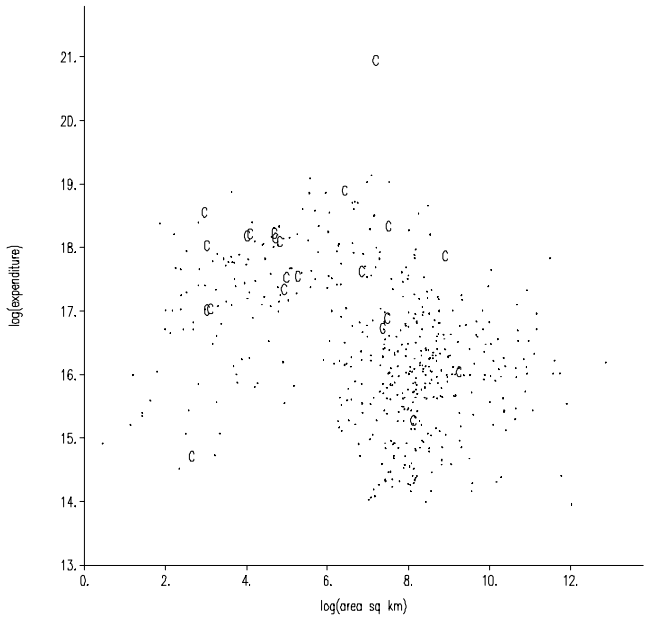
- The perspective of each individual interviewed for each case study is included. Because there were multiple interviewees for many case studies, there are more perspectives than case studies.
- Roles are only counted for those interviewees with LG or mixed perspectives. Where one person has been interviewed for more than one case study, their role is only counted once. Sub-roles (such as mayor, a type of councillor) are indicated in brackets.
- Case study Q3, which covers the entire state of Queensland, is counted as a region.

Figure 7.5a Case study local governments, by population and area



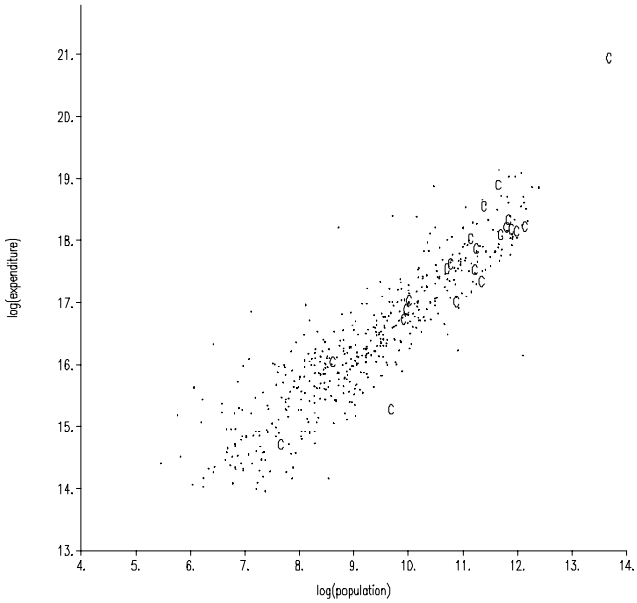
C = LGs selected for case studies Source: Information Australia 2000.

Figure 7.5b Case study local governments, by area and expenditure



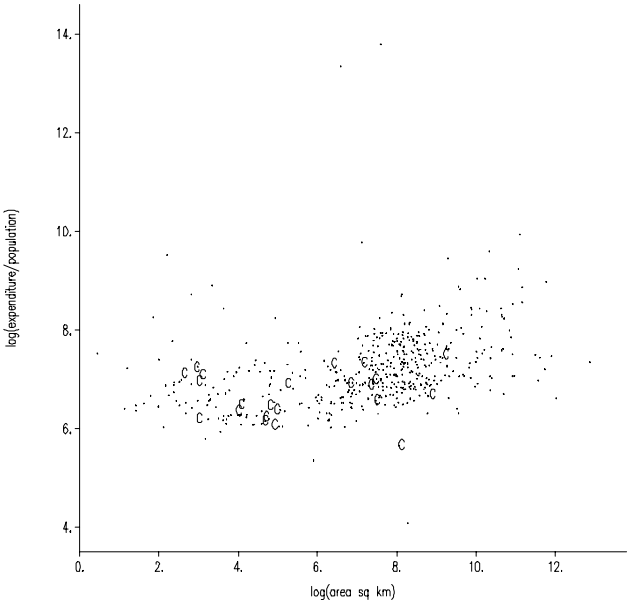
C = LGs selected for case studies Source: Information Australia 2000.

Figure 7.5c Case study local governments, by population and expenditure



C = LGs selected for case studies Source: Information Australia 2000.

Figure 7.5 d Case study local governments, by area, population and expenditure



C = LGs selected for case studies Source: Information Australia 2000.

7.5 Environmental Strategists

Another issue that is often highlighted by other authors, and that has already been suggested by the above discussions is the importance of environmental strategists in attempts to deliver beneficial environmental outcomes. Other terms used to describe such people include change agents, champions, but the term environmental strategist (Taper 1999) is used here since it emerged during interviews, and is particularly applicable to the setting of the comparative case studies. These are people who see their roles with LGs as giving them opportunities to progress personal environmental goals. Because of this, they proactively, and strategically initiate and follow up the environmental attempts, beyond what is required of them in their formal role. Case study informants were frequently environmental strategists.

A focus on environmental strategists was not part of the initial methods for the comparative case studies. During the early interviews, it was hoped that the case study methods would bring out important issues relating to the people who proactively drive attempts. It became clear that this was not happening during one interview with a particularly proactive informant. This Mayor was constantly called away by phone calls and other urgent business relating to his proactive environmental initiatives. The distractions gave the researcher a chance to look around his office, and see the space he works in. All around were photographs of wetlands and pictures, sculptures and other images of frogs. These were clearly an inspiration to him, yet that never came out in the case study interview. This was obviously an important gap in the methods, and specific questions for environmental strategists were added.

The environmental strategist questions were refined over time, and aimed to tap into their sources of inspiration. This seemed to be the key element that was missing from the research to date. These inspirations both stimulate the strategists to initiate attempts, and also keep them going through times when beneficial environmental outcomes are slow to be realised. The questions that were asked to tackle these issues were:

- Do you see your role in LG as giving you a chance to meet other personal environmental goals? (and if the interviewee answered yes, they were also asked the following two questions)
- Do you have a particular hobby issue, or something that you are most concerned about that motivates to you in your environmental work? If so, what is that issue?

And

- How effective do you think LG is in addressing this environmental issue.

While this led to interesting discussions that are worthy of considerable analysis, it was beyond the scope of this thesis to address this in detail. However the analytical category of environmental strategists, and the method for identifying them was effective, and therefore worth reporting here.

7.6 Accountability, accuracy and partnerships

The interviewees who provided the case studies have an enduring and central interest in them. They have typically been involved in the environmental attempts for several years, and have generally worked beyond the 'call of duty' in progressing beneficial environmental outcomes in each attempt. They have also often applied strategic initiatives and creative efforts that will impact beyond the life of the case studies, as reported here. These relationships with the attempts, as well as their intimate knowledge of them demanded that they be involved with the write-ups of the case studies, as well as the provision of the original data. The processes described here to involve the interviewees in the final case study write-ups aimed to address these issues while ensuring case study accountability, accuracy, and respectful ongoing partnerships with the people and organisations involved in the attempts.

To address these issues, drafts of each case study were supplied to each of the original interviewees. They were asked to check the accuracy of the case studies, add relevant details about events that had occurred since the interview, and check the appropriateness of the case study materials with others in the LG if necessary. In the cases where the original interviewees did not hold formal roles with the relevant LG, or had moved on from the LG since the case study interview, the draft case studies were also supplied to the most appropriate person from the relevant LG. These people were identified through phone conversations both the interviewee and the LG.

The opportunity to co-author the written case study was offered to each of these contributors. Many took up the offer, and those individuals are acknowledged at the start of the case study story, and in the case study footer. Some did not want to be recognised as co-authors but were happy to be acknowledged for their contributions. Those people are acknowledged at the start of the case study story, but not in the footer.

Others wanted to remain anonymous, and were not named at all. This was sometimes because they felt they had played only a small part in the case study, and sometimes because they considered that their role within the LG made their identification inappropriate or overly sensitive.

The partnership between contributors and the case study process will also continue after this thesis is completed and submitted. The author has undertaken to provide each contributor with a CD-Rom, of the final thesis, together with the whole set of case studies. It is hoped that this will assist the contributors to share the stories of their work with others, and so keep the memory of their environmental attempts alive. Access to the other case studies could also help them to see their own attempts in context with others, and perhaps to be inspired and informed about other possibilities. The provision of the thesis, including the case study analysis might also invite contributors to consider the broader context and implications of their work and perhaps even its theoretical value, and potential to enhance general understanding of LG environmental issues.

7.7 Coding and emergent analytical categories

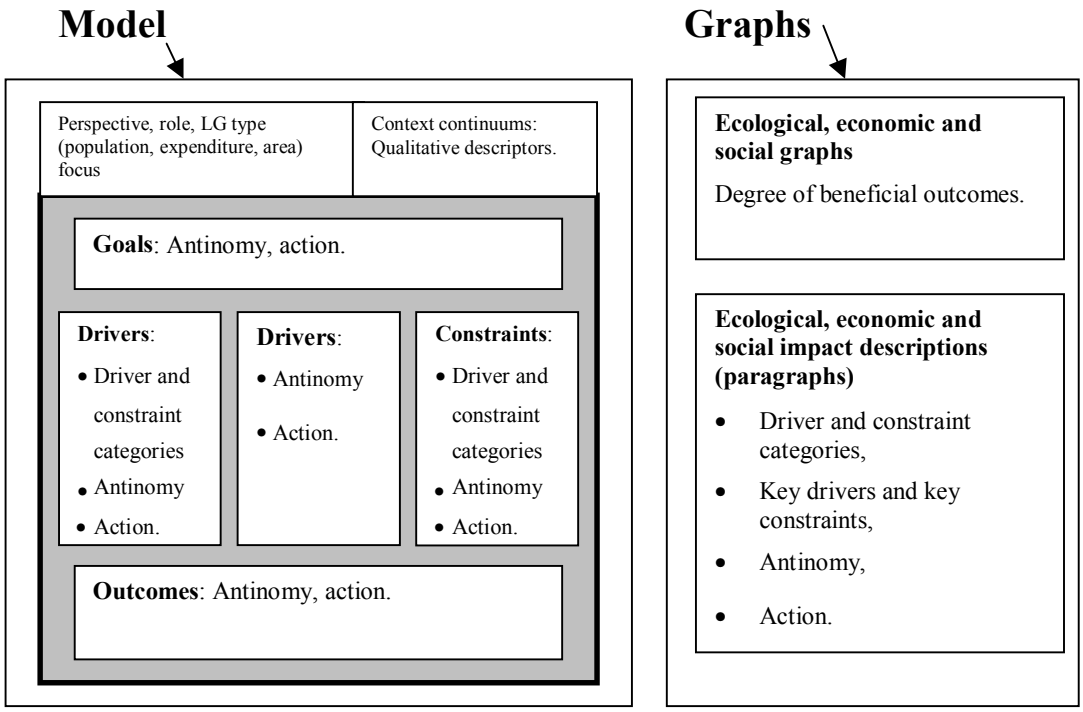
As described above, the generation of analytical categories is a central goal of grounded theory building. This research generated a range of analytical categories from through case study analysis, and those that served as explanatory variables have already been described in this chapter. This section introduces the emergent analytical categories that form the response variables from the case studies. These were developed through iterative coding and analysis of each element of the attempt model, and the graphs. In most cases, one-to-many relationships were allowed in the coding of the dot points from the model, and the paragraphs describing the graphs. This meant that any individual point might be coded into number of any of the categories. This was because some of the points were complex, and it was overly restrictive to limit the coding, and such limitations would not have assisted the discovery of grounded theories. Despite this allowance, most points could be accurately coded as only one of each relevant type of category.

Six groups of categories were discovered during case study coding and analysis. Each of these primary categories also included a range of subcategories, and these are all defined in this section. The core categories are:

- Driver and constraint categories,
- Degree of beneficial outcomes,
- Antinomy categories
- Action categories,
- Winners and losers, and
- Key drivers and key constraints.

Figure 7.6 shows which of the categories were applied to each component of the models and graphs. The following discussion formally defines each of the categories and subcategories.

Figure 7.6 How the coding was applied to the models and graphs



The *driver and constrain categories* were the most complex group, and were also one of the least commonly applied. Only the driver and constraint elements of the model, and the paragraphs describing the graphs were coded with driver and constraint categories. Iterative coding and analysis of the categories led to the discovery of four core categories, with up to seven subcategories within each one. Table 7.4 defines each of the final driver and constraint core and sub-categories. A key aspect of each category and subcategory is that each one represented a force that could be expressed as either a driver or a constraint (or both). For instance, the first subcategory of *LG commitment*

would be a driver if such a commitment was made, but a constraint if progress towards the attempt was inhibited by the lack of such a commitment, or the presence of contradictory commitments.

Table 7.4 Core driver and constraint categories

Category	Definition
INITIATIVE/ BELIEF / COMMITMENT	**Voluntary contributions to attempts, beyond the legal or perceived obligations of the local government.**
LG commitment	The majority of elected Councillors support the attempt.
Personal belief	Individuals involved in the attempt have personal beliefs about it.
Strategic action	Action in the short term that aims to bring about change in the long term.
Public support	A dominant view in the general community supports the attempt.
Consultation	Program for LG and other agencies to learn from community responses to attempt.
Local features	Aspects of the local ecological economic or social environment stimulate the attempt.
PRACTICAL RESOURCES	**The tangible resources targeted towards attempts.**
Conceptual systems	Scientific or other recognised source of knowledge about the issue, together with a model or other means with which to translate that into action.
Ongoing finance	A reliable source of funds that will be available for the life of the attempt.
One-off payment	A single grant, or limited amount of money that will not extend for the life of the attempt.
Skilled people	Workers available with knowledge and skills necessary to undertake the attempt.
Physical systems	Adequate practical or physical infrastructure sufficient to support a successful attempt.
Time	Enough time to complete the attempt, without compromising other issues facing the authority.
RIGHTS/ RESPONSIBILITIES	**The obligations of local government to make attempts**
Legal obligation	A law requires that the attempt be made by the authority.
Statutory potential	A head of power enables the authority to make a law that would support the attempt.
Leadership	The authority is perceived as being best-placed to make an effective attempt, and therefore to have an ethical responsibility to undertake the attempt.
INSTITUTIONS	The agencies, groups and organisations actively involved in the attempt.
Community environment group	A group working to improve local ecological conditions.
SG	SG departments and officials with interests in the attempt.
Regional organisations	A group of LG working together as a formal regional organisation, on issues related to the attempt, whether or not other non-LG agencies are involved.
Issue-specific working group	An ongoing group involved in the attempt, and working together on it over time.
Media	Media coverage of the attempt and related issues.
LGAs and other LGs	The Local Government Association expressing an interest in the attempt, or other LGs being involved in the attempt, outside of formal regional arrangements.
FG	Any involvement by any federal government official.

Source: Appendix 1. Thesis category map.

A second category described case study components in terms of *local-state antinomy* force origins and impacts. Each of the model elements and the paragraphs describing the graphs were coded according to its origins or impacts in relation to the antinomy. Initially, only subcategories for *inside* and *outside* were included. However coding quickly showed that many aspects of each case study effectively integrated the efforts of LGs with other broader organisations, including the SG. This led to the inclusion of the third subcategory of *integrated*, as defined in Table 7.5.

Table 7.5 Categories for local-state antinomy force origins and impacts

Category	Definition
Inside	A force originating, focused or impacting within the local area, including within the LG.
Outside	A force originating, focused or impacting within the local area, excluding the LG's particular concerns.
Integrated	A force that integrates efforts and initiatives within and outside the local government area, and that therefore provides a practical solution to the local-state antinomy.

Source: Appendix 1. Thesis category map.

The third set of categories described the nature of the *action* brought about by each component of an attempt. This set first included only the subcategories of *administrative* and *substantive* actions, that highlighted the differences between practical impacts of attempts, and those that were represented only by words on paper. However many parts of attempts did not fit either category, but were adequately described as actions that changed either the *knowledge* about an environmental issue, or the *relationships* involved in it. These categories are defined in Table 7.6.

Table 7.6 Categories for actions involved in attempts

Category	Definition
Administrative	A goal, process, outcome, driver or constraint that does not directly change any ecological, social or economic values
Substantive	A goal, process, outcome, driver or constraint that directly changes ecological, social or economic values
Knowledge	A goal, process, outcome, driver or constraint that directly changes what is generally understood about the environmental values and impacts involved in the attempt.
Relationships	A goal, process, outcome, driver or constraint that directly changes relationships or partnerships between individuals or institutions involved in the attempt

Source: Appendix 1. Thesis category map.

The remaining categories focused specifically on the graphs. The fourth category described the *degree of beneficial outcomes* pictured in the graphs. Initial coding used a complex set of descriptors for the start, winner and loser levels and trends

on each of the ecological, economic and social graphs. This proved too unwieldy for analysis, and the categories were instead replaced with the three simple categories, defined in Table 7.7. These use the ecological outcomes as the primary factor in assigning each case study to a category, and then consider the trade-offs that occurred in economic and social spheres in order to achieve the ecological outcome. Although simplifying these categories aided analysis, it remained difficult to accurately and consistently fit each case study into just one category. It was beyond the scope of this research to develop this analysis any further, but further insights could be gained through further application of this approach in other studies.

Table 7.7 Categories for degree of beneficial outcomes

Category	Definition
Highly beneficial environmental outcomes	Ecological values are maintained at high levels, improve, or there is a slowing in the rate of degradation. Meanwhile, there are no long-term economic or social costs, or costs are restricted to a very small group, which is able to recover in the long term. Sustainable beneficial outcomes are assured in the foreseeable future.
Moderately beneficial environmental outcomes	Ecological values are maintained at high levels, improve, or there is a slowing in the rate of degradation. However there are moderate economic and/or social costs associated with these ecological outcomes that threaten the viability of the attempt in the long term. Beneficial outcomes are possible in the foreseeable future.
Low benefit environmental outcomes	Ecological values continue to degrade or rates of degradation are only slightly improved. There are significant and widespread economic and social costs that severely threaten the long-term viability of any gains.

Source: Appendix 1. Thesis category map.

The final two categories tried to identify the specific impacts of attempts that were helped define the degree of beneficial outcomes. The fifth category dealt with the *winners* and *losers* involved in attempts. These categories sought to elicit the particular interest groups who benefited or suffered as a result of the attempt. The sixth and final category considered the *key drivers* and *key constraints*. These were the factors that directly changed the slopes of the graphs. These final subcategories are defined in Table 7.8.

Table 7.8 Categories identifying specific impacts of attempts

Category	Definition
Winner	An entity benefiting from an attempt.
Loser	An entity suffering from an attempt.
Key driver	A force that raises the slope of an ecological, economic or social graph (whether by reducing the rate of decline, flattening it out, retaining a flat trend despite a negative force or generating a positive slope)
Key constraint	A force that lowers the slope of an ecological, economic or social graph (whether by increasing the rate of decline, flattening out a rising line or generating a negative slope.

Source: Appendix 1. Thesis category map.

7.8 Conclusion

The work described in this section encompassed the collection, write-up and initial analysis of the 34 case studies that form the major inside-out study of this thesis. While the case studies are not included in the main text of the thesis, they are provided in full in this volume, and in Appendix 4 in the accompanying CD-Rom, and readers are encouraged to look through them. Those who have not yet been tempted may find themselves encouraged to do so as they work through the next chapter, which deals with the case study analysis. This analysis was supported by N-Vivo[2], and aimed to discover grounded theories to explain the origins and impacts of LG attempts to deliver beneficial environmental outcomes.

[2] Produced by Qualitative Solutions and Research Pty. Ltd. Suite 3,2 Research Ave, Bundoora Victoria, Australia 3083. The N-Vivo viewer program and project are included with instructions on the accompanying CD Rom.

8. Comparative case study findings

8.1 Introduction

The 34 case studies that are presented in Appendix 4 are fascinating, rich and diverse accounts of LG attempts to deliver beneficial environmental outcomes. They also constitute a large array of original primary data for this thesis. The case study format provides a way to explain and promote understanding of LG capacity to deliver beneficial environmental outcomes, and is thus an answer to the thesis' first major research question. The case studies also detail the nature of some beneficial environmental outcomes being achieved by LG, and thus also give answers to the second research question. Answering the third research question about how LG environmental capacity can be improved requires analysis of the case studies to discover patterns and lessons[1]. This chapter is primarily a comparative analysis deriving from the coding of data from the case study models and graphs into the analytical categories that were defined in Chapter 7. In this way, its focus is on using the analytical categories to compare across the case studies. In doing so it discovers grounded theories about the relationships between categories, thereby discovering patterns in LG environmental efforts and drawing lessons about ways to improve LG environmental capacity. Despite this cross-case study focus, individual case studies are discussed at some points, to elucidate the detailed findings.

As with Chapter 6, this chapter is structured around the elements of the local-state antinomy that were presented in Table 4.2. At least one explanatory variable category and one response variable category was used to explore each of the antinomy elements, and an effort was made to include every analytical category at least once in the analysis. Table 8.1 shows which analytical categories were used to analyse the workings of each element of the local-state antinomy in the case studies. Regarding this table, remember that each of the broad driver and constraint categories contain

[1] The major thesis research questions are detailed in Chapter 1, and are:

- How can Australian LG capacity to deliver beneficial environmental outcomes be understood?
- Within this capacity, what are the environmental outcomes now being achieved by Australian LGs?
- How can Australian local government extend its capacity to deliver beneficial environmental outcomes? and

subcategories. In some cases, the analysis focuses on the broad categories, and at other times the subcategories are the focus. The table distinguishes between the explanatory and response variables used in each part of the analysis. Note though that some of the categories were analysed as both types of variables, depending on which other variables were involved in the analysis and what questions were being asked. This included the categories for origins and impacts or attempts, environmental focus areas and the broad driver and constraint categories.

Table 8.1 Summary of the variables used to analyse each antinomy element

Antinomy elements	Explanatory variables	Response variables
LG responsiveness to the community	• Flexibility • Attempt origins or impacts • Drivers and constraints	• Broad driver and constraint categories • Attempt components • Initiatives/Beliefs/commitments (subcategories of a broad driver and constraint category)
Resource shortages	• Drivers and constraints • Key drivers and key constraints	• Broad driver and constraint categories • Practical resources (subcategories of a broad driver and constraint category).
The potential for partnerships between LGs and others	• Drivers and constraints	• Institutions (subcategories of a broad driver and constraint category).
LG efficiency and effectiveness	• Environmental focus areas	• Degree of beneficial outcomes (from the graphs)
LG leading the community	• Drivers and constraints • Environmental focus areas	• Rights and responsibilities (subcategories of a broad driver and constraint category).
The politics of LG	• LG type	• Winners and losers
The diversity between LGs	• LG type	• Environmental focus areas
The knowledge base of LG	• Action categories	• Attempt components
The integration of policy that occurs in LG.	• Perspectives	• Propensity for involvement with attempts (compared with EPA implementation in chapters 5 and 6).

The patterns in the statements that were coded into each of these analytical categories (coding references) are sometimes presented as bar charts. These bar graphs

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- What are the implications of the local-state antinomy on Australian LG capacity to deliver beneficial environmental outcomes?

have no statistical basis, and are not intended to summarise the theoretical findings for any section. They are simply used to convey the relative frequency of certain combinations of the categories and subcategories and therefore to highlight some broad patterns.

The detailed statements that are summed in the bar charts were also qualitatively analysed to produce the resulting grounded theories. This was not done for analysis of the broad driver and constraint categories (since there were too many individual statements included in these), but only for the subcategories within these broad categories. Generalised theories are proposed for those comparative analyses where patterns did emerge. Readers can assess the accuracy of the generalisations themselves by referring to the detailed quote tables for each qualitative comparison, that are presented in Appendix 4.

It must be acknowledged that not only the methods used in this analysis, but also most of the categories and all of the coding are original contributions from this research. An important implication is that external validity has not yet been established for any aspect of this research. The primary strategy for addressing this has been to ensure absolute transparency between the original research, categories, coding and analysis so that any reader may readily make their own judgements about the research. This is achieved in four main ways. First, transparency is achieved through the provision of each complete case study in Appendix 4. By telling stories, and then presenting the same material within the analytical models, the case studies demonstrate the links between the observations and initial analysis. Second, the presentation in the previous chapter and throughout the thesis, of each analytical category used allows readers to consider the degree to which these fit and work in explaining LG capacity to deliver beneficial environmental outcomes in general and the case study materials in particular. Third, the Appendix four also includes tables showing the full range of case study statements contributing to each of the generalisations made in this chapter. These are referenced individually throughout the text. Fourth, the *N-Vivo project* containing all of the case studies complete with their coding is provided on the accompanying CD-Rom, along with instructions on its use. As a reader you could use this to view the complete case study coding, and to run your own searches to explore other issues you see emerging from the case studies.

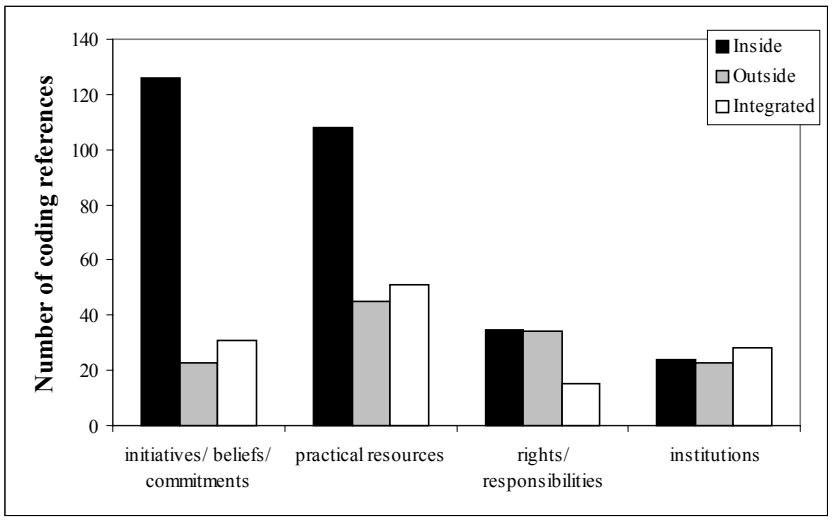
8.2 Local government responsiveness to the community

There was great variation between case studies in the nature of LG responsiveness to the community. Case study N1 on the South Sydney city gardens was an example of an unofficial community initiative being taken up and supported by a LG, which later linked the community initiative with broader LG policy initiatives. More commonly, the attempts included significant consultation that specifically aimed to ensure that community views were well represented in environmental policies and strategies[2]. In two of the case studies, community activists sought election to the LG specifically to achieve an environmental initiative. In case study Q4, community environmental activists from Noosa Shire were elected to council on balanced green electoral platforms, and were successful in achieving the long-term, strategic objective of protecting the Noosa North Shore from development. There was an opposite outcome in Nedland City, described in case study W3, where residents who opposed council's tree clearing controls were elected to the council and immediately halted the local environmental initiative. These last two examples show how LG democratic processes can be so responsive that they enable community views to take over the council and its policies for either beneficial or detrimental environmental outcomes. This section explores the analytical categories that most clearly address questions of LG responsiveness to the community.

Figures 8.1 and 8.2 show how frequently each of the broad driver and constraint categories and attempt components originated or impacted inside or outside a local area, and how often these integrated between inside and outside the LG sphere. These graphs suggest that forces originating or impacting inside a LG area are most commonly identified throughout all stages of an attempt. These inside forces are most predominant in relation to initiatives/beliefs/commitments and practical resources. Outside forces are also frequently identified as drivers and constraints, and integrated forces are often listed as drivers.

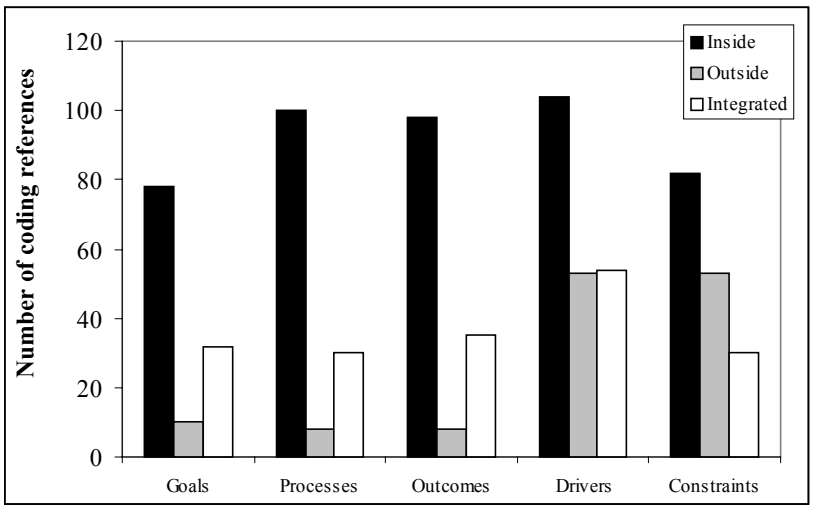
[2] See for example Q1, Q10, T3, T5, W1, W4, W5, W7, V7, V8, N2.

Figure 8.1 Four broad driver and constraint categories and attempt origins and impacts



Source: Coded comparative case study database

Figure 8.2 Attempt components and attempt origins and impacts

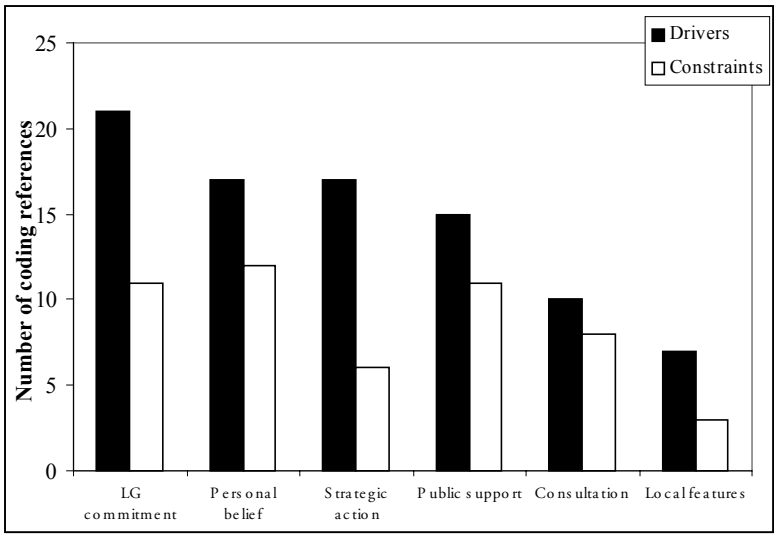


Source: Coded comparative case study database

Subcategories of intiatives /beliefs/commitments as drivers and constraints provide further insight into LG responsiveness to communities. Figure 8.3 shows the patterns. Interestingly, this is the only one of the core driver and constraint categories in which every element was more often identified as a driver than a constraint. Detailed tables listing every case study quote that was summed for this bar chart are presented in Appendix 4[3].

[3] Appendix 4, 1. Commitments as drivers and constraints.

Figure 8.3 Subcategories of initiatives, beliefs and commitments as drivers and constraints



Source: Coded comparative case study database

Qualitative analysis was also used to find patterns in drivers and constraints related to flexibility[4]. Table 8.2 presents some representative and illuminating excerpts from the case study quotes about commitments. A first observation is that LG responsiveness to the community is working well when *commitments* are expressed as *drivers*, and also when *flexibility* is relatively high. Further conceptual density and variation in these generalisations is gained by considering the more detailed expressions of these patterns within the subcategories of *inditiatives/beliefs/commitments.* Table 8.3 summarises these more detailed patterns.

[4] See Appendix 4, 2. Initiatives, beliefs and commitments by flexibility for the full range of case study excerpts.

Table 8.2 Examples of initiatives/beliefs and commitments as drivers and constraints, by differing degrees of flexibility.

	Drivers	Constraints
High Flexibility	Q11: Supportive population, environmental mandate through election campaign. V6: Establishment of community networks during training courses. Q4: Dedicated individuals working for decades from different angles. Q7: Enthusiasm and vision within Council and senior LG managers, especially Mayor, CEO.	Q4: Shifting and not always 'green' councils. W2: Community perception that optimal recycling only occurs where LG provides two wheelie bins. V2: Pressure for selling the site rather than the demonstration project (overcome by ability to achieve objectives).
Low Flexibility	V8: Elections following the amalgamations brought back 6 of 9 Councillors with knowledge of previous visions. V8: The new planning processes have involved successful community consultation and the current draft plan reflects dominant local views.	Q5: Local business people were fairly opposed to the EP Act, considering themselves to be causing little pollution. V8: However sections of the community would disagree with sections of the plan, and it is also possible that the SG will reject popular aspects of the new plans.

Source: Coded comparative case study database

Table 8.3 Generalised features of initiatives/beliefs/commitments as drivers and constraints

	Drivers	Constraints
LG commit-ments	Attempts have long-term legitimacy, deriving from commitments by key individuals, or well-established, undisputed policies and programs.	Attempts suffer from instability and uncertainty, due to policy changes with subsequent elections, and unpredictable policy implementation.
Personal beliefs	Key players passionately follow their personal commitments to causes. Communities and clients derive tangible benefits from their active contribution to attempts.	Many community members, or vocal minorities are ignorant about aspects of the attempt, opposed to aspects of it that are costly to them or apathetic about contributing to it.
Strategic actions	Enthusiasm and vision applied to attempts over the long-term. Systems are put in place that will deliver long-term environmental benefits.	Outside agencies oppose or fail to support local attempts.
Public support	Community members undertake personal action towards public good outcomes.	Community members act to preserve their private property rights.
Consultatio n	Respectful, two-way communication occurs between the LG and community.	Community remains apathetic and ignorant despite efforts to communicate initiatives clearly, or outside forces hinder effective LG/community partnerships.
Local features	Local features are appealing and resilient, and are perceived as worth taking care of.	Environmental constraints and environmental management difficulties.

Source: Coded comparative case study database. See Appendix 4 on the accompanying CD Rom for detailed quotes.

Summarising these findings, initiatives, beliefs and commitments are more commonly identified as positive aspects of attempts, rather than noted for their absence. In addition, it seems that in general, when LG responsiveness to the community works well, it is characterised by respectful two-way communication between LG and the community. It also involves enduring, personal and passionate environmental commitment on both parts. In contrast, poor responsiveness is characterised by ignorance and apathy from the community, and instability, uncertainty or a lack of environmental commitments on the part of the LG.

8.3 Resource shortages

Resource shortages are widely recognised as a major constraint to LG capacity to deliver beneficial environmental outcomes. Recall from Chapter 3 that LGs are responsible for only 4.5 per cent of Australian government expenditure, yet contribute 53 per cent of the total government environment budget. The nature and workings of resource issues as a constraint to LG are less well understood, as are the features of resources as drivers of environmental attempts.

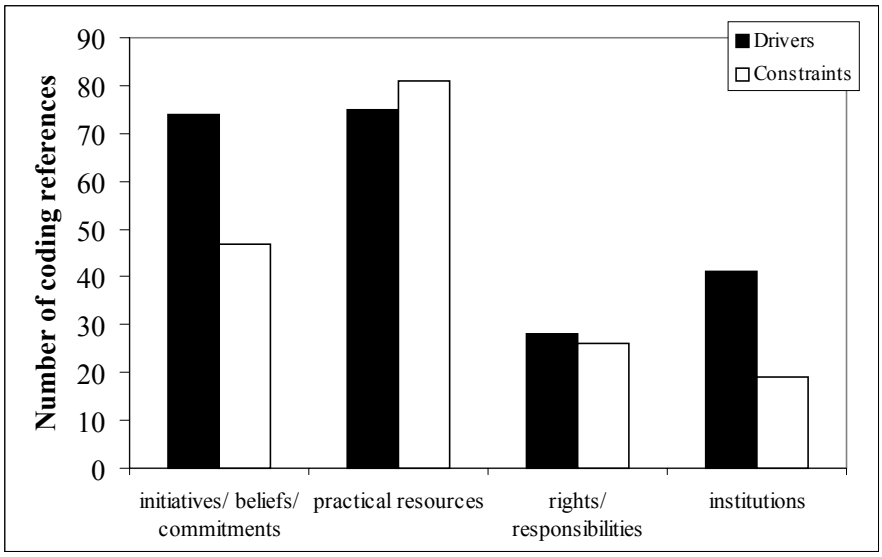
Many of the case studies contain insights into LG environmental resourcing issues that might surprise outsiders to LG. For instance, lack of financial resources were rarely a fundamental constraint that undermined an entire attempt. The only case study in which this occurred was Q5, in which Herberton Shire contributed to the development of a regional waste management strategy, but was finally unable to take part because the solution that was adopted was too expensive. There were more cases where the SG had grant programs available for equivalent LG environmental programs, but the locally sensible approach being taken by the case study LG made it ineligible for the funding. Examples include the waste minimisation initiatives in Darebin City (V3), the weed management programs in Manningham City (V5), and the coastal strategy at Albany City where SG and FG government funding was inappropriate for identified needs (W7).

Novel approaches to self-funding were present in more of the case studies than were fundamental problems due to a lack of finance. Examples include charging environmental levies (Q4), investing the profits from potential land sales into sustainability objectives (N2, V2), carefully investing in sustainable building materials that will deliver long-term financial benefits (V1), and creatively keeping the cost of

attempts to a minimum (T2). Interestingly, the provision of funding can also be a constraint. Case study W5 on the South West Western Australian regional environmental plan shows how a successful attempt was undermined by the subsequent funding of a similar initiative that competed with the earlier attempt, rather than building on its strengths.

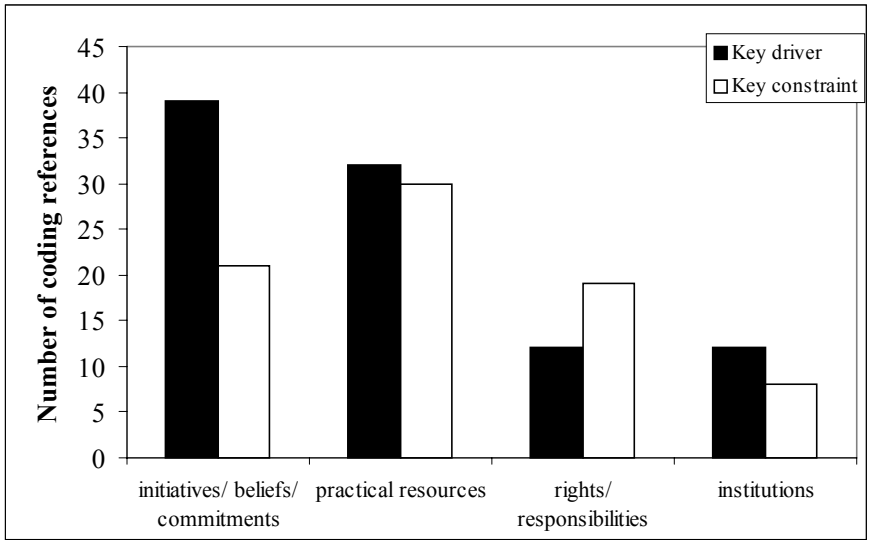
The main analytical category dealing with resourcing issues is the broad driver and constraint category for *practical resources*. Figure 8.4 shows the number of coding references from the case study model, to each of the four broad driver and constraint categories. This shows that a lack of, or inappropriate practical resources were most commonly identified as a constraint, and that there were more references to this than to any other driver or constraint category. Interestingly though, Figure 8.5 shows that practical resources were less commonly identified as a key constraint than as a key driver. Both differences however are slight, and would not be statistically significant. But clearly, resources are important as both drivers and constraints to LG environmental initiatives.

Figure 8.4 Broad driver and constraint categories as drivers and constraints



Source: Coded comparative case study database

Figure 8.5 Broad driver and constraint categories as key drivers and key constraints

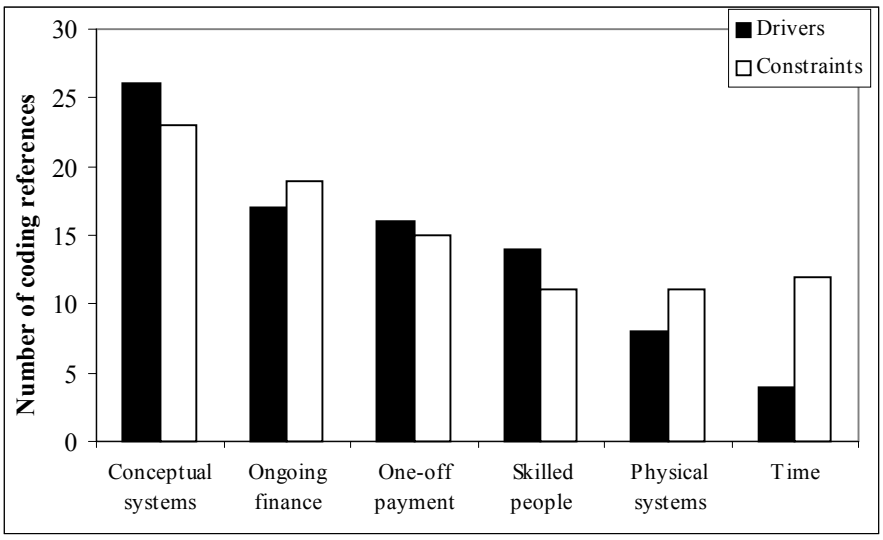


Source: Coded comparative case study database

Importantly, and perhaps surprisingly to LG outsiders, finances are not the only component of the practical resource issues that strongly influence LG capacity to deliver beneficial environmental outcomes. Figure 8.6 shows the six induced subcategories of *practical resources*, only two of which focus on finance. The following discussion explores the ways in which each of these practical resource issues operate as both drivers and constraints. It was also suspected that practical resources might affect LGs differently, depending on whether they were rich or poor. However no clear patterns could be discerned, probably because the sample size of poor LGs was too small. The detailed quotes that these generalisations draw on are presented in Appendix 4[5].

[5] Appendix 4, 3. Practical resources as drivers and constraints, and 4, 4. Practical resources as key drivers and key constraints.

Figure 8.6 Subcategories of practical resources as drivers and constraints



Source: Coded comparative case study database

Throughout the case studies, there were clear differences in the way that financial resources operated as drivers and constraints to attempts, depending on whether they were *ongoing*, or *one-off payments*. As well as being ongoing, the former funding sources were also usually strategically arranged by LGs, for their own use. In contrast, the one-off payments were generally provided by the other spheres of government, and were serendipitous (applying to all LGs in a jurisdiction) or tied to a specific purpose, as well as being one-off. Even when these one-off payments helped to drive attempts they were rarely a key stimulus since they could not be relied on in the long term. One of the striking features of both types of financial resources when they were expressed as constraints was that this lack of finance often triggered creative, strategic or opportunistic approaches to generating the required funding. Case study N2 addresses this, arguing that constraints were "usually expressed as financial issues, but this is often a perception not a reality. Creative solutions can be used to find innovative ways to fund environmental initiatives" (case study N2, p.3). The overall message here is that funding shortfalls are a troublesome reality that can often be overcome, so long as there is broader support for environmental attempts.

Conceptual and *physical systems* were frequently identified as both drivers and constraints. As drivers, conceptual systems tended to be off-the-shelf models with widely-recognised legitimacy, but which were be targeted to a specific attempt. Conceptual systems constrained attempts when they were overly bureaucratic or too generalised to be focused on in local conditions. When physical systems operated as

drivers this was due to LG ownership or access to land and infrastructure needed to progress an attempt. When these were lacking, their absence caused constraints.

The case study references to the subcategory of *skilled people* is interesting because of the frequency of references to individuals outside of LG. Skilled people from regional and central offices of SG, research institutions and statutory authorities were all mentioned. Community members from both within the LG jurisdiction and from further afield often also helped LGs to deliver beneficial environmental outcomes. *Skilled people* were constraints when those involved demonstrated a lack of knowledge about environmental systems, failed to learn from past mistakes, applied old assumptions to new settings or were hard to communicate with. The loss of skilled people who moved onto other roles was also constraining.

A lack of *time,* or problems stemming from competing pressures was another common constraint, especially if policy and bureaucratic processes slowed attempts further. It was also hard to maintain momentum of initiatives over time in many cases. Time was identified as beneficial when individuals were prepared to work on the attempt 'beyond the call of duty', and when this commitment continued for many years.

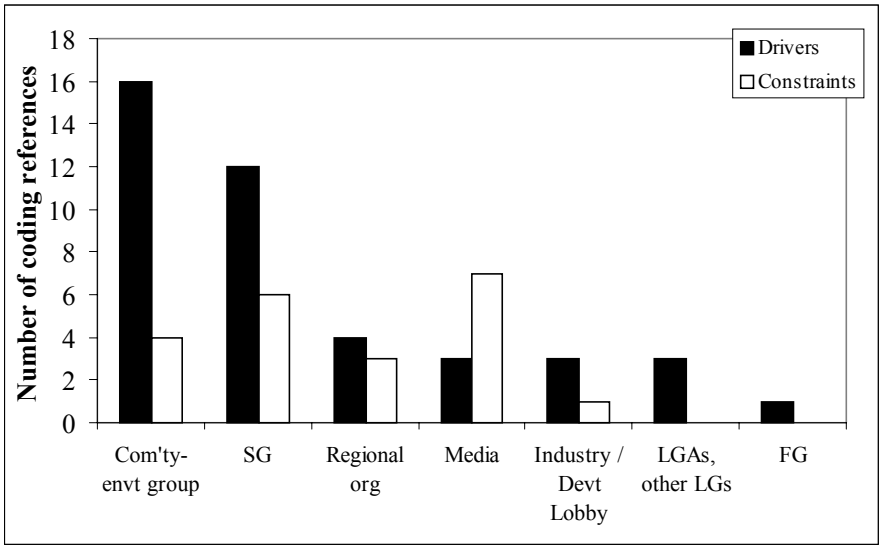
In summary, practical resources were often both drivers and constraints to attempts, and while financial resources were important, they were not the only major resource issues. So long as strong support for an attempt existed, a poor funding base was more often a stimulus to creative solutions than a fundamental constraint that might undermine an attempt. Other practical problems such as an absence of accessible infrastructure, overly bureaucratic processes, the absence or loss of skilled workers and competing time pressures were also serious constraints. Accessibility of well targeted and reliable resources in each category was a strong driver.

8.4 The potential for state/local government partnerships

The case studies tell stories of a range of partnerships and antagonisms involved in attempts. The driver and constraint category of *institutions* includes subcategories that extend beyond LG and SG officials and these are discussed together in this section. A brief overview of the patterns in coding references to *institutions* begins this discussion.

Figure 8.7 shows the patterns of *institutional* subcategories identified as drivers and constraints in the case studies. The graph shows that community groups were the most commonly identified driver and were rarely considered a constraint. SG was often mentioned, and was also mentioned twice as often as a driver rather than a constraint. There were relatively few references to regional organisations, the media, industry lobby groups, LGAs and other LGs or the FG. Of all of the institutions, only the media was more commonly identified as a constraint than a driver. The nature of each of these institutions' operation as both a driver and constraint is discussed in turn below, and the detailed quotes from the case studies that provided the data for the discussion are presented in Appendix 4[6].

Figure 8.7 Subcategories of institutions as drivers and constraints



Source: Coded comparative case study database

Perhaps the most striking feature of the community groups that were identified as drivers of attempts was their official nature, generally based on their formal backing by LG or broader government agencies. Of the 16 groups identified in the case studies, only three were purely community groups who did not derive their formal legitimacy from a government program of some sort. Regardless of their origins though, each of the community groups that drove attempts were well-established, recognised for their legitimate involvement in the attempt, and were made up of individuals with long-term commitments to the attempts, who worked well together. In contrast, the community groups that constrained attempts had poor cohesion, formal recognition or longevity.

[6] Appendix 4, 5. Institutions as drivers and constraints.

There were three general ways in which the SG operated as an institutional driver of attempts. Often, SG provided information, expertise, or advocacy to support LG initiatives or LG implementation of SG policies. Remarkably, another SG initiated driver was the forced amalgamation of smaller LGs to form larger councils. This helped because the changes sometimes provided an initial stimulus to action, and over the long term, the new LGs had more resources to direct towards attempts. When SG was identified as a constraint, it was for quite different – and not opposite – reasons. Amalgamations for instance, were never identified as a constraint. Instead, the SG was a constraint when its priorities differed from those of LGs so that the often well-considered and locally-appropriate local initiatives excluded LGs from established SG programs, and no special support could be obtained from relevant SG Ministers or other officials.

Problems associated with regional dissonance (introduced in Chapter 2) were expressed in several of the case studies, and in the drivers and constraints listed within them. In case study Q6, Herberton Shire from Far North Queensland was a long-term contributor to the development of a regional initiative for better waste management. For Herberton, this was part of a broader vision to achieve regional cooperation between LGs without compromising local autonomy. This might mean that sparse, remote LGs with few resources could potentially govern more and more effectively, even if SG legislation required increasing levels of professionalism and responsibility from them. Herberton was frustrated by overly bureaucratic SG mechanisms for affecting regional partnerships, and by its own poverty and isolation, which constrained its long-term involvement in even the waste management initiative it had helped to establish.

The problems in South West Western Australia that are the subject of case study W5 were equally frustrating for the LGs involved. There, a regional environmental planning initiative organised from the inside (although externally funded) was highly successful in achieving broadly-based consensus for a range of visionary and radical environmental initiatives. Practical outcomes were quickly achieved, and looked likely to continue. The initiative faltered when the SG failed to continue its funding of a key initiative, and later, when new funding was provided for "a second strategy, with a larger, overlapping area, but coordinated by a state agency" (case study W2, p.2). The LGs that had been involved became disillusioned or distracted by the new strategy, and failed to implement key parts of the first strategy. Within three years, the South West Western Australian Local Government Association that had developed the initial

strategy had disbanded and the influence of the regional initiative was certainly compromised.

Both of these cases highlight the tenuous nature of regional initiatives (also discussed in Dore and Woodhill 1999), and suggest that SGs may currently be inhibiting effective regional arrangements by failing to recognise or respond to the expressed priorities of the LGs who contribute to them. Regional initiatives might have more longevity, and be more robust if SGs carefully consider existing regional arrangements, and prioritise working with them, rather than undermining them, before imposing new regional initiatives.

As was stated above, the media were more frequently identified as constraints than drivers of attempts. The main issue here may lie with the nature of the media itself, which relies on controversy and conflict to attract custom. Several of the attempts involve a short-term compromise of personal property rights in favour of a public good outcome, which often delivered private benefits in the long-term[7]. The media was identified as a constraint when it reported specific examples of these as sensationalist examples of governments attacking individual freedoms. The impacts were sometimes quite severe and long-lived, and the negative public opinion that grew from unbalanced reporting sometimes proved difficult to overcome. Only those media services to which LG had good access, or which were notably pro-environment took an educative stance on these issues, explaining broad principles rather than reacting to isolated problems[8].

There were so few references to the remaining subcategories that little can be reliably concluded about them, but the following patterns are suggested by the limited available data. LGAs and other LGs were drivers when they provided funds, enthusiasm or support for a local initiative, and these institutions were never identified as constraints. Lobbyists from industry were drivers when they saw the environment as an asset from which a profit could be drawn. Tourist industries in environmentally special places such as Far North Queensland were the most common example. Industry constrained attempts when it perceived them as compromising their property rights and capacity to exploit environments.

The relative scarcity of coding references to FG initiatives is somewhat misleading, as programs such as LA21, Waterwatch, the Natural Heritage Trust and others are included instead in the *practical resources* category of *conceptual systems*. It

[7] See for example case studies Q2, Q4, Q11, W1, W4.

was generally these sets of ideas, rather than the FG itself that rated a mention. This made it difficult to draw specific conclusions about the roles of the FG in LG delivery of beneficial environmental outcomes. Further analysis of this aspect of the case studies would be warranted, but was beyond the scope of this discussion.

8.5 Efficiency and effectiveness of service delivery

The case studies clearly show that LGs can, and often do, deliver beneficial environmental outcomes. This section explores the nature of those outcomes, focusing mainly on the effectiveness of the LG environmental work that is described within them. The case study graphs show the environmental outcomes of attempts, in relation to ecological, economic and social issues. They summarise the efficiency and effectiveness of LG delivery of beneficial environmental outcomes, and are the best source of data for the discussion in this section. Two analytical categories are drawn on for this analysis. The nature of the outcomes for each of the *environmental focus areas* of environmental *planning*, *management* and *protection* are a subject of analysis. Differences in the *degree of beneficial environmental outcomes* between case studies are a second discussion point.

Different patterns in the case study graphs are evident for different environmental focus areas. For instance, it was very rare for environmental planning attempts to achieve improvements in ecological values (indicated by a shift to an upwards trend in the ecological graph lines). It was only some of those planning activities in degraded areas that achieved this outcome[9]. Instead, the most common beneficial ecological outcomes were those that retained existing values (horizontal lines), or those that reduced the rate of environmental degradation. The graphs for the environmental management attempts were strikingly different, and most of these resulted in ecological improvements to degraded areas indicated by a rise in ecological values[10]. Improved ecological values were more common in those environmental

[8] T2 provides an example.

[9] Case study V2, and potentially in some areas of case study W6.

[10] Case studies A1, T5, N1, W4, W7, V1, V5, V6, V7, and potentially in T3 and W6.

protection case studies that focused on waste management rather than pollution prevention[11].

There are major implications of the difficulties in improving ecological values that seem to be faced by LGs during attempts. It is noteworthy that these seem especially constraining in the attempts focusing on environmental planning and pollution prevention. Although this research has not specifically addressed the issue, there appears to be a widespread public perception that LGs generally do not deliver beneficial environmental outcomes. For instance, the productions of *Muriel's Wedding* and *Sea Change* (Hogan 1994 and Cox and Knight 1998-2000 respectively) were mentioned in Chapter 2, and these both parody LGs making corrupt and environmentally degrading planning decisions. Throughout the process of researching and writing this thesis, the researcher has also encountered similar views among most LG outsiders who asked about the thesis topic. But the case studies clearly show that LGs both attempt and succeed in delivering beneficial environmental outcomes. It seems likely that the problem is that it is difficult for LG outsiders to recognise a *reduction in the rate of environmental degradation* as a beneficial environmental outcome. Such a reduction still looks like environmental degradation, even if the alternative (without the attempt) may have involved greater degradation. This suggests that in LG environmental planning and pollution prevention attempts in particular, where improvements to ecological values are rare, there is a pressing need for public education campaigns that clearly show both the positive outcomes that have been achieved in relation to the degradation that has been avoided.

So far this discussion has focused on the ecological outcomes from attempts, and not the economic or social outcomes that are also shown on the case study graphs. The combined environmental outcomes, recognising the ecological successes any economic or social trade-offs are addressed by the analytical category of *summary environmental outcomes*. Table 8.4 shows attempts that were classified into each of the focus areas and each degree of beneficial outcomes, and shows that despite the challenges in delivering ecological improvements in environmental planning, beneficial environmental outcomes were most common. It was only the environmental protection attempts that had more

[11] Ecological values improved in the waste management case studies W2, V3, V4, and potentially in Q9. The rate of degradation slowed down in the pollution prevention attempts in case studies Q3, Q5, Q8 and Q1. The only other environmental protection case study was W1, which had a waste management objective, and the rate of degradation declined.

neutral environmental outcomes than beneficial ones, and few detrimental environmental outcomes were reported for any of the environmental focus areas.

Table 8.4 Patterns of environmental outcomes by environmental focus areas

	Environmental Planning	Environmental Management	Environmental Protection	Totals
Beneficial environmental outcomes	**6** Q4, Q7, Q10, Q11, V1, V2	**9** Q2, N1, N2, T3, W7, V5, V6, V7, A1	**2** V3, W2	**17**
Neutral environmental outcomes	**3** V8, T1, T2,	**3** T5, W4, W5	**5** Q1, Q3, Q9, W1, V4	**11**
Detrimental environmental outcomes	**2** T4, W6	**2** Q6, W3	**2** Q5, Q8	**6**
Totals	**11**	**14**	**9**	**34**

Source: Coded comparative case study database

This raises the question of what factors might lead to beneficial environmental outcomes. LGs delivering highly beneficial outcomes can be described as relatively empowered in relation to the attempts. In these cases, flexibility was relatively high, and the LG was generally an originator of attempts. Coupled with and as a result of this, these LGs proceeded by involving broad stakeholders, and managed processes so that either no-one in the community was disadvantaged by the attempt, or adopted strategies that promised and provided long-term benefits, even if there were short-term costs. In contrast, the LGs that delivered detrimental environmental outcomes were often comparatively disempowered, with the attempts generally originating or strongly influenced outside of the LG, and flexibility being relatively low. This restricted the LGs capacity to ensure that all stakeholders were informed or included in decision making about the attempt, and their ability to guarantee that short-term negative impacts could be overcome. This suggests the need to formally articulate new analytical categories for empowered and disempowered LGs. Table 8.5 provides definitions based on the findings in this section.

Table 8.5 Analytical categories for empowered and disempowered local governments

Categories	Definitions
Empowered LG	A LG with the capacity to initiate, and flexibility in determining processes in attempts to deliver beneficial environmental outcomes, considering both short and long-term implications.
Disempowered LG	A LG involved in attempts to deliver beneficial environmental outcomes, but that lack the capacity to initiate the attempts, or the flexibility to determine how they should proceed.

Source: Appendix 1. Thesis category map.

8.6 Local government leading the community

Many of the case studies demonstrate LG leadership for beneficial environmental outcomes. Brave environmental programs that had the potential to alienate or upset vocal and powerful stakeholders within local areas were initiated or progressed by LGs in many of the case studies[12]. The previous section suggested that LG capacity to accommodate such stakeholders may help to achieve beneficial environmental outcomes. This section explores the factors that stimulate LG leadership in environmental attempts, and their propensity to address a range of community views.

Figures 8.8, 8.9 and 8.10 show patterns of coding references to the *broad driver and constraint categories*, according to the *environmental focus area* of each case study. The graphs suggest some differences in the nature of drivers and constraints that are commonly identified for each environmental focus area. *Initiatives, beliefs and commitments* were the most commonly mentioned drivers of both environmental planning and environmental management attempts. But these were the third-most common driver of attempts focusing on environmental protection, and were also more commonly mentioned as constraints than drivers. *Practical resources* were commonly identified in all three focus areas, and were always the most numerous constraint category. They were the most commonly mentioned driver only for environmental protection attempts. An analysis of the detailed quotes that contribute to these broad patterns is needed to discern the sources of these differences, and these are presented in Appendix 4[13] and discussed below.

[12] Q2, Q4, Q7, Q10, Q11, T1, T2, T4, W1, W2, W3, W4, W6, W7, V7, V8.

13 Appendix 4, 6. Environmental focus areas by core driver and constraint categories.

Although this was not a criterion for their selection, many of the environmental *planning* case studies are located in places that border World Heritage listed areas, and that have also faced intense development pressure in recent decades[14]. Given the relative scarcity of World Heritage areas in relation to all other areas, this could be more than just coincidence, and may actually be a potential stimulus for attempts to improve environmental planning practices. The patterns of *initiatives/beliefs/ commitments* that were drivers in planning attempts are also similar to those for the attempts where LGs lead the community (Section 8.2). The quotes from the planning case studies tend to highlight special environmental values of local areas, and a passion and willingness to work for these over the long term amongst the people contributing to the attempts. When *initiatives/beliefs/commitments* were constraints in planning attempts, this was often due to community ignorance or defense of private property rights, and instability in LG environmental commitments.

Most of the environmental *management* case studies are located in highly developed capital cities or capital fringe areas[15]. Many of the case studies focus on the maintenance of threatened environmental values in small remnants that are heavily used by the dense populations. Again, initiatives that helped to drive attempts in these areas were characterised by long-term commitments by dedicated individuals. However the passion that characterised planning attempts was less intense in the management focus areas, and respectful community education and consultation were common stimuli of broad local support. When initiatives were constraints, there was again a strong emphasis on private property rights, community ignorance, and the diversity of views on environmental issues that remained in the community, despite public education campaigns.

Community education campaigns were also common drivers amongst the initiatives in environmental *protection* attempts. However there was also a focus here on the potential for private benefits that could derive from environmental protection initiatives. Suppliers of recycled materials, potential users of recycling services, and recipients of incentive licences were among the groups who expected to benefit from these attempts. Apathy and ignorance were constraints here, just as for planning and management attempts, and frustration confusing or changing compliance standards was also mentioned several times. The relative importance of institutions, appears to be an

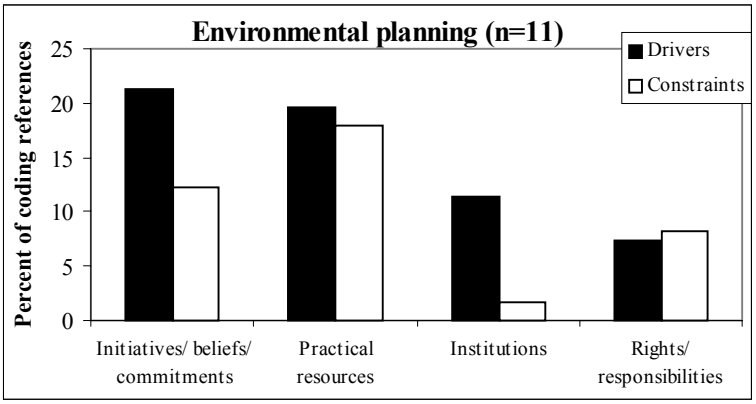
[14] These include Q4, Q7, Q11, T1, T2.

alternative to the predominance of initiatives for environmental protection attempts. Very often it was SG legislation, programs, funding or other support, or regional organisations that stimulated the environmental protection attempts. It seemed that when pollution prevention was the focus, these outside stimuli could inspire dedicated commitment on behalf of LGs, local business and the community in general.

Taken together these results suggest that the quality of local environments and the nature of the threats to them have strong influences on the likely focus of environmental attempts. They can also affect the ways in which they capture the attention of LGs and encourage LGs to take leadership roles for beneficial environmental outcomes. Threatened special environments often generate passion and commitment throughout communities and stimulate attempts focusing on planning initiatives that seek to avoid the loss of pristine areas. The special and threatened values of small bush remnants can readily stimulate leadership initiatives for environmental management attempts, but it is more common for wider communities to need the values and threats to local remnants explained to them, before their commitment is assured. Solutions to environmental protection problems are more likely to be driven by outsiders who may need to articulate the potential for private gains to flow from pollution prevention actions, to those whose support is needed in order for attempts to succeed. LGs will still often show leadership within their communities, but may rely more heavily on these outside forces for the justification, and models with which to explain the range of potential benefits of environmental attempts.

[15] These include A1, N1, N2, Q2, T3, T5, V1, V2, V5, V6, V7, W3.

Figure 8.8 Driver and constraint categories in environmental planning case studies



Source: Coded comparative case study database

Figure 8.8 Driver and constraint categories in environmental management case studies

Source: Coded comparative case study database

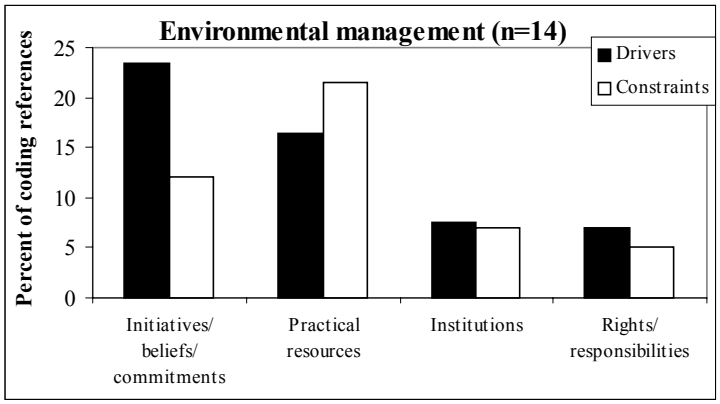
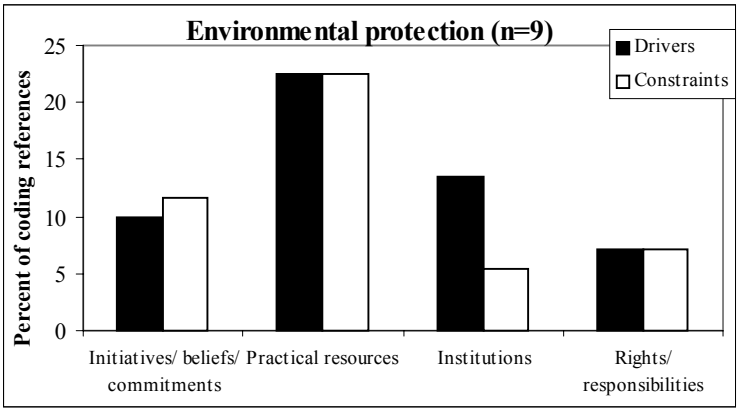


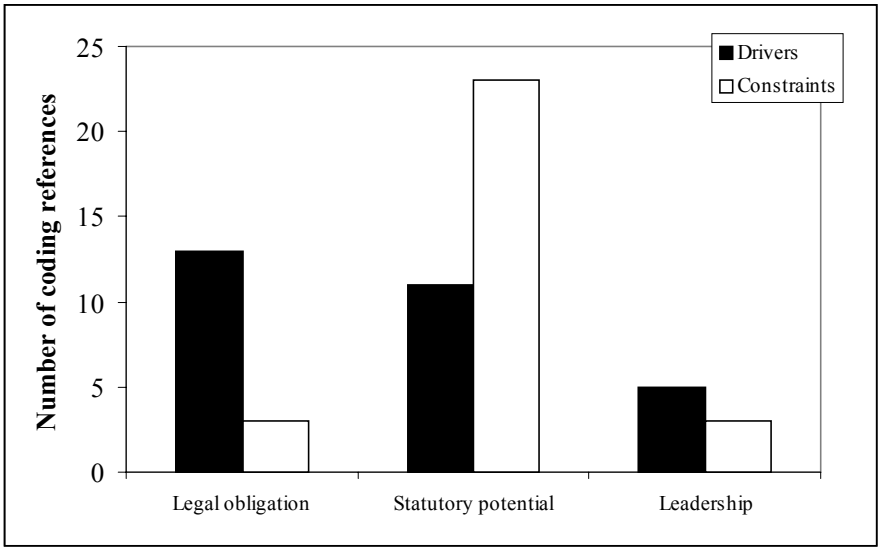
Figure 8.9 Driver and constraint categories in environmental protection case studies



Source: Coded comparative case study database

Further insight is gained about LG leadership efforts by considering the subcategories that deal with patterns of drivers and constraints relating to LG *rights and responsibilities*. Figure 8.11 shows the coding references to each of the three subcategories. The detailed quotes that were summed for this graph are provided in Appendix 4[16].

Figure 8.11 Subcategories of rights and responsibilities as drivers and constraints



Source: Coded comparative case study database

This shows that the most commonly identified issue here was a lack of statutory potential for environmental attempts. These were instances where SG legislation inhibited LG attempts by failing to provide the powers necessary to look after local environments. These were serious problems for LGs, since their lack of powers can be apparent to the groups responsible for generating environmental harm, and their authority could be seriously undermined in the long-term, even if the required statutory powers are later provided. The lack of on-the-spot fines for the early implementation of the Queensland EPA (as discussed in Chapter 6) is an example of this issue generating long-lasting problems for LGs and the business community. When rights and responsibilities acted as drivers, their unifying characteristic was their anticipatory

nature. Examples included development control plans, local laws, strategic plans and other mechanisms that are only effective if they are established before an environmental threat manifests.

Leadership itself was fairly rarely referred to either as a driver or a constraint, although it is implicit in many of the *initiatives/beliefs/commitments* as well. The references to leadership that were included in this category were those where the opportunities for LGs to be environmentally proactive were considered an obligation, rather than and option.

Between them the case studies suggest that the nature of LG leadership in attempts is often related to the fundamental environmental values of an area, and the environmental focus that is being addressed. These provide stimuli that can capture the attention of LGs and local communities, particularly for planning matters in recognisably special local places. When environments are degraded, statutory outside stimuli are often needed to initiate and frame an attempt so that it appeals to local communities. The absence of statutory tools to address problems can be a serious constraint in these cases.

8.7 The politics of local and state government institutions

In considering the politics of LG and SG institutions, it is enlightening to explore who the winners and losers were in the case studies since this can highlight the trade-offs that are made by LGs during attempts. Deciding who to advantage and disadvantage and how this is to be done and dealt with is inherently political, so this is a worthwhile analytical focus for this section. The case study graphs are the source of data for this exercise, as winners are those stakeholders that are represented by the upper or upward sloping lines on any of the case study graphs, while losers are those represented by the lower or downward sloping lines. This discussion completes the analysis of the case study graphs since Section 8.5 on efficiency and effectiveness of the attempts dealt only with the ecological graph, Section 8.6 on leadership with all three graphs on each case study, and this section deals primarily with the economic and social graphs.

[16] Appendix 4, 7. Rights and responsibilities as drivers and constraints.

The first observation across the case studies is that it was very rare for purely beneficial outcomes to be achieved, so that everyone in the community was a winner. These cases are indicated when all of the lines on the social and economic graphs remain horizontal or trend upwards. This occurred in none of the environmental protection cases, and only three each of the management and planning cases[17]. Each of those were cases where the *scale* of the attempt was predominantly local, *flexibility* was high and *origins* were also primarily local. Most of the LGs were *capital city* of *capital fringe* LGs, although one was an *other centre* and one an *other LG*. All were *populous*, *compact* and *rich*. Together, these characteristics suggest a very high level of autonomy and empowerment for each of the LGs progressing these attempts.

There were two dominant patterns in the graphs, other than the minority of cases where attempts were entirely positive. More commonly, there was a short-term dip in economic profitability and/or social empowerment, as attempts were initiated. These dips sometimes affected entire communities, and more commonly impacted on small groups within them. In other cases, entire communities, or sections of communities suffered long-term losses in economic profitability and/or social empowerment. Anyone affected in any of these ways could be considered a loser in the attempt.

There were four main groups of losers identified in the case studies and these varied with different environmental focus areas. In the environmental protection case studies, the losers tended to be local business operators affected by increasing environmental protection regulations or restrictive and possibly expensive waste management requirements. In these cases, there was generally a good chance that their economic profits and social empowerment would improve over time if the overall attempt proved to be successful. In both the environmental planning and management cases, losers were often developers with financial interests in areas that were subject to new environmentally-sensitive planning or management restrictions restrictions. Otherwise they were private land-owners who felt that their personal property rights were being constrained by the attempts. Again, their long-term benefits relied on the success of the overall attempt, and there was often a positive outlook, even if there were short-term costs.

The fourth group of losers were identified most often in the case studies and were the LGs themselves. They often took on a financial risks in the short-term in order

[17] Q10, Q7 and V2 of the planning cases and N1, V6 and V7 of the management cases.

to achieve community-wide benefits over the long-term. Often, the success of the attempts relied on public acceptance and compliance with aspects of the attempts, and so the risks were frequently addressed through public education or consultation programs that aimed to achieve community acceptance of initiatives. Sometimes, success relied on external forces such as conducive SG legislation or policies, the development of new markets for environmentally-responsible products or other factors that were largely beyond the control of the LGs themselves. These patterns in the cases clearly show that LGs can be willing to take short term risks in order to achieve probable long-term gains.

The main group of winners throughout the attempts are the general communities within the LG areas. Very often, the general community benefited from attempts, even if small sections faced short or long-term costs. Benefits generally included increased property prices for land-holders due to widespread recognition of the special environmental values retained or managed well in local areas. In many cases, the small group of unconvinced community members were able to impact on attempts, and effectively avoid ecological benefits[18].

This section suggests that the politics of LGs include a level of risk taking, where LG resources are often invested for a potentially elusive long-term benefit. Groups within communities may also be called on by LGs to wear some short or long-term costs in order to progress attempts. However when LGs are highly empowered, and have the resources necessary to progress attempts, it is also possible for outcomes to be positive for all concerned throughout the entire life of an attempt.

8.8 The diversity between local governments

Previous discussions have highlighted two main emergent issues about the diversity between LGs, and these are worth further reflection here. The first was mentioned in Section 7.4, which discussed case study selection, and relates to the expenditure, scale and populations of the LGs represented in the case studies. The second is the relationship between LG types, their proximity to areas with special environmental values, and the environmental focus areas tackled by their attempts.

[18] This issue is demonstrated in various ways in cases W3, T4 at various times in Q4 and various locations in Q1.

Section 7.4 described how the LGs were selected primarily for their known involvement in an attempt to deliver a beneficial environmental outcome. Beyond that, selection was on the basis of the diversity of LG types, environmental focus areas, the roles and perspectives of individuals involved and other features. Although the LGs were not statistically sampled, an effort was made to ensure that a representative spread of LG experiences was included. Despite this effort, 28 of the 30 LGs providing case studies were populous, while only 2 were sparse. 24 were compact and only 6 were extensive, and 24 were rich, while 4 were poor (the expenditure of the others being unavailable). Moreover, 23 of the LGs were rich, compact and populous, while three were regions, so most of the LGs combined all three of the most commonly represented features. Remember that in these categories, half of Australia's LGs fit into each of the two subcategories in each case. It seems highly likely that these LG characteristics help to explain the likelihood of LG involvement in attempts to deliver beneficial environmental outcomes and that LGs that are rich, compact and populous are far more likely to be progressing attempts than are their poor, extensive and sparse counterparts.

Drawing from the previous section, which suggested that attempts are generally costly to LGs and to sections of communities in the short - and potentially also in the long - term, it seems likely that the poor, extensive and sparse LGs may be severely constrained from embarking on attempts. These LGs lack the resources to invest in risky initiatives and service smaller and generally poorer communities who are likely to be less able to pay for attempts. They are also more dispersed, so that basic costs, such as transport between areas involved in attempts may be more costly than for the compact LGs. This is consistent with the findings from the benchmarking studies that were reported in Chapter 6, where this same group of LGs often adopted low-level implementation strategies and charged relatively low, or no licence fees. If significant beneficial environmental outcomes are to be achieved by this group of LGs, then additional outside assistance may well be required both in the short and long term. This issue is of particular environmental significance, since by definition, these LGs manage by far the most extensive areas of Australia's environments, as was clearly shown in Figure 2.3.

The second issue was discussed above in Section 8.6 above. Many of the LGs that initiated planning attempts were from these places including or bordering world heritage listed areas, whose environmental values are widely recognised to be extremely special. In contrast, the management attempts were often within urban LGs. It seems

that certain features of a LG's environment can impact on its propensity to initiate or become involved in attempts. A sensitivity to this issue is valuable in understanding the stimuli to LG action.

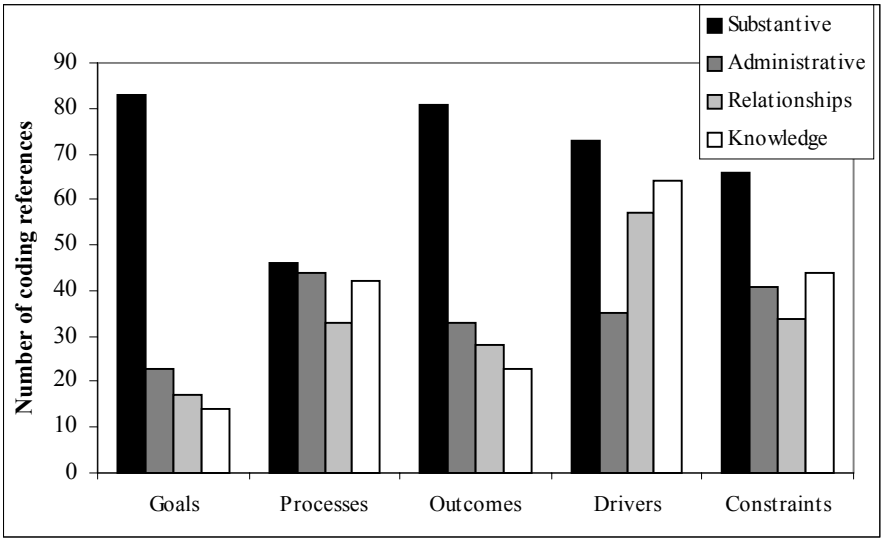
This section has argued that despite efforts to the contrary, many LGs are under-represented in the case studies. In particular, poor, extensive and sparse LGs were rarely included, and it is likely that these LG features, combined with the risks associated with attempts, can inhibit their involvement in attempts. Further, the characteristics of local environments seems to influence the nature of the attempts that LGs engage with, and knowledge of this may assist SG understanding of LG environmental work.

8.9 The knowledge base of both spheres

Issues about the knowledge base of LG are most specifically addressed in the category of *actions* involved in the case studies. This section compares the importance of *knowledge* development relative to other actions, and also investigates qualitative issues about the nature of the knowledge that was important in each component of the attempts.

Figure 8.12 shows the number of coding references that were made to each of the categories for actions, in each of the attempt components. This shows that throughout each of the components, substantive actions (those that directly change ecological, social or economic values) were the most frequently-identified category of action. In contrast, actions that changed knowledge (what is generally understood about the environmental values and impacts) about the attempts, were mentioned least often as goals and outcomes, but second-most often as both drivers and constraints. It seems that while increasing knowledge is not the most important purpose of attempts, it is a key part of their achievement, while a lack of knowledge can inhibit this.

Figure 8.12 Action categories as components of attempts



Source: Coded comparative case study database

Detailed analysis of the coding references to knowledge issues reveals much about the nature of knowledge that is involved in the actions. The full quotes involved in this analysis are provided in Appendix 4[19].

When *goals* aimed for a shift in knowledge, the intention was usually to generate information that was specific to the particular environmental attempt, and that would be effectively shared between the LG and community so that both parties could help to progress the attempt. Two-way sharing of information specific to the particular was also the common element when *processes* worked to increase knowledge. Further, processes generally used established systems for acquiring the knowledge. So audits of environmental values and various scientific techniques to establish environmental values were common here. When knowledge was identified as an *outcome*, the common feature was the likelihood that it could keep on being developed beyond the life of the attempt. This was either because systems were now in place that could keep up the generation of knowledge, or because community awareness had been sufficiently raised so that local people would continue to enhance their own knowledge bases about the issues.

It was interesting to note that (a majority of) 23 of the 34 case studies involved knowledge as a *driver*. Common features here included that the knowledge often worked to increase the understanding about attempts amongst senior, or key operational

[19] Appendix 4, 8. Knowledge throughout the attempt components.

LG officials, in a way that empowered their action to progress the attempts. In order to achieve this, the knowledge tended to be specific to the local area and the key issues involved, newly discovered, shared between the LG and community and able to grow steadily over time.

There were also several identifiable features of knowledge issues identified as a constraint. Often, knowledge was a constraint when communication between LG and the community was difficult because of issues like language barriers or local media that misrepresented issues. Knowledge was also a constraint when inappropriate old assumptions were brought to bear on novel issues. Ignorance about issues could be an ongoing problem on its own, or when any of these other factors were also present. There were also instances where communities were confused about aspects of the attempts, or felt negative about the potential for the attempts to succeed.

This section has identified knowledge as an important feature of the actions associated with events, that has particular relevance as both a driver and a constraint. Specific, growing, shared and new knowledge seems to be an effective driver, while confusion, negativity, ignorance, old assumptions and communication difficulties can constrain attempts.

8.10 The integration of policy that occurs in local government

There have already been examples given of the integration of policy that occurs in LG. For instance, many of the attempts involve the development of strategies and programs that work across the functional areas of LGs to deliver broadly-based environmental improvements[20]. Similarly, when LGs take risks in environmental attempts that involve trade-offs that could disadvantage sections of the community, they risk considerable and costly community resistance unless they take integrated steps to deal with the costs as well as the benefits of attempts[21]. Rather than revisit these issues in any depth, this section raises just one new issue, which is the predominance of mixed perspectives in the case studies. This is one indicator of the ways in which policies may be integrated in attempts.

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[20] See for instance cases Q4, Q7, Q10, T2, W5, W6, V1, V2, V4, V7, V8, N2, A1.

[21] As in Q1, Q3, Q5, Q8, W1, W3.

As has already been stated, case study selection was primarily based on prior knowledge that a LG was undertaking an attempt, with a secondary goal of maximising the diversity of environmental focus areas, LG types and other features. No effort was made to control for the perspectives of case study interviewees. If all other things were equal, it would therefore be expected that the range of perspectives involved in attempts would be similar to the general range of perspectives within the LG community. This does not appear to have been the case. 8 of the people who provided information about attempts had mixed perspectives, while 31 had LG perspectives, one was from SG and 7 had other perspectives. The proportion of people involved in attempts who had mixed perspectives appears to significantly exceed the general population of these people within the LG community. This conclusion is based on a comparison of these perspectives with those represented in the benchmarking studies.

The benchmarking studies used stratified random sampling to select LGs that represented the entire population of LGs in Queensland, and not just those that were involved in proactive attempts to deliver beneficial environmental outcomes. Interviews were then held with the relevant authorised persons within each selected LG, as well as with individuals from the regional offices of DoE. There is no reason why these methods would be biased in favour of any particular perspective. Yet only LG and SG perspectives were recorded in any of the interviews, suggesting an overwhelming predominance of people working within SGs and LGs, whose perspective only gives them insight into one side of the antinomy of LG. That no-one with a mixed perspective was randomly sampled suggests that only a very small proportion of the populations of LG or SG officials have this perspective.

All other things being equal, it could well have been expected that no people with mixed perspectives, or perhaps only a couple, would have contributed case studies. This suggests that all other things were not equal, and that there may be a relationship between people with mixed perspectives and involvement in proactive attempts by LGs to deliver beneficial environmental outcomes. Having interviewed many such people, it is this researcher's view that a mixed perspective provides an individual with the capacity to integrate complex policy issues on a personal level. This can inspire and empower efforts to go beyond the call of duty in progressing beneficial environmental outcomes. Many of the people with mixed perspectives were also the environmental strategists working to progress attempts. They are maintaining personal environmental visions, and informal policy networks as they move between positions in LGs and SGs,

and play significant and strategic roles in enhancing LG environmental capacity. Little more can be said on the basis of the data that was gathered for this thesis, but this is a rich, and potentially very important area for further research into LG capacity to deliver beneficial environmental outcomes.

8.11 Conclusions

This chapter has explored the analytical potential of the comparative case studies, using elements of the antinomy of LG as a basis for discussion. It has shown that the case studies and their emergent analytical categories are rich sources of information to assist an understanding of LG capacity to deliver beneficial environmental outcomes using an inside-out approach. There are many recurrent themes and insights emerging from this work. They include the overwhelming LG focus on issues focused inside LG own boundaries as they progress attempts, and a focus on knowledge and other resources that are specifically applied to local problems. Broader models, programs, legislation and other resources provided from SGs and other outsiders appear most able to successfully drive environmental attempts when they are sufficiently flexible to enable their focused application to issues of local significance. Successful attempts generally involve respectful two-way communication between LGs and the communities that they lead and respond to.

New ways of understanding the success of environmental attempts have emerged from this research. The environmental focus of LGs in different places is likely to vary, with LGs in recognisably special environments often initiating or responding to community interest in planning attempts, while those in urban centres often encourage their local communities to participate in environmental management initiatives. It may be less likely that LGs will initiate environmental protection attempts, and external stimulus from other LGs or SGs may be necessary for these issues. In environmental planning and pollution prevention attempts in particular, beneficial outcomes involve a reduction in the rate of environmental degradation, and not an improvement in environmental values. Care needs to be taken in communicating these outcomes, since it is difficult for LG outsiders to recognise a beneficial outcome that still involves ongoing environmental degradation. Success in attempts is related to long-term, formalised and personalised commitment to attempts, and beneficial outcomes are also associated with

empowerment of the LGs involved, and often with the broad experience of environmental strategists that are involved.

However, most attempts involve risk-taking on behalf of LGs, and short or long-term economic or social costs that will apply to all or some in the community. When these costs are not strategically managed, attempts can fail completely, and environmental outlooks may be threatened. In addition, the risky and often costly nature of attempts probably makes it difficult for poor, extensive, sparsely populated LGs to initiate, or even to take part in attempts. These LGs may need additional assistance if they are to successfully undertake and progress attempts.

Chapter 9: Conclusions

9.1 Introduction

The primary conceptual advance offered in this thesis is the concept of the local-state antinomy as a pathway to understanding Australian LG capacity to deliver beneficial environmental outcomes. The antinomy is the contradiction between the two compelling principles that:

- Australian local governments are statutory agencies of Australia's state governments, with no power or authority beyond that which is ascribed to them by the states (the *outside-in* principle); and
- Local governments in Australia are independent agencies whose authority and capacity transcends their regulatory powers by nature of their attachment to their local area (the *inside-out* principle).

The thesis does not try to resolve the antinomy by discussing the philosophical conflicts between the principles. Instead, it accepts both the thesis and antithesis, and presents information and analysis to support and explore both the outside-in and inside-out principle (chapters 2 and 3). It develops methods that allow both qualitative and quantitative comparative analysis of outside-in and inside-out environmental efforts (chapters 5 and 7). It also it reports on two extensive studies that use the methods (chapters 6 and 8). The research questions posed in this thesis and explored in those studies were:

- How can Australian LG capacity to deliver beneficial environmental outcomes be understood?
- Within this capacity, what are the environmental outcomes now being achieved by Australian LGs?
- How can Australian local government extend its capacity to deliver beneficial environmental outcomes? and
- What are the implications of the local-state antinomy for Australian LG capacity to deliver beneficial environmental outcomes?

This concluding chapter reviews the thesis' contributions to understanding LG environmental work in relation to the four research questions. It first summarises findings about the Australian local-state antinomy, focusing on the nine elements of the antinomy that were induced in Chapter 4. The Sections 9.3 to 9.5 then present concepts, strategies and tools constructed in the course of answering each of the other research questions in turn.

9.2 Reflections on the local-state antinomy

The principles of the local-state antinomy have developed throughout the thesis. Chapter 2 showed that LG derives its legitimate authority both from SG through state LG legislation, and also through the democratic election of councillors by local residents. This is despite the inherent contradiction between those two bases of authority. Chapters 2 and 3 discussed many instances where conflicts between SG and LG have reflected both sides of the antinomy. Examples included the forced amalgamations of Victorian LGs in the mid 1990s, which was achieved using the power of the state. A significant outcome was the parallel emergence of the Victorian Local Governance Association with its focus on democracy and local autonomy clearly reflecting the power and perseverance of the local. Regional dissonance is another outcome from conflicts between inside and outside forces. LGs' frequent insistence that they are the lead stakeholders in local environmental planning, management and protection, regardless of their rights as defined by SG legislation provide other examples.

Chapter 4 discussed the overall methods for the thesis, and presented results of research based on concepts from symbolic interactionism that show that the antinomy is also expressed in the contradictory perceptions of individuals with LG and SG perspectives. The nine elements of the antinomy are key areas where LGs and SGs fail to understand one another. These were induced from interview questions using ideas from symbolic interactionism. Those nine elements formed the basis of the discussions in Chapters 6 and 8, which presented findings from the original thesis research. The research reported in Chapter 6 was a quantitative study of LG and SG implementation of the Queensland EPA, that focused on the environmental risk reductions and responses to pollution prevention initiatives. Chapter 8 was a qualitative comparative analysis of 34 case studies of LG attempts to deliver beneficial environmental

outcomes, each described from an inside-out perspective. Table 9.1 lists each element of the antinomy, and summarises the key findings from the two major thesis studies.

In summarising the nine elements of the local-state antinomy, Table 4.2 identified a key problem with LG responsiveness to the community - that in maintaining a local focus, LGs may be unaware of and unresponsive to important, large-scale issues. But the experience of LGs implementing the Queensland EPA also showed that SG translation of these large-scale issues into legislation can also be problematic. While the broad goals of the EPA were established before its commencement, critical details about compliance standards were omitted until years later. In the interim, administering authorities had to develop their own compliance standards to include in the licence conditions they set, and naturally based these on local or regional issues. Because of the time-lag, the SG opportunity to achieve consistent statewide pollution prevention standards was effectively lost. Yet there were clear benefits to this in the South West Queensland region, where slow, gradual implementation engendered long-term business support for the EPA. This approach was enduring, and respected the individual capacities of local business operators who often passionately wanted the best for their businesses, as well as the environment. These characteristics of the outside-in initiative in the South West were consistent with the shared characteristics of successful inside-out attempts, reported in various case studies.

Table 9.1 Summary of key findings from the two thesis studies

Antinomy elements	Environmental Risk Studies – focus on a predominantly outside-in initiative	Comparative Case Studies – focus on predominantly inside-out initiatives
LG responsiveness to the community	LG capacity can be constrained by ambiguous, insufficient or inappropriate SG legislation.	Beneficial outcomes are associated with respectful, two-way relationships between LG and the community. These often involve enduring, personal, passionate commitments on both parts.
Resource shortages	Cost recovery systems are difficult in practice, since environmental protection is a net cost which consumers are not keen to pay. Operators showed a willingness to pay to improve environmental performance, but not to pay administrative charges with no apparent environmental benefit.	Environmental attempts are generally costly, at least in the short term. A lack of adequate funding for environmental goals is troublesome, but can usually be overcome if the commitment is there. Other practical resources such as physical and conceptual systems, skilled workers and time are as important as financial resources.
The potential for partnerships between SGs, LGs and others	LG and SG delivered consistent outcomes within regions, demonstrating the capacity for effective partnerships at the regional level. There are sound reasons for some regional differences in environmental initiatives and outcomes.	Partnerships between LG and the community are a common driver of beneficial environmental outcomes. Partnerships between SG and LG are effective drivers when SG provides information, advocacy and expertise. Regional partnerships associated with individual initiatives are tenuous.
LG efficiency and effectiveness	Appropriate statutory tools are needed in a timely manner if LG is to achieve efficient and effective delivery of beneficial environmental outcomes. Positive outcomes relied more on the personal beliefs of operators than on any incentives or rewards provided by governments.	Effectiveness was correlated with LG empowerment to initiate environmental attempts and to manage the ecological, social and economic impacts of those attempts.
LG leading the community	LG can lead the community towards beneficial environmental outcomes. Its capacity for leadership is constrained when its authority derives from SG legislation over which it has no control.	LGs with threatened, 'special' local environments initiate attempts to improve environmental planning and initiatives, beliefs and commitments are important drivers. Environmental protection attempts are often driven from outside the LG, but poor statutory tools for this are frequent constraints.
The politics of LG	Professional hierarchies within LG impact subtly on the way LGs implement SG programs. Simple options are important since excess bureaucracy may be rejected by LG.	Most attempts to deliver beneficial environmental outcomes have losers as well as winners, at least in the short term. Success is most likely when losses can be addressed in a balanced way.
The diversity between LGs	Inherent environmental risk, residual risk and risk reduction all differ between different types of LGs. The differences have many sources and implications, and a focus on the risk of 'pollution havens' over-simplifies this. Different compliance standards between areas are justified in some cases. Equivalent environmental outcomes could still be achieved.	Different types of LGs appear likely to focus on different environmental attempts, and empowered LGs seem more likely to undertake environmental attempts than do others. Little has been learned here about the sparse, extensive, populous LGs that govern most of Australia's vast rangelands. Further research, and most likely additional assistance, may be necessary if beneficial environmental outcomes are to be achieved in those areas.
The knowledge base of LG	New legislation can mean a steep learning curve for LG officials and affected operators. Simple, technical information and face-to-face discussions about new requirements were appreciated.	Knowledge is an important driver of attempts, and a lack of knowledge is a common constraint. Knowledge that is specific to the local area, and processes that effectively share knowledge assist the achievement of beneficial environmental outcomes.
The integration of policy that occurs in LG.	Conflicts between different pieces of SG legislation are apparent at the LG level. Such conflicts can render responsible and well-supported operations illegal.	People with experience in both SG and LG spheres seem over-represented in attempts. A mixed perspective may provide an individual with the capacity to integrate complex policy issues on a personal level, and this may assist the success of initiatives.

Resource shortages are a second element of the local-state antinomy. The outside-in and inside-out perspectives differ here in that both spheres are aware that LGs continually demand resources, but SGs do not understand that new initiatives need proper resourcing, while LGs do not understand that SG resources are also stretched. A key insight from the quantitative outside-in study was that environmental efforts are a net cost, especially in the short-term. This finding undermines the currently popular notion of 'cleaner production', which routinely includes the premise that environmental benefits bring clear cost savings to most businesses. Instead of environmental improvements delivering financial benefits, the outside-in study found that people with the potential to pollute were willing to invest to improve their environmental performance. However they could not continue to do so if standards were not consistently enforced, since otherwise their competitors could readily undercut their costs and attract their customers. Also, operators were much less keen to pay for a costly licence administration system. The scope of the case studies shows that LGs too are prepared to invest to improve their environments, despite the net costs of these efforts and generally tight LG budgets. The studies also showed that financial restrictions are rarely a fundamental impediment to the delivery of a beneficial environmental outcome, and neither are they a particularly outstanding driver or constraint. It is important for instance, to distinguish one-off, or short term finance from an ongoing budget, and to recognise the importance of conceptual systems, skilled people, physical systems and time as resources that might add benefit to an attempt.

The third antinomy element – the potential for state-local government partnerships – describes LG capacity to implement policies through its connection to people in the community. To maintain this connection, LGs must be responsive to local community needs, which may mean diverging from SG expectations about their policy implementation. This can frustrate SG which sees LG primarily as a delivery vehicle for its policies. The outside-in study of EPA implementation found that an effective LG-SG partnership had formed within each region, with consistent implementation strategies and outcomes apparent between the spheres. Through its regional devolution working groups, Environmental Protection Support Kit and SG regional office support for LG, the SG had provided information, advocacy and expertise to assist implementation. These factors were consistent with the successful inside-out attempts to deliver environmental outcomes. Unfortunately regional dissonance means that arrangements

such as these are tenuous, and that the relationships and outcomes would be unlikely to encourage or support other regional environmental initiatives.

The fourth element of the antinomy focuses on the efficiency and effectiveness of LG service delivery. SG understands this, but fails to recognise that the tight political feedback loops facing LGs, make it better for them to take action quickly and risk getting a response slightly wrong, than to wait until policies are perfect. Meanwhile, LGs do not understand that it is more important for SGs to get their big-picture policies right, and that drawn-out bureaucratic processes are required to ensure that all stakeholders and issues are addressed. The LG priorities make it essential that adequate statutory tools are available when needed in policy implementation. The case studies further suggested that attempts are most beneficial when LGs are empowered to manage the ecological, social and economic impacts, which might involve supporting or compensating vocal dissenters for any losses. When LGs did not manage the negative impacts of the attempts to deliver beneficial environmental outcomes, these dissenters were sometimes successful in undermining the attempts. When negative impacts were managed, even those suffering short-term losses often benefited from the attempt in the longer term, and this in turn, seemed likely to assist the sustainability of outcomes from the attempts.

The fifth element recognises LGs' role as community leaders, with the capacity to harness community and business support for initiatives. This capacity is often ineffectively used, because SGs work harder to address FG issues than those of local community members. Meanwhile LGs exclusion from policy processes mitigates their efforts to engender local community support for those policies. The outside-in study found that LGs were able to lead local business operators towards better environmental performance through their EPA implementation. But their leadership was constrained due to a lack of on-the-spot fines, and because the confusing, restrictive and sometimes poorly targeted categories for businesses requiring EPA licences restricted their capacity to use the legislation to address local concerns for pollution prevention. The inside-out case studies suggested that there are differences in both the focus of environmental attempts that are likely to be initiated by LGs and the types of LGs that most commonly undertake attempts. Case studies with an environmental protection focus were more likely to be initiated by SGs than by LGs, so devolution programs such as that under the Queensland EPA may be a necessary stimulus for local action. LGs bordering recognisably 'special' environments such as world heritage areas frequently initiated

broadly-based attempts to improve environmental planning processes, while capital city and capital fringe LGs often initiated attempts to improve the management of remnant vegetation.

The politics of LG were the sixth element of the antinomy, with council politics generally shaped by local disputes, rather than political parties. Politics between professions can also be more transparent at LG than SG level, since all professions are vying for priority and funding within the one organisation, whereas SG departments operate separately from one another, hiding professional inequalities from most lower-ranking public servants. These professional hierarchies had subtle impacts on EPA implementation in Queensland, especially in the development of Integrated Environmental Management System licences by LGs. The licences covered activities that were generally operated by council engineers, but there were good reasons for the generally lower-ranking environmental health officers to develop the licensing systems. Sensitivities stemming from this led many councils to hire external consultants to work through the bureaucratic licensing processes suggested by the SG, despite the high costs involved, but many felt that the result met administrative, rather than practical needs. The politics of the inside-out case studies also included a focus on the costs of environmental attempts, recognising that most such attempts have losers as well as winners. As with the lessons about LG efficiency and effectiveness, the case studies showed that better outcomes were likely when LGs were able to offset losses in some practical way.

The diversity between LGs is widely recognised and many analysts conclude that it makes LG too difficult to understand collectively. Typologies of LGs that existed before this research have very many categories, which have not previously been linked to the outcomes achieved by LGs. This research developed and explored an intergovernmental typology of LG that has only five categories of LG, recognises the relationships between spheres of government, and identifies indigenous LGs as well as the others. The outside-in study found statistically significant relationships between the identified types of LGs, the inherent environmental risk within their local areas and the environmental outcomes they achieved. The relative scarcity of *other* LGs from the case studies suggested that this most common type (numbering about two-thirds of the total) may be the least likely to initiate attempts to deliver beneficial environmental outcomes. Other LGs are often sparse, poor and extensive, and are responsible for managing much of Australia's vast rangelands. It seems likely that this group may need additional

assistance, encouragement, reward, and certainly understanding by the other spheres if they are to proactively achieve significant and sustainable, beneficial environmental outcomes. More research would be justified into the environmental issues facing this type of LG.

The eighth element of the local-state antinomy focuses on the knowledge-base of both spheres. LGs have a high general knowledge, since they receive information from a wide range of sources, including those strongly based in their local areas. SGs do not understand that, but do know that distance from an issue can provide a clear view of its parts. The outside-in study confirmed that LGs sometimes lack the detailed technical knowledge needed to progress new policy initiatives. It also showed that even when LG or SG officials know little about such technical details, their direct contact with policy recipients is appreciated. The exploration of knowledge issues through the case studies suggested that the models and general information associated with a distant perspective work most effectively to drive environmental attempts when they are translated into specific knowledge in the local area. So general ecological knowledge is useful locally when it identifies specific rare, endangered or valuable species, or ecological processes that are relevant to a local problem and solution. Such knowledge gains legitimacy from both its broad base and its local focus.

The final element of the antinomy is the integration of policy that occurs in LG. LGs implement a wide range of SG policies, whereas individual SG departments generally specialise in a more discrete set of policy issues. The outside-in study gave a detailed example of an instance where a conflict between two pieces of SG legislation threatened an otherwise viable, valuable and well supported local business. The LG was not empowered to adjust implementation in recognition of these features of the business, but was instead obliged to implement both pieces of legislation in a way that made continued operation difficult, if not impossible. The inside-out case studies highlighted an interesting pattern that is certainly worthy of further attention. Compared with the randomly selected LG interviewees in the outside-in studies, the inside-out studies were driven and reported by a surprisingly high proportion of people with a mixed perspective, who had worked in LG and another sphere, or in LGAs. Many of these individuals also identified as environmental strategists. It was beyond the scope of this thesis to properly explore the emergent issues suggested by this, but the finding certainly raises questions about the possible benefits of a mixed perspective, and the

ways in which environmental strategists engage with Australia's systems of government. Again, further research into these issues could well be valuable.

These findings show that the local-state antinomy is a rich source of questions and answers about LG capacity to deliver beneficial environmental outcomes. It has been a successful concept in highlighting a range of issues that could assist mutual understanding and supportive relationships between LG and SG if they are to approach future environmental initiatives more successfully together.

9.3 How Australian LG capacity to deliver beneficial environmental outcomes can be understood

The antinomy of LG, discussed in the previous section is the primary conceptual contribution to understanding LG capacity to deliver beneficial environmental outcomes. The two distinctive research methods, and the analytical categories, and relationships between them are the other contributions that answer this research question. This section summarises those contributions.

CERAM, the Comparative Environmental Risk Assessment Method described in Chapter 5, was developed through two consultancy projects whose findings are reported in Chapter 6. The method proved to be simple, flexible, robust and cost-effective in determining environmental outcomes from EPA implementation in Queensland. Since these projects were completed, several agencies involved in local governance have incorporated CERAM into their environmental management systems, or made inquiries towards doing so. This shows that CERAM has promise as a way to both understand and improve LG environmental capacity. CERAM supports the combination of general principles of environmental risk assessment and management, with specific information from the local area. It therefore meets the knowledge needs of LGs that were discussed in the previous section. CERAM's simple numeric outputs, and the photographs of risk issues that have illustrated the findings from CERAM reports all help to effectively share the knowledge that is generated through the method. The success so far of CERAM is probably also aided by its accessibility, since this author, and the agencies that have used CERAM so far have all avoided any copyright restrictions on the method itself, and have continued to freely share information about its use, and associated findings. These actions have been consistent with the research principles applied here,

which included producing research that is directly useful to LG environment practitioners and that accommodates LG interests.

There were several conceptual and analytical contributions from CERAM and the risk assessment work. The potential to describe the substantive outcomes from the legislation in simple, quantitative terms is probably the main contribution, along with the specific findings that were reported. These included evidence that the intergovernmental typology explains differences in environmental risk and risk reduction, and that effective regional partnerships were achieved between LGs and SG agencies in implementing this legislation. The combination of environmental risk data with quantitative analysis of operator responses to initiatives also gave rise to some noteworthy findings. Key among these was the discovery the best environmental performers were the most frustrated with the incentive systems, having benefited little from their best practice environmental management. Administering authorities may also benefit from knowing the depth of frustration among good environmental performers, with the lack of low-level enforcement, and the willingness of many operators to invest to improve their performance. Knowledge of the relationship between cost and environmental risk reduction also has the potential to assist policy development and implementation for environmental protection.

The comparative case studies were compiled using the second methodological contribution from this research. Again, this was designed with reference to the research questions and principles. The *story* component, that makes up the first two pages of each case study aims to be accessible, interesting and sufficiently informative and empowering to enable LGs to apply learning from relevant case studies to their own local areas. Photographs again add a colourful and inviting realism to the cases. The primary academic contributions are in the *models* and *graphs* from each case study. Identifying the goals, processes, outcomes, drivers and constraints for each case study proved relatively easy, and was a rich source of analytical categories that gave rise to meaningful analysis. The graphs are an alternative to other approaches to 'triple-bottom-line' reporting, and again, are simple to define for any particular case, and a rich source of summary information.

The analytical categories emerging from the case studies also deserve some discussion here. The thesis category map in Appendix 1 presents and defines all of these categories, as well as the relationships between many of them. The categories include the explanatory variables of LG perspectives, roles, LG types and environmental focus

areas, even though these were introduced in earlier chapters. These, together with the three context continuums help to explain many of the differences between the case studies, including their effectiveness in delivering beneficial environmental outcomes. It was surprising to this researcher, but an honest reflection of the cases to express each case study as a range, rather than a point on each continuum. Similarly, most of the graphs needed more than one line to describe the full range of ecological, social and economic outcomes from the cases. Both of these features made analysis of the continuums and graphs more difficult than anticipated, but some findings could still be drawn from them.

The key drivers and constraints to LG attempts to deliver beneficial environmental outcomes were defined as four major categories, each with a set of subcategories. It proved relatively easy to define these so that each category could be identified as either a driver or a constraint, according to its contribution to each case study. The four main emergent driver and constraint categories of initiatives/beliefs/commitments, practical resources, rights/responsibilities and institutions each provided insights into the workings of LG environmental attempts. Categories for the antinomy of LG, actions involved in attempts, summaries of environmental outcomes and those used to describe the specific impacts of events also added to the findings from the thesis. Those thesis findings are the subject of the next section.

9.4 The nature of environmental outcomes being achieved by local governments

The findings presented in this thesis clearly show that LGs can and do attempt and succeed in delivering many beneficial environmental outcomes. Some specific findings about environmental outcomes being achieved by LGs have already been discussed in this chapter. This section first discusses some additional broad findings about the general nature of environmental outcomes being delivered by LGs. Then it reviews some further specific outcomes that have been reported throughout the thesis.

A key finding was that it was relatively rare for LGs to achieve improvements to ecological values (indicated by a sustained shift to an upwards trend in the ecological graph lines). Ten of the 34 cases achieved sustained ecological improvements, and

most of these cases only involved improvements to some ecological values, while others in the local area were degraded or retained at prior levels[1]. In the majority of cases, ecological benefits resulting from attempts were best described as a *reduction in the rate of environmental degradation*, indicated by a reduced downward slope of the line in the ecological values graph. The critical point here in comparing LG attempts to the environmental efforts of the other spheres is that the outcomes described in the graphs are substantive changes to observable ecological values within local areas. In contrast, many of the environmental achievements of the other spheres are largely administrative, involving policy or legislation development, or the funding of projects that are carried out by other agencies. In other words, SG and FG environmental attempts are frequently generalised or outsourced, rather than being locked onto a specific location. It is this author's view that this feature of other spheres' environmental work makes it easier for their outcomes to be perceived and reported as positive, whether or not they directly result in a substantive ecological benefit.

LGs' environmental impacts on the other hand are clearly apparent to local residents within the local area. And when an ecological benefit involves a slowing of the rate of degradation, this will still be perceived as degradation of existing values. Observers seem to find it easier to perceive the continued, observable degradation to local ecological values, than to recognise the ecological values that are saved through concerted efforts on the part of their LGs. For example, the implementation of the EPA led to a 41 per cent environmental risk reduction over the first three years of its operation. Yet operators remained frustrated because they could still perceive pollution from their unlicensed neighbours and non-complying competitors. The continuing degradation was more apparent than the significant reduction in pollution risks. If LGs reputations as environmental planners, managers and protectors is to be improved, then concerted efforts are needed to educate observers within local areas, so that they can better perceive such reductions in the rate of degradation, as ecological benefits.

Another insight on the nature of environmental outcomes being achieved by LGs relates to the clear definition of which parameters are being measured when reporting on environmental outcomes. The Buy Recycled initiative at Yarra City provides a good example of this point[2]. The environmental attempt in this case study was based in part on the FG target of a 50 per cent reduction of waste to landfill by the year 2000. This

[1] Case studies V1, V2, V5, V7, T5, W2, W6, N2, Q9 and A1.

initiative had not set a baseline for the reduction or otherwise clarified how progress towards this goal would be reached or measured. The ecological outcomes at Yarra could be interpreted as beneficial, since there was an increase in recycling. They could also be considered as unchanged, since waste to landfill remained constant, or degrading, since overall waste production in Yarra increased during the attempt. An accurate interpretation of the outcomes must take account of all three measures, despite the complexities involved in explaining that outcome. It should also acknowledge that the success of the attempt relies on factors that are outside the scope of the attempt itself, in this case including general trends in waste production, that extend beyond the local area.

Another finding was that people with different roles within LGs have different modes of engagement with LG attempts to deliver beneficial environmental outcomes. Mayors for instance, have the opportunity to use creativity and flexibility in attempts, beyond that which is available to, or generally used by officers or managers. Gerry Wood gave a vivid example when he posed as a 'wealthy sheik' who had bought all of outer Darwin, as a strategy to highlight the planning problems facing LGs in the Northern Territory[3]. However the mayors that were most successful at leading the delivery of beneficial environmental outcomes made every effort to ensure that their policies effectively balanced ecological, economic and social needs of their local communities, and were widely perceived as doing so. It seems that mayors, and perhaps other councillors have the potential to pursue their personal environmental goals to the extent that these are consistent with general benefits to the communities that democratically elect them. These types of colourful initiatives were not observed amongst the officers and managers involved in attempts. However people in those other roles often had the benefit of working for many years in building up momentum for their attempts to deliver beneficial environmental outcomes. When they enjoyed political support persuasive information to support their environmental work, they could be highly effective in progressing environmental objectives.

The thesis also raised and answered many questions about LGs' capacity to work together to deliver environmental outcomes that extend beyond their local boundaries. The question was posed early on about whether regional dissonance would inhibit successful work across LGs. This certainly occurred in South West Western

[2] Case study V4

Australia where a successful regional arrangement was undermined by a subsequent regional initiative with substantial, but not complete overlap[4]. And Herberton Shire's proactive work towards regional waste management in Far North Queensland was undermined when its financial constraints inhibited its eventual participation in the final strategy[5]. However some regional initiatives were successful, including the Far North Queensland waste strategy, at least for those LGs that could participate[6]. And interestingly, some successful initiatives flowed on from amalgamations between LGs. These included the Cairns City Environment Plan and the Port Phillip and Moreland City re-developments[7]. In other cases though, amalgamations interfered with pre-existing momentum, and alienated previously enthusiastic local community members[8]. In these cases the amalgamations challenged, but did not completely undermine the achievement of beneficial environmental outcomes. Together, these case studies showed that LGs can work together to achieve beneficial environmental outcomes, but that shifting regional boundaries, arrangements or resources can inhibit attempts to do so.

The thesis did not specifically investigate the stimulus for LG attempts to deliver beneficial environmental outcomes, or the reasons why some do not attempt to do so. However the relative absence of *other* LGs from the case studies suggested that that most common group may be less involved in such attempts, or might simply be less vocal about promoting their achievements. These LGs are also often sparse, extensive and poor, and may face additional challenges in embarking on, and achieving beneficial environmental outcomes in their local areas. In addition, there was not the scope to investigate the environmental interests and efforts of Australia's numerous indigenous LGs. More research is needed to understand the nature of environmental work being undertaken by both of these groups.

In summary, the environmental outcomes being achieved by LGs are highly varied, but beneficial shifts in environmental planning, management and protection are being achieved. Regional groupings for environmental initiatives were tenuous, and this sometimes undermined attempts to deliver beneficial environmental outcomes. Amalgamations sometimes slowed, and sometimes stimulated environmental efforts.

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[3] Case study T2.

[4] Case study W5.

[5] Case study Q6.

[6] Case study Q9.

[7] Case studies Q10, V2 and V1.

Often the outcomes involve a reduction of the rate of ecological degradation, rather than a broad improvement in ecological values, and the benefits of these types of achievements are difficult for general communities to perceive. People with different roles within LGs, and different types of LGs appear to have differing modes of engagement with environmental attempts, and different capacities to deliver environmental outcomes.

9.5 Improving local government environmental capacity

This thesis has focused primarily on explaining what is happening with LG environmental work, and not predicting how it might be improved. It has done so because the author considered that so little had previously been rigorously explored about LG environmental capacity, that increasing the understanding of existing conditions was more important than proposing alternative arrangements. Nevertheless, many of the findings do suggest ways that LG environmental capacity could be improved.

SG recognition and respect for the LG side of the local-state antinomy is an important first step to improving LG environmental capacity. The history of LGs primary focus on its own local communities is as old as the institution itself. It is doubtful that this primary focus could ever be shifted, and even more so that such a shift would benefit anyone or any cause. Rather, LGs local focus can be seen as a source of insight into the ways that SGs can assist LGs to do better, rather than trying to force them to follow some new system. Acting on these understandings would include supporting local and regional interpretations and implementation of broad, SG legislation, when there are sound ecological, social or economic reasons for doing so, as this is likely to engender long-term public support for public policy initiatives. It would also include responding quickly to LG requests for appropriate statutory tools with which to implement policies. This may be more important than striving to get the policies 'exactly right' which, after all, appears to be an elusive goal.

Further use of the two methodologies developed here, to increase general understanding of LG environmental capacity, also has the potential to enhance that

[8] Case studies V7 and V8.

capacity. Both of the methods apply broad concepts to local areas. Case study analysis showed that initiatives with those characteristics are empowering to LGs, and can drive attempts to deliver beneficial environmental outcomes. That finding could also be used to enhance the effectiveness of other off-the-shelf models aimed at improving LG environmental capacity.

The analytical categories introduced in the thesis are also avenues by which LG observers can make sense of the diversity of LGs and their environmental efforts. Perhaps other analysts may use these concepts to better incorporate LG issues into general texts on environmental governance in Australia. Some of the categories and concepts also need further work in order to better explain LG environmental capacity. The intergovernmental typology, for instance, works in explaining some differences in LG environmental features and outcomes. But the most common category of *other* LGs needs further investigation if it is to help explain why so few of these LGs appear to make attempts to deliver beneficial environmental outcomes.

There is nothing new in highlighting LG resource shortages as a pressing problem for LG environmental efforts. This thesis compiled evidence that certainly supports LGs' ongoing requests for better resourcing. It presented data showing that LGs are responsible for only 4.5 per cent of total government expenditure, yet contribute 53 per cent of total government environment spending. It also showed that both business and government environmental efforts are usually a net cost, at least in the short term, and that some degree of trade-off is generally necessary to achieve beneficial environmental outcomes. But the thesis does not simply suggest that LGs need more money for their environmental work. Indeed, since resource shortages were a fundamental constraint to LG attempts to deliver beneficial environmental outcomes in only one of the case studies[9], there was a clear need to expand on the general issue of LG resourcing. The case study analysis suggested a key distinction between ongoing finance, and one-off payments. The former was a far more empowering driver of LG environmental work, and its absence was a serious constraint. Other resource issues, such as conceptual systems, skilled people, physical systems and time were also important. When LGs are committed to delivering beneficial environmental outcomes, they can generally find ways to cope with financial shortages if some of these other resources are available. Some of these resources, and especially the conceptual systems

[9] Case study Q6.

that were reported in the case studies could well be used in other places, even in the absence of big environmental budgets. Prime examples are the strategies used in Port Phillip, Moreland and Kogarah[10] to finance environmental initiatives by off-setting short term costs with long-term savings. In each case, the broader agenda of leading by example in approaching local sustainability was the core goal, and this was achieved even if direct financial benefits were lower than might otherwise have been the case.

Rather than necessarily restricting environmental initiatives, resource shortages can otherwise hinder relations between LGs and SGs. Such shortages for instance heighten LG awareness and frustration with any SG process that seems overly bureaucratic when compared with its substantive impact. SGs could improve LG capacity to deliver beneficial environmental outcomes if they kept such processes to an absolute minimum. Meanwhile, they could work to inform LGs and local communities of the benefits being generated by the associated initiatives, ensuring that these are tangible and meaningful within local areas. The implementation of the Queensland EPA is a prime example of failure to achieve this. Tensions were created by the bureaucratic processes involved in obtaining integrated licences. At the same time frustration with perceived poor enforcement was high, even though that enforcement was an unprecedented success. At the same time, bureaucratic inertia slowed the provision of on-the-spot fine powers to LGs, meaning that their own actions were constrained in their local areas.

Addressing the problems stemming from regional dissonance is another important step towards improving LG environmental efforts. There was considerable evidence in the case studies that shifting regional arrangements for LG environmental work can undermine partnerships between LGs and their communities, which can in turn inhibit beneficial environmental outcomes[11]. SG and FG agencies could greatly assist local and regional environmental efforts by first checking what regional arrangements are working successfully before imposing new ones for new initiatives. If new initiatives can use, build on, and strengthen existing arrangements, the potential for ongoing cooperation and empowerment is certainly greater than if conflicting arrangements erode support and momentum from previous successes.

[10] Case studies V1, V2 and N1.

[11] Case studies W5, Q6, V7, V8.

9.6 Conclusions

This thesis has developed and used the concept of the local-state antinomy to explore LG capacity to deliver beneficial environmental outcomes. It has shown that Australian LGs and SGs operate on fundamentally different understandings of LGs roles, where LGs consider that their primary responsibility is to their local areas, and SGs consider that LGs are primarily engaged in implementing their policies and statutes.

The thesis has also highlighted LGs' importance in progressing Australia's environmental initiatives. It has developed two new methodologies for understanding Australia's LG environmental capacity, has applied these in two extensive studies, reported on the findings, and now brought those two sets of findings together in this conclusion. In so doing it has developed, defined and explored a large set of analytical categories that have the potential to help analysts better understand Australian LG capacity to deliver beneficial environmental outcomes. The thesis shows that although LGs are complex, diverse and primarily focused on local issues, they and the environmental outcomes they achieve can be understood through this range of analytical categories and the relationships between them. This has the potential to assist a shift towards a more empowered and capable local sphere of government in Australia.

References

ACTG (Australian Capital Territory Government). 1991. *Land (Planning and Environment) Act 1991*. Canberra: ACTG.

ACTG. 1997. *Environmental Protection Act 1997.* Canberra: ACTG.

AHC (Australian Heritage Commission). 1998. *Protection local heritage places: a guide for local communities.* Canberra: Australian Heritage Commission.

Aitkin, D. Jinks, B. and Warhurst, J. 1989. *Australian political institutions: 4th Edition.* Melbourne: Longman Cheshire.

Alexandra, J. Higgins, J. and White, T. 1998. *Environmental indicators for national state of the environment reporting: local and community uses.* Canberra: Commonwealth of Australia.

ALGA (Australian Local Government Association). 1997. *Regional environmental indicators project: environmental indicators for reporting at local, state and national levels*. Canberra: ALGA.

ALGA. 1998. *Working out agreements with indigenous Australians*. Canberra:ALGA.

ALGA.. 2000. *2000 National agenda for Australian local government*. Canberra: ALGA.

ANZECC (Australian and New Zealand Environment and Conservation Council). 1992. *Australian water quality guidelines*. Canberra: AGPS (Australian Government Publishing Service).

Australia. 1988. *Constitution Act: The Australian Constitution as altered to 1988*. Canberra: AGPS.

Babbie, E. 1989. *The Practice of Social Research*. Belmont, California: Wadsworth Publishing Company.

Bailey, B. and Morgan, D. 1966. *Thinking and Writing: A Course in English communication*. Adelaide: Rigby Limited.

BCC (Brisbane City Council) 2001. BCC-EMC Net Aspects and Impacts Training. Internal training manual. Brisbane: Brisbane City Council.

Berger, J. 1972. *Ways of Seeing: Based on the BBC Television Series with John Berger*. London: British Broadcasting Corporation and Penguin Books.

Berndt, R.M. and Berndt, C.H. 1977. *The world of the first Australians* (first published in 1964). Sydney: Ure Smith.

Berwick, M. and Thorman, R. 1999. *National Local Government Biodiversity Strategy*. Canberra: ALGA in conjunction with Biological Diversity Council.

Binning, C. and Young, M. 1999. *Conservation Hindered: the impact of local government rates and state land taxes on the conservation of native vegetation.* Canberra: Commonwealth Scientific and Industrial Research Organisation (CSIRO) Wildlife and Ecology.

Binning, C., Young, M. and Cripps, E. 1999. *Beyond roads, rates & rubbish: opportunities for local government to conserve native vegetation.* Canberra: CSIRO Land & Water.

Blandy, R. and Forbes, D. 1998. *The population growth prospects of the Darwin region*. Darwin: Northern Territory Government.

Boston, J. 1988. "Democratic Theory, Devolution and Accountability". *1988 Conference of the New Zealand Institute of Public Administration*. Wellington: Government Printing Office.

Bradby. K. 1988. Diversity of dust. In: Newman, P., Neville, S. and Duxbury, L. (eds) 1988. *Case studies in environmental hope.* Perth: Western Australian Environmental Protection Authority. pp.97-103.

Bradby, K. and Pearce, D. 1997. *South West Environmental Strategy.* Bunbury: South West Western Australian Local Government Association.

BCC (Brisbane City Council). 1995-98, *Operator's Environmental Guidelines,* for 'Spray Painting and Panel Beating', 'Motor Vehicle Workshops', 'Abrasive Blasting' and others. Brisbane: BCC Pollution Prevention Unit.

Brown, V. 1994. *Turning the tide: integrated local area management for Australia's coastal zone.* Canberra: Department of the Environment, Sport and Territories.

Brown, V.A. 1999. Top down, ground up or inside out? Community Practice and the precautionary principle. In: Harding, R. and Fisher, E. (ed.) *Perspectives on the Precautionary Principle*. Sydney: The Federation Press. pp. 270-282.

Brown, V. 1997. *Managing for local sustainability: policy, problem-solving, practice and place.* Canberra: Green Words.

Bruce, J. 1988. *The new planning system in Victoria*. Melbourne: The Law Book Company.

Bugden, P. 1995, Chapman out to fight new Environment Act. *Pine Rivers Press*. 28 March 1995. pp 8-9.

Bullock, A., O., Stallybrass, O. and Trombley, S. (eds). 1988. *The Fontana dictionary of modern thought*. London: The Fontana Press.

Business responds well to introduction of Environment Protection licensing. 1995 *Noosa Country Review* 3 October 1995. p.6.

Caldwell, B. J. 1988. The case for pluralism. In: De Marchi, N. (ed) *The Popperian legacy in economics: Papers presented at a symposium in Amsterdam*. December 1995. Cambridge University Press. pp.231-245.

Cass, B. 1997. Summary of key issues from conference. *Pathways to Sustainability: local initiatives for cities and towns.* Newcastle. 5 June 1997. Taped presentation.

CCCLM (Council of Capital City Lord Mayors). 1996. *The Commonwealth Government's Role in Capital City Improvements: Position Paper No. 1.* Brisbane: CCCLM.

CEPA (Commonwealth Environmental Protection Agency). 1992. *National waste minimisation and recycling strategy.* Canberra: AGPS.

Chaplin, L. and Kenny, M. 2000. *Buy-recycled resource kit for local government.* Melbourne: Ecorecycle Victoria.

Chapman, R. 1997. Intergovernmental relations. In Dollery, B. and Marshall, N. *Australian local government: reform and renewal.* Melbourne: Macmillan Education Australia.

Charon. J.M. 1992. *Symbolic interaction: an introduction, an interpretation, and an integration.* New Jersey: Prentice Hall.

City of Newcastle. 1997. *Pathways to Sustainability: local initiatives for cities and towns: conference proceedings.* Newcastle: City of Newcastle.

Climitile, C.J., Kennedy, V.S., Lambright, W.H., O'Leary, R. and Weiland, P. (1997). Balancing risk and finance: the challenge of implementing unfunded environmental mandates. *Public Administration Review.* 57:1.

C of A. (Commonwealth of Australia). 1996. *Commonwealth competitive neutrality policy statement*. Canberra: AGPS.

C of A. 1998. *National greenhouse strategy: module 3: partnerships for greenhouse action: governments, industries and communities.* Canberra: AGPS.

C of A , ALGA. 1995. *Commonwealth-local government Accord*. Canberra: Cof A, ALGA.

C of A. 1999. *Environment Australia Annual Report. 1998-99.* Canberra: AGPS.

Coffey, B.H. and Atkinson, P. 1996. "Qualitative data analysis: technologies and representations". *Sociological Research Online*. 1:1. http://www.socresonline.org.uk

Cohen, M. 1995. "Antinomies". In Honderich, T. (ed) *The Oxford companion to philosophy.* New York: Oxford University Press.

Collie, G. 1994. Green 'tax' outcry: fees will cost jobs: councils *The Courier-Mail.* November 2, 1994. p. 1.

Commoner, B. 1972. *The Closing Circle: Nature, Man and Technology*. New York: Alfred A. Knopf.

Conacher, A. and Conacher, J. 2000. *Environmental planning and management in Australia.* Oxford University Press: Melbourne.

Consadine, M. (1994). *Public policy: a critical approach*. Melbourne: Macmillan.

Cotter, B. and Hannan, K. 1999. *Our community our future: a guide to Local Agenda 21*. Melbourne: Environs Australia.

Council showing concern at implications of Environment Act, *The Clifton Courier.* Thursday, October 5 1995. pp.1, 4.

Couston, M. 1995. Compulsory competitive tendering and natural resource management. In: Phillips, A. and Scanlan, S. (eds). *Compulsory Competitive Tendering and local environmental management.* Melbourne: Municipal Conservation Association.

Cox, D. and Knight, A. 1998-2000. *Sea Change*. Australian Broadcasting Commission: Artist Services.

CPDP (Environment Australia's Cleaner Production Demonstration Project). By Dames and Moore. 1997. *Cleaner Production Manual: Environment and Business Profiting from Cleaner Production*. Canberra: Environment Australia and Dames and Moore.

Cripps, E., Binning, C. and Young, M. 1999. *Opportunity denied: review of the ability of local governments to conserve native vegetation*. Canberra: CSIRO Wildlife and Ecology.

Dahl, R.A. 1995. With the consent of all'. In: Theodoulou, S.Z. and Cahn, M.A. *Public Policy: The Essential Readings*. New Jersey: Prentice hall. pp.38-45.

Davis, G., Wanna, J., Warhurst, J. and Weller, P. 1988. *Public Policy in Australia*. Sydney: Allen & Unwin.

DoE (Department of Environment, Queensland). 1995-98. *Report on the administration of the Environmental Protection Act 1994, 1995-96, 1996-97, 997-98*. Brisbane: Queensland Government.

DoE (Department of Environment, Queensland). 1995:a. Environmental Protection Act 1994, Environment News brochure. Brisbane: Queensland Government.

DoE. 1995:b. Enforcement guidelines for Environmental Protection Act 1994. Environment Management Guideline. Brisbane: Queensland Government.

DoE. 1995:c. Due diligence guidelines. Environment Management Guideline. Brisbane: Queensland Government.

DoE. 1997. *Environmental Protection Council of Queensland: Report number one, covering period 2 September 1996 to 31 March 1997.* Brisbane: DoE.

Dore, J. and Woodhill, J. 1999. *Sustainable regional development – final report*. Canberra: Greening

Australia.

Dovers, S.R. 1996. Sustainability: demands on policy. Journal of Public Policy: 16.

Dovers, S. and Mobbs, C. 1997. An alluring prospect? Ecology, and the

requirements of adaptive management. *1997 Conference of the Ecological Society of Australia*. Albury, 1 - 3, October.

Dovers, S. 1999. Public policy and institutional R&D for natural resource management: issues and directions for LWRRDC. In: Mobbs, C. and Dovers, S. *Social, economic, legal, policy and institutional R&D for natural resource management: issues and directions for LWRRDC*. Canberra: Land and Water Resources, Research and Development Corporation. pp.78-106.

Dovers, S. 2001. *Institutions for Sustainability*. Tela Series Issue 7. Canberra: Australian Conservation Foundation.

Dovers, S. and Wild River, S. 2002. *Australian experiences in processes and institutional arrangements for resource and environment.* The Federation Press. Forthcoming.

Doyle, T. and Kellow, A. 1995. *Environmental policy and policy making in Australia*. Melbourne: Macmillan.

Dryzek, J.S. 1987. *Ecological rationality: environment and political economy.* Oxford: Basil Blackwell.

Elkington, J. 1997. *Cannibals With Forks: The Triple Bottom Line of 21st Century Business*. Oxford: Capstone Publishing.

Elmore, R., F. 1982. Backward mapping: implementation research and policy decisions. In: Williams, W. *Studying implementation: methodological and administrative issues*. New Jersey: Chatham House Publishers, Inc. pp.18-35.

Engwicht. D. 1989. *Traffic calming: the solution to Route 20 and a new vision for Brisbane.* Brisbane: Citizens Against Route 20.

Engwicht, D. 1992. *Towards and Eco-City: Calming the Traffic.* Sydney: Envirobook.

Envirotest. 1995 *Environmental audit and assessment of industrial wastestreams: motor vehicle workshops, printers, spray painters, surface coaters, cabinet makers/joiners.* Prepared for Pollution Prevention Unit, Community Health Branch, Brisbane City Council. Brisbane: Envirotest.

ESDSC (Ecological Sustainable Development Steering Committee). 1992. *National Strategy for Ecologically Sustainable Development*. Canberra: AGPS (Australian Government Publishing Service).

Fitzgerald, J.D. 1908. On the Royal commission for the Improvement of the City of Sydney and its Suburbs. *Sydney Mail*. 13 May. 1908.

Fletcher, C. 1998. *Grounds forAgreement: Evaluating Responses of Northern Territory Governments to the Aboriginal Land Rights (NT) Act 1976*. Canberra and Darwin: Australian National University.

Flyvbjerg, B. 1998. *Rationality and Power: Democracy in Practice*. Chicago: The University of Chicago Press.

Galligan, B. and Fletcher, C. 1993. *New Federalism: Intergovernmental Relations and Environmental Policy*. Canberra: Federalism Research Centre, Australian National University Research School of Social Sciences.

Garlick, S. 1997. Regional economic development: new partnership challenges for local government. In: Dollery, B. and Marshall, N. 1997 (eds). *Australian Local Government: Reform and Renewal*. Melbourne: Macmillan Education Australia. pp.276-293.

Glaser, B. G. 1978. *Theoretical sensitivity: advances in the methodology of grounded theory*. San Franciso; The Sociology Press.

Glickman, R. 1996. Environment – competitive advantage and managerial headache. In *Myths, myths, models and milestones: sustainability and local environments.* 2nd National conference of Environs Australia. Sydney. November 28-29. Pp.27-31.

Grabovsky, P.N. 1995. Counterproductive regulation. *International Journal of the Sociology of Law* 23: 347-369.

Gregory, R. 1989. Political rationality of 'incrementalism'? Charles E. Lindblom's enduring contribution to public policy making theory. *Policy and Politics* 17, No 2: 139-153.

Hanson, L. 1995. Green tax too heavy for small businesses. *The Sun, Gold Coast.* 2 June 1995.

Harding, R. 1998. *Environmental decision-making: the roles of scientists, engineers and the public.* Sydney: The Federation Press.

Harvey, N. 1998. *Environmental Impact Assessment: procedures, practice and prospects in Australia.* Melbourne: Oxford University Press.

Healey, K. (ed). 1996. *Waste management: managing waste disposal, exporting toxic waste, packaging and pollution, recycling and minimising waste.* Sydney: The Spinney Press.

Heath, I. 1999. *Choosing and using environmental indicators.* Canberra: Australian Local Government Association.

Henningham, J. (ed). 1995. *Institutions in Australian society.* Melbourne: Oxford University Press.

Hiatt, L.R. (ed). 1978. *Australian Aboriginal Concepts.* Canberra: Australian Institute of Aboriginal Studies.

High Court of Australia Judgements. FC 96/044. 23 December 1996. *The Wik Peoples Vs. The State of Queensland and Ors-Matters*. No. B8 and B9.

High Court of Australia Judgements. FC 88/062. 1984. Mabo and Another Vs. The State of Queensland and Another. No. 166 CLR 186.

Hill, M. 1999. Mike Hill, Victorian Local Governance Association. Interview by Su Wild River, unpublished. November 1998.

Hjern, B. and Porter, D.O. 1981. Implementation structures: a new unit of administrative analysis. *Organisation Studies* 2/3: 211-227.

HoG (Heads of Government). 1992. *Intergovernmental agreement on the environment*. Canberra: HoG.

Hogan, P.J. (write and director).1994. *Muriel's wedding*. Motion picture.

Homan, R. 1991. *The ethics of social research*. London: Longman.

Howlett, M. and Ramesh, M. 1995. *Studying public policy: policy cycles and policy subsystems*. Toronto: Oxford University Press.

IMM (Institute of Municipal Management). 1995. *Code of ethics*. Melbourne: IMM.

Information Australia. 2000. *The Australian guide to local government: 28th Edition. July 2000 to November 2000.* Melbourne: Information Australia.

James, E.B.M. 1998. *A review of certain elements of the planning process which result from the operation of the Planning Act 1993.* Darwin: Northern Territory Government.

Jenkins, B. 1990. Policy analysis: models and approaches. In: Hill, M. (ed) *The policy process: a reader*. New York: Harvester Wheatsheaf. pp.34-44.

Johnson, I. 1997. Regional development – VROCS (Voluntary Regional Organisations of Councils) and LGAQ (Local Government Association of Queensland) working in

partnership. In: *Local Government Association of Queensland Inc. Yearbook 1996-97.* Brisbane: LGAQ. pp 74-80.

Jones, G. and Stewart, J. 1985. *The Case for Local Government*. London: Allen and Unwin.

Ladd, H. and Doolittle, F. 1982. Which level of government should assist the poor? *National tax journal* 35: 323-336.

Kant, I. 1929. *Critique of pure reason.* London: Kemp Smith.

Kelly, G.A. 1955. *The psychology of personal constructs.* New York: Norton.

Kincaid, H. 1996. *Philosophical foundations of the social sciences: analysing controversies in social research.* Cambridge: Cambridge University Press.

Kvale, S. 1996. *Interviews: an introduction to qualitative research interviewing*. Thousand Oaks, California: Sage.

LGANT (Local Government Association of the Northern Territory). 1998. *Fact sheet: local government in the Northen Territory: A Summary*. Darwin: LGANT.

LGAQ (Local Government Association of Queensland). 1997a. *Community satisfaction benchmarking study*. Brisbane: LGAQ.

LGAQ (Local Government Association of Queensland) 1997b. *Local government development program – optimising the provision of local government infrastructure and services*. Brisbane: LGAQ.

LGTCQ (Local Government Training Council of Queensland). 1989. *Environmental management: an environmental education program for local government.* Brisbane: LGTCQ.

LGTCQ (Local Government Training Council of Queensland) (1994). The Councillor Handbook: A Guide to Local Government in Queensland. Terry Coman & Associates Pty Ltd, Brisbane: 94.

Lindblom, C.E. 1959. The 'Science' of Muddling Through. *Public Administration Review* 19: 79-88.

Local Councils Taking Action: Councils take action on Environment Act as community shows concern. *Dalby Herald.* 22 September 1995. p. 1

Lonie, I. and Bryant, T. 1989. *Councillors handbook to the Local Government Act,* Melbourne: Maddock, Lonie and Chisholm.

Lonkila, M. 1995. Grounded theory as an emerging paradigm for computer-assisted qualitative data analysis. In: Kelle. U. (ed). *Computer-aided qualitative data analysis.* London: Sage.

LSP (Local Sustainability Project). 1996. Getting ahead of the game. Canberra: Centre for Resource and Environmental Studies.

Macquarie Dictionary. 1998. *The Macquarie dictionary: the national dictionary.* Sydney: The Macquarie Library.

Maddock, K. 1974. *The Australian Aborigines*. Harmondworth: Penguin.

Manning, P.K. 1987. Analytic induction. In *Sociological Quarterly*. 23:455-76.

Marrow, A.J. 1969. *The practical theorist: the life and work of Kurt Lewin*. New York: Basic Books.

Marshall, N. 1997. Introduction: themes and issues in Australian local government. In Dollery, B. and Marshall, N. (eds). 1997. *Australian local government: reform and renewal*. Melbourne: Macmillan Education Australia. pp.1-14.

May, P.J. 1992. Policy Learning and Failure. *Journal of Public Policy* 12: 4: 331-354.

MCA (Municipal Conservation Association of Victoria). 1989. *How to Save Energy in Local Government*. Melbourne: MCA.

McCarthy, J. 1996 Redland leads environmental management. *The Weekend Australian.* May 18-19. 1996.

McNeill, J. 1997. Local government in the Australian Federal System. In: Dollery B. and Marshall, N. (eds). 1997. *Australian local government: reform and renewal*. Melbourne: Macmillan Education Australia. pp. 17-39.

Miley, F. and Read, A. 2000. Environmental reporting: thinking locally. Article published at www.cpaonline.com.au. Australian Certified Practicing Accountants. April 2000.

Miller, C.M.L. and Parlett, M. 1974. Reprinted 1983. *Up to the Mark.* Guildford: Society for research into higher education.

Morley, P. 1995, Green Tax Backdown: Businesses win on fees. *The Courier-Mail*, Friday February 17 1995.

Mowbray, M. 1997. Intellectuals and the local state: the Australian local government literature. *Urban policy and research* 15(4): 247-256.

Newman, P. and Kenworthy, J. *Cities and automobile dependence: an international source book.* Aldershot: Gower Technical.

Newnham, L. and Winston, G. 1997. The role of councillors in a changing local government arena. In: Dollery, B. and Marshall, N. *Australian local government: reform and renewal*. Melbourne: MacMillan Education Australia. pp.105-124.

NOLG (National Office of Local Government, Commonwealth of Australia). 1998. *1996-97. Local government national report: report on the operation of the Local Government (Financial Assistance Act) 1995*. Canberra: Commonwealth Department of Transport and Regional Services.

NOLG. 2001. *Local government national report: 1999-2000 report on the operation of the Local Government (Financial Assistance) Act 1995*. Canberra: Commonwealth Department of Transport and Regional Services.

Norgaard, R. B. 1989. The case for methdological pluralism. *Ecological economics* 1: 37-57.

NSWDP (New South Wales Government Department of Planning). 1995. *State planning: planning for regional NSW: building on local strengths*. Sydney: NSWDP.

NSWEPA (NSW Environmental Protection Authority). 1998. *The EPA's first phase*. Sydney: NSWEPA.

NSWG (NSW Government). 1970. *Pollution Control Act 1970.* Sydney: NSWG.

NSWG. 1979. *Environmental Planning and Assessment Act 1979.* Sydney: NSWG.

NSWG. 1993. *Local Government Act.* 1993. Sydney: NSWG.

NSWG. 1997. *Pollution Control Amnendment (Load Based Licensing) Act 1997.* Sydney: NSWG.

NSWG. 1999. *Environmental Planning and Assessment Amendment Act 1999.* Sydney: NSWG.

NSWSWAC (NSW State Waste Advisory Council). 1997. *State Waste Advisory Council 1996-97 Report*. Sydney: NSWSWAC.

NTDHLG (Northern Territory Department of Housing and Local Government). 1998. *Performance indicators for local government in the Northern Territory: pilot program workshop report.* Darwin: NTDHLG Policy and Planning.

NTG. (NT Government) 1993a *Northern Territory Local Government Act 1993*. Darwin: NT Government.

NTG. 1993b. *Northern Territory Planning Act 1993*. Darwin: NT Government.

NTG. 1998. *Waste Management and Pollution Control Act 1998*. Darwin: NTG.

NTG. 1999. *Northern Territory Planning Act 1999.* Darwin: NTG.

NTG. 2000. *Community information about the local government directory.* Darwin: NT Government.

Osmond, P. and Ray, S. 1996. *Attending to the environment: a manual for contract specifications*. Melbourne: Environs Australia.

Pathways 1997. *The Newcastle declaration*. World Executive Committee (I.C.L.E.I. (International Council for Local Environmental Initiatives). Australian Local Government Association. Lord Mayor of Newcastle). Newcastle: Pathways to Sustainability Conference.

Power, J. Wettenhall, R. and Halligan, J. (eds). 1981. Local government systems of Australia. *Advisory Council for Inter-government Relations information paper number 7*. Canberra: Australian Government Publishing Service.

QDLGP (Queensland Department of Local Government and Planning, Incorporating Rural Communities). 1996. *Material personal interests: guidelines for councillors*. Brisbane: QDLGP.

QG (Queensland Government). 1963. *Clean Air Act.* Brisbane: QG.

QG. 1971. *Clean Water Act.* Brisbane: QG.

QG. 1984a. *Community Services (Aborigines) Act 1984*. Brisbane: QG.

QG. 1984b. *Community Services (Torres Straight) Act 1984*. Brisbane: QG.

QG. 1993. *Local Government Act 1993.* Brisbane: QG.

QG. 1994. *Queensland Environmental Protection Act 1994*. Brisbane: QG.

QG. 1995a. *Queensland Environmental Protection (Interim) Regulation 1995*. Brisbane: QG.

QG. 1995b) Environmental protection support kit. Brisbane: QG.

QG. 1996. *National competition policy and Queensland local government*. Brisbane: QG.

QG. 1997. *Queensland Integrated Planning Act 1997*. Brisbane, Queensland Government.

QDLGP/LGAQ (Queensland Department of Local Government and Planning, Incorporating Rural Communities; Local Government Association of Queensland). 1997. *A Protocol Establishing Roles and Responsibilities of the State Government and Local Government in the Queensland System of Local Government*. Brisbane: QDLGP/LGAQ.

Quine, W.V.O. 1961. *From a logical point of view*. New York: Harper and Row.

Quine, W.V.O. 1966. *The ways of the paradox.* New York.

RAMP (Remote Area Management Project). 1997. *Fact Sheet*. Darwin: RAMP.

RCC (Regional Coordination Committee, South East Queensland). 1995. *South East Queensland*

regional framework for growth management. Brisbane: RCC.

Ricketts, M. 1994. Speak Softly and Carry a Big Stick: Regulatory Innovation in Queensland's Environmental Protection Bill. Unpublished discussion paper for Queensland Department of Environment and Heritage, Brisbane.

Robson, M. 1994. *Second Reading Speech for the Environmental Protection Act 1994.* Brisbane: Queensland Parliament Hansard.

Rose, A. 1962. *Human behaviour and social processes.* Boston: Houghton Miflin.

Rumley, H. 1987. *Aborigines and Local Government in the East Kimberley*. Canberra: Centre for Resource and Environmental Studies.

Sabatier, P.A. 1990. Top-down and bottom-up approaches to implementation research. In Hill, M. *The Policy Process: A Reader*. New York: Harvester Wheatsheaf. pp.266-293.

SAG (South Australian Government). 1993a. *South Australian Development Act 1993.* Adelaide: SAG.

SAG. 1993b. *Environmental Protection Act 1993.* Adelaide: SAG.

SAG. 1999. *Local Government Act 1999.* Adelaide: SAG.

Sansom, G. 1993. *Ideas for integrated local area planning.* Canberra: Australian Local Government Association.

Schon, D.A. 1983. *The reflective practitioner: how professionals think in action.* London: Temple Smith.

Scott, C. 1988. Funding issues, devolution and accountability. *1988 Conference of the New Zealand Institute of Public Administration*, Wellington: G.P. Books, Government Printing Office.

Searle, R. 2000. *Australian Bureau of Statistics Taxation Revenue Australia 1999-2000.* Canberra: Commonwealth Grants Commission.

SEOSA (State Electoral Office, South Australia). 2000. *Annual Report 1999-2000.* Adelaide: SEOSA.

Sheldon, S. (ed). 1996. *Managing the Environment: A practical guide for local government to environmental management systems and ISO14001.* Canberra: Australian Local Government Association.

Sherwood, J. 1999. Unpublished interview with Su Wild River. Bunbury, Western Australia.

Sirolli, E. 1995. *Ripples in the Zambezi: passion, unpredictability and economic development.* Perth: Institute for Science and Technology Policy.

Spearett, P. and Demarco, C. *Planning Sydney's future.* Sydney: Allen & Unwin.

Slovic, P. 1991. Beyond numbers: a broader perspective on risk perception and risk communication. In Mayo, D. and Hollander, R. (eds.) *Acceptable Evidence: Science and Values in Risk Management.* New York: Oxford University Press. pp. 48-65.

Smith, D. 1995 Councils to Cash in on Green Law: Bounty on Business Licences. *Gold Coast Bulletin.* May 1995, p. 23.

Spradley, J.P. 1980 Participant observation. New York: Hold, Rinehart and Winston.

Sproats, K. 2001. *Inquiry into the structure of local government in eight council areas in the inner city and eastern suburbs of Sydney.* Local government public inquiry. Sydney: New South Wales Commission of Inquiry.

Sproats, K. 2002. *Local government in the Asia and the Pacific: A comparative analysis of fifteen countries*. United Nations Economic and Social Commission for Asia and the Pacific: Human Settlements. http://www.unescap.org/huset/lgstudy/comparison1. Accessed 15 January 2002.

Standards Australia. 1999. *Australia/New Zealand Standard, (AS/NZS 4360) Risk Management.* Standards Australia.

Standards Australia. 1996. *ISO14001: 1996 – Environmental management systems – specifications with guidance for use.* Standards Australia.

State of the Environment Advisory Council. 1996. *Australia state of the environment 1996: summary.* Melbourne: CSIRO Publishing.

Strauss. A. 1964. *The social psychology of G.H. Mead.* London and Chicago: University of Chicago Press

Strauss, A. 1987. Qualitative analysis for social scientists. New York: Cambridge University Press.

Strauss, A. and Corbin, J.1990. *Basics of qualitative research: grounded theory procedures and techniques*. Newbury Park: Sage Publications.

Sullivan, R. 1998. Assessing the acceptability of environmental risk – a public policy perspective. *Australian Journal of Environmental Management*. 5(2): 72-80.

Sullivan, R. and Hunt, A.R. 1999. Risk assessment: the myth of scientific objectivity. *Environmental and Planning Law Journal*. 16(6): 522-530.

Sulman, J. J. 1921. *Town planning in Australia.* Referenced in Conacher and Conacher. 2000. *Environmental Planning and Management in Australia*. Melbourne: Oxford University Press. p.111.

Taper, B. 1999. Unpublished interview with Su Wild River. Sydney: New South Wales.

TEC (Tasmanian Electoral Commission). 2000. *2000 Local Government Elections*. www.electoral.tas.gov.au/pages/local/2000.

TG (Tasmanian Government). 1993a. *Local Government Act 1993.* Hobart: TG.

TG. 1993b. *Land Use Planning and Approvals Act 1993.* Hobart: TG.

TG. 1994. *Environmental Management and Pollution Control Act 1994.* Hobart: TG.

Trewin, D. 2000. *Environmental Expenditure: Local Government Australia 1998-1999*. Canberra: Australian Bureau of Statistics.

Trewin, D. 2001. *Australia's environment: issues and trends.* Canberra: Australian Bureau of Statistics.

Tucker, D. 1981. Queensland. in Power, J. Wettenhall, R. and Halligan, J. (eds) 1981. *Local Government Systems of Australia*. Advisory Council for Inter-government Relations Information Paper No. 7. Canberra: Australian Government Publishing Service.

UNDP (United Nations Development Program). 1997. *Governance for sustainable human development: A UNDP policy document.* UNDP.

Van Ballegooyen, J. 1995. Protest March: Motor traders slam green tax collector. *Innisfail Advocate*, 26 August 1995. p.1.

VG (Victorian Government). 1970. *Environment Protection Act 1970.* Melbourne: VG.

VG. 1987. *Planning and Environment Act 1987.* Melbourne: VG.

VG. 1989. *Local Government Act 1989.* Melbourne: VG.

Vince, A. 1997. Amalgamations. In Dollery, B. and Marshall, N. *Australian Local Government: Reform and Renewal*. Melbourne: Macmillan Education Australia. pp.151-171.

Vincent, M. 1994. Environmental protection. Unpublished discussion paper for the Queensland Department of Environment and Heritage.

Wackernagel, M. and Rees, W. 1996. *Our Ecological Footprint*. Philadelphia: New Society Publishers.

WADLG (Western Australian Department of Local Government). 1997. *Comparative indicators for Western Australian local governments*. Perth: WADLG.

WAEC (Western Australian Electoral Commission). 2001. Local Government in Western Australia. www.waec.wa.gov.au/local/factsheet.

WAG (Western Australian Government). 1928. *Town Planning and Development Act 1928.* Perth: WAG.

WAG. 1985. *Environmental Protection Act 1985.* Perth: WAG.

WAG. 1995. *Local Government Act 1995*. Perth: WAG.

Wagner, J. (ed). 1979. *Images of Information: Still Photography in the Social Sciences*. Beverley Hills: Sage Publications.

WAPC (Western Australian Planning Commission). 1997. *State Planning Strategy: Final Report*. Perth: WAPC.

Waugh, J.N.C. 1994. Green tax to increase rates. Letter to the editor, *The Courier-Mail.* November 3, 1994.

WCED (World Commission on Environment and Development). 1987. *Our Common Future*. Oxford: Oxford University Press.

Weiland. 1988. Unfunded Environmental Mandates: Causes, Burdens and BenefitsThe Harvard *Environmental Law Review*. 22:1. 283-311

Wensing, E. 1997. The process of local government reform: legislative change in the states. In Marshall, N. and Dollery, B. *Australian local government: reform and renewal*. Melbourne: Macmillan Education Australia. pp.89-102.

Weston, P. 1995. Logan urges support on environment laws. *ALN.* 24 November 1995, p.18.

Whittaker, S. 1996. Áre local councils 'willing and able' to implement Local Agenda 21?' Keynote paper at *Sustainability & Local Environments: Myths, Models & Milestones.* Environs Australia National Conference. Sydney: November 28-29.

Wild River, W. 1993. Ecology, economics and energy: an interdisciplinary analysis of Australia's National Strategy for Ecologically Sustainable Development". Unpublished honours thesis. Brisbane: Griffith University.

Wild River, S. 1997. Brisbane City Council Environmental Benchmarking Study: A Report into Environmental and Related Outcomes from Brisbane City Council's 1995-97 Implementation of the Environmental Protection Act 1994, Unpublished report for Brisbane City Council.

Wild River, S., Hahn, L., Cunningham, R., Miller, G., Renouf, G., Brown, T., Donnelly, C., McNevin, B., Stanmore, E. and Dickson, M. (Australian National University and Mary Maher & Associates) 1998. Statewide benchmarking Study into Environmental and Other Impacts of the Queensland Environmental Protection Act 1994 for Environmentally Relevant Activities: Technical Report on Benchmarking Issues for Administering Authorities. Unpublished report for Queensland Department of Environment.

Wild River, S. 2001. Comparative environmental risk assessment: a practical and applied method. *Australian journal of environmental management.* December. 211-218.

Wild River, S. 2002. *Australian National University Environmental Risk Study*. Unpublished report prepared for the ANU Environmental Management Planning Committee, Canberra.

Williams, S. 1989. *How to save energy in local government*. Melbourne: Municipal Conservation Association.

Wood, G. 1998. Unpublished interview with Su Wild River. Litchfield, Northern Territory.

Workshops sought for new Act. *Port Douglas & Mossman Gazette,* 31 August 1995. p. 4

You do the Explaining Council could tell EPA. *Daily News Warwick,* 9 September 1995. p. 5.

Zlotkowski, M. 1995. Councils to Rebel Against New Act. *Cairns Post.* 2 March 1995.

Zuber-Skerritt, O. 1991. *Action Research in Higher Education: Examples and Reflections*. Brisbane: Centre for the Advancement of Learning and Teaching, Griffith University.

Directory structure for CD-Rom

Notes:

- Files not provided in the printed version of the thesis appear in italics
- Directories appear in bold, shaded rows of the tables. Subdirectories are italicised. Documents within a directory or subdirectory are presented in the rows below that directory.
- Documents will be presented in pdf format unless otherwise stated.Acrobat reader will not be supplied.
- Some N-Vivo databases are presented. N-Vivo demonstration version will be supplied on the CD-Rom.
- There are several long lists of related documents within directories. These are attached to the end of this document, for ease of reading.

Appendices

Appendix 1: Categories and tools

Document name	File name
Appendix 1: Terms, concepts and tools	**A1 terms**
Thesis category map	Category map
N-Vivo viewer software	*N-vivo viewer*
Instructions for installing N-Vivo and using it to scrutinise the case studies	*N-Vivo instructions*

Appendix 2: Research

Document name	File name
Appendix 2: Research	**A2 research**
Antinomy quote table	*Antinomy quote table*
3.1 Government environmental finance data	*3.1 govt finance data*
Interviewee summary	*Interviewee summary*
Maps (all printed in text, rather than appendices)	***Maps***
Case study local governments	*Cases*
Intergovernmental typology	*Typology colour*
Local governments included in the Queensland environmental risk studies	*Risk study LGs*
Noosa Maps	***Noosa Maps***
a) Moreton Region, Australian Bureau of Statistics	*a – moreton region ABS*
b) Sunshine Coast Branch, Regional Development Organisation	*b – sunshine RDO*
c) North and wide Bay Burnett Team, South East Queensland Planning	*c – nth and wide bay team SEQ planning*
d) sunshine Coast district, Queensland Environmental Protection Agency	*d – sunshine district QEPA*
e) Wide Bay Burnett Region, Queensland Environmental Protection Agency	*e – wide bay burnett QEPA*
f) South East Queensland Branch, Local Government Managements Association	*f – SEQ branch LG mgers*
g) Sunshine Coast Chapter, Australian Institute of Environmental Health.	*g – sunshine AIEH*
h) Sunshine Coast District, Royal Australian Planning Institute	*h – sunshine coast RAPI*
i) South East Branch, Local Government Services, State Local Government Department	*i – SE branch LG services*
j) South East Queensland Regional Organisation of Councils	*j –SEQROC*
k) Northern District, South East Queensland Regional Organisation of Councils	*k – NORSROC*
l) South East District, Local Government Association of Queensland	*l – SE district LGAQ*
m) Urban Local Government Association of Queensland	*m – ULGAQ*
n) North East regional Aboriginal language group	*n – NE regional Aboriginal*

	language grp
o) South East Queensland bioregion	*o – bioregions*
p) North East Coast Drainage Division	*p – NE coast drainage division*
Various obscure newspaper articles quoted in thesis	***Newspaper articles***
Various	*Various descriptive names. Not listed here.*

Appendix 3: Environmental risk studies

Document name	**File name**
Appendix 3: Risk	**A3 Risk**
ANU 2002 Environmental Risk Study	*ANU Risk Study 2002 report*
ATEM/AAPPA Conference paper on CERAM	*ATEM/AAPPA conference paper*
Brisbane City Council Environmental Benchmarking Study Report	*BCC final report*
Queensland benchmarking study	
Queensland Statewide Benchmarking study into environmental and other outcomes from the implementation of the Queensland Environmental Protection Act	*Several documents:* *Qld benchmarking tech report.* *Acknowledgements.* *Executive summary* *Scientific report cover* *Scientific report*
Queensland benchmarking study data set	*Queens bench study data*
Queensland benchmarking study graphs	*Queens bench study graphs*
Outline of all of the variables, terms and codes used in the Queensland benchmarking study data set	*Variables and terms*
Calculation table for estimating cost and risk. Includes instructions for use.	Risk cost calculations.
Triangulation survey	*Triangulation survey*
Risk antinomy quote table	*Risk antinomy quotes 6.1*
LG responses to Integrated Environmental Management Systems licences	*LG responses IEMS quote tables*
Statistical graphs	
Various graphs including error bars. Scanned, with logical file names.	*Various. Not listed here.*
Risk study methods	**Risk study methods**
How the Queensland Benchmarking Study folder was set up.	*Folder setup*
Master document for recording operator responses to environmental protection initiatives during interviews.	*Response recording sheet.*
Master document for recording environmental risk findings during site inspections.	*Risk recording sheet*

Appendix 4: comparative case studies

Document name	**File name**

N-Vivo Project *(find this folder when following instructions for using N-Vivo in Appendix 1)*	*N-vivo project*
Analysis	
1 Initiatives, beliefs and commitments by flexibility	*1 Init belief commit by flex*
2 Initiatives, beliefs and commitments by core driver and constraint categories	*2 Init belief commit by D&C*
3 Practical resources by core driver and constraint categories	*3 Pract res D&C by expend*
4 Practical resources by key drivers and constraints	*4 Prac res by key D&C*
5 Institutions by core driver and constraint categories	*5 Instit by D&C*
6 Environmental focus areas by core driver and constraint categories	*6 Focus by D&C*
7 Rights and responsibilities by core driver and constraint categories	*7 Rights and resps by D&C*
8 Knowledge by attempt components	*8 Knowledge, attempts components*
Appendix 4: Case studies	***A4 Case studies***
Q1: LGs implementing the Queensland Environmental Protection Act	Q1 Qld EPA
Q2: Vegetation protection in Redland Shire	Q2 Redland
Q3: Brisbane – Leading by example with environmental protection	Q3 Brisbane
Q4: Protecting Noosa North shore from development	Q4 Noosa
Q5: Herberton Shire fulfilling the statutory responsibilities of Queensland's Environmental Protection Act 1994	Q5 Herberton EPA
Q6: Achieving regional cooperation in Far North Queensland, while supporting local autonomy	Q6 Herberton regional coop
Q7: Johnstone –developing the Johnstone Plan	Q7 Johnstone plan
Q8: Johnstone Shire fulfilling its Statutory Responsibilities under the Queensland Environmental Protection Act 1994	Q8 Johnstone EPA
Q9: Far North Queensland Regional Waste Strategy	Q9 FNQ Regional Waste
Q10: Cairns City Council Environmental Plan	Q10 Cairns
Q11: Douglas Shire, Development and Population Cap	Q11 Douglas
T1: Mirrar Say No	T1 Mirrar
T2: Litchfield balanced environmental planning	T2 Litchfield
T3: Improving the management of Mitchell Creek	T3 Mitchell Creek
T4: Planning Darwin	T4 Darwin
T5: Improving waterways management with the Rapid Creek Advisory Committee	T5 Rapid Creek
W1: Wanneroo – recycling strategy	W1 Wanneroo
W2: Stirling City waste minimisation	W2 Stirling
W3: Nedland City Council Tree Management Policy	W3 Nedland
W4: Greening Gosnells Advisory Committee	W4 Gosnells
W5: Ground-up environmental planning in SWWA	W5 SWWA

W6: Preserving ecological values in Busselton Shire	W6 Busselton
W7: Albany Coastal Strategy	W7 Albany
V1: Showcasing urban environmental management in Moreland City	V1 Moreland
V2: Port Phillip community housing project/depot redevelopment	V2 Port Phillip
V3: Waste Minimisation in Darebin City	V3 Darebin
V4: Introducing the 'Buy-Recycled' guide for Yarra City	V4 Yarra
V5: Bushland management in Mullum Mullum Creek, Manningham City	V5 Manningham Mullum
V6: Improving vegetation management on private land in Manningham City	V6 Manningham private
V7: Environmental Strategies for the City of Greater Dandenong	V7 Dandenong
V8: Regional environmental strategy for the Yarra Ranges	V8 Yarra ranges
N1: South Sydney City Gardens	N1 South Sydney
N2: Cultural greening at Kogarah City	N2 Kogarah
A1: Australian National University Environmental Management Planning	A1 ANU

Thesis Category Map

This document presents and defines the analytical categories that are developed, defined and used throughout the thesis. These terms are also defined in the main text, but are presented here as a whole set. The last column of each table indicates the chapter in which each term is defined.

Elements of the Antinomy	**Outside-In**	**Inside-Out**	**Chapter**
Perspectives	State government, federal government and other points of view based in spheres of understanding at broader than local scales.	Local government and mixed points of view based in spheres of understanding within local scales.	1. Introduction
Environmental initiatives	Attempts originating in state or federal government spheres and excluding local initiatives.	Attempts originating in local areas and those where the initiative came from local, together with broader spheres.	1. Introduction
Analysis	Research into local government delivery of state or federal government initiatives, where the analytical categories derive from those initiatives.	Research into local government delivery of initiatives that are important in the local area, where the analytical categories are defined in terms of the local issues.	1. Introduction

Categories	**Definition**	**Chapter**
Local Government	The sphere of government that is closest to the people and the environment.	1. Introduction
Governance	The manner, acts and processes of governing, including the government, private and community sectors (UNDP 1997)	1. Introduction
Components of theories	Analytical constructs that comprise the formal articulation of theories.	1. Introduction
Concepts	The labels placed on discrete happenings, events and other instances of phenomena (Strauss and Corbin 1990. p.61).	1. Introduction
Categories	Higher order classifications of concepts, discovered when the concepts are compared against one another, and appear to pertain to a similar phenomenon (Strauss and Corbin 1990. p.61).	1. Introduction
Environment	Comprehensive, dynamic and complex systems encompassing nearly everything, living and non-living. Ecological, social and economic aspects are explicitly recognised here.	1. Introduction
Environmental issue	An environmental problem associated with conflict between people (Conacher & Conacher. p.16).	1. Introduction
Environmental problem	A threat to environmental values with an adverse affect on people (Conacher & Conacher. p.15).	1. Introduction
Beneficial environmental outcomes	The practical, tangible effects of successful efforts to protect environmental values, in the context of current, often degrading environmental values. They do not necessarily imply a practical change to any situation. In this sense, the retention of an environmental value that has been under threat of degradation, is considered a beneficial environmental outcome.	1. Introduction
Environmental values	A quality of physical characteristic of the environment that is conducive to ecological health, or public amenity or safety (from QG 1994. S.9).	1. Introduction
Sustainable environmental	Environmental outcomes that will continue over time.	1. Introduction

outcome		
Perspectives	The point of view or conceptual framework of a person that provides their insight into local environmental issues.	2. Introduction to Australian LG.
Local government	Includes those people who have held formal roles in LG, and in no other sphere of government.	2. Introduction to Australian LG.
Mixed	People with experience working in LG associations, or have held formal LG roles and worked in at least one other sphere of government. Includes people who have worked in LG and regional, state or federal government.	2. Introduction to Australian LG.
State and federal government	People who have worked in state and/or federal governments, but not in local governments.	2. Introduction to Australian LG.
Other	People who have not worked in any form of government.	2. Introduction to Australian LG.
Antinomy forces	The source or target of a shift that stimulates or is caused by any part of an attempt by a LG to deliver an environmental outcome, expressed in terms of the local-state antinomy.	2. Introduction to Australian LG.
Inside	A force originating from or focused within the local area, including within the LG.	2. Introduction to Australian LG.
Outside	A force originating from or focused outside of the local area, excluding the LG's particular concerns.	2. Introduction to Australian LG.
Integrated	**A force that integrates efforts and initiatives within and outside the local government area, and that therefore seeks to provide a practical solution to the local-state antinomy.**	2. Introduction to Australian LG.
Roles	Formal positions held within a LG that influence available options for tackling environmental issues.	2. Introduction to Australian LG.
Elected	Local government officials that are elected to legislative roles.	2. Introduction to Australian LG.
Mayor	The most senior elected official (also known as President, Chief Minister).	2. Introduction to Australian LG.
Councillors	All elected local government officials other than the Mayor.	2. Introduction to Australian LG.
Council	The entire group of elected officials in a single local government. The legislative part of the local government.	2. Introduction to Australian LG.
Manager	A senior officer, working with executive powers, accountable for delegated responsibilities.	2. Introduction to Australian LG.
Chief Executive Officer	The most senior manager in any LG (also known as general manager and town clerk).	2. Introduction to Australian LG.
Other manager	Managers other than the Chief Executive Officer.	2. Introduction to Australian LG.
Officer	An official working with executive powers, accountable to a manager.	2. Introduction to Australian LG.
Environmental	An officer working in any area with direct environmental relevance (including environmental officers, environmental health officers, environmental planners and others).	2. Introduction to Australian LG.
Other	Any officer who is not involved in environmental work.	2. Introduction to Australian LG.
Impact type	The type of change that directly results from any part of an environmental initiative.	2. Introduction to Australian LG.
Administrative	An impact based in a document or financial transaction with no direct affect on any environmental values.	2. Introduction to Australian LG.
Substantive	A physical or practical impact that changes environmental values.	2. Introduction to Australian LG.
Relationships	A shift in the way that individuals, organisations or institutions	2. Introduction to

	perceive and treat one another.	Australian LG.
Knowledge	A shift in understanding about environmental issues or values.	2. Introduction to Australian LG.
Regional dissonance	The impact when regional boundaries have such variety and incongruence that they create barriers to effective, long-term regional partnerships.	2. Introduction to Australian LG.
Intergovernmental typology of local government	A simple classification of Australian LG based on LG identity and closeness to state government agencies.	2. Introduction to Australian LG.
Capital city	The built-up area in the city in which state and commonwealth parliaments are based. Includes the LGs governing the central business district and those surrounding areas that do not have their own discrete business centres.	2. Introduction to Australian LG.
Capital fringe	Includes LGs in areas surrounding capital cities and are usually areas with their own distinct business centres.	2. Introduction to Australian LG.
Other centre	Includes city and town LGs that are widely considered to be major centres for regions or districts. Several regional offices of state government departments are located in each other centre.	2. Introduction to Australian LG.
Indigenous	A LG with mostly indigenous councillors, servicing a predominantly indigenous community.	2. Introduction to Australian LG.
Other local government	Any LG that is not a capital city, capital fringe, other centre or indigenous LG.	2. Introduction to Australian LG.
Region	A group of LGs working together for a common purpose.	2. Introduction to Australian LG.
Local government features	Descriptors of LG features for which quantified data are readily available.	2. Introduction to Australian LG.
Population	The number of residents in a LG.	2. Introduction to Australian LG.
Populous	LGs with a greater-then-median resident population. Includes most of the *capital city*, *capital fringe* and *other centres*.	2. Introduction to Australian LG.
Sparse	LGs with a less-than-median resident population. Includes most of the *indigenous* and *other LGs*.	2. Introduction to Australian LG.
Area	The geographic land area covered by a LG.	2. Introduction to Australian LG.
Extensive	LGs with a greater-than-median geographic area. Includes most of the *other LGs* and some of the *other centres* and *capital fringe* LGs.	2. Introduction to Australian LG.
Compact	LGs with a less-then-median geographic area. Includes most of the *capital city* and *capital fringe LGs* and some of the *other centres*.	2. Introduction to Australian LG.
Expenditure	The total amount spent by a LG annually.	2. Introduction to Australian LG.
Rich	LGs with greater-than-median annual expenditure. Includes all of the *capital city LGs* and most of the *capital fringe LGs* and *other centres*.	2. Introduction to Australian LG.
Poor	LGs with less-than-median annual expenditure. Includes all of the *indigenous LGs* and most of the *other centres*.	2. Introduction to Australian LG.
LG environmental focus areas	Discrete areas of LG environmental work, based on the purpose of the activity.	3. Environmental local governance
Environmental planning	Any activity that establishes the future land-uses for an area. Includes strategic land-use planning, development control, development assessment, environmental impact assessment and infrastructure design.	3. Environmental local governance
Environmental management	Any activity contributing to the day-to-day use or maintenance of environmental values. Includes retaining and supporting	3. Environmental local governance

	biodiversity, building and operating basic infrastructure.	
Environmental protection	Any activity dealing with the unwanted by-products of environmental management activities. Includes all pollution prevention, waste management and recycling activities.	3. Environmental local governance
Environmental hazards	Iindustry practices that pose a risk of environmental harm	5. Benchmarking study methods
Environmental risk	The likelihood and consequences of environmental harm resulting from an activity.	5. Benchmarking study methods
Inherent environmental risk	The likelihood and consequences of environmental harm from an activity conducted considering only short to medium term production expediency	5. Benchmarking study methods
Residual environmental risk	The likelihood and consequences of environmental harm occurring, taking account of risk management measures.	5. Benchmarking study methods
Environmental risk area	The type of environmental values that are likely to be affected by a potentially polluting industry practice.	5. Benchmarking study methods
Surface water	Point source release of contaminants to surface waters	5. Benchmarking study methods
Groundwater	Release of contaminants to groundwater	5. Benchmarking study methods
Stormwater	Release of contaminated stormwater off site	5. Benchmarking study methods
Fugitive Air	Non-point source release of contaminants to the atmosphere (other than odour)	5. Benchmarking study methods
Point Source Air	Release of contaminants into the atmosphere via a chimney or other stack	5. Benchmarking study methods
Odour	Offensive smell migrating off site	5. Benchmarking study methods
Noise	Emission of noise	5. Benchmarking study methods
Site Contamination	Release of contaminants to land	5. Benchmarking study methods
Waste	Any gas, liquid, solid or energy (or a combination of wastes) that is surplus to, or unwanted from , any industrial, commercial, domestic or other activity, whether or not of value.	5. Benchmarking study methods

The following categories are all introduced in chapter 7.

Component	Definition
Context continuums	Schematic representations used to describe the contextual issues that influence attempts. Any specific attempt may occur at any one point on a context continuum, or across a range on the continuum.
Scale	The geographic extent of the attempt. Scales range from less than local, including small parts of a local government area, to international. *"what was the scale of the attempt? Was it just within this LG, or did it extend further than that?"*
Origins	Where the stimulus of the attempt is from. The range is the same as for *scale.* *"where did the idea for the attempt originate? Within this LG, or from outside?"*
Flexibility	How much choice the LG had in deciding how to progress with the attempt. The range is from none to full. *"what level of flexibility was there in this attempt? Could you decide how you went about it yourself, or were constrained in some way?"*
Attempts	Efforts that made to deliver an environmental outcome. LG attempts might be initiated and championed by an individuals within or outside the LG or by the LG as a whole.
Goals	The purpose of an attempt. The range of intended outcomes, established at the start of the attempt, or emerging as the attempt progressed. *"what were the goals that you aimed to achieve?"*
Processes	The important steps on the way to achieving outcomes. *"what were the important processes that you went through in achieving the goals?"*
Outcomes	The achievements resulting from the attempt. *"what were the outcomes from the attempt? What did you achieve?"*
Drivers	A force causing or assisting an attempt. "*What were the drivers, that helped you with the attempt?"*
Constraints	A confinement or restraint that hinders an attempt. *"What were the constraints that made it harder to achieve the attempt?"*

Environmental values, used in comparative case study graphs

Levels	Ecological	Economic	Social
High	**Pristine** Ecological systems are largely or entirely unchanged since European colonisation. Biodiversity and species richness are high, and ecosystems are intact and sustainable.	**Profitable** Economic systems are functioning well, and delivering strong and sustainable profits.	**Empowered** The community is ready and able to participate in decisions and actions that affect them. Community issues are addressed by decision makers, and the outcomes meet community needs.
Medium	**Recoverable** Ecological values have been altered from their original states. But ecological values such as good air and water quality, some native biodiversity and species richness still exist. Agricultural lands, rural residential areas and other semi-developed country is included.	**Cost-recovery** Economic systems are returning as much as they are costing. This is sufficient to continue running the existing economic systems, but provides no strong incentives for such action.	**Resilient** Community members are reasonably well informed about local policy decisions and issues that will affect them. However few have a real capacity to influence decisions, or ensure that government decisions address their needs.
Low	**Degraded** Ecological values are entirely altered from their original state. Few, if any native species are present, and the prospects of their return are slim. Industrial areas, waste sites, and inner-city areas are examples.	**Loss** The economic systems are costing more than they are earning. There is no benefit in continuing investment in these conditions.	**Disempowered** Community members know little of the policy decisions and actions taken by governments. They have no access to

Environmental strategists: people who see their roles with LGs as giving them opportunities to progress personal environmental goals

Core driver and constraint categories

Category	Definition
INITIATIVE/ BELIEF / COMMITMENT	**Voluntary contributions to attempts, beyond the legal or perceived obligations of the local government.**
LG commitment	The majority of elected Councillors support the attempt.
Personal belief	Individuals involved in the attempt have personal beliefs about it.
Strategic action	Action in the short term that aims to bring about change in the long term.
Public support	A dominant view in the general community supports the attempt.
Consultation	Program for LG and other agencies to learn from community responses to attempt.
Local features	Aspects of the local ecological economic or social environment stimulate the

	attempt.
PRACTICAL RESOURCES	**The tangible resources targeted towards attempts.**
Conceptual systems	Scientific or other recognised source of knowledge about the issue, together with a model or other means with which to translate that into action.
Ongoing finance	A reliable source of funds that will be available for the life of the attempt.
One-off payment	A single grant, or limited amount of money that will not extend for the life of the attempt.
Skilled people	Workers available with knowledge and skills necessary to undertake the attempt.
Physical systems	Adequate practical or physical infrastructure sufficient to support a successful attempt.
Time	Enough time to complete the attempt, without compromising other issues facing the authority.
RIGHTS/ RESPONSIBILITIES	**The obligations of local government to make attempts**
Legal obligation	A law requires that the attempt be made by the authority.
Statutory potential	A head of power enables the authority to make a law that would support the attempt.
Leadership	The authority is perceived as being best-placed to make an effective attempt, and therefore to have an ethical responsibility to undertake the attempt.
INSTITUTIONS	The agencies, groups and organisations actively involved in the attempt.
Community environment group	A group working to improve local ecological conditions.
SG	SG departments and officials with interests in the attempt.
Regional organisations	A group of LG working together as a formal regional organisation, on issues related to the attempt, whether or not other non-LG agencies are involved.
Issue-specific working group	An ongoing group involved in the attempt, and working together on it over time.
Media	Media coverage of the attempt and related issues.
LGAs and other LGs	The Local Government Association expressing an interest in the attempt, or other LGs being involved in the attempt, outside of formal regional arrangements.
FG	Any involvement by any federal government official.

Categories for the local-state antinomy

Category	Definition
Inside	A force originating, focused or impacting within the local area, including within the LG.
Outside	A force originating, focused or impacting within the local area, excluding the LG's particular concerns.
Integrated	A force that integrates efforts and initiatives within and outside the local government area, and that therefore provides a practical solution to the local-state antinomy.

Categories for actions involved in attempts

Category	Definition
Administrative	A goal, process, outcome, driver or constraint that does not directly change any ecological, social or economic values
Substantive	A goal, process, outcome, driver or constraint that directly changes ecological, social or economic values
Knowledge	A goal, process, outcome, driver or constraint that directly changes what is generally understood about the environmental values and impacts involved in the attempt.
Relationships	A goal, process, outcome, driver or constraint that directly changes relationships or partnerships between individuals or institutions involved in the attempt

Categories for summary environmental outcomes

Category	Definition
Beneficial environmental outcomes	No trade-offs occur. Ecological values are maintained at high levels, improve, or there is a slowing in the rate of degradation. Meanwhile, there are no long-term economic or social costs, or costs are restricted to a very small group, which is able to recover in the long term. Sustainable beneficial outcomes are assured in the foreseeable future.
Neutral environmental	Balanced trade-offs occur. Ecological values are maintained at high levels, improve, or there is

outcomes	a slowing in the rate of degradation. However there are moderate economic and/or social costs associated with these ecological outcomes that threaten the viability of the attempt in the long term. Beneficial outcomes are possible in the foreseeable future.
Detrimental environmental outcomes	Negative consequences occur. Ecological values continue to degrade or rates of degradation are only slightly improved. There are significant and widespread economic and social costs that severely threaten the long-term viability of any gains.

Categories identifying specific impacts of attempts

Category	Definition
Winner	An entity benefiting from an attempt.
Loser	An entity suffering from an attempt.
Key driver	A force that raises the slope of an ecological, economic or social graph (whether by reducing the rate of decline, flattening it out, retaining a flat trend despite a negative force or generating a positive slope)
Key constraint	A force that lowers the slope of an ecological, economic or social graph (whether by increasing the rate of decline, flattening out a rising line or generating a negative slope.

Categories for empowered and disempowered local governments (from chapter 8)

Categories	Definitions
Empowered LG	A LG with the capacity to initiate, and flexibility in determining processes in attempts to deliver beneficial environmental outcomes, considering both short and long-term implications.
Disempowered LG	A LG involved in attempts to deliver beneficial environmental outcomes, but that lack the capacity to initiate the attempts, or the flexibility to determine how they should proceed.

Appendix 4

Comparative case studies

Local Governments Implementing the Queensland *Environmental Protection Act 1994*

Case Study Q1. By Su Wild River.

The *Queensland Environmental Protection (EP) Act 1994* broke new ground for environmental legislation and partnerships between state and local governments (LGs). A 41% environmental risk reduction was recorded across Queensland over the first three years of operation of the EP Act. State and local government implementation was equally effective in delivering these environmental outcomes.

The EP Act commenced in March 1995, replacing several ineffective, outdated laws dealing with pollution control. The *Clean Air Act 1963* for example, had its first successful prosecution in 1995, after it had been replaced. A handful of prosecutions succeeded under the *Clean Water Act 1971*. But these involved very low maximum fines for a limited range of offences. These were also highly difficult to prove in a court of law. Clearly, Queensland's pollution management Acts neither discouraged, nor punished polluters enough to address the State's growing environmental protection problems.

The EP Act broke new ground in many ways. For instance, there was extensive public consultation leading up to the EP Act's commencement. This included mailouts of 10,000 kits containing Public Consultation Papers and 60 meetings in 32 locations across the State. The comments received during that consultation were also well reflected in the final Act.

For example, the draft legislation included provisions for what would finally be called 'Environmental Management Programs' to deal with non-complying operators. The programs provide a legally enforceable and transparent process for operators who are not meeting environmental requirements to move towards compliance. Targets and timeframes in the programs are proposed by the operators, but approved by administering authorities. Special provisions ensure that the programs do not open up a loophole for non-compliance to continue over time. This provision was supported by 413 of the 420 respondents to the public consultation for the draft EP Bill (Ricketts 1992, p. 38).

The EP Act was distinguished from its predecessor legislation in many other important ways. Environmental licensing under the Clean Air and Water Acts was limited to a couple of hundred premises with pipes, stacks or other point sources of pollution into the environment. The new EP Act required over 13,000 operations to obtain environmental authorities (licences or approvals). The EP Act also made it cost effective, and relatively easy to prosecute environmental offences. In its first three years, the EP Act was successful in prosecuting polluters in over 20 cases, with fines as high as $80,000 (Wild River et al 1998. P.59).

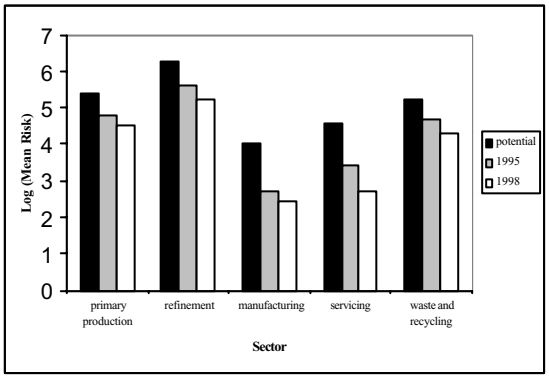
The EP Act and associated initiatives also established new partnerships between State and LG for environmental protection. The licensing and administration of over 10,000 activities was devolved to LG. The Department of Environment and Heritage (DEH) set up 'Devolution Working Groups' in each region. These were forums for training, information and support. They also supplied an avenue for feedback to the DEH on EP Act implementation issues, and encouraged consistent implementation strategies between administering authorities within regions. DEH provided a 5 volume Support Kit containing practical tools to support implementation to every administering authority. The state government also essentially paid LGs to start their licensing programs by paying them $500 for each licence issued, while they waived payment from the licence-holder. A system for incentive licensing, where 'best practice' operators pay lower fees than polluters was later brought in. However, despite these initiatives, inter-governmental problems remained. For instance government requested the ability to impose on-the-spot polluters, for simple standards for compliance from the state. But these statutory features were slow to commence, and this created major problems as local governments sought to fairly and consistency implement the new laws.

The environmental and other outcomes from the EP Act have been measured in two studies (Wild River 1997, Wild River 1998). These showed that the EP Act was successful in reducing environmental risk in licensed premises by an average of 41 per cent over the

first three years. The study showed that:

> Average risk reduction, and residual environmental risk varied between Queensland regions, for different licence types and for different activities. However environmental improvements were made by all licence types in most of the industry sectors studied, and in all regions of Queensland. (Wild River 1998. P. 2)

Figure 1: Environmental Risk Reduction by Sector.



Source: Statewide Benchmarking Study data. Wild River 1998.

Figure 1 shows environmental risk reductions by industry sector. The graphs show significant reductions in environmental risk between 1995 and 1998 for each sector. There is also great variation in the potential and actual environmental risk between the sectors. Note that most of the lower-risk operations in the manufacturing and servicing sectors are those majority of activities licensed by the LGs, with the state government licensing the high-risk activities such as refinement.

Licensee responses to environmental protection initiatives were also investigated in the Benchmarking Studies. The majority of operators considered that the EP Act was both important and effective in encouraging better environmental performance. But many problems were also reported. Licence and compliance costs were often considered high by many operators. 88% of large, integrated licence holders spent an average of $185,200 to comply with new environmental requirements (Wild River 1998, p. 2). Figure 2 shows a chemical manufacturing operation which has been built to meet the EP Act requirements. It is triple-bunded, and covered, and has a very low risk of causing environmental harm.

But in most cases, significant environmental improvements were made in cost-effective, simple ways. For instance many operators had not previously realised that two sets of drains leave their premises, that only the sewage is treated, and that stormwater drains take contaminants directly to waterways. Many were able to stop routine stormwater contamination by bunding and covering work and storage areas, and by redirecting waste streams to the sewage system. Altogether, only 39% of licence holders, in small manufacturing and service

industries had to pay to comply with the EP Act. The average cost of compliance was $3,400 for these industries. The result was a 45% environmental risk reduction (Wild River 1998, p. 2).

It is worth noting that there were no significant differences in the environmental outcomes achieved by highly and less committed administering authorities. This suggests that consistent factors such as the size of the fines, the publicity and inspectors contact with operators were crucial to the success of this legislation.



Figure 2: triple-bunded and covered chemical storage plant

References

Ricketts, M. 1992. *Environment Protection Legislation: A summary of public responses.* Brisbane: Department of Environment and Heritage.

Wild River, S. 1997. *Brisbane City Council Environmental Benchmarking Study.* Canberra: Centre for Resource and Environmental Studies, Australian National University.

Q1: Local Governments Implementing the Queensland Environmental Protection Act

Perspective: Mixed
Role: Officer
LG type: Region
Focus: Protection

Context Issues
This case study covers all of Queensland's 125 LGs, operating in different contexts. Hence the range of origins and scales.

Context continuums

Scale
<local **local** regional state national international

Flexibility of Process
Full mostly **equal** partial none

Origins of initiative
<local **local** regional state national international

Goals
- Fulfill statutory responsibilities under the EP Act,
- Achieve Ecologically Sustainable Development through pollution prevention,
- Support environmentally responsible operators and punish polluters,
- Monitor progress and report to those affected,
- National goals for consistency in environmental protection laws.

Drivers
- Integrated, comprehensive Act,
- EP Act a stimulus to improve environmental performance,
- Training programs to assist LGs to use and understand EP Act
- Devolution Working Groups for regional cooperation, consistency
- Environmental Protection Support Kit with updates,
- SG support for LG, through public meetings, workshops,
- Guidelines and standards for how to improve performance,
- Cleaner production and incentive licence systems reward good operators.

Processes
- Consultation for 5 years prior to Act implementation,
- Cooperation of LGAQ, industry peak bodies, marred by operator complaints about fees, compliance issues,
- Different degree of EP Act support between LGs, depending on level of involvement, and local responses,
- Policy clarification by QEPA, continual updating of legislation and policies,
- Inspections and licence conditions imposed at over 10,000 operations.

Constraints
- Problems with fees, partial solutions from IEMS and fee waivers,
- Compliance costs considered too high by many in LG, business etc,
- Difficulties determining compliance, due to flexibility in legislation,
- Business opposition eroded some LG support for legislation,
- Not all legislation in place – enforcement, incentives, definitions,
- Inconsistencies in legislation – potential polluters not all equally affected,
- Sensationalist, negative media reports,
- Perception of constant change in EP system.

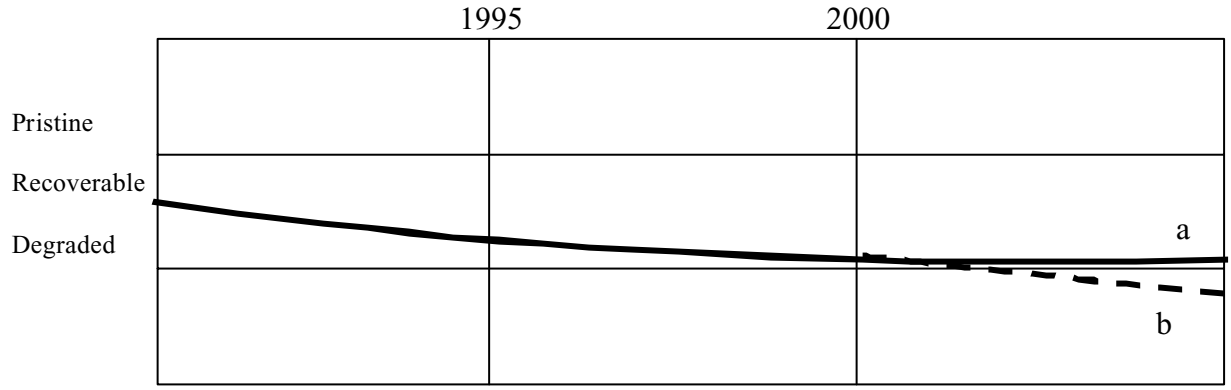
Outcomes
- 41% environmental risk reduction over first 3 years of implementation,
- Regional partnerships between SG and LG formed for environmental protection,
- Publicly available databases of potentially polluting activities held in all LGs and QEPA,
- Increased understanding of environmental problems and solutions across Queensland.

About the Models

The Comparative Case Study Model records an attempt to deliver environmental outcomes in a simple, general format enabling comparative analysis of issues. Key elements of attempts, and their contexts are recorded. The graphs across the page show the environmental, economic and social values before, during and after the attempt, and how these changed as a result of initiatives. The graphs are often 'split', indicating different outcomes for different sectors simultaneously, or different possible outcomes.

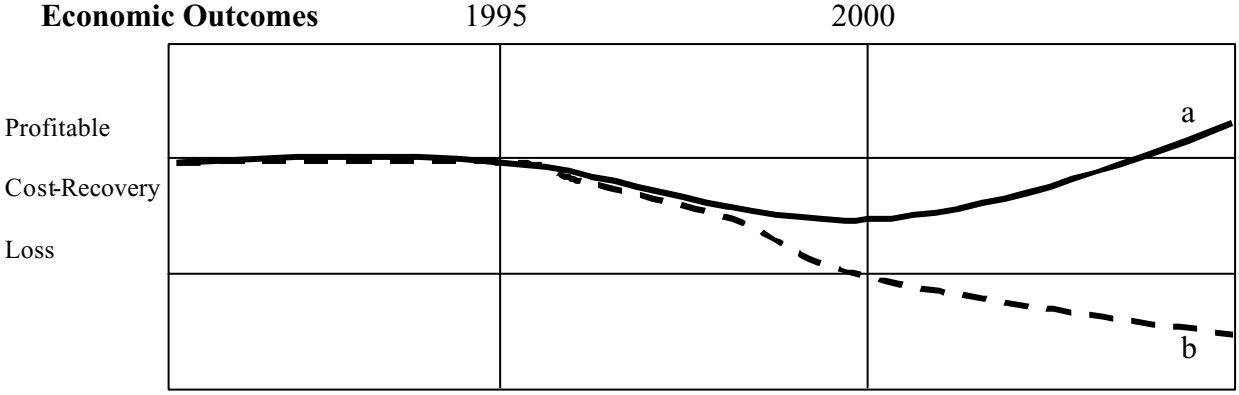
Note: This case study is one of 34 produced for Su Wild River's PhD research, undertaken through the Centre for Resource and Environment Studies, Australian National University.

Ecological Outcomes



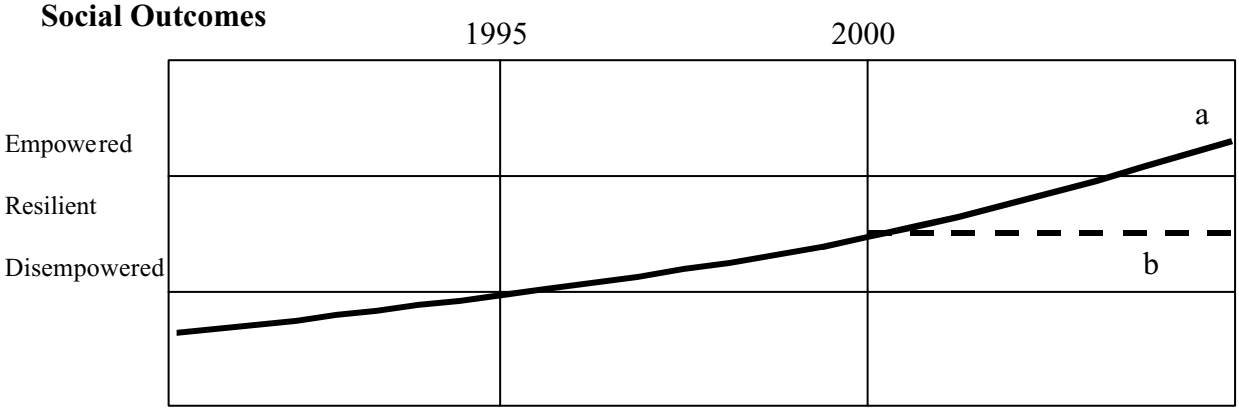
CERAM research showed a 41% environmental risk reduction in the first three years since 1995. This means a slowing of the rate of environmental degradation that is still occurring. Continued implementation, while addressing EP Act problems could halt environmental degradation, keeping environmental quality at current, largely recoverable conditions (a). Failure to address the problems, or limitations to the scope or implementation of the Act is likely to lead to further, potentially irreversible environmental degradation (b).

Economic Outcomes



Businesses with potential to pollute have their profits artificially high, since the real costs of pollution and resource use are not recognised in current economic systems. The implementation of the EP Act has been costly to many of those who invested to comply, since 1995, and has caused losses to many operations, especially those with non-complying competitors. Some have benefited from reduced use of materials, waste costs, or from marketing advantages through the incentive licence system (a). Continuing to implement the EP Act, while addressing inconsistencies and enforcement problems would help these responsible operators to recover costs and increase profits. Failure to address the problems would cause ongoing losses to responsible operators, due to the competitive advantage afforded to non-compliers in the absence of on-the-spot fines (b).

Social Outcomes



Prior to the EP Act, public information on environmental licences and conditions was unavailable, other than through expensive and time-consuming Freedom of Information channels. The EP Act requires administering authorities to keep public registers of licence information, establishes processes for public input to legislation and policy development, and legal mechanisms for the public to appeal decisions, giving great potential for empowered community involvement (a). However these opportunities have had limited use to date, and general community knowledge and empowerment through the use of the processes is probably still limited (b).

Vegetation Protection in Redland Shire

Case Study Q2. By Su Wild River, with Toni Bowler, (Councillor, Redland Shire). Further assistance also from Redland Shire Council environmental planning officer

Comparative Statistics for Redland Shire

Category	Measure	Comparison
Area (Sq/Km)	570	Bottom 29%
Population	108,000	Top 8%
Pop Sq/Km	189	Top 22%
Total Income ($)	31,376,000	Top 23%
Rate Content ($)	75,862,000	Top 2%
Expenditure ($)	149,456,000	Top 2%

Information Australia, 2000

Redland Shire is implementing a comprehensive vegetation protection local law. This is having beneficial impacts on local ecological, economic and social values.

Redland Shire Council lies between Brisbane and Moreton Bay, South of the Brisbane River in South East Queensland. North Stradbroke Island, and the Southern Moreton Bay Islands are also within the Shire boundaries. Redland has many significant environmental values. Moreton Bay is an important and sensitive seagrass area, that is home to dugong and other rare species and is included in the RAMSAR CAMBA/JAMBA register. Much of the mainland within Redland Shire is koala habitat, and home to many other marsupials, birds and other wildlife. Redland is also located on highly fertile soils, and has supported many successful small farms for over a century. Redland also continues to grow in popularity as a residential area. These changes threaten both the environmental and agricultural values of the Shire.

Many residents and Local Government offficials are very aware of the important environmental values in the local area. Redland has taken steps towards inititives to help protect local environmental significance of its local assets.

One of these initiatives was to develop a Local Law and Policy known as Local Law No.6 – Protection of Vegetation (or the Vegetation Protection Local Law – VPLL) for the protection of vegetation within the Shire. Importantly, Redland Shire has also managed to coordinate many of its strategic and operational policies and programs, so that they link together coherently. For instance, Redland Shire's strategic plan places all of its environmental initiatives in context with related issues (Redland Shire 1998a).

A critical issue for Redland's environmental initiatives, is that much of the intact vegetation in the Shire is privately owned. Redland Shire cannot afford to purchase all local land with significant environmental values, and this means that Council has had to find other ways to protect vegetation on private land. In 1990, Council passed a Tree Protection Bi-law for this purpose. Its effectiveness however, was limited in many ways. For instance, it applied only to a limited number of trees or areas and not all vegetation stratums, and was hard to enforce. Since 1998, the Bi-law has been replaced by the VPLL.

The VPLL has both broader scope and greater effectiveness than the previous bi-law. For instance, it specifies 19 criteria for identifying 'significant vegetation'. These cover cultural, ecological, aesthetic and pollution issues, and allow any vegetation type to be recognised as significant. Figure 1 shows a giant Moreton Bay Fig tree, protected area by the VPLL, along with its buffer. The VPLL also includes controls on removing or damaging significant vegetation. These vary depending on the designated land use, and the state of development on the vegetated land. For instance, property owners can remove vegetation that 10 metres around their house and 3 metres around an approved shed as of right.

Figure 1: Moreton Bay Fig and buffer protected in Redland Shire



However where significant vegetation is located on land intended for development, controls such as conditions of approval may require that

buildings and other structures are designed around the vegetation, ensuring its protection. In these cases, Environmental Planning Officers can inspect sites where development is planned, and identify vegetated areas on site that are significant worth protecting and depending on the zoning, a 'building envelope' can be designated. Clearing and building cannot be carried out outside the building envelope in areas with significant vegetation and therefore the vegetation is protected (Redland Shire 1998b, Sections 3, 5, 21, 26).

These sorts of controls in the VPLL are designed to be proactive, in that they can avoid vegetation damage, rather than just punishing it after it has occurred. The VPLL also carries fines of up to 850 penalty units for unlawful damage to protected vegetation (Section 26).

Redland's VPLL rests in part on several State Planning and related policies. In this sense, it is an example of good state/local partnerships for environmental outcomes. The *State Planning Policy for Conservation of koalas in the Koala Coast* (Department of Environment 1997), and related *Planning Guidelines* (Queensland Government 1997) were particularly useful in helping to design a strong VPLL. The former document shows that Redland Shire consists almost entirely of koala conservation areas, other major habitats and balance areas. The policy requires that these koala habitats be protected wherever practical, and also that local government planning schemes be consistent with the State Planning Policy. The consistency of these requirements with Redland's own policies for protecting local vegetation meant that both the two initiatives reinforced one another (see Queensland Government 1997).

The VPLL can also be coupled with other environmental planning measures such as the Strategic and Development Control Plans, to provide additional controls. For instance, some Redland households now face restrictions on the number and type of domestic animals they are able to keep. The new housing development of Ridgewood Downs is a good example of the VPLL in action. Building envelopes apply throughout the entire development, and roads and building locations have been designed to protect trees. No cats are allowed, and only one dog is allowed per house. Figure 2 shows the development, with trees remaining in the middle of the road, and all around the newly-built houses.

Figure 2: Ridgewood Downs



The VPLL has received significant local support, but there has also been some criticism. Some local residents and media reports have focused on perceived restrictions to landowners rights on their properties. Time will tell whether the overall public benefits from this initiative continue to outweigh such private costs.

References

Department of Environment. 1997. *Planning Guidelines: Conservation of Koalas in the Koala Coast.* Brisbane. Queensland Government.

Information Australia. 2000. *Australian Local Government Guide, 28th Edition, July 2000-November 2000,* Melbourne.

Quensland Government. 1997. *State Planning Policy 1/97.* Conservation of koalas in the Koala Coast. Brisbane: Queensland Government.

Redland Shire Council. 1998a. *Redland Shire Strategic Plan*. Cleveland: Redland Shire Council.

Redland Shire Council. 1998b. *Redland Shire Council Local Law Number 6: Protection of Vegetation.* Cleveland: Redland Shire Council.

V2: Vegetation Protection in Redland Shire

Perspective: LG
Role: Officer/Councillor
LG type: Capital fringe (rich, compact populous)
Focus: Management

Context Issues
-

Context continuums

Scale
<local local regional state national international

Flexibility of Process
Full mostly equal partial none

Origins of initiative
<local local regional state national international

Goals
- Protect all significant vegetation in Redland Shire, on both private and public land,
- Extend controls in the Tree Protection Bi-Law so that it covers more than just trees,
- Increase the amount of private land covered by vegetation protection laws,
- Tighten up fines for non-compliance with vegetation protection requirements.

Drivers
- Strategic Plan that identifies Green Space,
- Envt inventory which categorises priority vegetation to protect,
- Opportunity to place controls on land with rezoning applications,
- Opportunity to place controls on developments with building envelopes,
- VPLL allowing anyone to suggest areas for protection,
- Local community members wrote in identifying areas,
- State Planning Policy for koalas allowed large area of Shire declared as protected vegetation,
- Local media pro-envt, and report tree removal.

Processes
- Vegetation Protection Local Law in place for over 2 years,
- Anything with development potential is covered, which reduces pre-emptive clearing by potential developers,
- VPLL includes broad definitions of significant vegetation,
- Community consultation done by consultant,

Constraints
- Some of the zonings (eg Residential A) make it hard to protect vegetation,
- Even in large protected areas, some rezonoing etc still enables development with vegetation clearing,
- Some landowners unhappy with VPLL,
- Some Councillors unhappy with VPLL controls,
- Media sometimes misrepresents issues,
- Developers always apply for more than they need in terms of vegetation clearing,
- The VPLL creates a big compliance issue, More officers are needed to implement it

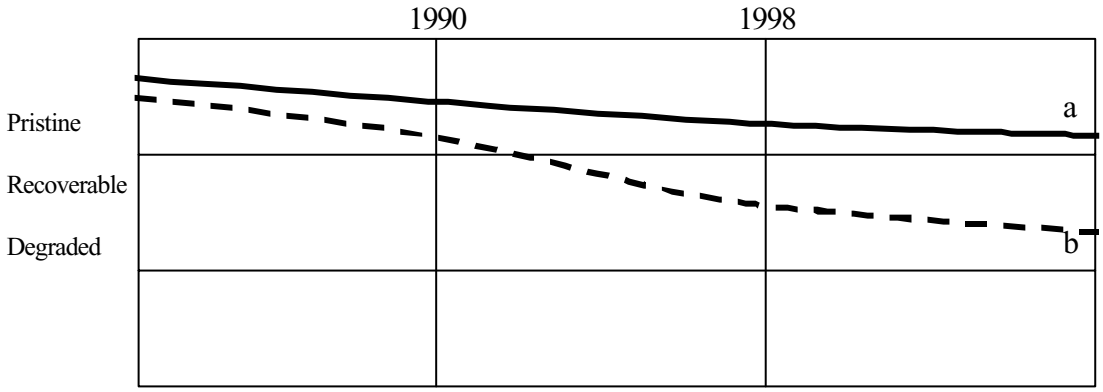
Outcomes
- Increase in protected areas within the Shire,
- Developments no longer indiscriminately clear land, or undertake pre-emptive clearing,
- Greater awareness among the community in general, and the development community about the value of vegetation.

About the Models

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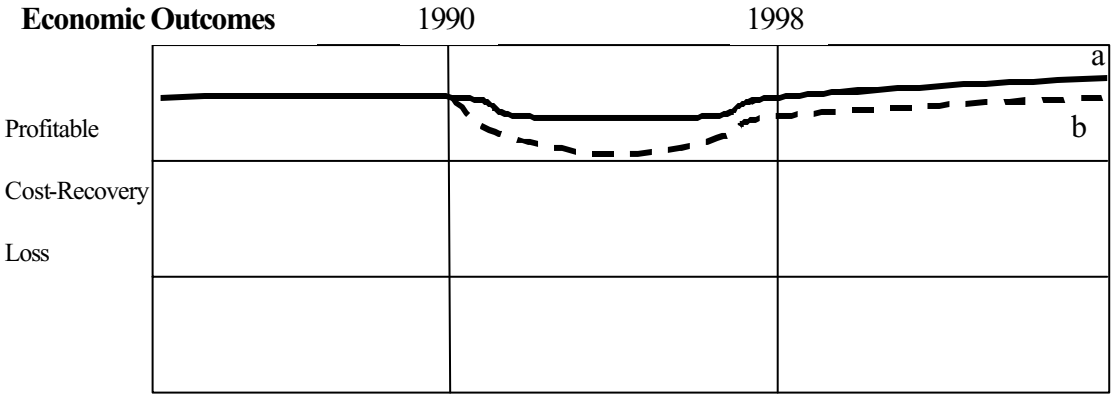
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Ecological Outcomes



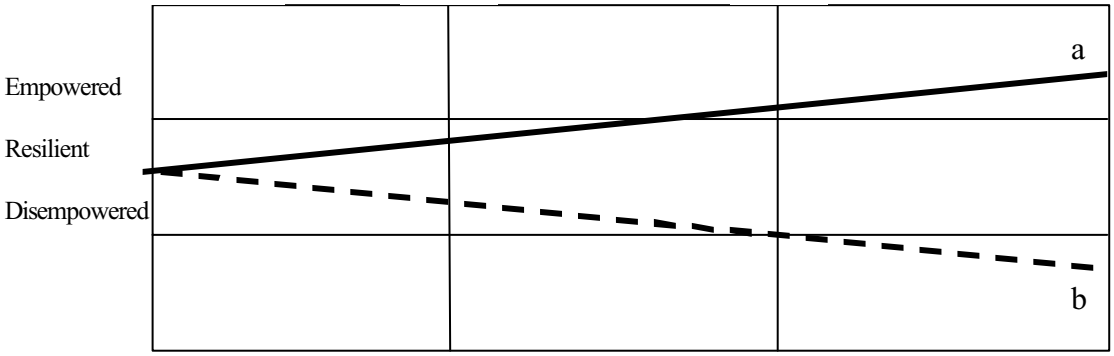
Both of the lines on the graph show trends for intact vegetation on privately-owned land. The top line (a) shows the trend for land with unrealised development potential prior to the 1990 Tree Protection Bi-Law. The controls in the Bi-Law, and subsequent VPLL have been highly successful in reducing the rate and extent of degradation on that land. The lower line (b) shows the trend for privately-owned land that had already been developed prior to 1990. There are much fewer controls on that land, and vegetation clearing has been more pronounced.

Economic Outcomes



The line on this graph shows amounts and changes to the value of land with development potential in Redland Shire. The top line (a) shows the changes to land values for private owners. These dipped slightly as a knee-jerk reaction to the perceived development constraints imposed by the Tree Protection Bi-Law. More recently, land prices in Redland have increased, probably partly as a result of public recognition of the dollar value of vegetation retained in the landscape. The dip in land values was more severe for developers (b). This was because of development constraints such as restrictions on proposed buildings. For instance the number of blocks allowed on some subdivisions was reduced, because of building envelopes. However economic values have increased again, since individual blocks are selling for higher prices because of the perceived benefits of the protected vegetation.

Social Outcomes



Vegetation protection initiatives have increased community empowerment by raising the awareness of environmental values within the landscape of Redland Shire. There has been a resulting increase in people's desire to live in the Shire, and their enjoyment of both public open space, and vegetation values in visible private spaces (a). However, some local residents have felt disempowered by the changes, believing that their rights have been constrained (b).

Brisbane City Council – leading by example with environmental protection

Case Study Q3. By Su Wild River, with Ian Christesen and Mark Ricketts (Pollution Prevention Health and Safety. Brisbane City Council) .

Brisbane City Summary Statistics

Category	Measure	Comparison
Area (Sq/Km)	1220	Top
Pop Sq/Km	673	Top 14%
Total Income ($)	1,009,238,000	Top
Rate Content ($)	597,424,000	Top
Expenditure ($)	1,156,954,000	Top

Information Australia, 2000.

Brisbane City Council (BCC) governs Queensland's whole capital city. It is by far the largest Local Government (LG) in Australia, in terms of both budget and population. Brisbane's location, budget and corporate culture make it a politically powerful institution. BCC has been a key stakeholder in the development and implementation of the *Environmental Protection Act 1994* (EP Act). This makes sense, since BCC administers over 2,800 environmental licenses, which is over 20% of the total.

Brisbane City Council was heavily involved in the consultation leading up to the commencement of the EP Act. It had actively lobbied the Department of Environment and Heritage (DEH) for more environmental protection powers to tackle local pollution incidents. It had stressed that environmental protection initiatives must be self-funding, insisting on reasonable licence fees from businesses. It successfully negotiated many key issues of this nature with DEH before and after the EP Act commenced.

The EP Act was frustratingly slow to be commenced. And even when it finally started in March 1995, it still lacked many of the key elements needed to make the new environmental protection system work. The regulation specifying licensed activities was only 'Interim', and was amended 4 times in the first year. The EP Act itself was amended twice. Categories of licensed activities were added and removed during the changes, and powers of administering authorities also shifted. The Environmental Protection Policies that were to provide the detail about compliance were gradually completed over the following years. The first, addressing water issues, commenced in 1996, with air and noise policies commencing in 1997 and waste in 2000. The nuisance regulation, providing workable statutory tools for issuing on-the-spot fines for small offences was delayed until 1999 (Queensland Government 1995-1999).

Administering authorities that had been involved long-term in EP Act preparations had expected it to start up at least a year before it did. And because BCC had so many environmental authorities to issue, it had hired staff to implement the Act months before they could start inspecting premises or issuing licences. Instead, the new 'pollution prevention unit' staff spent the time getting their own administrative and policy systems in order.

The Pollution Prevention Unit formed consultative committees with local leaders from each industry sector. They used these to develop licence conditions, training programs for inspectors, and other policies, and later to monitor the effectiveness of implementation. Through this process, they developed *Operator Environmental Guidelines* for each environmentally relevant activity, outlining pollution prevention strategies and requirements. They also developed simple, industry-specific 'tick and flick' licence application forms.

BCC's initiatives were keenly sought by other LGs throughout Queensland. DEH responded to this by providing BCC's entire license administration system as an off-the-shelf model to all other LGs in Queensland. One outcome from this process was that many of BCCs policies were adopted statewide, making it a policy leader in many practical ways.

In 1997, BCC hired a consultant to evaluate the environmental and other impacts of the EP Act in Brisbane City. The consultant developed a simple, quick, environmental risk assessment methodology, allowing comparisons across industry sectors for this task. The method also allowed analysis of changes to environmental risk pollution potential since the EP Act commenced.

Findings from the study showed that significant environmental risk reductions were achieved in each of the 7 industry sectors that were assessed. The environmental risk reductions had been consistent across the City within

industries, but there were differences between them. Spray painters and panel beaters had made the biggest risk reductions. Many had installed spray booths and wash-down stations to avoid air and water pollution. 27% of spray painters had invested an average of $27,000 to comply with the new requirements (Wild River 1997, p.27).

But in most cases, significant environmental improvements were made in cost-effective, simple ways. For instance many operators had not previously realised that two sets of drains leave their premises, that only the sewage is treated, and that stormwater drains take contaminants directly to waterways. Many were able to stop routine stormwater contamination by bunding and covering work and storage areas, and by redirecting waste streams to the sewage system. Figure 1 shows a typical waste chemical storage area before the EP Act, where contaminants can easily enter the stormwater system. Figure 2 shows best practice storage of similar waste products, where full bunding, separation and covering is provided.

BCC has now adopted the risk assessment methodology that was developed in the study, for its own corporate environmental risk management. It has since used it to assess many of its own potentially polluting activities, and to prioritise environmental improvements.

The study also investigated operator responses to pollution prevention initiatives. There were many positive responses to the EP Act. Operators generally supported the Act, and BCCs approach to implementing it. Many complained however that it was being poorly enforced, and unequally applied to potentially polluting operations.

Some of these issues were beyond BCCs control, since they relied on statutory tools that had not yet been commenced, or regulations they could not alter. However BCC could have applied additional resources to industry regulation, and particularly to ensuring equal enforcement of all potential polluters. This would have reduced the market failure that provided financial advantages to businesses that did not comply early on.

Wherever possible, BCC would develop its own systems in the absence of state legislation, when local operators demanded such action. For instance, it brought in its own incentive licence system prior to the commencement of a similar one by DEH.

Figure 1: unbunded liquid waste storage area



Figure 2: bunded liquid waste storage with full waste separation for recycling.



References

Information Australia. 2000. *Australian Local Government Guide, 28th Edition, July 2000-November 2000,* Melbourne.

Queensland Government. 1995-1999. *Environmental Protection Legislation*. Various Acts, Regulations and Policies. Brisbane: Queensland Government.

Wild River, S. 1997. *Brisbane City Council Environmental Benchmarking Study.* Canberra: Centre for Resource and Environmental Studies, Australian National University.

Q3: Brisbane City Council leading by example with environmental protection

Perspective: Mixed
Role: Manager
LG type: Capital (rich, compact populous)
Focus: Protection

Context Issues

Brisbane City Council is Australia's largest Local Government. It is a policy leader within south-east Queensland, and the state as a whole.

Context continuums

Scale
<local local regional state national international

Flexibility of Process
Full mostly equal partial none

Origins of initiative
<local local regional state national international

Goals

- Fulfill statutory responsibilities under the EP Act
- Achieve Ecologically Sustainable Development through pollution prevention,
- Support environmentally responsible operators and punish polluters,
- Monitor progress and report to those affected

Drivers

- Integrated, comprehensive Act,
- BCC policies pushed the formation of the EP Act, regulations and policies,
- Training programs to assist inspectors to use and understand EP Act
- Devolution Working Groups for regional cooperation, consistency
- Operator's environmental guidelines and industry consultative groups for direction,
- Support from environmentally responsible operators,
- Cleaner production and incentive licence systems reward,
- Fee waiver for first 15 months,
- Risk assessment method.

Processes

- Consultation for 5 years prior to Act implementation,
- Preparation for EP Act commencement, through training courses, 'tick and flick' licences etc.
- Other LGs in the region also supportive of the EP Act,
- Gradual policy clarification by QEPA, continual updating of legislation and policies,
- Inspections and licence conditions imposed at over 2,800operations

Constraints

- Problems with fees, partial solutions from incentive licence system
- Compliance costs considered too high by many in LG, business,
- Difficulties determining compliance, due to flexibility in legislation,
- Business opposition due to poor media coverage,
- Not all legislation in place – enforcement, incentives, definitions,
- Inconsistencies in legislation – potential polluters not all equally affected,

Outcomes

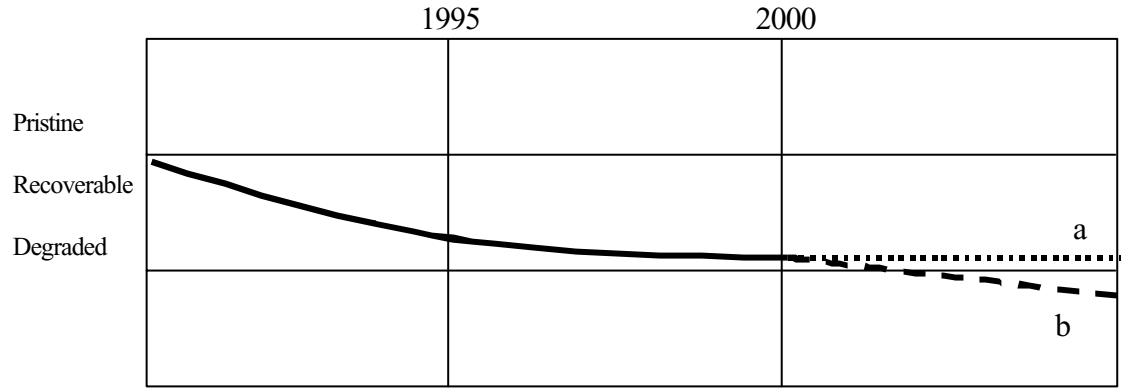
- significant environmental risk reduction over first 2 years of implementation,
- practical support and compliance by key industry groups and businesses,
- databases of potentially polluting activities, publicly available,
- increased understanding of environmental problems and solutions across Brisbane.

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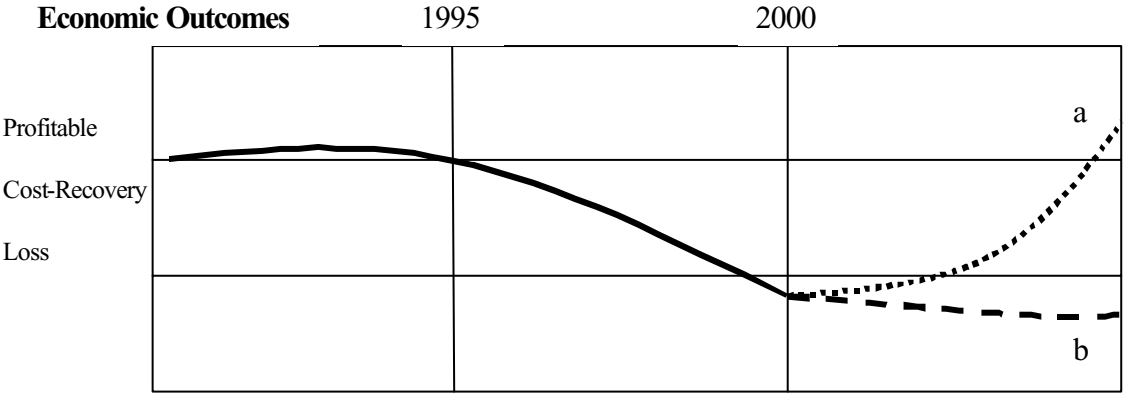
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Ecological Outcomes



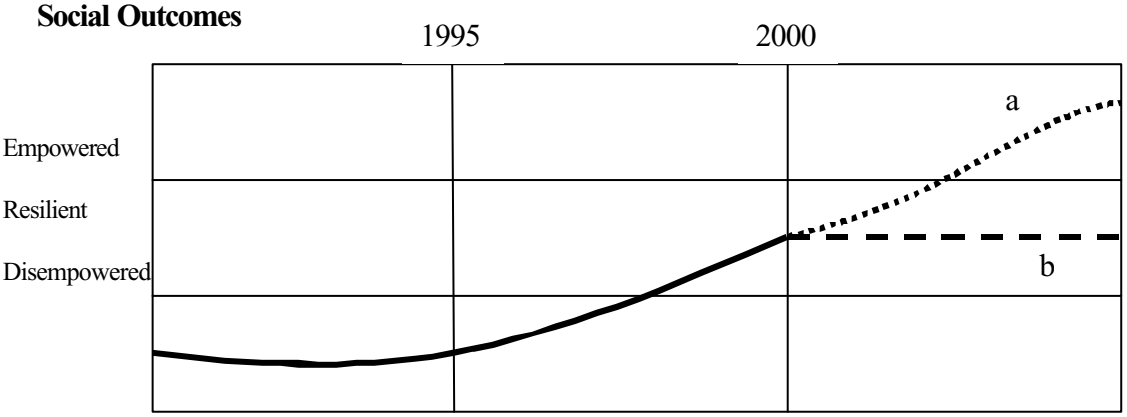
Significant environmental risk reduction in at least 7 industries between 1995 and 1997. 1995. This means a slowing of the rate of environmental degradation that is still occurring. Continued implementation, while addressing EP Act problems could halt environmental degradation, keeping environmental quality at current, largely recoverable conditions (a). Failure to address the problems, or limitations to the scope or implementation of the Act is likely to lead to further, potentially irreversible environmental degradation (b).

Economic Outcomes



Businesses with potential to pollute have their profits artificially high, since the real costs of pollution and resource use are not recognised in current economic systems. The implementation of the EP Act has been costly to those who invested to comply, since 1995, and has caused losses to many operations, especially those with non-complying competitors. Continuing to implement the EP Act, while addressing inconsistencies and enforcement problems would help these responsible operators to recover costs and increase profits. Failure to address the problems would cause ongoing losses to responsible operators (b).

Social Outcomes



Prior to the EP Act, public information on environmental licences and conditions was unavailable, other than through expensive and time-consuming Freedom of Information channels. The EP Act requires administering authorities to keep public registers of licence information, establishes processes for public input to legislation and policy development, and legal mechanisms for the public to appeal decisions, giving great potential for empowered community involvement (a). However these opportunities have had limited use to date, and general community knowledge and empowerment through the use of the processes is probably still limited (b).

Protecting Noosa North Shore from development

Case Study Q4. By Su Wild River.

Comparative Statistics for Noosa Shire

Category	Measure	Comparison
Area (Sq/Km)	869	Bottom33%
Population	45,000	Top 19%
Pop Sq/Km	52	Top 30%
Total Income ($)	57,043,000	Top 12%
Rate Content ($)	32,137,000	Top 11%
Expenditure ($)	41,723,000	Top 18%

Information Australia, 2000.

The Noosa River marks the northern boundary of development on Queensland's busy Sunshine Coast. The likely development on and beyond Noosa North Shore was averted after decades of strategic lobbying from the Noosa Parks Association and finally by decisive action of Noosa Shire Council.

Noosa Shire, at the northern tip of Queensland's Sunshine Coast, is one of Australia's premier tourist destinations. Visitors make much of its unique environmental values, including its beautiful beaches, highly accessible National Parks, and clean river. The Noosa River provides a natural southern boundary to the Great Sandy Region.

From 1968 to 1988, the Bjelke-Petersen era of Queensland politics was marked by strong pro-development policies. Government processes were also notoriously corrupt, and 'due process' in land use planning decisions was one example (see Dickie 1988). Despite the fact that Councils in Queensland were responsible for land use planning and development approvals (subject to ultimate power of the State), the State Government during this period was not averse to approving its own rezoning of land to accommodate large developments. Opposition from local communities was frequently brushed aside "in the interests of the State".

The Queensland Government also includes some unusual, pro-development provisions in its Planning Act. The "injurious affection' provision, for instance, provides for compensation to be paid by Councils for diminishing the development rights of a particular property by changes to a Planning Scheme e.g. rezoning from high density to low density or future urban to open space. The theoretical developed land value is thus built in to the raw land value, and has frequently stopped Governments from reclaiming land for ecological or social reasons.

Other provisions that can constrain the environmental impacts of developments however, provide some balance to injurious affection. Development Control Plans (DCPs) for instance, focus on a particular area and issues, and can restrict the type and scale of development to mitigate adverse impacts. However these controls are only available when the Local Government anticipates problems, and prepares its DCP well in advance of planning decisions. (Similar provisions are contained in both the superceded Planning and Environment Act and the Integrated Planning Act).

This was the background against which, in the 1970s, several groups and individuals within and beyond Noosa started lobbying to avoid development north of the river. The Noosa Parks Association was one such group, and individual members like Dr Arthur Harrold put huge efforts into their lobbying for Noosa conservation over several decades (see Bonyhady 1993 for details of this and related actions).

Most of the North Shore freehold land was held in single ownership, and Dr Harrold lobbied unsuccessfully for the land to be purchased by Government for National Park (it is now almost surrounded by the Cooloola Section of the Great Sandy National Park).

In 1982, a group of candidates including Noel Playford were elected to Noosa Shire Council after a balanced election campaign with a distinctly environmental focus. Over the next three years, that Council prepared and passed the North Shore Policy Plan, with provisions to restrict development north of the river. However, their efforts were cut short by the 1985 election of a pro-development Council that shared few of their beliefs about the necessity to protect Noosa's environmental values. Most of the environmentally conscious Councillors, including Noel Playford, were defeated.

It was during the term of this Council that Leisuremark Australia acquired its interest in the large vacant land holdings on Noosa's North Shore, and applied for rezoning for a huge resort (approx 10,000 person capacity) complete with jet airport. Despite the Council's pro-development philosophy and under great

local pressure, it first asked the State Government to decide the application to avoid having to make a decision. When the State refused, the Council refused the application on a 7-6 vote just before the 1988 Council elections.

In a dramatic turnaround, the 1988 election returned Noel Playford as Mayor, as well as several other pro-environment councillors. Injurous affection provisions and a lack of funds meant that buying back the land was impossible. Instead, they moved quickly to bring in a DCP to control development on the North Shore, which was approved by a newly elected State Labor Government. The DCP limited future development to a scale far below that previously applied for, and also exploited several gaps in the previous arrangements. For instance, the DCP required that any sewage from any approved development be transported south of the river for treatment, at the (great) expense of the developers. It also put paid to the possibility of a bridge over the river, severely restricting the anticipated access to the resorts. These restrictions stalled developers for many years.

Approval was finally obtained by the developer for a modest proposal which was not financially feasible. This was the result of the planning changes introduced through the DCP which meant that the large development costs could not be met by limited development. The approval finally lapsed, but the land would always remain a potential problem while it remained in private hands.

Meanwhile, other environmental issues were being resolved in the region. A large public dispute erupted over logging and sand mining on Fraser Island. This was eventually resolved in favour of environmental values, and Fraser Island was granted World Heritage status. Disappointingly, the case for including all of the Great Sandy Region, including Noosa North Shore, and all of Cooloola National Park in the World Heritage listing failed, in part because of the freehold land that might still be developed on Noosa North Shore.

Noosa Shire Council under Noel Playford's leadership had been working to increase the extent of National Park within its boundaries, and to build up its image as an eco-tourist holiday destination. These initiatives paid off well for Noosa. The Shire entered an era of unprecedented and continuing growth in profits from the tourist and other service industries. Property values rose and Noosa became a great example of the potential for ecological, economic and social values to work together within a local area. Radical policies, like a population cap, seem only to have further established Noosa's credentials as a leading holiday destination, home and farming community. Playford and various others who believed in balanced development were returned to the Council in 4 successive elections, up until the present time.

Another successful council initiative was the commencement of a 'conservation levy', which is levied on all properties. In 1998, this finally ended the fight for protecting the North Shore by providing enough money for Council to buy the land. The price was lower than it might otherwise have been, and the land available, because of the significant restrictions that Council had put in place. Some in the development industry, including most of the mortgagees who had provided money or services in return for an interest in the land (and in the end received nothing), would not have been happy with the outcome. But it is clear that Noosa as a whole has been a winner, and will continue to benefit from its wild northern boundary.

Noosa council now has control and management of the land to the north of the river. It is now able to use this asset in bargaining with the other spheres of government, to ensure sound management into the future, or to attract other environmental benefits to the local area.

Latest developments in the ongoing saga (2001) are seeing serious moves to resubmit the Cooloola Section of the Great Sandy Region for World Heritage listing. Both the Fraser Island World Heritage Area Scientific Advisory Committee and the Queensland Labor Government are committed to the outcome.

References

Bonyhady, T. 1993. *Places worth keeping: Conservationists, Politics and the law.* ST. Leonards: Allen and Unwin.

Dickie, P. 1988. *The road to Fitzgerald* Brisbane: University of Queensland Press.

Information Australia (2000). *Australian Local Government Guide, 28th Edition, July 2000-November 2000,* Melbourne: Information Australia.

Playford, Noel, 1999. *Interview with Su Wild River.* Unpublished.

Q4: Protecting Noosa North Shore from Development

Perspective: Mixed
Role: Councillor
LG type: Other LG (rich, compact, populous)
Focus: Planning

Context Issues
An initiative of some Council members only. Discontinuous scale since the area has greatest significance as *part* of the Shire, a key element of the Great Sandy R*egion*, and potential *world* heritage area. Initiative origins reflect this.

Context continuums

Scale
<local | local | regional | state | national | international

Flexibility of Process
Full | mostly | equal | partial | none

Origins of initiative
<local | local | regional | state | national | international

Goals
- To protect a local area of enormous environmental significance,
- Through that, to maintain the environmental integrity of the Great Sandy Region,
- To make Noosa North Shore a National Park,
- To retain the possibility that the Cooloola National Park may become a World Heritage Area,
- To retain the green vista on the North Shore of the Noosa River.

Drivers
- Strong community support for environmental values, (eg. long-term, rural residents with their 'playground' threatened),
- Environment Group support (eg. Noosa Parks),
- Long term strategic vision of LG and community reps to maintain environmental values,
- Dedicated individuals working for decades from different angles (eg Arthur Harold),
- 'Conservation levy' as a source of funds,
- Community and cultural attitude shift,
- Maintenance of strategic vision for years,
- Electoral support for environmental issues,
- Aspects of the planning legislation (Development Control Plans (DCPs).

Processes
- New Councillors elected in 1982 with vision for Noosa North Shore,
- North Shore Policy Plan developed by 1985,
- Development-oriented Council elected 1985, negotiated for huge developments,
- Greener Council elected in 1988, fought developments and won some environmental concessions (eg some small developments approved, but bridge refused and expensive restrictions put in place),
- DCP brought in so that no more lenient approvals could be made, and that large developments could not be approved in the future.

Constraints
- Some planning decisions reliant on Minister for Planning approval (eg success relied on Minister *not* rezoning some land),
- Other features of Planning Act (eg injurious affection)
- The need for Council to buy the land in order to protect it,
- Developer ownership of freehold land on Noosa North Shore,
- High value and cost of land to buy,
- Shifting, and not always 'green' Councils.

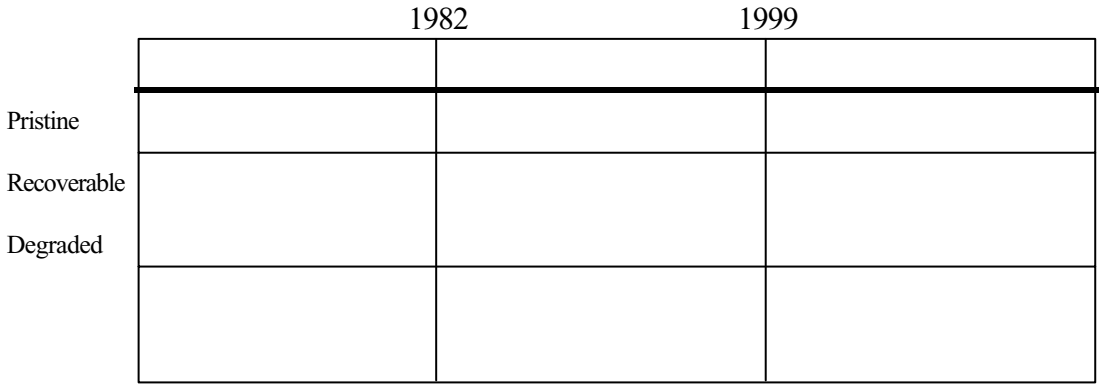
Outcomes
- Vacant land on Noosa North Shore now owned by Council, bought through conservation levy,
- Potential for land to become National Park, or World Heritage area. But currently, potential to use land as a lever to encourage State or Federal Government to ensure protection and management of environmental values on the North Shore and beyond,
- Maintenance of the green vista North of Noosa River

About the Models

The Comparative Case Study Model records an attempt to deliver environmental outcomes in a simple, general format enabling comparative analysis of issues. Key elements of attempts, and their contexts are recorded. The graphs across the page show the environmental, economic and social values before, during and after the attempt, and how these changed as a result of initiatives. The graphs are often 'split', indicating different outcomes for different sectors simultaneously, or different possible outcomes.

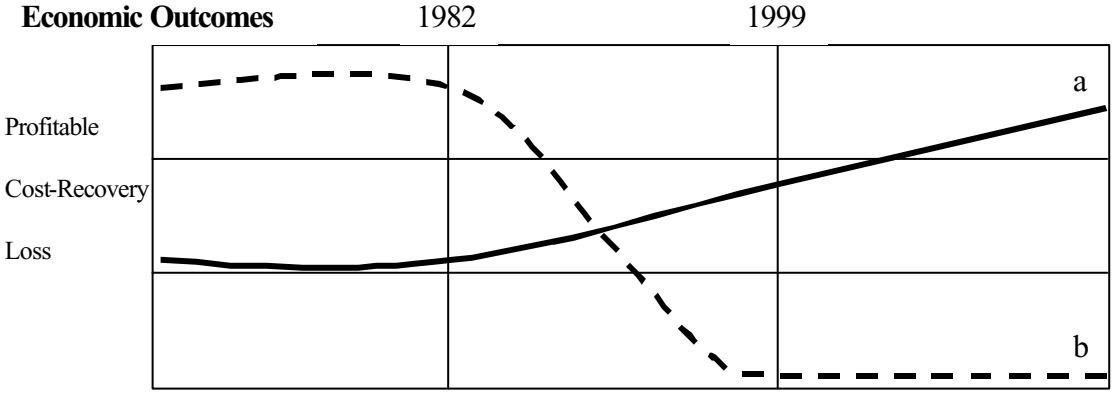
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Ecological Outcomes



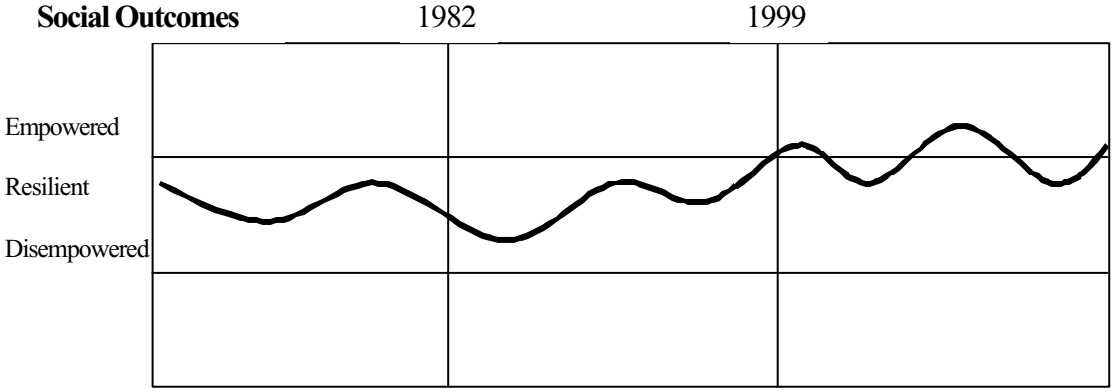
Throughout this intense 20 year bureaucratic and institutional battle, the environmental values on Noosa North Shore have remained relatively unchanged. A few small blocks, several kilometres up the river, have residential homes on them. But other than that, the several hundred hectares between the township of Noosa, and the Fraser Island World Heritage area remain pristine. Access to the area is by a vehicle ferry, and there will be no bridge, and no further large scale private infrastructure on the North Shore.

Economic Outcomes



Economic outcomes for Noosa as a whole have been inversely related to those of the would-be developers of Noosa North Shore. The retention of significant environmental values within Noosa Shire has increased property values, profits from tourism, and general business activity over the past couple of decades (a). These initiatives have given Noosa a distinctive advantage over neighboring Shires, in attracting and retaining profitable ventures. The particular developers who bought land on Noosa North Shore, assuming that a bridge would be built over the river, and that large, resort-style complexes could be supported. In the absence of other viable options, land was eventually sold back to Noosa Shire at a loss (although still for significant sums).

Social Outcomes



It is difficult to track the community impact of these changes over time. Community members with strong environmental beliefs believe that Noosa Council could have done more to protect important local natural values. Those who simply wanted their 'holiday playground' on Noosa North Shore, and other green spaces retained for public use would be empowered by these outcomes. Empowerment is limited by some resentment costs such as the Conservation Levy. Those within the Shire who support intense development also have objections. Community opinion on such matters shifts over time, but the initiatives have favoured of the majority in the Noosa community.

Herberton Shire Fulfilling the Statutory Responsibilities of Queensland's *Environmental Protection Act 1994*

Case Study Q5: By Su Wild River. With assistance from Luke Taylor (Environmental Health Officer, Herberton Shire).

Herberton Shire Summary Statistics

Category	Measure	Comparison
Area (Sq/Km)	9,575	Top 15%
Population	5,181	Bottom 42%
Pop Sq/Km 1		Bottom 32%
Total Income ($)	9,317,944	Bottom 48%
Rate Content ($)	1,886,139	Bottom 32%
Expenditure ($)	8,572,963	Bottom 34%

Information Australia, 2000

Herberton Shire has worked to implement the Queensland Environmental Protection Act, along with all other Queensland local governments. However there are many old mine sites and other historic pollution sources throughout the shire. This combined with a very low number of local activities requiring environmental licences, each of which also has a low volume of work, give the Act a low level of local relevance.

Herberton Shire lies on the Atherton Tablelands, South West of Cairns City in Far North Queensland. It is a relatively poor and stable Shire in a relatively wealthy and fast-growing region of Queensland. In 1996, Agriculture accounted for 49% of local businesses. Retail and construction were the two next most dominant industries, accounting for 8 and 7% respectively (ABS 1997).

There are highly diverse environmental values within Herberton Shire. For instance, much of the area close to the main town of Herberton was intensively mined in the early 1900s, for tin and other metals. This land is heavily degraded, and is still a source of leachate pollution into the local river system. In contrast, other areas of the Shire include large tracts of near-pristine wilderness areas, such as parts of the Herbert and Tully River systems.

Herberton Shire, along with all other Queensland Local Governments (LGs) was required to implement the *Queensland Environmental Protection Act* (EP Act) from March 1995. This meant both that Herberton Shire had to licence devolved Environmentally Relevant Activities (ERAs) in the local area, and also to ensure that Council-operated ERAs were licensed by the Queensland Environmental Protection Agency.

Herberton issued 19 environmental authorities to local businesses over the first two years of their implementation program. For these efforts, it received A total of $9,500 in fee relief payments from the State Government (QDEH 1995, 96).

Herberton Shire is committed to effectively implementing the EP Act, and meeting all of its statutory commitments under that legislation. However the small number of local devolved ERAs, and presence in the shire of other potential polluters meant that the Act missed the mark in Herberton. For instance, the leachate from the disused and non-licensed mine sites is far more apparent and locally-significant than that caused by the devolved ERAs. This meant that the Act did not clearly tackle important local environmental problems, and this further eroded potential local enthusiasm for the Act.

Despite this, environmental outcomes were achieved by Herberton Shire. The Far Northern Region of Queensland brought about an overall environmental risk reduction of 15% in the first three years of EP Act implementation. This was a significant risk reduction, despite being the lowest reduction by any Queensland region. The inherent risk of activities in the Far North was lower than for most other regions, and medium level overall. The residual risk in the Far Northern region was calculated at 49% of total risk, making it the region with the highest residual risk in 1998. (Wild River 1998, pp. 44-46)

Herberton Shire has also been actively involved in strategic work to improve environmental management practices for its own operations. The Shire works with other Local Governments in Queensland's Far Northern Region to investigate, and find solutions to regional waste management problems. In 1996, a report by Woodward-Clyde listed a Herberton landfill as being the only environmentally acceptable landfill among 29 surveyed in the region ("Shire leads landfill survey").

Information Australia. 2000. *Australian Local Government Guide, 28th Edition, July 2000-November 2000,* Melbourne: Information Australia.

QDEH (Queensland Department of Environment and Heritage). 1995-96. *Annual Reports for 1994-95 and 1995-96 Administration of the Environmental Protection Act 1994*, Brisbane: Queensland Government.

"Shire leads landfill survey". 1996. *Cairns Post*, 1996 (exact page and date unknown).

Wild River, S. 1998, *Statewide Benchmarking Study*. Canberra: Australian National University.

References

Australian Bureau of Statistics (ABS). 1997. *1996 Regional Statistics: Queensland. ABS Catalogue 1314.3*. Canberra: ABS.

Q5: Herberton Shire fulfilling statutory requirements under Queensland's *Environmental Act 1994* (QEPA)

Perspective: LG
Role: Manager
LG type: Other LG (poor, extensive, sparse)
Focus: Protection

Context Issues

The EP Act contains provision for high flexibility. However Herberton had other pressing priorities, and implemented QEPA just as recommended in support materials, rather than taking up the flexible options.

Context continuums

Scale

<local **local** regional state national international

Flexibility of Process

Full mostly equal **partial** none

Origins of initiative

<local local regional state **national** international

Goals

- Fulfil statutory responsibilities under QEPA
- Develop and implement Integrated Environmental Management System,
- Licence local Environmentally Relevant Activities.

Drivers

- Local support for environmental improvements,
- Queensland Environmental Protection Agency support for LGs, through Devolution Working Groups, EP Support Kit,
- Grants and rebates that have covered part of the administrative and other costs of the EP Act,
- EP Act requires LG to issue environmental authorities for devolved activities.

Processes

- Council arranged $40,000 contract with a consultant to develop Integrated Environmental Management System,
- Still unclear on how well the Integrated Environmental Management System will be implemented. It could be easier in a small LG like Herberton to make the necessary organisational and administrative arrangements, without these formal procedures,
- Writing processes down on paper, rather than just doing them. Not sure whether that helps with environmental management
- Issuing environmental authorities for devolved activities

Constraints

- Costs to comply with new requirements are not fully known,
- Confusing information from QEPA, on specific requirements for the Integrated Environmental Management System licence, so an environmental consultant was hired,
- Local opposition to environmental licensing and the licence fee.

Outcomes

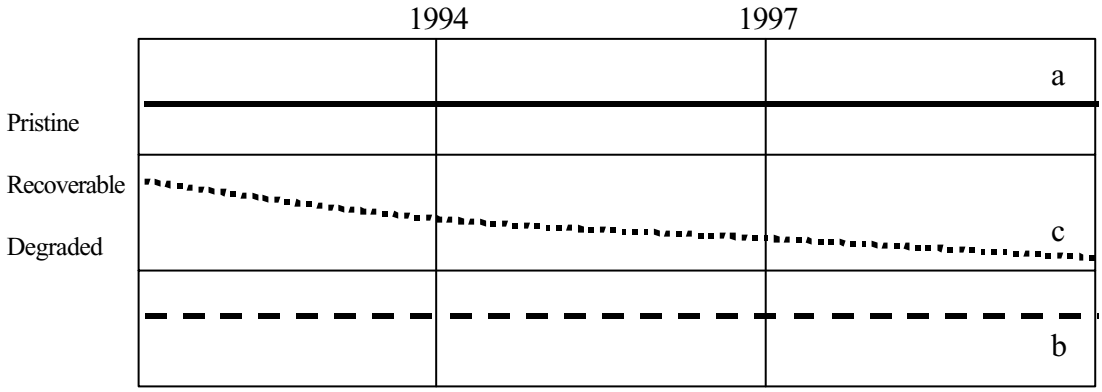
- Knowledge of pollution potential for local small businesses,
- Some learning through development of Integrated Environmental Management System (although less since being prepared by a consultant),
- Compliance with EP Act achieved,

About the Models

The Comparative Case Study Model records an attempt to deliver environmental outcomes in a simple, general format enabling comparative analysis of issues. Key elements of attempts, and their contexts are recorded. The graphs across the page show the environmental, economic and social values before, during and after the attempt, and how these changed as a result of initiatives. The graphs are often 'split', indicating different outcomes for different sectors simultaneously, or different possible outcomes.

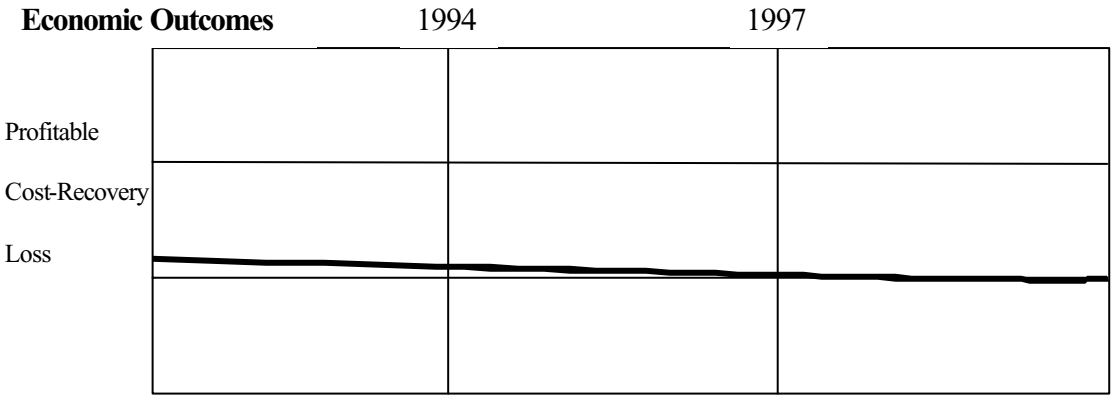
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Environmental Outcomes



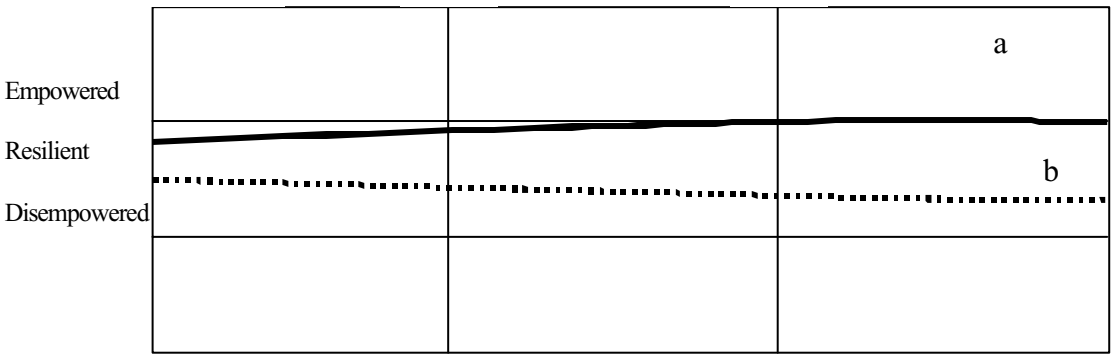
Herberton has highly varied local environmental values, which to date have been little affected by the EP Act. Some extensive parts of the Shire are pristine wilderness areas (a). At the other extreme are old, disused mines, in highly polluted and degraded areas (b). The EP Act has not, and is unlikely to stimulate any changes to environmental values or management at these areas. The landfill, sewage treatment and water treatment plants, and local service industries are small, and a relatively minor source of pollution compared with leachate from disused mines. But small environmental improvements, with a slowing of pollution, may result from EP Act and

Economic Outcomes



Herberton boasts a few small towns in remote locations, most of which are suffering from poor economic conditions. The EP Act has some negative environmental implications for either local businesses, the LG or both. Local businesses and Herberton Shire Council will face net costs which they will not be able to recoup, if compliance requires additional pollution prevention capital of management costs. If licence fees are charged, this will again be a net cost to businesses, that they will not be able to recover. If fees are not charged, then the administrative and inspection costs of the EP Act will be a net cost that the LG will have to cover through rates and other Council funds. The development and implementation of the Integrated Environmental Management System are likely to register as net costs to Council, and the magnitude of the costs is not yet known.

Social Outcomes



The process of developing the Integrated Environmental Management System licence, and of issuing licences to local operators was slightly empowering for Council. Empowerment was limited because of the use of the consultant, rather than the emergence of a sense that Council could develop its own system (a). Local business people were fairly opposed to the EP Act, considering themselves to be causing little pollution. The implementation process was slightly disempowering for them, since it went on regardless (b).

Achieving regional cooperation in far north Queensland, while supporting local autonomy.

Case Study Q6: By Su Wild River, with Ann Portess and Ivan Seerston (Mayor and Deputy Mayor, Herberton Shire).

Regional cooperation between (LGs) is often the most efficient option for service delivery. Existing arrangements for regional cooperation however, fall short of satisfying the needs of many LGs. Herberton Shire's involvement with the Far North Queensland Waste Management Strategy is a prime example.

Far north Queensland is a distinctive and identifiable Australian region. It is the north eastern tip of Australia, roughly the triangle, from the bottom of the Gulf of Carpentaria, across to the Pacific Ocean. Cairns City is the regional centre. Douglas Shire, the Atherton Tablelands, the Daintree-Wet Tropics World Heritage area, six major Aboriginal communities and all of the Torres Straight Islands are also within the region. To the north, east and west, the regional boundaries are clear, since they are defined by sea. However its southern boundary is fairly arbitrary, and the line is drawn differently for different purposes.

It is worth considering some of the issues facing smaller local governments, and those on the fringes of the region. Herberton provides an example and some insights. Herberton Shire is located up on the tableland, in between Cairns and Townsville. Some regional groupings of local governments in the north of Queensland label Herberton as being in the north, while others consider it to be in the far northern region.

Councillors at Herberton realise that their shire would benefit from greater regional cooperation. For instance, new State Government waste legislation requires that regulated wastes be disposed in appropriately licensed landfills. None exist in Herberton, nor in any other LG in the surrounding regions. The cost of establishing a regulated waste facility is beyond any individual council in the region, and none have sufficient demand for such a facility to make it cost effective to run on their own. However together, councils in the far northern region could justify such a facility.

Acknowledging this, most of the local governments in the far north region have been involved since the mid-1990s, in forums aiming to improve waste management for the region. Herberton has helped to develop the concepts for regional waste management. Herberton had always planned to be involved in the regional initiative, rather than trying to build its own new waste facility to comply with current waste management laws.

The resulting initiative is reported in Case Study Q9, on the Far North Queensland Regional Waste Strategy. This will be a state-of-the-art waste facility, taking sewage and solid waste, and transferring at least 70% of that waste to beneficial uses. It is a $200 million, 20 year project, and is the largest contract ever awarded in north Queensland.

Ironically having spent years working towards the regional waste facility, Herberton now finds itself unable to finally use it. The facility will run on a cost-recovery basis, and it has proven too costly for Herberton to transport its wastes to the facility for processing. Instead, Herberton will redirect its efforts to upgrading its own facilities. This option is still costly, and will be less environmentally beneficial, but will be affordable for the small and cash-strapped local government.

Challenges like this, facing small, isolated local governments must be see in the context of the opportunities for regional cooperation with local autonomy. Many key agencies support regional initiatives. Several federal programs have worked to establish and support regional organisations of councils for such cooperative ventures. The LG Association of Queensland supports regional ventures in various practical ways, and through lobbying with the state government. The Australian LG Association does the same at the federal level. Most state government departments have officials located across regional Queensland, dealing with regional issues. However this sometimes fails to build either regional identity or cooperation, since these departments define regions differently.

However despite these many policies that support regional initiatives, there are also significant barriers to their achievement. One problem is that LGs are seeking to achieve

regional cooperation while retaining local autonomy. This apparent contradiction is conceptually difficult for many stakeholders. Another problem is that legal mechanisms to support regional cooperation can be hard to work with. The Queensland Local Government Act for instance provides a mechanism for LGs to form 'joint boards' for certain purposes. The process of establishing a joint board is time consuming, complex, and also requires state government approval. The functions of the boards are also limited to those that are specified during their creation, and it is difficult to accurately anticipate all issues. A benefit is that some funding is made available to the joint boards.

Q6: Achieving Regional Cooperation in Far North Queensland, while Supporting Local Autonomy

Perspective: LG
Role: Councillor
LG type: Other LG
Focus: Management

Context Issues
Proactive parts of the initiatives are fully flexible, but much is constrained by the Local Government Act.

Context continuums

Scale
<local **local** regional **state** national international

Flexibility of Process
Full mostly equal partial none

Origins of initiative
<local **local** regional state national international

Goals
- Find the best ways to gather and use available funds, so that local needs can be met, and efficiencies achieved on a regional scale,
- Be consistent with SG and CG goals, without compromising local autonomy,
- Extend the limited application of existing statutory opportunities for formal regional initiatives.

Drivers
- LGA of Queensland with State-level LG support (more needed),
- LGA Queensland Lawyer for legal advice, (but may need SG legal advice too),
- SG Department of LG and Planning with its willingness to be flexible,
- Funding, through the joint board structure, available for regional activities. Especially with the realisation that there was no need to exclude other initiatives,
- Outside initiatives that make it more poignant to do something regionally (eg new standards for waste management).

Processes
- Councillor-driven research into appropriate structures for better regional cooperation,
- Attempts to articulate the concept so that it was clear, accurate, but not intimidating to stakeholders,
- Recognition that a big shift needs to occur in the ways of thinking about the problem.
- Learning about aspects of this concept. It needs to involve development of a statutory basis for regional cooperation that is more flexible and fluid than is possible under the existing LG Act. It also needs to accommodate fluid boundaries for LG involvement, and activities that start, proceed and stop, without losing the regional structures.

Constraints
- Practical constraints to participating in regional inititives,
- Negative ideas about what can't be done,
- Outsiders missing the point of attempting to achieve both cooperation and autonomy,
- Lack of appropriate legislation, and the need for the SG to support this locally/regionally-driven approach,
- If these initiatives are successful, the biggest ongoing challenge will be to keep all of the LGs informed of shifts in the regional structures and their functions.

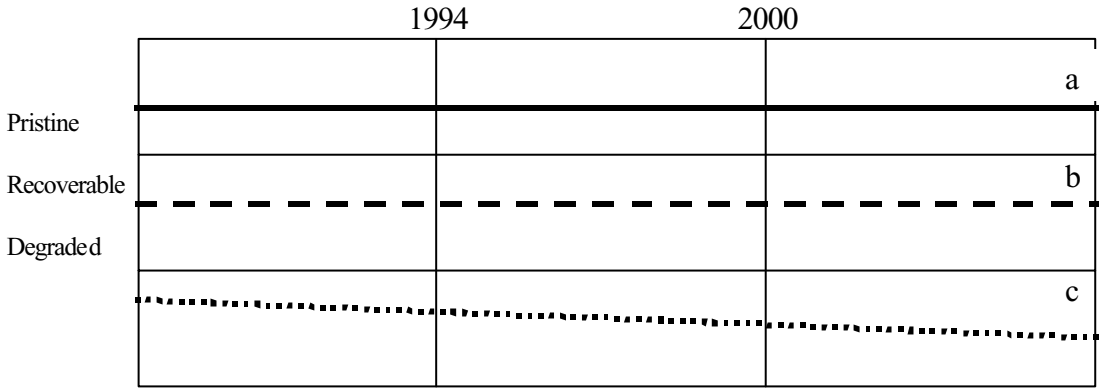
Outcomes
- Some conceptual outcomes have been achieved, including regional understanding of the opportunities and limitations in the current LG Act,
- Outcomes that are sought are practical solutions to the problems, especially the development and implementation of new statutory mechanisms for regional cooperation with local autonomy

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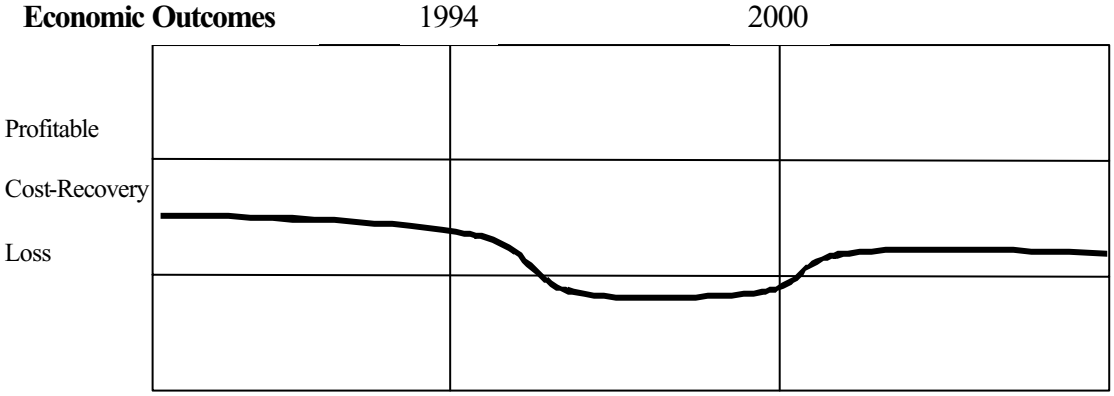
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Ecological Outcomes



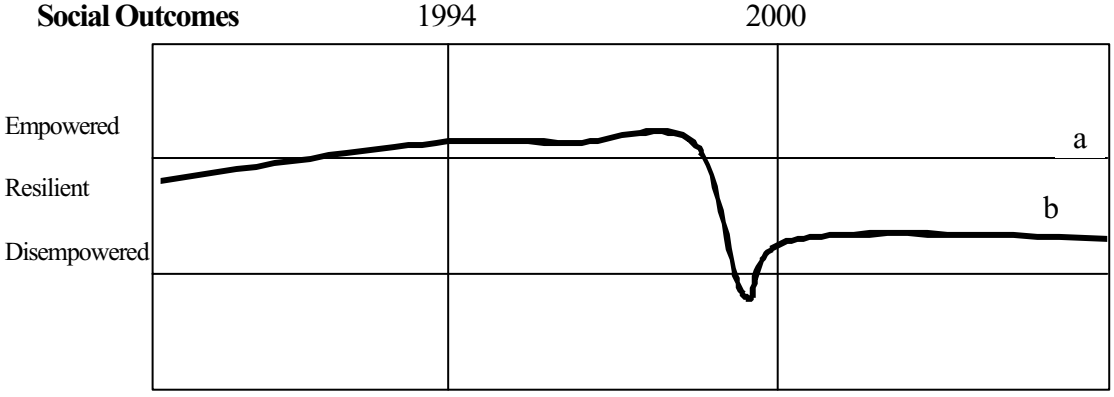
Herberton has highly varied environmental values in different parts of the shire. Despite the efforts of Herberton Shire officials to strategically address environmental issues on a regional scale, the qualities and trends of these environmental values remain unchanged. Some areas remain in their pristine, wilderness condition (a). In other areas, such as the towns and farmlands, the environments are not pristine, but they safely support human and some native animal and plant communities (b). In the degraded areas such as the old mine sites, and landfill, environmental values either remain low, or are continuing to gradually degrade (c).

Economic Outcomes



Herberton's efforts to collaborate strategically with regional neighbours has been a net cost to the Shire. The efforts made by Herberton to develop regional waste management solutions benefited those LGs in the region that will be able to participate in the proposed new system. But Herberton cannot afford the transport and disposal costs associated with the proposed system and has opted to reduce its costs by not participating further. Waste management in the shire still faces an uncertain future, but the new environmental requirements probably mean increased ongoing costs for this service.

Social Outcomes



Overall, this attempt at finding regional solutions while supporting local autonomy has been disempowering for Herberton Shire. Empowerment was increased during some of the negotiations, when it seemed that there was a chance to sort out some locally-relevant issues through collaboration and cooperation with neighbours. However the costs of ongoing participation, and the complexity of the administrative arrangements have proven too great. As a result, Herberton now simply has a greater awareness of the disadvantage facing it, due to its relative isolation and poverty.

Developing the Johnstone Plan

Case Study Q7: by Su Wild River. With assistance from Eddie McEchan (Chief Executive Officer, Johnstone Shire) and Bob Devine (Manager Environmental Services, Johnstone Shire Council).

Comparative Statistics for Johnstone Shire

Category	Measure	Comparison
Area (Sq/Km)	1,633	Bottom 44%
Population	20,000	Top 32%
Pop Sq/Km	12	Top 39%
Rate Content ($)	13,500,000	Top 25%
Expenditure ($)	20,000,000	Top 35%

Information Australia, 2000.

Since 1991, Johnstone Shire has been working on a holistic and strategic approach to managing its local area. *The Johnstone Plan* has been Australia's international showcase of Local Agenda 21 initiatives, and has also helped Johnstone to fulfil its new statutory planning responsibilities.

Johnstone is a coastal shire just south of Cairns City in Far North Queensland. It is a largely agricultural shire, which also benefits from the regional tourist industry. Johnstone's special environmental values include the great barrier reef just off-shore, tropical rainforests within the shire and region, and species, such as the endangered Cassowary within the Shire.

Like all other Local Governments (LGs) in Queensland, Johnstone Shire has been bound by the *Planning and Environment Act 1990*, to develop a statutory Town Planning Scheme, with the object of guiding future development. The Act had limited requirements either for public consultation, or the strategic integration of social, economic and ecological issues into planning decisions. This situation has changed now, with Queensland's *Integrated Planning Act 1997* now requiring all LGs to undertake comprehensive planning for sustainability.

Johnstone Shire however, was years ahead of its time. The newly elected Council of 1991 decided to prepare a new revised town plan. It adopted a set of objectives stating a desire for a participatory approach to planning and servicing the community. In partnership with key stakeholders, Council undertook a series of background studies, focusing on the Community Profile, Environmental values, Cassowary Habitats and Management, Catchment Management and Economic Development (Low Choy 1996).

Council also embarked on a community consultation process involving town meetings, press releases, press conferences, newspaper articles, newsletters, letter-drops and radio interviews. The initial 21 town meetings produced a list of 1,585 issues for the LG to address either directly or indirectly. This process led to the development of a community Vision for the Shire (see below), and a series of Partnership Building initiatives. The latter included 4 Community Consultative Committees, in the areas of;

- Economic planning,
- Environmental planning,
- Social planning, and
- Mission Beach and Environs Joint Planning (Low Choy 1996).

Johnstone Shire Community Vision

> The Shire will be a place which abounds with enduring natural beauty and resources, productive activity and a strong community sprit.
>
> It will primarily be a rural Shire, with successful and diverse agricultural production, supported by a broader industry base, including manufacturing, education, research and tourism.
>
> Sufficient opportunity will be available for people to be able to pursue employment, education and leisure, locally, to be well housed and to enjoy a relaxed and friendly lifestyle.
>
> Its natural resources, including soil, water, fauna, flora, minerals and air will be valued by the whole community and will be responsibly managed for the benefit of this and future generations.
>
> The Shire will be an inspiration to others for its initiatives in sound environmental planning, especially for ensuring the survival of a viable population of the endangered species the Cassowary, in its natural habitat.
>
> Council will be responsible and progressive in its management of the Shire.

Source: Shire of Johnstone, 1997a.

Decision making processes and strategic responses are outlined in the following table.

From Vision to Action, The Johnstone Plan

	Strategic Response		
	ENVIRONMENT	**SOCIAL**	**ECONOMIC**
Decision Making	Water Soil vegetation	Human Housing leisure	Agricultural Land bank tourism
Operational Plan	Water usage Waste water Construction practice	Integrated services Bikeways	Area promotion Concessions
Land Use Plan	Develop guidelines Environmental impact	Planned development, Developers' contributions	Attract industry, Protect industry Reduce land use conflict
Community Action Plan	Catchment management Tree planting Land care	Voluntary services	Area promotion Identify Opportunity

Source: Shire of Johnstone, 1997b.

Johnstone Shire made a great effort to make the Johnstone Plan into a central, and strategic element of Council's work. For instance, it established a direct connection between the Johnstone Plan and the Shire's Corporate Plan, and its physical Land Use Plan. Despite the implicit logic of this approach, such integration of different policies and plans is unusual. One implication of this 'radical' step was the challenge of finding appropriate people to drive the process. Johnstone Shire Council and management sought and hired a planner from interstate for the task. In doing so they hoped to avoid the appointment of an individual with assumptions about the potential for integrated and strategic planning for sustainability.

The expression of environmental values in the Land Use Plan has already delivered sustainability outcomes for Johnstone Shire. For instance, a recent development proposal aimed to locate small residential blocks on a rainforest escarpment visible from the main street of Innisfail. The development could not be stopped, because of the timing of the initial land zoning decades earlier. But the LG was able to negotiate with the developer to include conservation zones in the area, which are protecting both wildlife habitats and the visual amenity of the town. The blocks have also been arranged with sensitivity to natural features, and with much of the native vegetation left in place on the blocks (see photographs).

Figure 1: Rainforest escarpment where small residential blocks would have been placed. Now a conservation zone.



The Johnstone Plan has received worldwide recognition as a Local Agenda 21 (LA21). LA21 is an international program recognising that LGs are critical to the achievement of ecological sustainability. The Johnstone Plan is one of 14 case study examples of the Model Communities Program which developed and tested planning approaches to integrate principles of sustainability into local decision making processes. These have been used by the International Council for Local Environmental Initiatives, to help develop models to assist other LGs to develop their own LA21s. It was the only Australian LG to be selected as such a case study.

Figure 2: native vegetation retained on the development site.



Figure 3: mangroves at sunset near the mouth of the Johnstone River.



References

Information Australia. 2000. *Australian Local Government Guide, 28th Edition, July 2000-November 2000,* Melbourne: Information Australia

Environments: Myths, Models and Milestones, Conference Papers, Sydney, November 28-29, 1996:65-69.

Shire of Johnstone 1997a, *The Johnstone Shire Planning Scheme.* Innisfail: Shire of Johnstone.

Shire of Johnstone. 1997b. "The Johnstone Plan: A Partnership for Sustainable Development". Brochure, Innisfail: Shire of Johnstone.

Q7: Developing the Johnstone Plan

Perspective: LG
Role: Manager
LG type: Other LG (rich, compact, populous)
Focus: Planning

Context Issues
The discontinuity in 'origins' is because the Johnstone Plan originated from local issues, and the international framework for LA21 was seen to provide a good model for achieving these.

Context continuums

Scale
<local **local** **regional** state national international

Flexibility of Process
Full mostly equal partial none

Origins of initiative
<local **local** regional state national **international**

Goals
- Develop a Local Agenda 21 for the local area.
- Improve planning processes so that they address environmental, social and economic issues.
- Attract skilled, innovative, visionary local planner to the position.

Drivers
- International Local Agenda 21 program - helped with marketing and keeping commitment through perceived legitimacy of efforts,
- Grants from outside - only taken if they fitted what Johnstone Shire Council was already doing,
- Funding provided by council over 5 years,
- Getting the right planner - someone who was really excited by the job.
- Enthusiasm and vision within Council and senior LG managers, especially Mayor, CEO.

Processes
- Council's initial decision to allocate $70,000 in 1991 corporate plan, for the planner. A further funding commitment to complete the process made the total cost about $700,000 over 5 years,
- Develop the Johnstone Plan - a community plan that is bigger than a simple town plan. Incorporates the town plan, corporate plan, and various strategies covering economic, social, environment and development issues. Johnstone Plan provides the coherence and overall vision for components,
- Council had strong ideas about what was wanted - especially a non-Queensland social and town planner, who would be able to think beyond standard limitations.

Constraints
- Onerous process of doing a new town plan, due to SG administrative frameworks,
- Getting people who knew what they were talking about,
- Outside people were offering off-the-shelf models, but Johnstone wanted their own, unique vision for their own unique area.

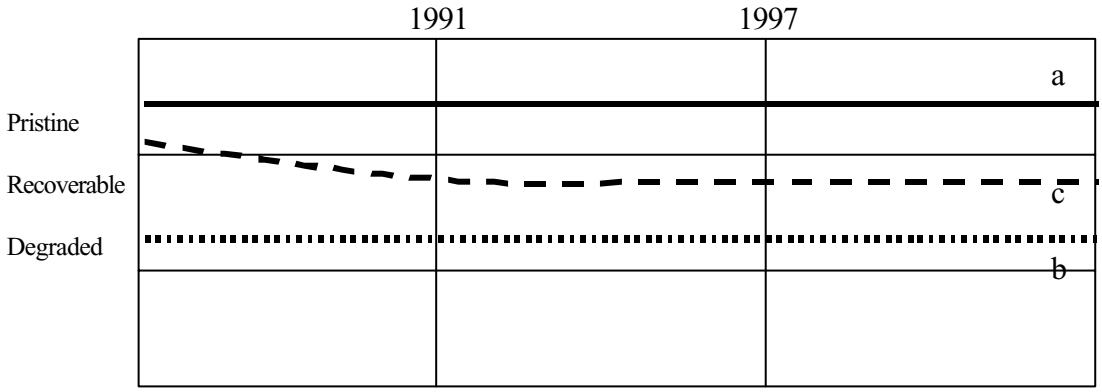
Outcomes
- New planning provisions, including 'conservation zones' to deal with remnant vegetation.,
- Formal integration of environmental, social and economic needs,
- New plan reflecting aspirations of the community

About the Models

The Comparative Case Study Model records an attempt to deliver environmental outcomes in a simple, general format enabling comparative analysis of issues. Key elements of attempts, and their contexts are recorded. The graphs across the page show the ecological, economic and social values before, during and after the attempt, and how these changed as a result of initiatives. The graphs are often 'split', indicating different outcomes for different sectors simultaneously, or different possible outcomes.

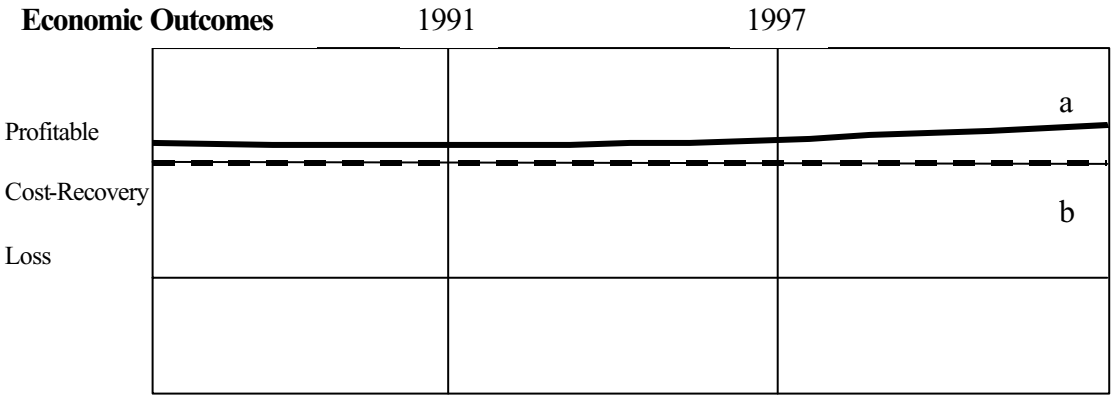
Note: This case study is one of 34 produced for Su Wild River's PhD research, undertaken through the Centre for Resource and Environment Studies, Australian National University.

Ecological Outcomes



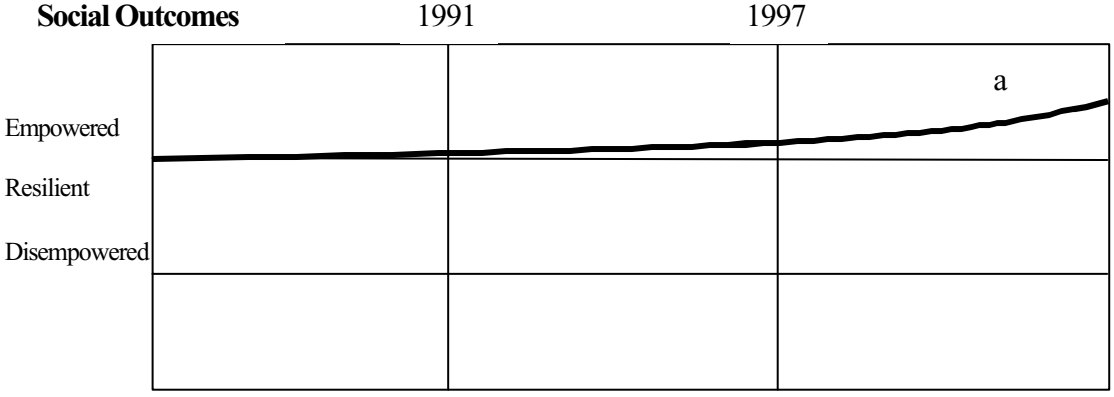
Environmental values in Johnstone Shire include some pristine areas, some agriculture (predominantly sugar cane), and some areas subject to development pressure. The Johnstone Plan protects the pristine areas (a), and the capacity for continued agriculture in the Shire (b), and is reducing the environmental impacts of those developments that are still going ahead, while also limiting the possibility of further developments in some areas with high conservation values (c).

Economic Outcomes



The Johnstone Plan has a high emphasis on retaining and enhancing the sustainable profitability of local economic activities such as agriculture and existing small tourism ventures, as well as the developments that are occurring. It does not encourage much tourism, major new developments or many other new ventures (a). It limits the maximum levels of profitability of proposed developments with prior approvals, by imposing conditions on them to promote sustainability. However these restrictions are unlikely to result in losses to the developers, since the environmentally friendly products and results can return higher prices per unit, because of their environmental values, and sound profits are still very feasible (b).

Social Outcomes



Social needs for the local population are accommodated well in the Johnstone plan, both through the consultative processes that led to it, and in the outcomes expressed in the Plan. Interestingly, the Shire has clearly articulated its desire not to become a major tourist centre, but instead aims to meet the needs of the permanent population over the long term.

Johnstone Shire Fulfilling its Statutory Responsibilities under the *Queensland Environmental Protection Act 1994*

Case Study Q8: By Su Wild River. With assistance from Bob Devine, Manager Environmental Services, Johnstone Shire Council.

Comparative Statistics for Johnstone Shire

Category	Measure	Comparison
Area (Sq/Km)	1,633	Bottom 44%
Population	20,000	Top 32%
Pop Sq/Km	12	Top 39%
Rate Content ($)	13,500,000	Top 25%
Expenditure ($)	20,000,000	Top 35%

Information Australia, 2000.

Johnstone Shire has worked to implement the Queensland *Environmental Protection (EP) Act 1994,* along with all other Queensland local governments. However there are many activities which have environmental impacts in Johnstone Shire and it was initially difficult for Council to accept and then to convince the affected business community of the need for action to be taken as required by the Queensland EP Authority. Significant costs had to be carried by the business community and local government was made to look like the 'bad guy' in the picture as a result of devolved responsibility from the State Government. Six years later the business community has generally accepted the relevance of the EP Act and now questions when agricultural activities will have legislation to require compliance with the same Act.

Johnstone is a coastal shire just south of Cairns City in Far North Queensland. It is a largely agricultural shire, which also benefits from the regional tourist industry. Johnstone's special environmental values include the great barrier reef is just off-shore, the Daintree Wet Tropics just to the north, and species, such as the endangered Cassowary within the Shire.

Johnstone Shire, along with all other Queensland local governments (LGs) was required to implement the *Queensland Environmental Protection Act* (EP Act) from March 1995. This meant both that Johnstone Shire had to licence devolved Environmentally Relevant Activities (ERAs) in the local area, and also to ensure that Council-operated ERAs were licensed by the Queensland Environmental Protection Agency.

Johnstone issued 130 environmental authorities to local businesses during the first year of their implementation program, and a further 43 the following year. The licences required that businesses avoid water, air and noise pollution. Requirements like redirecting liquid wastes away from stormwater systems, covering and bunding waste storage, and encouraging recycling were among the common licence conditions. For it AP Act implementation efforts, Johnstone Shire received A total of $59,000 in fee relief payments from the State Government (QDEH 1995, 96).

Because it sought to be a responsible local government, Johnstone Shire was committed to effectively implementing the EP Act, and meeting all of its statutory commitments under that legislation. Council employed an additional person to implement its responsibilities under the Act and resolved not to recover the costs of implementation from the business community via annual fees, but to finance the work via general revenue. Council also commissioned consultants to prepare an Integrated Environmental Management System (IEMS) to assist staff to manage all of Council's environmentally relevant activities. The IEMS was adopted by Council in January 2000.

The Far Northern Region of Queensland brought about an overall environmental risk reduction of 15% in the first three years of EP Act implementation. This was a significant risk reduction, despite being the lowest reduction by any Queensland region. The inherent risk of activities in the Far North was lower than for most other regions, and medium level overall. The residual risk in the Far Northern region was calculated at 49% of total risk, making it the region with the highest residual risk in 1998 (Wild River 1998, pp. 44-46).

References

Information Australia. 2000. *Australian Local Government Guide, 28th Edition, July 2000-November 2000,* Melbourne: Information Australia.

Shire of Johnstone. (undated). *The Johnstone Plan: A Partnership for: Sustainable DevelDevelopment.* Brochure, Innisfail: Shire of Johnstone.

QDEH (Queensland Department of Environment and Heritage). 1994-1996. *Annual Reports for 1994-95 and 1995-96 Administration of the Environmental Protection Act 1994*. Brisbane: Queensland Government.

Wild River, S. 1998. *Statewide Benchmarking Study.* Canberra: Australian National University.

Q8: Johnstone Shire Fulfilling its Statutory Responsibilities under Queensland's *Environmental Protection Act 1994* (QEPA)

Perspective:	LG
Role:	Manager
LG type:	Other LG (rich, compact, populous)
Focus:	Protection

Context Issues.
-

Context continuums

Scale
<local local regional state national international

Flexibility of Process
Full mostly equal partial none

Origins of initiative
<local local regional state national international

Goals
- Fulfill statutory responsibilities under QEPA,
- Meet business needs for information and support,
- Achieve pollution prevention outcomes in Johnstone Shire,
- Ensure consistent implementation with other LGs in region.

Drivers
- QEPA
- Good support from Environmental Protection Authority, Regional and Central Offices, through training and information kits,
- New staff member hired - full time for one and a half years, then part time on EP Act work.

Processes
- Additional staff required and hired,
- QEPA not welcomed, especially by current Council, but finally accepted,
- Culture in Council gradually shifting towards acceptance of QEPA and its requirements.

Constraints
- Poor 'selling' of QEPA. Seen by local businesses as another unnecessary and useless imposition by government,
- Timing of training was too late,
- Training was time consuming,
- QEPA not all in place, and unlikely to be for years. On the spot fines and other enforcement components not in place, at the time of proclamation,
- No solutions about how to solve problems in own licences. No facility in North Queensland for regulated waste, therefore hard to meet licence conditions,
- Financial cost of own licence fees and effort to develop integrated licence,
- Financial cost of licence fees to local businesses. Council decided not to charge full fees for cost-recovery, but to cover costs from general revenue.

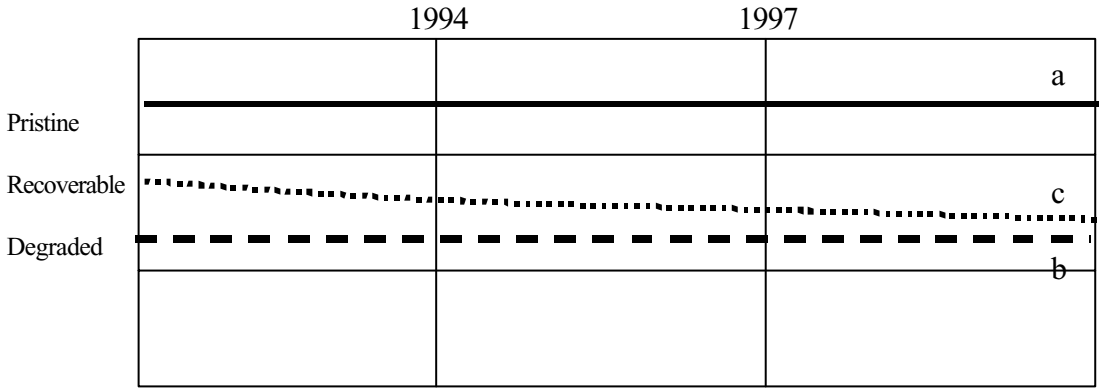
Outcomes
- Cultural shift in Council towards environmental protection issues,
- Obtain own licence and fulfil all feasible licence requirements,
- Community more convinced of environmental stewardship roles and benefits of compliance,
- Reduction in the risk of environmental harm in the local area.

About the Models

The Comparative Case Study Model records an attempt to deliver environmental outcomes in a simple, general format enabling comparative analysis of issues. Key elements of attempts, and their contexts are recorded. The graphs across the page show the ecological, economic and social values before, during and after the attempt, and how these changed as a result of initiatives. The graphs are often 'split', indicating different outcomes for different sectors simultaneously, or different possible outcomes.

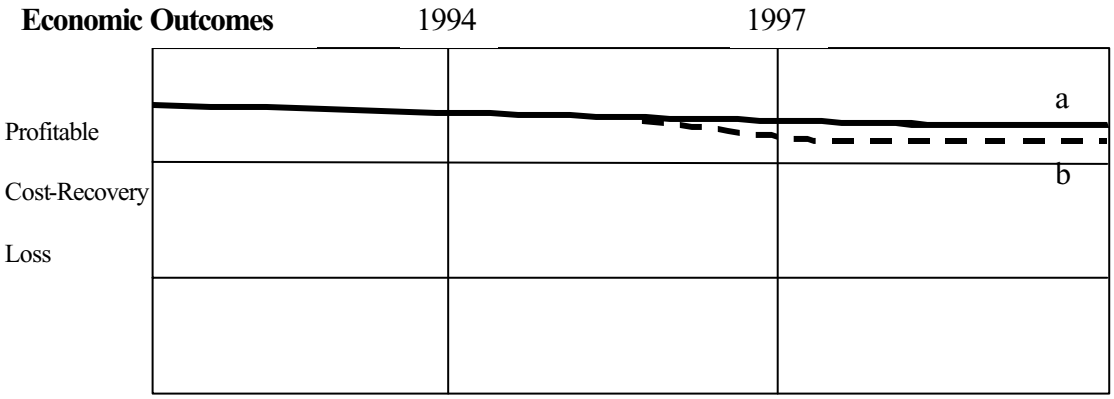
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Ecological Outcomes



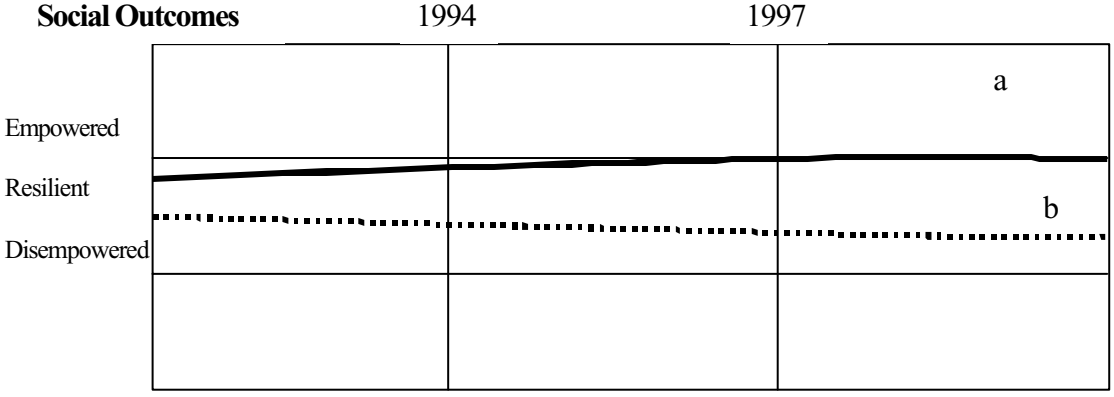
Johnstone has highly varied local environmental values, which to date have been little affected by the EP Act. Some extensive parts of the Shire are pristine wilderness areas (a). Some are agricultural lands, which are largely unaffected by QEPA (b). The EP Act has not, and is unlikely to stimulate any changes to environmental values or management at these areas. Despite a fairly minimalist approach to QEPA implementation by Council, small environmental improvements, with a slowing of pollution, appear to be resulting from EP Act and association legislation (c). These efforts would be enhanced by real solutions to problems such as hazardous waste disposal.

Economic Outcomes



Johnstone Shire boasts a sound local economy, with most businesses making a reasonable profit. Environmental improvements to comply with the EP Act often have a small immediate cost, which is rarely recoverable. Johnstone has hired an officer to take charge of QEPA implementation, and is unlikely to recoup the costs of this, or the development of its Integrated Environmental Management System through licence fees. Licence fees are also a source of costs to local businesses. Line (a) is the cost curve for Johnstone Shire if it charges businesses the fill fees, with line (b) then being the line for businesses who pay the fees. If Council decides not to charge full fees, then the lines are reversed.

Social Outcomes



The learning within Council about environmental management issues, and acceptance of the importance of these was slightly empowering for Johnstone Shire (a). Local business people did not believe that QEPA was necessary. The implementation process was slightly disempowering for them, since it went on regardless (b).

Far North Queensland Regional Waste Strategy

Case Study Q9: by Su Wild River, with Terry Davidson (Manager Environmental Assessment, Cairns City), Mike Berwick (Mayor, Douglas Shire).

The Far North Queensland Regional Waste Management Project is breaking new ground in both regional cooperation and beneficial reuse of waste. The Project addresses federal and state policy directives to reduce the quantity of waste to landfill across Australia. The project also draws on strategic planning initiatives from across Queensland's Far Northern region. Cairns, Douglas and Mareeba councils will all use the new waste facilities. These councils currently produce 85% of the region's waste, and the new facility will provide beneficial re-use of 70% of that waste.

Queensland's far north region is a remote, tropical area in Australia's second-largest state. It has rich, deep soils, high summer rainfall, and an abundance of unique environmental values. These include the Wet Tropics World Heritage area that takes up much of the region, and the Great Barrier Reef offshore.

Geological features place many important constraints on development in far north Queensland. The Great Dividing Range that stretches down most of eastern Australia is very close to the coast in the far north region. Around Cairns for instance, only a few kilometres separate the ocean from the range. This restricts the size of the City, and its ability to provide essential services such as water supply and waste management. Much of the coastline has acid-sulfate soils, restricting construction activities. These features leave few sites for waste facilities, and other public infrastructure. Significant regional development in the area has placed further pressure on scarce land resources, while also increasing the demand for services.

Meanwhile, there have been significant shifts in local, national and international thinking about waste management. In 1992, the Australia and New Zealand Environment Conservation Council set a target of 50% reduction of waste to landfill by the year 2000. This target has been adopted as a goal by many Australian local governments, including those in Far North Queensland.

Waste management has been a big technical and political problem in the region for decades. There is currently no licensed facility available to take many of the regulated wastes produced in the region. Yet the *Queensland Environmental Protection Act 1994* and *Environmental Protection (Interim Waste) Regulation 1996* require that these wastes only go to a regulated waste facility. This creates clear legal and practical problems for the region. Recycling options and markets for recycled goods are also limited.

Waste management is also a long-term political and practical problem in the major centres. For instance, in 1988, Cairns City Council came under fire from the local community and media over its release of thousands of litres of contaminated stormwater and leachate into the ocean, at a Trinity Inlet. The contaminated waste originated from the Portsmith Dump, operated by Cairns City Council (see Schofield, G. 1988. p.1). Only 10 days later the local government election removed 5 of the incumbant council, including the Mayor and Deputy Mayor, in favour of the 'Alliance' party, which promised to stop refuse dumping on tidal wetlands. In particular, it promised to solve themost persistent problems of the dump, particularly the leaking of leachate into Trinity Inlet (Shears, G. 1988. p.1).

In 1996 and 1997, the Far North Queensland Regional Organisation of Councils (FNQROC) developed a strategy for regional waste management. However, of the nine local governments within FNQROC, only Cairns, Douglas and Mareeba elected to proceed with the project. Others were unable to continue due to financial constraints. Together, these three represented 85% of the available solid waste within the region.

In addition to their regional focus, several features of the far north Queensland approach are particularly noteworthy. For instance, the project was for a build-own-operate system. This means that the successful contractor would take on all three of those roles, while the local governments involved will not control the contractor or the project. This has balance sheet advantages, that were carefully weighed against the risks entailed by the loss of control. The local governments' statutory and inherent responsibility to ensure environmental best practice in the operation of the plant is instead accounted for under the Expressions of Interest and Tender Documents. These did not proscribe any particular technologies, but instead invited

the waste management industry to supply the solutions that would best cater for the waste management needs of the region. Specifications were included for the outcomes, including high levels of waste being directed to beneficial re-uses. Another key, novel element of this system was that it was to deal with the entire waste stream, including sewage and landfill waste (Davidson, 2001).

At the time of writing, the contract has been signed by all three of the local governments involved, with only one councillor dissenting from this approach amongst all of the councils. The total cost of the project is estimated at $35 million, and just under $700,000 has been spent developing the documentation. This cost is well within relevant industry standards for developing such documentation, and represents a judicious and economic use of resources (Davidson, 2001). The local governments involved consider that many of the lessons learned during the development of the project documents have value beyond this region. There is a chance that these might be made available to others.

References

Davidson, T. 2001. "Regional Waste Management Project Contract No. 1396. Cairns City Council. Unpublished.

Information Australia (2000). *Australian Local Government Guide, 28th Edition, July 2000-November 2000,* Melbourne.

Shears, J. 1988. 81 to Alliance. *The Cairns Post.* Cairns. p.1

Schofield, G. 1988. Release of dump waste 'accidental'. *The Cairns Post.* Cairns. p.1

Q9: Far North Queensland Regional Waste Strategy

Perspective: LG
Role: Manager/ Councillor
LG type: Region
Focus: Protection

Context continuums

Scale
<local local regional state national international

Flexibility of Process
Full mostly equal partial none

Origins of initiative
<local local regional state national international

Goals

- Ensure long-term disposal and recycling options for local and regional wastes,
- Meet statutory requirements for regulated waste disposal,
- Achieve regional cooperation, for optimal outcomes from efforts,
- Cooperate and coordinate with SG regional offices.

Drivers

- Support from specific groups within the community, (waste transporters, some industry, others with interest in waste management), partly from historical problems with existing landfill site and management,
- Support from other LGs in the region,
- QEPA staff - time, effort, expertise, information,
- SG funding (about a quarter of the total funding needs)
- 5 year term for current council, due to amalgamation between Cairns and Mulgrave, assists long-term, strategic initiatives.

Processes

- Realisation that within the Cairns City boundary, there would not be sufficient landfill sites to accommodate City's waste in the medium term,
- Realisation amongst councillors that this poses a significant problem for Cairns City,
- EP Act, Waste Environmental Protection Policy and other SG statutory requirements to improve waste management,
- Regional waste management group, with long-term membership, goals, and SG and LG regional partnerships. No dialogue with CG.

Constraints

- Uncertainty about whether the market will supply a provider for the required waste services, at an affordable price,
- Uncertainty about CG position. In relation to many issues.

Outcomes

- Maximisation of recycling opportunities (given the remote location of the region),
- Moving towards ecologically sustainable development, through the recycling initiatives,
- Improving compliance with the EP Act,
- Achieving lowest feasible cost for waste management in the long term.

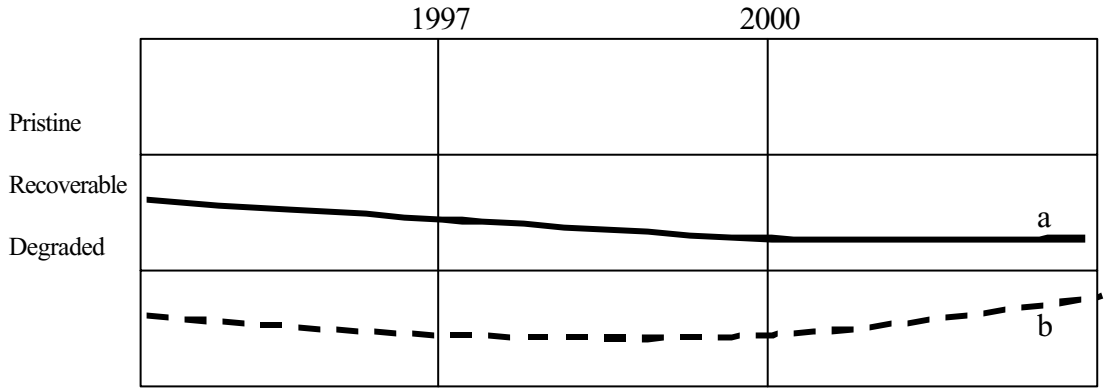
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Other Notes

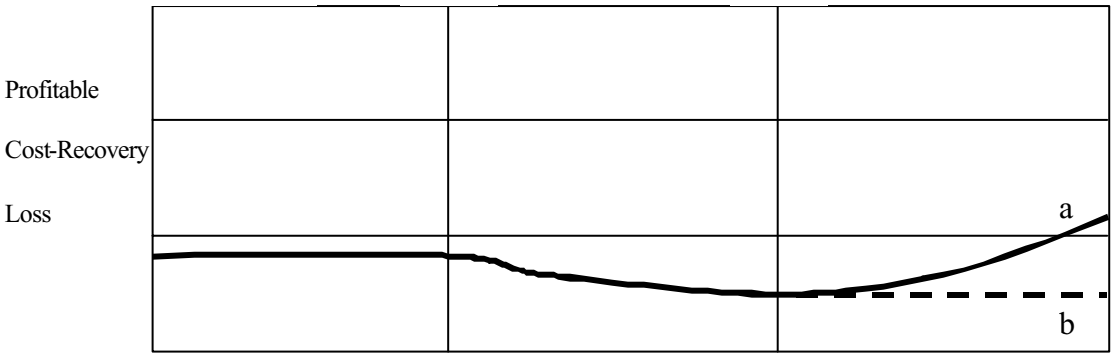
Many Local Governments, and the State Government have worked together to develop and implement the Strategy.

Ecological Outcomes



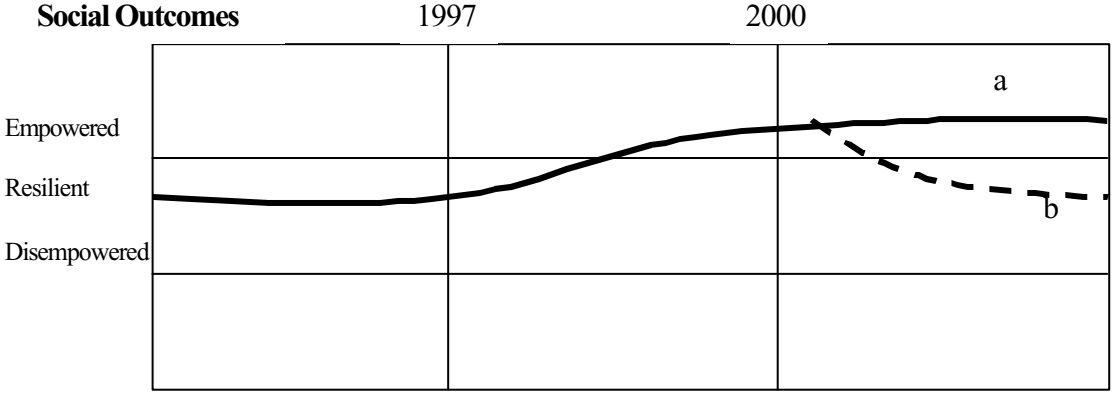
The context for waste management is of gradual degradation in environmental values, through resource loss and local pollution of landfill sites. These also have the potential to pollute groundwater and degrade other environmental values. The regional waste strategy has the potential to reduce this degradation, and possibly even halt it, through recycling and sound landfill management in optimal locations (a). In addition, the provision of better alternative landfill sites could enable some recovery of existing sites (b).

Economic Outcomes



Waste management has historically been a costly exercise, since landfill operation has typically make a loss. New EP Act requirements add to these costs, as does the effort of establishing the regional waste strategy. If efforts to establish recycling processes are successful, and regional cooperation provides a more efficient and effective system, then the net costs might shift to a cost-recovery system (a). If not, then ongoing costs are likely (b).

Social Outcomes



The process of developing and starting to implement the Regional Waste Strategy has been empowering for LGs, the SG, the local and regional waste management industry, and concerned community members (a). The future selection of sites for regional waste facilities may disempower communities in surrounding areas, but with careful management, the populations could be resilient to the changes, and may even benefit in some ways.

Cairns City Council Environment Plan

Case Study Q10: By Su Wild River. With assistance from Linda Kirtchener (Project Officer, Strategic Planning, Cairns City Council).

Comparative Statistics for Cairns City Council

Category	Measure	Comparison
Area (Sq/Km)	1,681	Bottom 44%
Population	130,000	Top 6%
Pop Sq/Km	77	Top 27%
Total Income ($)	113,957,207	Top 3%
Rate Content ($)	75,099,127	Top 2%
Expenditure ($)	85,221,675	Top 6%

Information Australia, 2000

The Cairns City Council Environment Plan has been developed in the wake of the amalgamation of Cairns with the former Mulgrave Shire Council. It aims to integrate approaches to environmental issues across all of the new Cairns City.

Cairns City Council is the regional centre of far north Queensland. It is "a long, narrow coastal strip edged between the Coral Sea and part of the Great Dividing Range" (Cairns City Council. 1998. p.3). It includes several major national parks, the state's highest mountain peak, and is the gateway to the Great Barrier Reef and Daintree Rainforest World Heritage areas. The Cairns region The area's population growth is more than 3.5 per cent, which is twice the State and national average (Ciarns City Council, 1998).

The current city of Cairns was formed in 1995 through the amalgamation of the urban Cairns City, with the surrounding, largely rural Mulgrave Shire. The amalgamation was one of just three that occurred in Queensland at the same time. Each involved a geographically small city centre, and larger surrounding Shire. The amalgamations were decided through agreement between state and local governments. They aimed to increase the capacity of the new local governments to undertake effective, long term strategic planning and management of infrastructure and local services.

Councillors were elected to the new Cairns City Council on very long, 5 year terms. This was to off-set the disruption caused by the amalgamation, at least at the political level, allowing the new, larger local government to stabilise. The merging of two very different local government structures and cultures required strategic thinking and action, as well as cooperation between individuals in different parts of the council. This provided stimulus and resources for broad, integrating initiatives. Many councillors and managers considered that environmental management was an area demanding input from many parts of the new local government. This would allow the coordination of local ecological, economic and social issues together. The proposal to develop an environment plan for the new council quickly received high level support from councillors and managers.

Cairns City officials worked to include all relevant sections within the local government in developing the environmental plan. The executive management team, including the chief executive officer (CEO) became involved, to coordinate efforts across the local government. The infrastructure and strategic planning group took on the role of project management, with the goal of achieving ownership by all operational departments. Planning, environmental health, engineering, waste management and other relevant departments took part. A budget of $30,000 was provided in 1997, with other money to be provided in subsequent years.

Although the amalgamation had provided a stimulus for this coordination, it created some barriers to it too. Operational parts of Cairns City that dealt with environment, social and economic issues were segmented after the amalgamation. Within each section of the new council, there were major, urgent challenges bringing together the systems and policies from the previous two local governments. It was often difficult for council staff to prioritise relevant sections of the environment plan while dealing with their own internal coordination.

The Cairns City Environmental Plan also drew on some initiatives at broader scales. Local Agenda 21 models were used to help articulate sustainability goals. The Far North Queensland 2010 strategy was also useful. Cairns and Mulgrave had both previously worked towards the strategy with other local governments in the region, and this broader perspective included a pre-existing set of environmental goals that had been agreed by both Cairns and Mulgrave councils.

The local community also became involved in developing the plan. Council established an

environmental reference group from the Cairns community to help set the policy direction of the new plan. The reference group included agencies such as the Cairns and Far North Environment Council and other conservation groups, the Aboriginal and Torres Straight Islander Commission, some tourist operators, members of the development industry, and representatives of relevant state government departments.

The consultative approach to developing the plan enabled a broad consensus to be gained about community goals for the local environment. For instance, the development and tourism sectors were highly involved in developing the plan. They participated in workshops, and made many written submissions. These were wary of an over-emphasis on purely ecological issues, and stressed that a balanced approach was needed. This would consider the communities' social and economic needs as well as the need to protect and enhance the natural environment.

The final plan consists of an Environmental goal for regional resource management. That is:

> "to promote and advance the principles of ecologically sustainable development within the greater Cairns region in a way that maintains the unique natural attributes of the area, and provides protection for its diverse ecology" (Cairns City Council 1998. p.5).

This goal is to be achieved though six objectives which relate to the region's key environmental values. These are:

- "Preservation and enhancement of catchment values through sustainable land management practices,
- Minimisation of downstream impacts on marine ecosystems,
- Identification and protection of significant fauna and flora habitats,
- Development and adoption of Environmental Management Plans for areas of significant ecological and/or aesthetic value,
- To foster the development of co-operative relationships, through intersectoral collboration, advocacy and consultation, that work to establish environments that promote community health and wellbeing, and
- To support the celebration of our diverse multi-cultural community and recognition of significant cultural places within the built and natural environments": (Cairns City Council. 1998. p.6).

These objectives are to be implemented through Council's 12 existing program strategies. Specific 'intents', 'targets', and 'actions' have been established by the Environmental Plan, and embedded into those existing programs. They are also all represented in the Council's Operational Plan.

For example, the first objective (preserving catchment values) will be achieved with the aid of several targets within the 'Water Supply', 'Sewage', Public Health and Safety', and Stormwater' programs. Specific targets include incorporating environmental flow requirements into current and future water infrastructure planning (Cairns City Council. 1998. P.14).

The section responsible for implementing each of the targets is also identified in the Environmental Strategy. Goals for the timing of initiatives are also listed. This level of detail should help to ensure transparency and accountability in delivering the environmental outcomes under the Plan.

References

Cairns City Council. 1998. *Environment Management Plan.* Cairns: Cairns City Council.

Information Australia. 2000. *Australian Local Government Guide, 28th Edition. July 2000-November 2000.* Melbourne: Information Australia.

Q10: Cairns City Council Environment Plan

Perspective: LG
Role: Manager
LG type: Other centre (rich, compact, populous)
Focus: Planning

Context issues

-

Context continuums

Scale
<local local regional state national international

Flexibility of Process
Full mostly equal partial none

Origins of initiative
<local local regional state national international

Goals

- Move towards ecologically sustainable development in the local area
- Integrate environmental, social and economic goals across council,
- Meet SG requirements related to environmental values
- Put international models for Local Agenda 21 to use in Cairns,
- Compile State of Environment Reports as required.,
- Implement regional strategy - Far North Queensland 2010

Drivers

- Tourist industry, when it promotes ecotourism,
- Cairns and Far North Environment Council and other conservation groups getting involved.
- Aboriginal and Torres Straight Islander Commission involved through specific contacts,
- SG Department that was previously known as 'Family Services' enthusiastic about the sociological component
- Budget of $30,000 in 1997, and other money in subsequent years.,
- Amalgamation provided some stimulus and resources to coordinate ecological, economic and social local issues.

Processes

- Assist the resolution of different perceptions of ecologically sustainable development in Council,
- Community environmental reference group involved in setting policy directions,
- Executive Management Team, including the CEO involved to coordinate efforts across LG,
- Environmental Reference Group with mentoring and referral agency role,
- Infrastructure and Strategic Planning group involved in project management, with the goal of achieving ownership by all operational departments

Constraints

- Competing pressures
- National Development Industry Association constantly trying to limit any proposed constraints to development, such as vegetation controls,
- Parts of the community opposed the plan, due to perception that environment and development don't mix,
- Challenge of prioritising limited funds to environment plan, within overall work requirements of council,
- Operational parts of LG dealing with environment, social and economic issues, segmented after the recent amalgamation. Hard to coordinate.

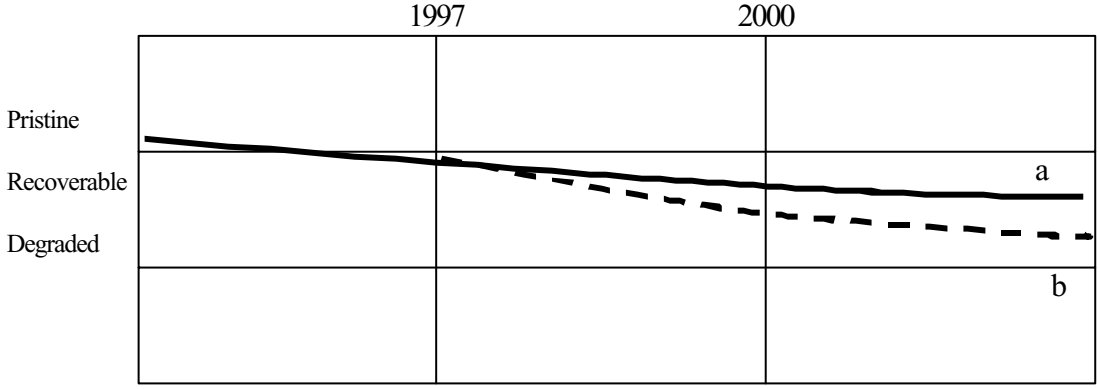
Outcomes

- Meeting SG general environmental requirements,
- New LG structure and culture more open to ecologically sustainable development objectives,
- LG in good position to implement its parts of FNQ2010 strategy,
- LG able toulfil some components of Local Agenda 21, with inherent sustainability outcomes,
- Community more trusting of LG initiatives, due to local environmental reference group.

About the Models

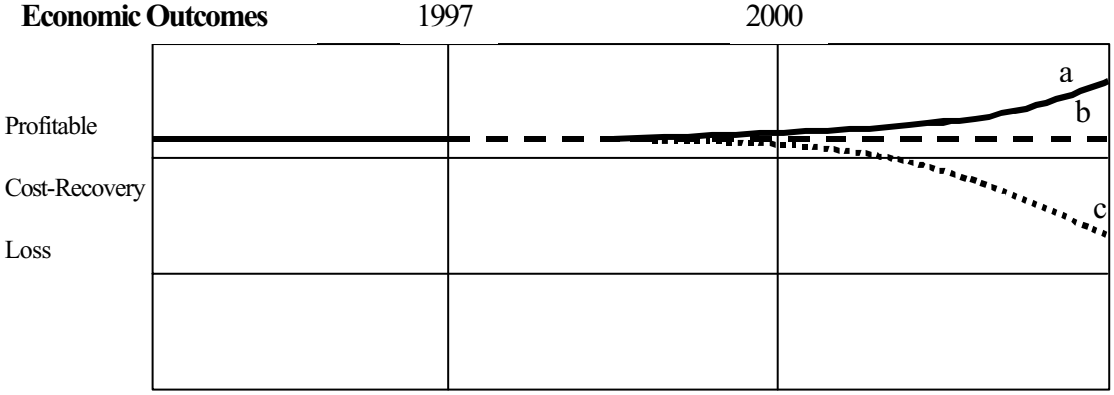
The Comparative Case Study Model records an attempt to deliver environmental outcomes in a simple, general format enabling comparative analysis of issues. Key elements of attempts, and their contexts are recorded. The graphs across the page show the ecological, economic and social values before, during and after the attempt, and how these changed as a result of initiatives. The graphs are often 'split', indicating different outcomes for different sectors simultaneously, or different possible outcomes.

Ecological Outcomes



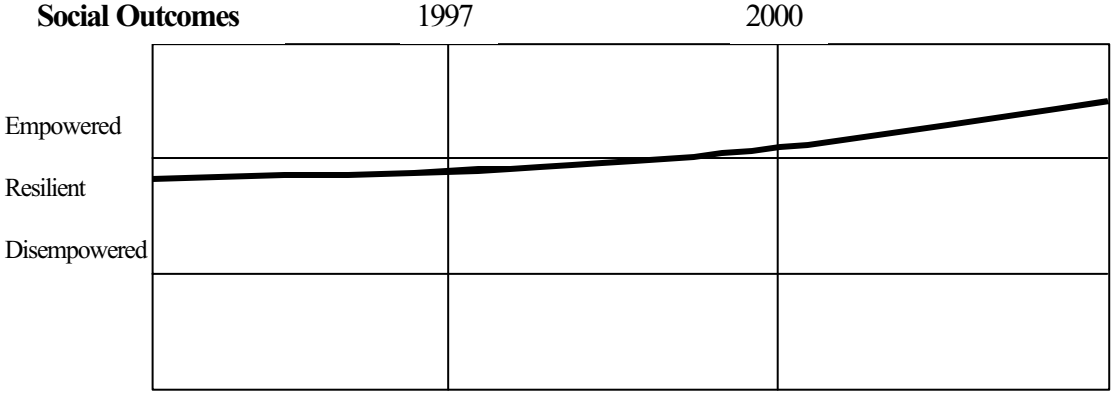
The context for the environmental plan is of gradually (and sometimes quickly) degrading environmental values, in a region with high environmental values. The environment plan has a strong potential to reduce the rate of degradation of environmental values. Because many potential developments have existing approvals, the reduced degradation will be slow to eventuate in some areas (a). However, in the absence of the plan, local environmental degradation would have proceeded at pre-plan rates (b).

Economic Outcomes



Sound, integrated environmental, social and economic planning has at least the capacity to retain profitability of businesses that operate consistently with the plan (b). Some businesses, such as those involved in ecotourism have already recognised that increased profitability could result from the environmental plan over the long term (a). Others, such as those which inherently compromise the environment, may face losses, and have therefore been opposed to the plan (c).

Social Outcomes



Sections of the community that have been involved in the community groups working towards the plan have found this an empowering experience. The direct link to Council decision making processes, provided by the Councillor members of the groups support and enhance this LG responsiveness to community issues.

Douglas Shire Development and Population Cap

Case Study Q11. By Su Wild River, with Mike Berwick (Mayor Douglas Shire Council)

Comparative Statistics for Douglas Shire

Category	Measure	Comparison
Area (Sq/Km)	2,386	Top 47%
Population	9,700	Top 46%
Pop Sq/Km	4	Top 49%

Information Australia, 2000

Douglas is a coastal Shire in Queensland's Far Northern Region. From 1990 to 1995 it had an average annual population growth rate of 2.9%, making it one of the fastest-growing local areas, in a fast-growing region and state. It has a strong local economy based largely on agriculture and tourism. In 1995 agriculture made up 24% while retail trade 17%, and tourist accommodation, cafes and restaurants made up 12% of local business (ABS 1997).

The development pressures facing Douglas are particularly challenging, because of the very high ecological values throughout the Shire. Most of the Shire is designated either World Heritage Area, or Area of High Biological and/ or Scenic Value. In addition to the Wet Tropics World Heritage Area within and around Douglas, the Shire also borders the Great Barrier Reef, and is a popular entry point to both areas (DSC undated p. 1.3).

Douglas' current strategic plan emphasises a need to balance different environmental, economic and social values throughout the Shire. Implicit in this plan is a move towards a population cap for Douglas Shire. The Plan also includes various practical strategies for keeping development within sustainable bounds.

The Plan starts by stating the central aim of the Planning Scheme, which is to:

> "provide for development which is consistent with the protection of the Shire's natural environment, the preservation or in some cases improvement of the character and quality of landscape experience, the maintenance of the sugar industry, the development of a sustainable tourism industry based on the Shire's special characteristics, and the development of pleasant and functional residential settlements" (Douglas Shire p. 1.2).

The aim is intended to be achieved by specifying the fine balance between development and conservation, that allows the shires attractions to be enjoyed, but acknowledges the following principles:

> (a) "the Shire's environmental qualities are valuable and vulnerable to change;
>
> (b) the Shire's infrastructural resources are relatively scarce;
>
> (c) some forms of development are not appropriate and therefore undesirable in the Shire; and
>
> (d) there may be a need to limit the extent of development to maintain the Shire's intrinsic desirable attributes." (DSC undated, p.1.2).

Some of the strategies for achieving the aim include the concentration of developments within the Shire's two urban centres of Port Douglas and Mossman. Development Control Plans now require compact development within those towns. The Plan also states

> "Among other things, the Strategic Plan and the Development Control Plans prescribe a maximum level for urban growth and development of tourist and other facilities, which is not be be exceeded in the life of this Plan; the option to limit growth permanently to this level is to be preserved for the duration of this Plan" (Douglas Shire 1.3)

It is surprisingly radical for a Local Government to intentionally place a cap on development in this way. Douglas Shire puts great emphasis on defending its decision to do so within its Plan. Its arguments rely largely on the practical integration of economic, ecological and social issues, as shown in the following quote.

> "The Planning Scheme provides for growth only up to a defined threshold, as beyond that level, the demand to upgrade to four lanes, the Captain Cook Highway between Simpson Point and Port Douglas, will become more difficult to resist; in addition, the need for other significant infrastructure commitments will increase, there will be further losses of sugar cane land, and there may be deterioration of ecological landscape, recreational, tourism and lifestyle values. Any decision to allow development beyond that level will be deferred until the end of the life of this Plan, in part to provide the opportunity to make a better informed decision in the future, and in the light of prevailing circumstances at that time" (DSC undated, p. 1.4).

This justification of the development and population caps was necessary for several reasons. First, the Council needed to obtain local community support for the restrictions, which might have restricted business opportunities for some locals. Second, although Douglas Shire developed its own strategic plan, and lives with its consequences, the plan itself was subject to approval by the State Government. Such approval was resisted, because of the State's perception that there might be negative consequences for development throughout the region. The shire was successful in negotiating the plan through both hurdles. The restrictions however, are only assured for the life of this Strategic Plan.

At the time of completing this case study, Douglas Shire was developing its new Planning Scheme, as required by the *Queensland Integrated Planning Act 1997*. The development and population cap issues have been discussed as part of this process. Recommendations have been tabled both to reduce the controls, and to further enhance this process seems likely to result in the continuation of the restrictions within the current boundaries.

Figures 1 and 2 below show some of the local environmental issues and the values that are being protected through development restrictions. Figure 3 shows a sign posted at a site where the Daintree Rescue Program is helping to improve and protect wildlife as part of a regional effort.

Figure 1: Town water pipe beside the road, in rainforest at Mossman Gorge.



Figure 3: Daintree Rescue Program sign shows an area where Local and State Governments cooperate for environmental outcomes.



Figure 2: Beachfront mangroves at Cape Tribulation



References.

ABS (Australian Bureau of Statistics). 1997. *1996 Regional Statistics: Queensland. ABS Catalogue 1314.3*. Canberra: ABS.

Information Australia. 2000. *Australian Local Government Guide, 28th Edition, July 2000-November 2000,* Melbourne: Information Australia.

DSC (Douglas Shire Council). Undated. *Planning Scheme,* Mossman: Douglas Shire Council.

Q11: Douglas Shire Development Population Cap

Perspective:	LG
Role:	Councillor (Mayor)
LG type:	Other LG (rich, extensive, populous)
Focus:	Planning

Context continuums

Scale

<local local regional state national international

Flexibility of Process

Full mostly equal partial none

Origins of initiative

<local local regional state national international

Goals

- Retain or achieve capacity of local environment to support a sustainable population,
- Retain and enhance local tourist industry, based on environmental values,
- Retain and enhance local agricultural industry.

Drivers

- Supportive population, environmental mandate through election campaign,
- Mayor's position, (car secretary, phone, office)
- Personal resources of Mayor (time),
- Land use planning laws with wide provisions,
- Agricultural base of economy, and local desire to preserve,
- Tourists and other visitors enjoy, want to preserve clean, green, beautiful environment,
- Economic imperative to sustain tourist industry,
- Global perspective - good to retain rare pristine areas,
- Many people with same goals, working together,
- National Competition Policy reforms assisting transparency.

Processes

- Very slow process of reform, due partly to development focus of much of council,
- Amendment of Local planning provisions to embed principles of sustainability in planning schemes,
- Gradual shift from dealing with planning and development issues as one-off problems, to applying established principles,
- Increased transparency of costs of development, transport, and cross-subsidisation of public good issues, through National Competition Policy reforms.

Constraints

- Community ignorance of environmental, sustainability issues and priorities
- Ethos of supporting agricultural land but unwillingness to take hard steps (tendencey to respond to issues 'special cases', rather than apply consistent principles),
- Uncertainty about whether local sustainability is possible,
- Reticence of SG/CG to consider growth capacity of local areas,
- Both last LGs mainly development-oriented,
- Inertia of LG generally - objective of raising rates the main focus,
- Vested interests of land holders wanting to develop and subdivide,
- Lack of information on natural resource capacities (eg how much water is needed for sustainability),
- Limited local knowledge of cumulative, off-site impacts of development.

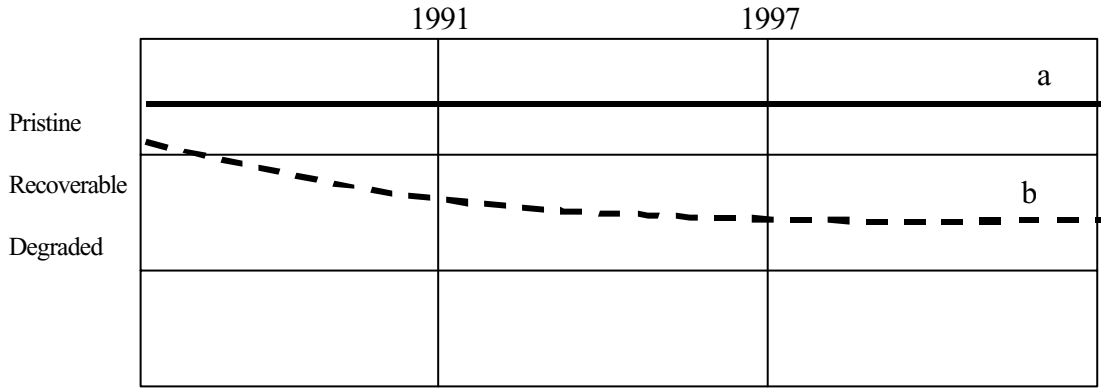
Outcomes

- Improvement to certain local values, including lifestyles, jobs, government.
- Environmental, economic and social issues working together, rather than in conflict,
- Approaching environmental sustainability within local boundaries,
- Within region, Douglas has the strongest economy, strongest growth, strongest environment, and best chance of protecting lifestyles,
- Increased profitability of tourist industry, based on environmental values,
- Commonwealth empowerment to hold LG responsible to the vision it has promoted.

About the Models

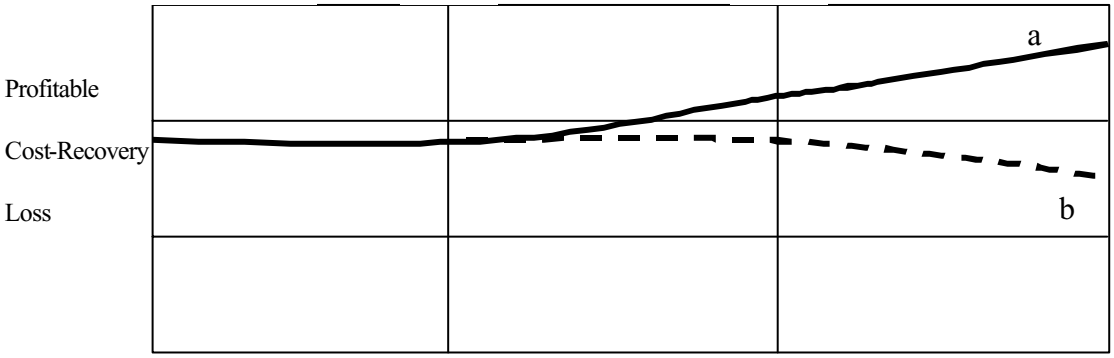
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Ecological Outcomes



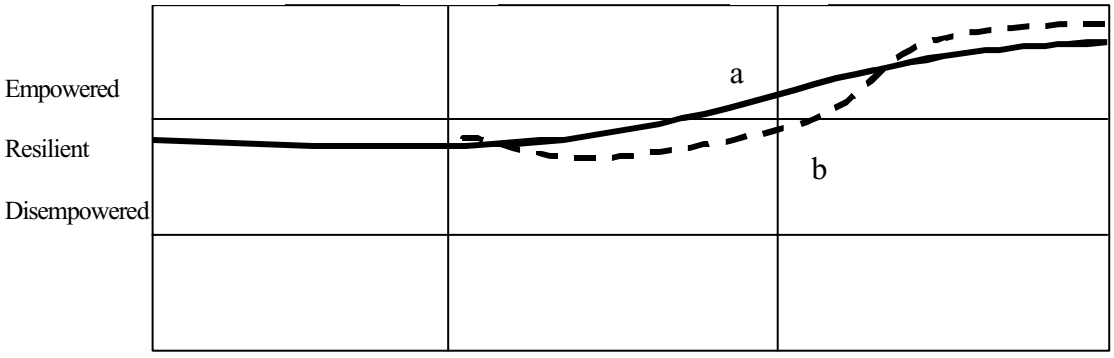
The graph separates the pristine environments (a) within Douglas Shire from the agricultural and developed ones (b). Line (a) shows those environments within World Heritage, and other protected areas, which continue in pristine condition. The population cap, and other environmental controls have preserved more environmental values in this pristine state, avoiding a reduction in this line. Line (b) shows the gradual reduction in environmental values that has been occurring through development, population growth, and possibly unsustainable tourist and other developments. The rate of degradation has been reduced due to planning amendments, and could even out, at a sustainable level.

Economic Outcomes



Douglas' economic position was strong even prior to the planning changes, since it had a strong agricultural and tourist industry. Profits (for business, the housing market and other economic ventures) have increased as a result of the guaranteed retention of local environmental values, and this trend looks set to continue (a). Without environmental controls, some of the sources of wealth (for example in the eco-tourist industries) might have reduced (b)

Social Outcomes



The process of instigating environmental controls has been empowering for most of the population, since it has combined education about environmental issues, with public input into decision making (a). Locals have a high awareness of environmental restrictions and the benefits of these. Developers within the Shire initially felt disempowered by the proposed restrictions, but this trend has reversed for developers who are able to learn, accept and benefit from the changes (b). For these developers, the changes have brought new opportunities.

Mirrar Say No

Case Study T1: by Su Wild River. With assistance from the Gundjehmi Corporation..

The Mirrar Aboriginal nation has been resisting uranium mining on their land since before their traditional rights were recognised in 1977. Their protests against a new mine proposal at Jabiluka have received strong support from a range of individuals and community groups across Australia and the world. The arrangements between the Mirrar and protestors are inspiring examples of respectful and powerful cross-cultural partnerships.

The Mirrar are the traditional Aboriginal owners of the Ranger and Jabiluka uranium mine areas in the World Heritage Area listed Kakadu National Park. Their traditional ownership was first recognised by European law in 1977, with the second report of the Ranger Uranium Environmental Inquiry (Fox Report), which also recommended Ranger proceed and that Aboriginal opposition "not be allowed to prevail".. Under the Aboriginal Land Rights (Northern Territory) Act 1976 traditional owners can withhold consent to the granting of a mining interest on Aboriginal land. The Mirrar's right of veto over Ranger, however, was specifically exempted from this veto. Mining was, therefore, inevitable. After a series of negotiations that were later the subject of legal action against the Commonwealth by the Northern Land Council (NLC) (which claimed the agreement was signed as a result of duress, undue influence and unconscionable conduct) the Ranger project proceeded.The Ranger mine led to the establishment of a second local authority in Mirrar territory. Jabiru township is a 'Special Purpose town', and operates similarly to a Northern Territory Municipal Government, except that many of the facilities are privately owned by the mining company. Jabiru provides services and dwellings to some Mirrar, as well as the miners and their families.

In 1971, the PanContinental mining company discovered uranium at Jabiluka 22km north of Ranger and made an application to mine. PanCon submitted an EIS for development of the mine in 1979. Discussions between the company, the NLC and traditional owners commenced from the late seventies. The Mirrar have shown that undue influence and misleading conduct during negotiations secured the Jabiluka mining agreement in 1982(see "We are not talking about mining – The history of duress and the Jabiluka Project," Gundjehmi Aboriginal Corporation).

In evidence to the 1999 Australian Senate inquiry into Jabiluka the current Mirrar senior traditional owner, Yvonne Margarula, described the pressures of the Jabiluka negotiations: - "In the beginning, around that time, there were lots and lots of meetings, and people would come and collect my father to take him to the meetings. He was the main focus of a lot of this pressure, so there were people coming to pick him up constantly. They gave him a lot of money. He had new cars whenever he wanted it. He was given a lot of good things. He found the pressure overwhelming. He started drinking a lot. He became an alcoholic. They just kept it stopped."

Between 1982 and 1995, the Jabiluka mine was placed on hold because of the Labor government's policy to limit the expansion of Australia's uranium mining industry. In 1991, the mine was sold by PanContinental to Energy Resources of Australia (ERA). The deed of transfer for the mine required that ERA obtain permission of the Mirrar to mill uranium ore at Ranger. The Mirrar have vowed never to agree to the milling at Ranger, providing another impediment to the mining. When the Howard Liberal government was elected in 1996, it fast tracked approvals for the Jabiluka mine, bringing on a new era of protests (see http://www.mirrar.net/indexer.htm for more information).

The Mirrar have quickly gained wide public support for their opposition to the mine. However the Mirrar always retained the leadership over the protests, in a unique example of Australian cross-cultural cooperation. The arrangements between the Mirrar and protestors covered where people stayed and travelled on the land, their personal habits while at Kakadu and Jabiru, the detail of the protests they took part in, and the way these were recorded.

The Mirrar arranged a large area to serve as a protest camp. The selected site had been a cattle station prior to the Mirrar land claim. Because of this, it is partly cleared of trees, is in a degraded, but fairly robust state, and has a bore and large storage tank for water. It is also positioned away from Jabiru, allowing privacy to the protestors, and close to Jabiluka mine, for easy access during protests.

The Mirrar did not stay at the protest camp, but visited it for briefings about conduct and protests. This made the camp itself a unique local community, whose facilities were governed by the Mirrar, but managed by the protestors themselves. The tropical conditions made life difficult at the camp, and the population fluctuated from a handful of people, to over 500. But food preparation, composting, toileting were all arranged for minimal long-term impact. For instance, special care was taken to ensure that seeds of food plants were not scattered throughout the bush, but were composted in a single area, to avoid the spread of weeds. Figures 1 shows the environmental management practice at the protest camp for composting. Solid and liquid food wastes were carefully buried in designated, well managed sites with signposts giving clear instructions.



Before being allowed to either stay at the protest camp, or participate in any actions, protestors were also required to go through an induction process. During this, they were told of conditions for their conduct, which respect the long-term needs of the Mirrar, and help achieve a cohesive and effective protest. For instance, drinking and other drug-taking was not allowed either at the protest camp, or anywhere else in Kakadu national park, for the duration of a protestor's stay. This was to avoid people losing control in difficult situations, or causing trouble in any public place. Protestors also agree to wear decent clothes, which covered as far as their shoulders and knees. These conditions were called for since without such conduct the media, and local residents have easy targets to use in discrediting both the Mirrar and the whole protest. Protestors were usually enthusiastic and respectful about following these codes of conduct.

As well as their general conduct, agreements were made for conduct in protests. Each protest was carefully planned, and approved by the Gundjehmi Corporation - an Aboriginal organisation formed by the Mirrar. Briefing sessions were held before the protest so that participants knew how to behave. Information on arrest procedures and what to expect in gaol were also provided.

Figure 2: Nuclear-Powered Howard protest



As a result of this cross-cultural partnership, the protests against the mine were colourful, powerful and peaceful. Most of the protests were held at the gate to the mine, and are set up before dawn so that mine workers could not get in to work for the day. In one protest, around 50 people claiming to be John Howard were arrested for protesting against the mine. In another, 10 people locked themselves into a car made up in the shape of a frill-neck lizard. This type of symbolic action is generally supported by Gundjehmi, and Jabiluka Action Groups throughout Australia also seek approval for similarly colourful protests in other places (see Figure 2)

The Gundjehmi Corporation also claims the rights to use any photographs or other images that are gathered from the protests at Jabiluka. This empowers them to provide images and other information to the media, or other parties.

A very small minority of Jabiluka protestors resented the protest management by the Mirrar. The vast majority, however, found the partnership with traditional owners to be a welcome and unique opportunity, and an essential part of the experience. This enthusiasm was warmly expressed during the 'cultural walks' that were often led by the Mirrar after successful protests. During these, protestors were taken through traditional Mirrar land, shown rock art images, meeting places and told of other elements of traditional Mirrar culture.

Figure 3: Cultural Walk



Jabiluka mine continues to be built, despite the protests and the respectful partnership between the Mirrar and others opposed to its operation. Its development has been slow, and remains uncertain. Economic factors, such as a current low world price for uranium have had impacts. So have legal details like the failure of the original agreement to provide for a mill at Jabiluka. The mine is not expected to produce uranium for several years yet. Participants in this struggle remain optimistic about Jabiluka, and the Mirrar have extended an invitation to protestors to return with their shovels and help fill in the hole, when the mine is finally stopped.

References

http://www.mirrar.net – the Mirrar/Gundjehmi website.

http://www.aph.gov.au/senate/committee/erca_ctte/jabiluka/index.htm

Many thanks to the Gundjehmi Corporation for assistance with this case study.

T1: Mirrar say no

Perspective: Other
Role: -
LG type: Other LG (poor, sparse)
Focus: Planning

Context Issues

Context continuums are split because the Mirrar have few direct controls over mine issues, but have freedom and flexibility over the rest of their land.

Context continuums

Scale

<local **local** regional state **national** international

Flexibility of Process

Full mostly equal **partial** none

Origins of initiative

<local **local** regional state national international

Goals

- Avoid uranium mining at Jabiluka,
- Reinstate Mirrar land rights at the Jabiluka mine site,
- Form respectful, effective partnerships between Mirrar and other protestors, based on Aboriginal protocol,
- Maintain access to services at Jabiluka,

Drivers

- Widespread public opposition to uranium mining,
- Low world price for uranium,
- Large pool of potential protestors, willing to travel to Jabiluka, and work respectfully with Mirrar code of conduct,
- Availability of land and water for campsite,
- Long-term protestors able to manage the camp and run induction sessions for new arrivals,
- Some resources pooled for protest, including vehicles, media equipment, etc.
- Good relationships maintained between local community, police, and protestors.

Processes

- 1982 Jabiluka mining agreement signed under extreme duress,
- Mining at Ranger established, operational,
- Reliance of mining community, Mirrar and protestors on Jabiru as a service centre,
- Gunjehmi established to represent Mirrar interests,
- Protests initiated by Mirrar and others, but approved by Gundjehmi,
- Photographs and other records of protests remain the property of Gundjehmi,

Constraints

- Lack of legal rights for Mirrar to stop uranium mining at Jabiluka,
- Government support for uranium mining at Jabiluka,
- Physical challenges of the environment for protestors (remoteness, heat, humidity),
- Difficult to keep equipment running in tough conditions (vehicles etc),
- Some protestors resistant to Mirrar code of conduct and management of the protest.

Outcomes

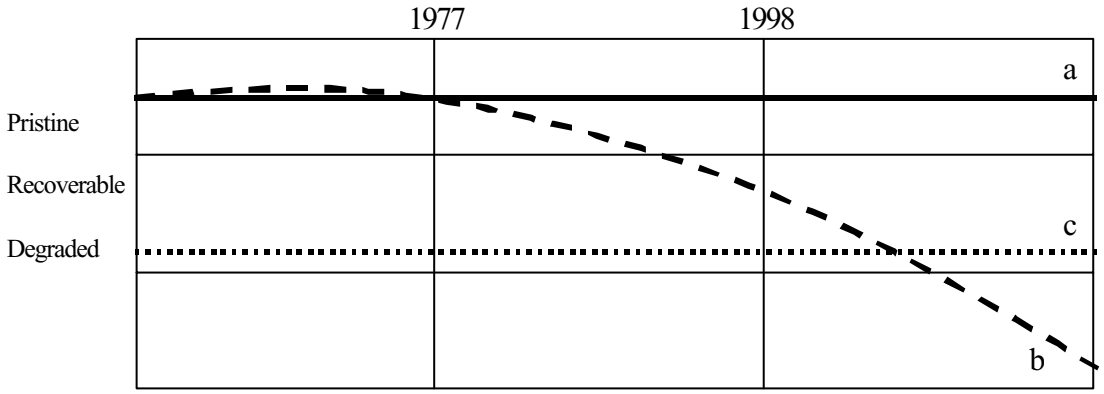
- Development of Jabiluka stalled in September 1999, no work since,
- Jabiluka an unpopular asset with business and broader community,
- Increased domestic and international coverage of Jabiluka issue,
- Optimism among Mirrar and protestors that uranium mining can still be avoided,
- Respectful partnerships established between Mirrar, Gundjehmi and protestors,
- Increased understanding of indigenous issues by protestors at Jabiluka.

About the Models

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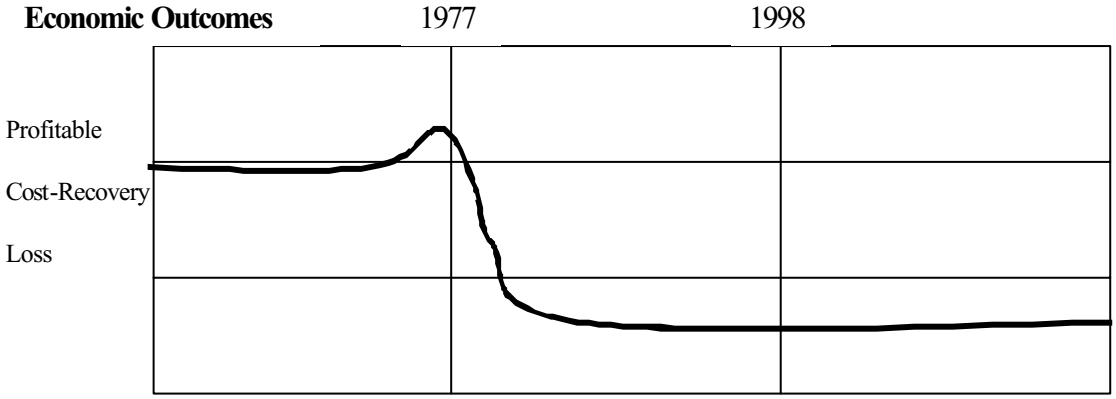
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Ecological Outcomes



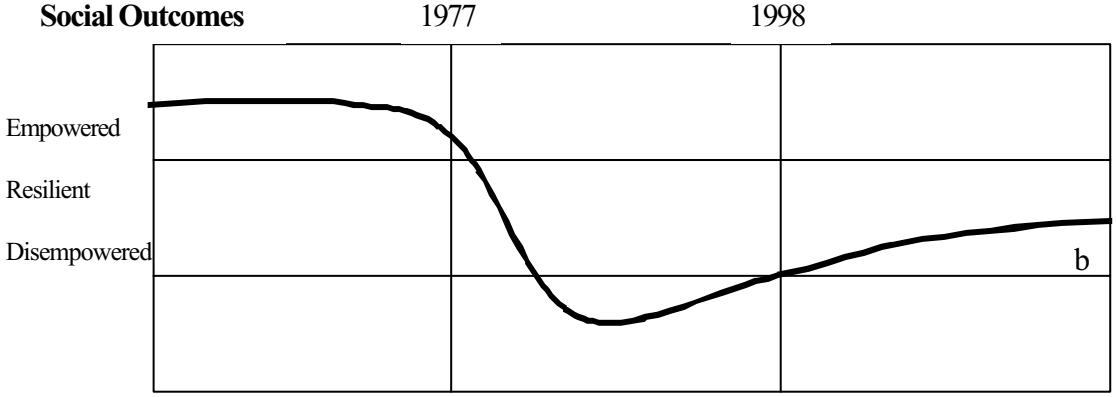
Several different environmental values are found at Kakadu, on Mirrar land. Much of the country is almost pristine, although some feral animals are present, and have changed some ecosystem function. This includes significant wetlands just a kilometre from the Jabiluka mine site (a). The land at the Jabiluka mine site has been developed since June 1998, and most of the original ecological values are now absent. The degradation will continue if the mine goes ahead (b). The protest campsite had been a cattle holding yard for many years, and was degraded before the protest as a result. Careful site management by the protestors has kept the environment there

Economic Outcomes



The Mirrar people enjoyed brief economic benefits from uranium mining activities in the seventies, when the mining companies approached them to negotiate mining rights. But the terms of the agreement negotiated by the NLC on behalf of the Mirrar are completely deficient from a cultural, environmental and monetary perspective, Because of this, the benefits have not benefited the Mirrar people, who have also invested highly in been lobbying consistently to stop the mining.

Social Outcomes



The long history of duress suffered by the Mirrar people has been fundamentally disempowering. This was especially the case just after the mining agreement was signed, when the implications of the agreement first became clear to the Mirrar. Other Australians who oppose uranium mining have also been disempowered by the struggle in Jabiluka. However the determination of the Mirrar to win their land back from the uranium miners, and the ongoing support from many thousands of protestors has been empowering to some extent. This empowerment will certainly grow much more if the protests are successful.

Striving for balanced environmental planning in Litchfield Shire

Case Study T2: by Su Wild River. With assistance from Gerry Wood (President Litchfield Shire)

Comparative Statistics for Litchfield Shire

Category	Measure	Comparison
Area (Sq/Km)	3,100	Top 40%
Population	16,000	Top 36%
Pop Sq/Km	5	Top 47%
Total Income ($)	4,000,000	Bottom 20%
Rate Content ($)	2,000,000	Bottom 33%
Expenditure ($)	4,000,000	Bottom 17%

Information Australia, 2000

The locations and boundaries of new rural subdivisions throughout Litchfield Shire, and a proposed industrial estate highlight the need for long-term infrastructure management to be considered in planning decisions. However planning is undertaken by the Northern Territory (NT) Government while local governments (LGs) are responsible for ongoing management. A shift to sustainability would probably require an effective system for coordinating between the two functions.

Litchfield Shire is situated at the gateway to Kakadu National Park in the Northern Territory (NT). It has a rapidly growing population, with rural residential subdivisions predominating, although horticultural development is expanding rapidly also.

Litchfield Shire is subject to tropical weather conditions, including flooding summer rains, and dry winters. The landscape in Litchfield Shire is fairly flat, with a confusing and variable array of drainage patterns for surface water in the wet season. Detailed geological surveys have not been undertaken in most of Litchfield Shire, so little is understood about the local hydrological conditions. Creeks without any water in the dry season become raging torrents in the wet. Figure 1 shows a typical local creek in the dry season.

Intensive settlement of Litchfield Shire is fairly recent, compared to many parts of Australia. The exact flooding potential of separate blocks of land was not always taken into account in many subdivisions approved in years gone by, but now maps showing waterlogging and flooding have been produced by government and these maps are now widely referred too in planning applications. Other ecological information, such as the range, abundance and vulnerability of indigenous flora and fauna species, is now slowly being gathered. For example, a vegetation map has been developed for the Litchfield Shire, and will also help in the better planning of the region into the future.

Environmental planning processes in the NT differ greatly from those in Australian states. Planning responsibilities lie with the NT Government, but ongoing infrastructure maintenance and land management in the cities and towns is the responsibility of local government. Many resulting planning decisions appear to ignore fundamental constraints to long-term management. This raises questions of whether the NT's division of planning and infrastructure responsibilities might reduce sustainability.

Figure 1: Creek during the dry season in Litchfield Shire



Aspects of old subdivision designs, approved by the NT government, draw repeated criticism from Litchfield Shire. A key issue is the width of road easements. Waters from the summer flooding must be directed somewhere in the Shire, and road easements are often a practical option. Litchfield Shire argues that such easements are relatively easy to maintain if they are 30 metres wide. This provides space for a wide, flat drain with gently-sloping walls, that are easy and safe to mow. Erosion and siltation are then less of a problem, since water runs through wide easements slowly, and consistent ground cover can be maintained. Wider easements also allow more roadside remnant vegetation to be retained. 30 metre road easements are now the standard.

The costs associated with narrow easements accrue to LGs like Litchfield Shire, since they are responsible for the long-term management of the roads and their edges. The ongoing costs

of this are very high. Litchfield Shire could spend its whole annual budget on drainage, but still not come close to solving the ongoing problems caused by the narrow drains (Wood 1998).

The NT government has also sometimes also approved the sale of blocks of land that really are unsuitable for development. Figure 2 for instance, shows a residential block for sale on the banks of a small creek bed in the dry season. Most of this land would be underwater in an average wet season. Litchfield Shire officials were not told of the intended land sale before the block went on the market, and only discovered it while driving past the site. Yet they will be the agency that receives demands for improved infrastructure once the block is sold and the new owners have attempted to build (Wood 1998).

Figure 2: Creek for sale in Litchfield Shire



There are many other examples of arguments from Litchfield Shire Council being overlooked in planning decisions. For instance, a proposal to build a 34 block industrial estate in a local wetland was supported by the NT government but opposed by Litchfield Shire. The existing drain at the wetland already showed signs of pollution, and Litchfield argued that pollution control infrastructure should be installed for the whole site, rather than be left to individual operations. The NT government preferred to rely on general pollution prevention principles in its Environmental Protection Act. The Act makes pollution from individual operations illegal, but doesn't provide mechanisms for ongoing inspections or enforcement. The NT Government also argued that the issues must minor because only the one complaint (from Litchfield Shire) had been received. The absence of current residents in the area was not considered to be a factor in the low response rate (Wood 1998).

There are some local examples of agreements between Litchfield Shire, the NT government, and developers, which have increased the sustainability of development. For instance, developers agreed to change the shape of a subdivision planned for Benjamin's Lagoon. In the original design, each residential block would have included a large section of the permanent wetland. Now the blocks border the water, but landholders do not own it.

Councillor Wood, the President (Mayor) of Litchfield Shire adopts creative strategies to take up environmental arguments in such cases. Initiatives include low-cost projects to encourage people to take personal responsibility for pollution and litter management, waterway preservation and other local environmental initiatives.

Councillor Wood has also worked with the local media to raise public awareness about the broader issues of environmental planning. Woods criticisms of the flaws in the NT planning arrangements and other territory environmental problems have featured in most editions of the local paper for over a decade. But Wood also frequently goes further than this. His more colourful comments have included an article in the local newspaper, where he posed as a fictional wealthy sheik, claiming to have bought all outer Darwin from the Territory Government. Wood himself was also quoted in the article, saying "the government probably consulted with us like they usually do, but forgot to tell us about it" (Litchfield Times 1998, Wood 1998).

As a result of its constant lobbying on planning issues, Litchfield Shire was used as a model during the development of new local land use objectives. The process was arranged by the NT government, whose employees also worked as facilitators in the consultation process. The public consultation highlighted differences, as much as it encouraged consensus. But the process clearly demonstrated that local governments and communities are interested in the issues, and willing and able to tackle them. Perhaps continued recognition of local voices in planning decisions might help bring development and management issues together in the NT.

References

Litchfield Times. 1998. Wealthy sheik buys all outer Darwin. Humpty Doo: Litchfield Times.

NT (Northern Territory) Government. 1993. *Northern Territory Planning Act.* Darwin: Northern Territory Government.

Wood, Councillor G. 1998. Interview with Su Wild River. Unpublished.

T2: Striving for balanced environmental planning in Litchfield Shire

Perspective: Mixed
Role: Councillor (Mayor)
LG type: Other centre (poor, extensive, populous)
Focus: Planning

Context Issues
With few, poor formal roles in the planning process, Litchfield both has no flexibility to act, and also complete flexibility to make any comment they choose.

Context continuums

Scale
<local local regional state national international

Flexibility of Process
Full mostly equal partial none

Origins of initiative
<local local regional state national international

Goals
- Improve planning in Litchfield Shire, so that long term issues are addressed in developments,
- Avoid building in wetlands, narrow drainage easements and other planning decisions bringing excessive long-term costs and management problems,
- Encourage sustainable land use practices in Litchfield Shire.

Drivers
- Enthusiasm from Shire President, other Councillors and Council staff for better planning practices,
- High management costs resulting form bad planning decisions underpin arguments for better future decisions,
- New land use objectives brings opportunity for better strategic planning,
- Local community gradually learning about the natural environment and its limitations,
- Freedom for Councillors to speak views openly in media and public forums.

Processes
- Planning decisions made without effective input from LGs,
- LGs using formal, and also non-formal means to comment on planning and other environmental issues,
- Many blocks sold for developments are on environmentally inappropriate land (eg waterways and wetlands),
- Community expectations that infrastructure such as stormwater drains will be provided regardless of cost.

Constraints
- Council lacks control over planning decisions and processes, but must manage resulting problems,
- No LG statutory powers over pollution in industrial areas or other environmental problems,
- Few financial resources for any environmental initiatives,
- Low finances further impacted by legacy of poor planning decisions (narrow drainage easements),
- Community view that anything goes on own land, but LG must maintain all other infrastructure.

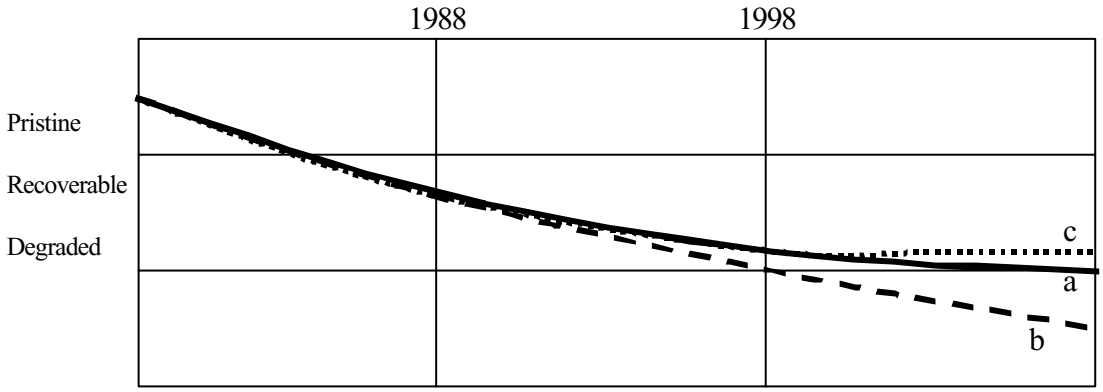
Outcomes
- Community and NT government understanding of complex planning issues raised due to lobbying by Litchfield Shire,
- New land use objectives likely to reflect more community concerns, due to consultation,
- Many subdivisions and individual land sales continue to breach good environmental practices,
- Community participation in managing many natural assets (eg hole in the road landcare group),
- Some developers convinced to design environmentally aware subdivisions.

About the Models

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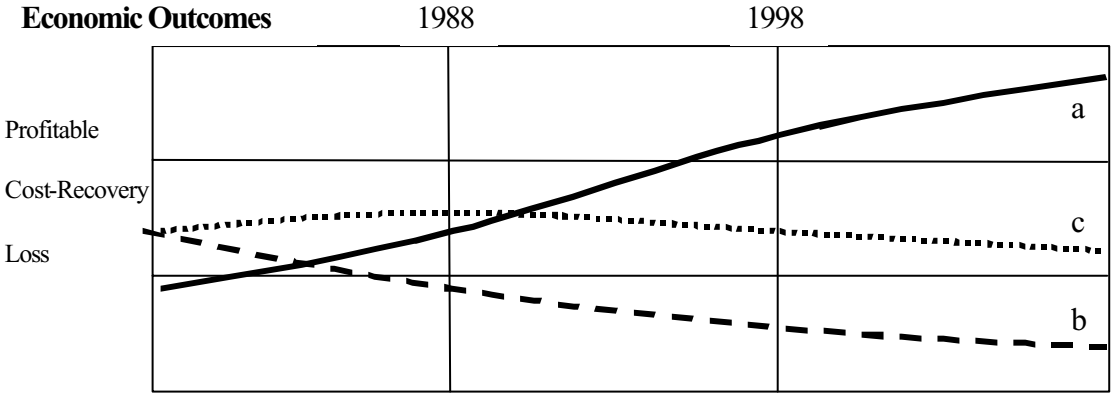
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Ecological Outcomes



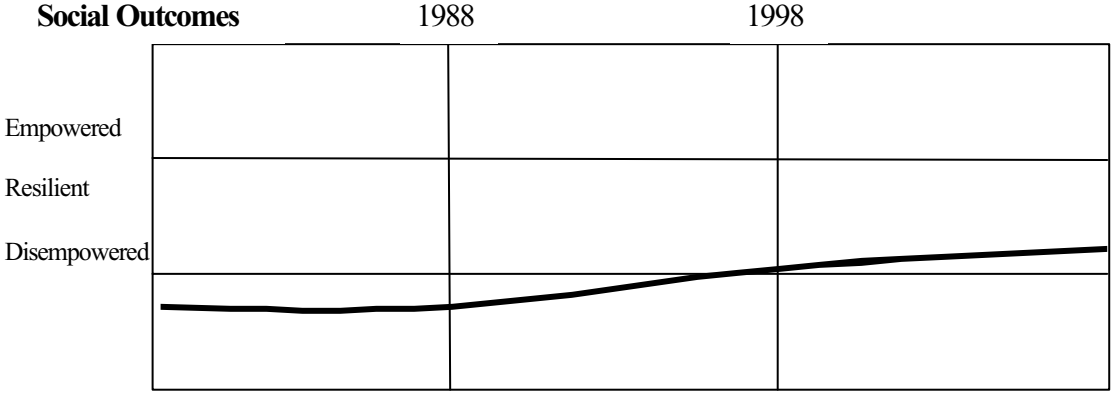
Environmental values in Litchfield Shire have been degrading steadily for many years, due to development pressure and many poor planning decisions. Litchfield Shire has been able to reduce the rate of degradation slightly, by lobbying the NT government, negotiating with some developers, and supporting community initiatives (a). Without these efforts, the degradation would have continued at the same, or a greater rate (b). However, degradation could have been further slowed if the NT government took a more precautionary approach to local land use planning in Litchfield (c).

Economic Outcomes



The economic impacts of planning decisions in Litchfield Shire have varied considerably for different parties. The NT Government has made steady profits from the subdivision and sale of 'crown land' in the Shire (a). Meanwhile, Litchfield Shire has had its small budget constantly and increasingly strained by providing and managing infrastructure for inappropriate subdivisions. Costs are particularly high when drainage easements are to narrow, and where construction is in wetlands and other waterways (b). Meanwhile, Litchfield residents have benefited slightly because the extra population enabled by the subdivisions raises the level of economic activity in the Shire, but also face high property management costs in the long term because of poor planning decisions (c).

Social Outcomes



Empowerment in relation to planning and land use issues has increased slightly in Litchfield Shire over recent years. Constant lobbying by the Shire and some community members has resulted in some small improvements to land use practices by the NT government. The recent consultation on the new Land Use Objectives was also empowering, since comments were sought from the community. Land care work and other community initiatives have also increased the level of community empowerment in environmental management.

Improving the management of Mitchell Creek, Palmerston

Case Study T3: By Su Wild River with Simon Goodhand (formerly with Greening Australia, now with the Department of Land, Planning and Environment) and Tony Scherer (Palmerstone City Council)

Comparative Statistics for Palmerston Town

Category	Measure	Comparison
Area (Sq/Km)	56.27	Bottom 14%
Population	21,850	Top 20%
Pop Sq/Km	388	Top 18%
Total Income ($)	8,082,989	Bottom 41%
Rate Content ($)	5,002,927	Top 45%
Expenditure ($)	11,509,776	Top 50%

Source: Information Australia, 2000

Environmental values at Mitchell Creek are threatened by the pace and form of development at Palmerston Town. Local residents, Palmerston Town Council and community environment groups have worked successfully together to ensure the protection of many of the creek's key environmental values. The NT Government (through Dept of Lands, Planning and Environment) prepared the Mitchell Creek Parkland – Drainage and Environmental Study in 1996 which has given formal recognition of the creek's values.

Mitchell Creek flows through Palmerston Town (now City) Municipality in the Northern Territory. Palmerston is a new residentialdevelopment located between Darwin City and the large Department of Defence base nearby. Many of the residents are Defence Force personnel.

Environmental factors such as the tropical wet season, with torrential rains and high levels of surface-water runoff also affect building. Soil loss can be very high when building activities extend into the wet season.

The pace of development in Palmerston has threatened the environmental values at Mitchell Creek. Development has been speedy, and continues at a fast pace. There has been little time for the local community to form coherent groups about issues, or to form strong attachments to values in the local area.

Despite the newness of the community, many of the residents have shown a proactive interest in protecting environmental values at Mitchell Creek. Several successful initiatives have been used to address the problems. The Mitchell Creek Landcare Group are actively involved in planning and planning issues throughout the catchment, and have replanted and maintained vegetation along the creek. Palmerston also boasts the only 'Adopt-a-Park group' in the Northern Territory who focus on the public open space around theCreek. Other community environment groups such as Greening Australia have also become involved in strategic and practical work to protect and manage the creek.

There have been two successful bids at securing funding to help maintain the environmental values at Mitchell Creek. The Natural Heritage Trust (through the Bushcate Program) has provided three years of funding aimed at encouraging broad community involvement in sustainable catchment management. Funding was also provided by the National Corridors of Green Program. As well as helping with these other funding proposals, Greening Australia also provided some direct funding for tree planting and other conservation work in the catchment. This work has helped to educate the community about the environmental values at Mitchell Creek. Together, these funds have helped to create a position at Palmerston City Council, to focus on the management of Mitchell Creek.

Community awareness and interest has been strong and has contributed to the setting aside of land for reserves which would otherwise have been developed. An example has been the creation of the Mitchell Creek Escarpment Reserve which has ensured that a green skyline will be protected in the long term. This supports the provision of environmental values such as natural habitats, a green corridor, and passive recreation area. It is also in the economic public interest, since the native bushland area is also likely to help individual residential blocks to retain and enhance their market value.

Problems faced by the Mitchell Creek initiatives have mostly been bureaucratic. There are only narrow bands of eligibility for each of these funding programs. At times this has constrained the type of work that seemed most pertinent for the local area. The bureaucracy within Palmerston City Council was an additional

challenge, since this initially slowed down approvals for funding applications, while their deadlines remained fixed. The City Council are now very supportive of the Mitchell Creek project, and provide considerable inkind support to the NHT position.

A further constraint on activities has been the relunctance by NT Government to declare formal boundaries for a proposed Mitchell Creek corridor reserve (as recommended by the Mitchell Creek Parkland: Drainage and Environmental Study in 1996). This has created some uncertainty for project activities in terms of the long term viability and maintenance of onground works, plus the planning of future works.

References

Information Australia. 2000. *Australian Local Government Guide, 28th Edition. July 2000-November 2000.* Melbourne: Information Australia.

T3: Improving the management of Mitchell Creek, Palmerston

Perspective: Other/Local Govt
Role: Officer
LG type: Capital fringe (populous, compact, poor)
Focus: Management

Context Issues
Natural Heritage Trust (Bushcare) provided most of the funds and impetus for the attempt.

Context continuums

Scale
<local **local regional** state national international

Flexibility of Process
Full **mostly** equal partial none

Origins of initiative
<local **local regional** state national international

Goals
- Improve the processes for planning and management of the natural systems in Mitchell Creek catchment.
- Protect significant native flora and fauna species and communities in the local area, including the creation of reserves
- Enhance awareness and community involvement in the management activities of the catchment

Drivers
- Landcare Group and local community, including many new residents interested in Mitchell Creek,
- Adopt-a-Park group formed (only one in the Territory),
- Natural Heritage funding, also encouraging a land management perspective,
- Greening Australia, and dedicated individuals within it,
- National Corridors of Green Program attracting national funding, and funding from Greening Australia, LG

Processes
- Greening Australia survey in 1995 identified a rare eucalyptus species in the local area.
- Lands, Planning and Environment identified the value of vegetation, including its control on mosquito-breeding (first time for such formal recognition). Formal inclusion of Greening Australia findings in LPE Mitchell Creek Parkland Study 1996.
- Escarpment area in west of catchment identified as steep slope with significant vegetation. . Now managed by LG

Constraints
- Bureaucracy within LG challenging due to external funding deadlines,
- General bureaucracy and administration in accessing funding
- Narrow band of eligibility for funding.
- Creation of a creek corridor reserve (as recommended in the Mitchell Creek Parkland Study) still not confirmed

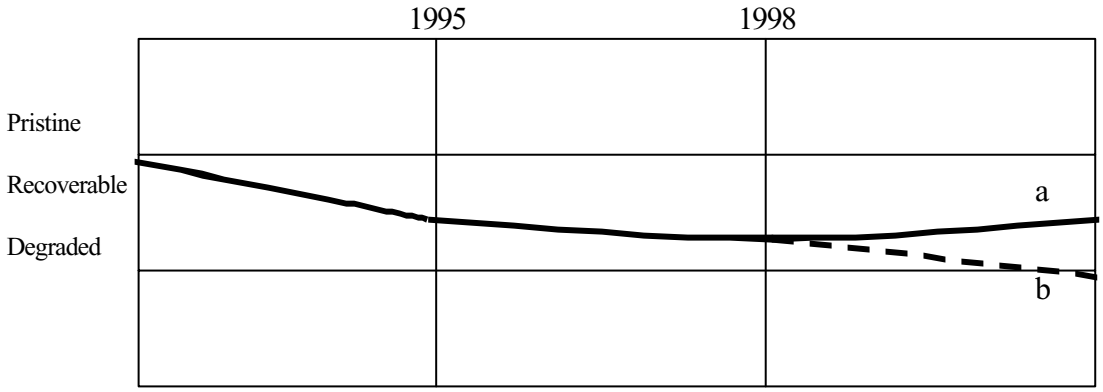
Outcomes
- Community education and involvement (ongoing),
- Position (externally funded but within council, and support of council,
- Creation of Mitchell Creek Escarpment Reserve, now managed by Palmerston City Council,
- New landcare group

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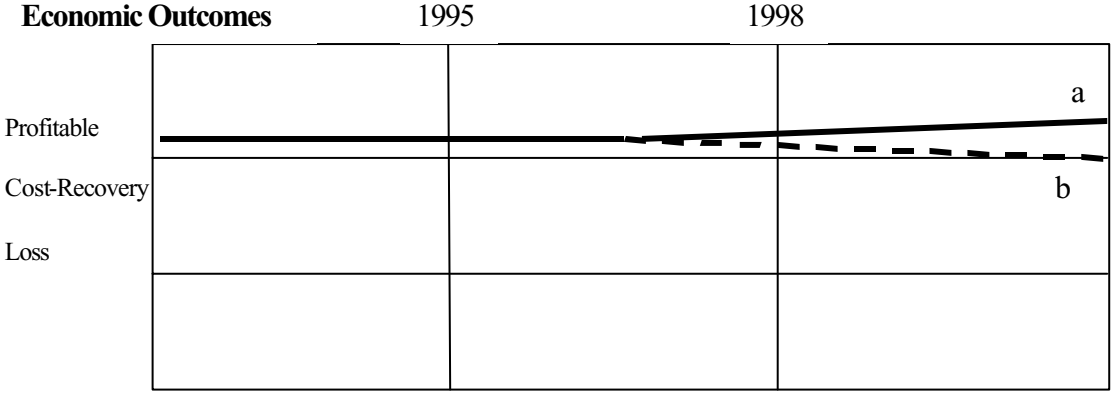
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Environmental Outcomes



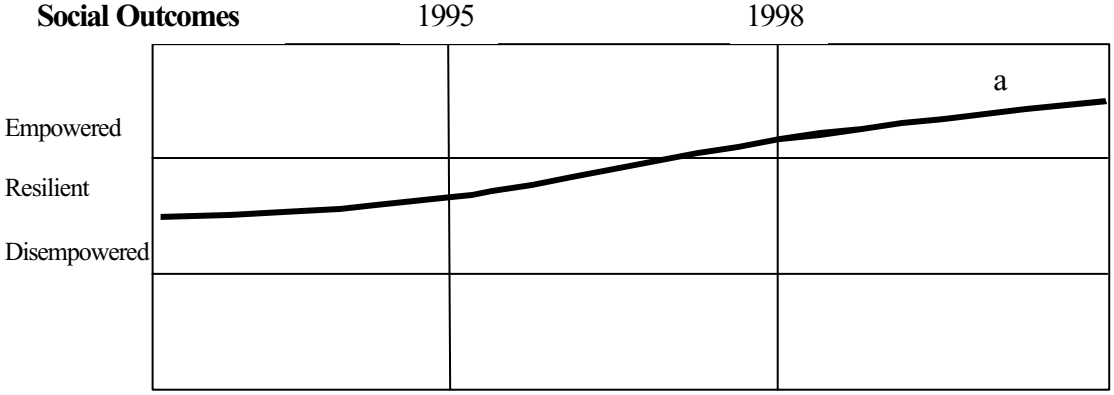
The environmental values at Mitchell Creek were deteriorating prior to 1995, with heavy development pressure throughout the catchment in Palmerston. The initiatives targeting catchment management have delivered some important enviornmental outcomes. The protection of the rare eucalypt species, and the reserve on the steep western slopes of the creek mean that existing environmental values there will be protected (a), rather than lost, as may have occurred (b).

Economic Outcomes



The retention of environmental values at Mitchell Creek, and the community involvement in managing the local values have the potential to add some value to surrounding suburbs, and to ongoing developments nearby (a). Minor opportunity costs will result from the inability of developers to build on the now-protected areas of the Mitchell Creek Catchment. However, these are minimal, because other areas are available for development, and because building would have been expensive on the steep slopes anyway (b).

Social Outcomes



The Mitchell Creek initiatives seem likely to result in positive outcomes for the community. The Landcare Group, the Adopt-a-Park group, work between the existing community and new residents, and the availability of some funding for practical initiatives have all made this a positive experience for community members.

Planning Darwin

Case Study T4: By Su Wild River, with Margaret Clinch (PLAN – community action group), Lex Martin (NT Greens Candidate). With advice from Darwin City Council and NT Power and Water Authority.

Comparative Statistics for Darwin

Category	Measure	Comparison
Area (Sq/Km)	135	Bottom 21%
Population	70,000	Top 12%
Pop Sq/Km	519	Top 16%
Total Income ($)	37,892,509	Top 19%
Rate Content ($)	25,265,500	Top 14%
Expenditure ($)	37,892,509	Top 21%

Information Australia, 2000

The locations and boundaries of new rural subdivisions throughout Litchfield Shire, and a proposed industrial estate highlight the need for long-term infrastructure management to be considered in planning decisions. However planning and management functions are split between the Northern Territory (NT) Government and local governments (LGs). A shift to sustainability would probably require an effective system for coordinating between the two functions.

Darwin is Australia's smallest, most tropical, and remote capital city. Darwin's indigenous population is very high compared with the other capital citie. Federal and NT Governments have made concerted efforts to increase economic development and population growth in Darwin for nearly 100 years. In 1913 a royal commission was established to report on the development of the NT in relation to railways and ports, and the desirability of setting apart an area for the eventual creation of a new capital. Present day development and population growth relies heavily on the defence forces, tourist industry, mining companies, various government departments, the NT University, and other large agencies. Darwin's non-indigenous population remains highly transient, with a relatively low proportion staying more than a few years (see Blandy and Forbes 1998).

Environmental planning processes in the NT differ greatly from those in Australian states. Planning responsibilities lie with the NT Government, but ongoing infrastructure maintenance and land management in the cities and towns is the responsibility of local government. Many resulting planning decisions appear to ignore fundamental constraints to long-term management. This raises questions of whether the NT's division of planning and infrastructure responsibilities might reduce sustainability (see for instance Jones 1998).

Environmental interest groups and stakeholders in Darwin are convinced that environmentally damaging land use planning has been occurring there for decades. A comic novel by Kaz Cooke even popularises the issue with hilarious eloquence (Cooke 1992). However knowledge of incidents has not helped these groups to improve either the processes or their environmental outcomes. Developments at Cullen Bay, and Bayview Haven provide good examples.

Cullen Bay was a small natural bay close to inner city Darwin, with a distinctive sandbar just off shore. In 1992, the NT government approved a development to build a lock, and large marina, for easy ocean access during any tide. A high-priced housing estate, tourist district and shopping centre was also planned for the bay. This made it an attractive proposal for the growth-oriented NT government, and approvals were rushed through. The contract included few environmental controls, or guarantees that the developers would complete the project (this (see The Environment Centre, NT, 1990)

The stability of the sandy base at Cullen Bay proved to be a building constraint, and the developers threatened to pull out from the project. They applied to the NT government to use material from the adjacent sandbar to help stabilise the building. Many community members and Councillors opposed this move on environmental and other grounds (Muddimer, 1992).

The NT government approved use of the sandbar after feasibility and hydrological studies and subject to a number of conditions and securities. Construction was finally completed, and over time, the sandbar has been reformed through natural processes. There has also been one occasion where internal pipes at one of the four sewer pump stations servicing Cullen Bay separated due (mainly but perhaps not only) to settling of previously deep sections of the marine clays and mud. Because infrastructure in the Cullen Bay precinct is a 'gifted asset', the maintenance of such problems is funded from public sources. Figure 1 shows the view looking out from the lock at Cullen Bay, with a natural foreshore on the left, and the constructed foreshore on the right.

Figure 1: Cullen Bay



Another case of Darwin foreshore planning is Bayview Haven. Environmental activists in Darwin refer to the site as 'Baygone Haven', because of the mosquitoes and sandflies there. Mangroves previously covered this inner-city foreshore area. However at the time of this research, a large area had been cleared to make way for a proposed development. Figure 2 shows a landfill site in an adjacent, recently cleared mangrove area. Paint tins and other wastes that are regulated in many states are present.

Figure 2. Mangrove landfill at Gonzales Road, adjacent to Bayview Haven



Approval processes on the site also appear to be lacking. Figure 3 shows a pink sign indicating that public comment is currently being sought on an application to rezone this area for development. Yet next to that sign, housing units are advertised for sale on the same site. Clearly, the planning process has been undermined, since a core purpose of such processes is to ensure that rezoning decisions precede resulting land sales.

Darwin City Council ran a campaign during the public submission stage of the new Planning Act, criticising the planning system that led to this type of problem. They stated that:

> "Darwin City Council, aware that community acceptance of town planning is greatest where political accountability is most direct, has lobbied the Territory Government and will continue to lobby, for decision makers who are accountable to their local community." (Darwin City Council, 1999, p.1)

Figure 3: Apparently simultaneous rezoning and property sale at Tipperary, adjacent to Bayview Haven.



Both the NT and LGs can benefit financially from development, whether or not it is environmentally sustainable. The NT government retains profits from the sale of 'crown land'. LGs have the opportunity to charge rates once the land is occupied. It is not clear from interstate or international experiences, whether either sphere is more liable to ensure sustainability in environmental planning decisions. However it is clear that key environmental and social issues are being downplayed in the NT. And since LGs live with long-term infrastructure management responsibilities, it seems very likely that these at least would feature in planning decisions made by LGs.

References

Blandy, R. and Forbes, D. 1998. *The population growth prospects of the Darwin Region*. Darwin: Northern Territory Government.

Cooke, K. 1992. *The Crocodile Club*. St. Leonards: Allen and Unwin.

Darwin City Council. 1999. *Council's Position on Town Planning.* Darwin City Council.

Information Australia. 2000. *Australian Local Government Guide, 28th Edition. July 2000-November 2000.* Melbourne.

James, E. 1998. *A review of certain elements of the planning process which result from the operation of The Planning Act 1993.* Darwin: Northern Territory Government.

Muddimer, D. 1992. *Candidates worry at marina impact.* Darwin: Northern Territory News. 18 May: 2.

NT (Northern Territory) Government. 1993. *Northern Territory Planning Act.* Darwin: Northern Territory Government.

The Environment Centre, NT. Inc. 1990. *Cullen Bay Waterfront and Marina Redevelopment Proposal.* Darwin: The Environment Centre

T4: Planning Darwin

Perspective: Other/LG
Role: Office/Manager
LG type: Capital (rich, compact, populous)
Focus: Planning

Context Issues

Flexibility and origins continuums are split because Darwin City has no planning powers. This allows them a full range of informal options for comment on issues.

Context continuums

Scale

<local **local** regional **state** national international

Flexibility of Process

Full mostly equal partial **none**

Origins of initiative

<local **local** regional **state** national international

Goals

- Increase LGs role in planning in the Northern Territory, and its capital city,
- Provide local representation and accountability for local land use decisions,
- Increase community participation in and ownership of planning processes and outcomes.

Drivers

- Long term LG responsibility for land management,
- Inherent duty for local representatives to influence local form,
- Higher management costs from poor planning decisions and construction methods,
- Community demand for better planning decisions,
- Obvious environmental harm from some developments,
- LG Association of the Northern Territory, Litchfield Shire and other local government support for campaign.

Processes

- NT government planning legislation excludes LG from decision making,
- Independent review of the legislation found many problems, but did not strongly suggest an increased role for LGs,
- Lobbying by many LGs and the LG Association has so far failed to provide additional powers.

Constraints

- Strong development and population growth agenda of Country Liberal Party,
- Lack of statutory power to participate in planning, or to change the planning legislation,
- Environmental constraints to many development projects.

Outcomes

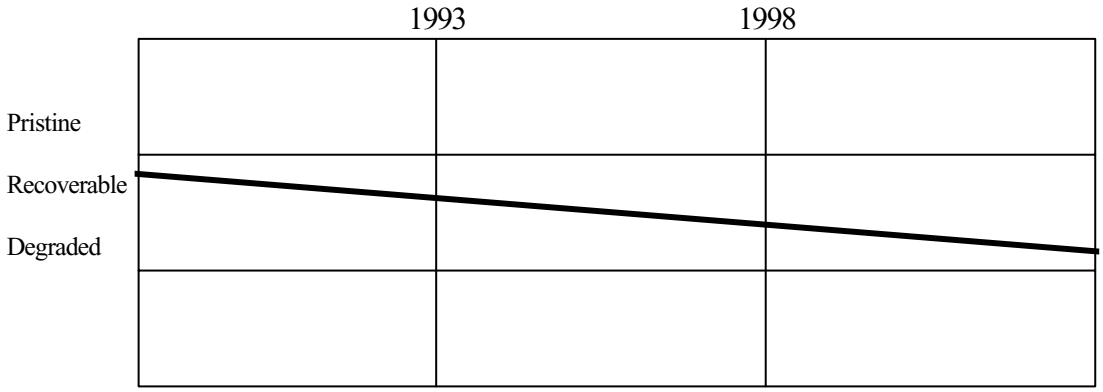
- Community support for changes to the planning system,
- Cooperation between LGs and the LG association in lobbying for planning reforms.

About the Models

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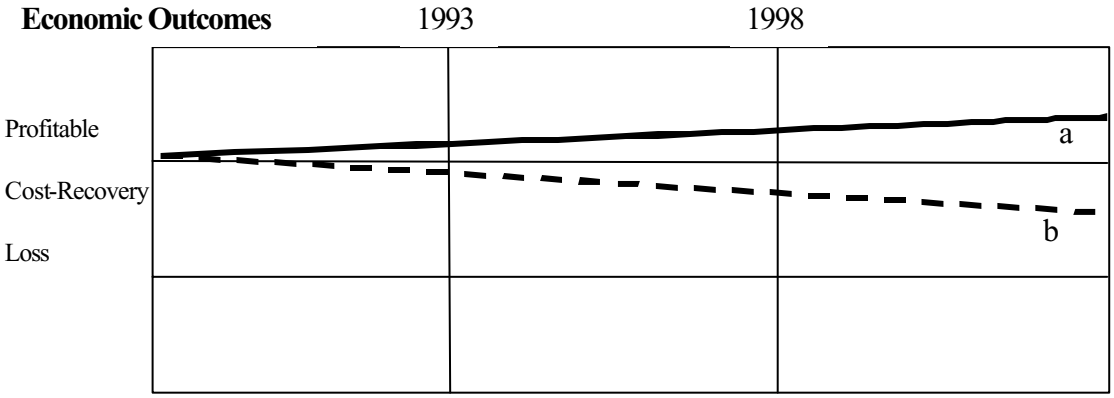
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Ecological Outcomes



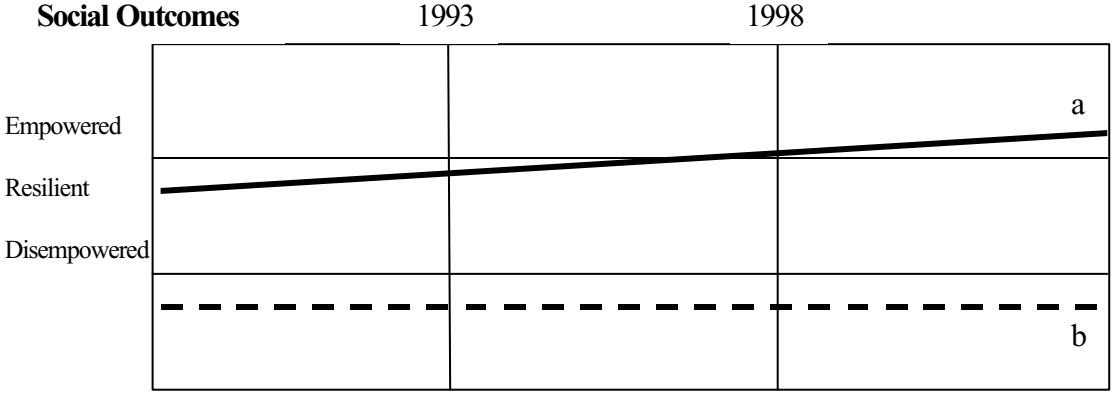
Environmental values in Darwin are continually degrading because of ongoing development pressure. Lobbying by LGs and communities, and the review of the planning legislation have not led to any change in either the planning processes or the development outcomes.

Economic Outcomes



There are some clear financial winners and losers from the planning practices in Darwin. Private developers and the NT government both benefit financially from ongoing development. The NT government retains profits from the sale of 'crown land'. Developers profit from the sale of properties once they have been developed. There has also been an ongoing increase in economic activity in the Territory as a result of ongoing development (a). Darwin City Council gets a small, ongoing financial benefit from the ability to obtain rates from many new land-holders. However these benefits are off-set by the necessity of providing and managing infrastructure services to properties. These are often poorly designed to meet the inherent environmental constraints of the local area. As a result, ongoing management costs are high (b).

Social Outcomes



Property developers are highly empowered in Darwin, with clear strong NT government policy encouraging population growth, and associated construction and land development. The Country Liberal Party also remains highly empowered, after 26 years in power in the Territory, during which time it has defined policy agendas in relative isolation from other Australian governments (a). Darwin City Council and the local community have continued to be disempowered, despite a review of the planning legislation which may have provided for greater local input to planning decisions.

Improving waterways management with the Rapid Creek Catchment Advisory Committee

Case Study T5: by Su Wild River with Simon Goodhand (Northern Territory National Landcare Coordinator) and Margaret Clinch (Plan: the Planning Action Network).

Since its formation in 1997, the Rapid Creek Catchment Advisory Committee (RCCAC) has worked to implement the Rapid Creek Plan of Management (prepared by Greening Australia and Darwin City Council) to promote both increased protection and appropriate management of the catchment, and greater awareness of the presence and importance of the whole system.

The Rapid Creek catchment is contained within the Darwin urban area, and the 10 kilometres long creek flows out into the Timor Sea through a large mangrove community in Darwin's northern suburbs. The upper part of the catchment is contained within the RAAF Base and Darwin International Airport lands. Like all creeks in the area, it floods in the summer wet season, and shrinks, with parts drying out altogether during the winter dry. Crocodiles, many fish, birds and other species occur naturally in the creek and its environs. Rapid Creek supports a number of important remnant vegetation communities, and the creek channel is virtually undeveloped for its entire length.

The main driving force behind the creation of the RCCAC was the recognition by the community and government (local and Territory) that the catchment was under increasing threat from intensifying land use and increasing urban pressures.

The Northern Territory (NT) government has also undertaken to retain 80% of the productivity of the mangroves within Darwin. Exactly how this is to be achieved is unclear, and various NT government and independent parties are researching the issues. The policy does provide some leverage for community groups like Greening Australia and the Environment Centre to lobby for effective management of mangrove areas within Darwin. Such lobbying also helped encouraged the TG to appoint the RCCAC to consider the issues for that catchment.

The Department of Defence RAAF Base in Darwin is a major stakeholder in the Rapid Creek catchment. The Commonwealth Department of Defence in the NT have proactive environmental policies. It has independently developed catchment management plans for the area of the Rapid Creek catchment that lies within Defence land. Those efforts further helped to encourage the NT Government to support further waterway management activities in the catchment.

In 1997, the Minister for Lands, Planning and Environment appointed the RCCAC with broad representation. This included all major landholders in the creek catchment (such as the Northern Territory University, Darwin City Council, Dept. Lands, Planning and Environment, Parks and Wildlife Commission, Darwin International Airport, and the Department of Defence), many important stakeholders (including Greening Australia, Rapid Creek Landcare Group, relevant government departments (the Departments of Transport and Works, and Primary Industry and Fisheries) and the traditional owners (the Larrakia Nation).

The RCCAC did not have an entirely smooth start. Ratification of its membership was slow, and it was initially short of financial resources. The breadth of representation in the group was certainly beneficial in the long-run, but initially, it contributed to a lack of vision and cohesion in the group. There were a huge variety of views, knowledge and environmental commitment amongst members. Bureaucratic hurdles were also an issue, because of the formal nature of the committee and its broad membership.

The RCCAC also faced major challenges in the implementation of catchment management decisions. An historical lack of environmental controls in the catchment meant that large and small landholders were unused to being directed in their environmental management practices. In addition, there were few resources available to manage the large area of the catchment on crown lands. Some stakeholders felt that the Northern Territory Planning Act 1993 provided few avenues for public input to planning decisions, or for environmental controls on developments. Now a new Act still provides for limited public input, through its clause 51.

The RCCAC has however, enjoyed several successes. Over the years since its ratification, it has developed a coherence and vision for its

work. It secured funds and other resources from various sources. Funding has been obtained through the Natural Heritage Trust (Bushcare Program), and the National Corridors of Green program. Prior to the formation of the RCCAC, funding through the One Billion Trees Program, and a 'Save the Bush' consultancy undertaken by Greening Australia and the Darwin City Council which led to the development of the Plan of Management for the Rapid Creek catchment. This document is now used as a framework for catchment management decision making by the RCCAC. Frameworks for action were also provided by 'Waterwatch, the Department of Defence catchment management plans and other sources. Figure 1 shows some community information about creek management issues and practices.

Figure 1: Community information about creek management practices



A community consultation program run by the committee has also been successful in educating catchment users about management issues. One outcome was the formation of a Rapid Creek Landcare Group, which is now active in on-the-ground works, improving parts of the creek corridor through plantings and weed control. The Landcare group's work also further increases local knowledge of management issues, and ownership of the creek. The major catchment landholders are now committing increased resources to environmental management issues on their land, reducing the requirement for external funding in the future.

Together, these efforts have provided a more integrated effort for managing a significant catchment in the Darwin urban area. One outcome has been the government publication of the *Rapid Creek Land Use Objectives and Planning Concepts.* These recognises the special environmental nature of the creek, and a creek corridor, zoned for conservation was declared for Rapid Creek. However the document is not legally binding, and subdivisions that appear to conflict with the stated environmental values continue.

Figure 2: Mangroves near the mouth of Rapid Creek.



References

Northern Territory Government 1993. *Northern Territory Planning Act.* Darwin: Northern Territory Government.

T5: Improving Waterways Management with the Rapid Creek Catchment Advisory Committee

Perspective: Other
Role: -
LG type: (Capital City)
Focus: Management

Context Issues
Rapid Creek flows through Darwin, through Defence Department-managed land, and through a large area of private and Crown Land.

Context continuums

Scale
<local local regional state national international

Flexibility of Process
Full mostly equal partial none

Origins of initiative
<local local regional state national international

Goals
- Achieve a more integrated effort for managing a significant catchment,
- Integrate on-the-ground effort with community education to promote awareness of issues,
- Provide feedback to the Minister on catchment management issues,
- Encourage a more systematic use of the resources going into the catchment management.

Drivers
- Rapid Creek Catchment Advisory Committee with wide membership,
- Waterwatch framework,
- Natural Heritage Trust and National Corridors of Green provided funding and advice,
- Department of Defence as a major stakeholder in the catchment. Developed catchment management plans for their area and were cooperative and proactive beyond that. Royal Australian Air Force Environmental Management Steering Committee also helpful,
- Greening Australia and Darwin City Council involved through one billion trees program and save the bush plan

Processes
- Minister for Lands, Planning and Environment appointed the Rapid Creek Catchment Advisory Committee including major landholders, stakeholders (such as LPE Department, Northern Territory University [a landholder], Department of Defence, Dept. of Transport and Works, Department of Primary Industry and Fisheries, Parks and Wildlife Commission, Darwin City Council, Rapid Creek Landcare Group, Greening Australia, Larrakia Nation [traditional owners], Waterwatch),
- Meetings and actions for

Constraints
- Initially starved of financial resources,
- Initial lack of vision and cohesion in group,
- Slow ratification of the committee and its directives by various stakeholders
- Huge variety of views, knowledge and environmental commitment amongst landholders,
- Historical lack of environmental controls,
- Lack of resources to manage crown lands,
- Bureaucracy in organisation and committee,
- Need for higher priority for environmental issues in planning processes in

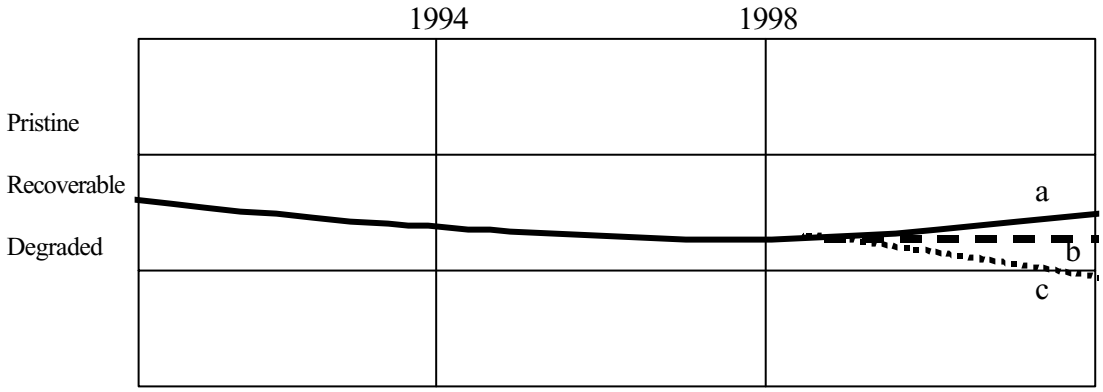
Outcomes
- Community consultation phase useful. Rapid Creek now seen more as an educational and recreational resource that is worth preserving and managing sustainably,
- Support from Department of Defence, NT University, NT Government and Darwin City Council for the process, Committee and onground management activity,
- Rapid Creek Landcare Group now active in on-the-ground work improving areas,
- There are still issues of wildfires, weeds, uncontrolled vehicle access and other problems

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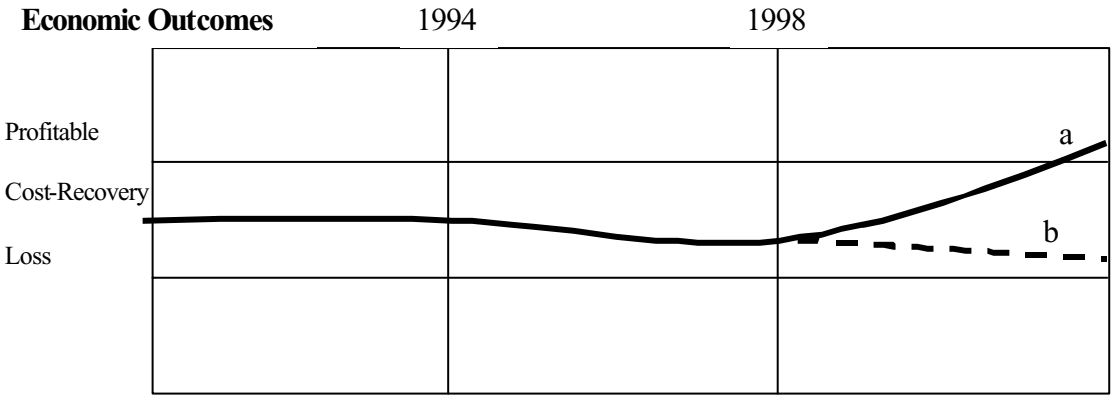
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Ecological Outcomes



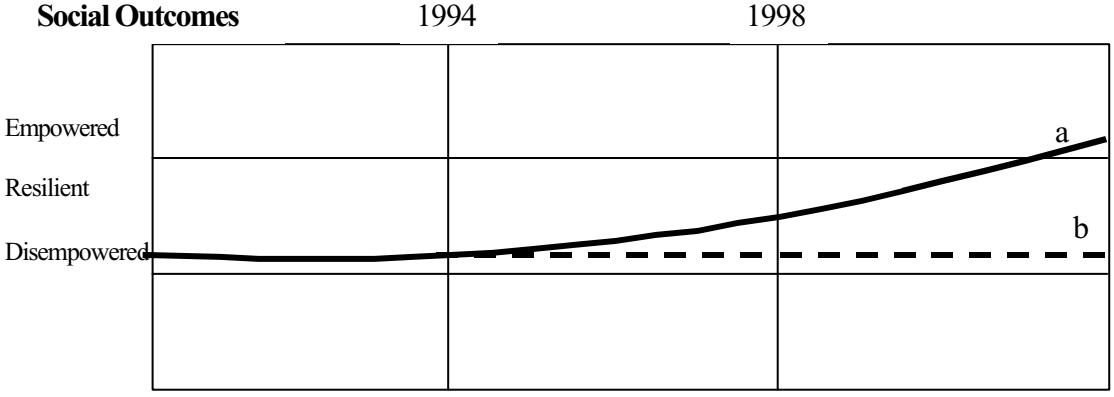
Parts of the Rapid Creek Catchment have been improved through the actions of the Rapid Creek Catchment Advisory Committee and associated initiatives. Weed control, fire management and protection of some areas have occurred (a). There are flow-on effects of these efforts into other parts of the Creek, which have slowed down the rate of degradation despite minimal efforts in those areas (b). In other areas, and in other ways, Rapid Creek management remains the same, and degradation continues (c).

Economic Outcomes



Environmental problems in Rapid Creek have not historically been a financial cost to the community, but some small costs have been involved in developing integrated catchment management systems. Continuation of the catchment management efforts has the potential to save money in the long term, since problems such as weed infestation, erosion and other problems could be avoided (a). Failure to continue these processes is more likely to result in long-term costs, as environmental problems would eventually require remedies, which would be more costly than avoidance (b).

Social Outcomes



The broad representation of the Committee, and the on-the-ground efforts of associated Landcare and Waterwatch initiatives have made this an empowering process for many of the stakeholders. Inclusion of such varied groups as the Larrakia Nation, various community representatives and government departments, and the Defence Department has proven successful, as the parties have worked together well (a). More work is needed to connect these initiatives with the needs and expectations of other land holders, and to provide sustainable long-term management strategies throughout the catchment (b).

Wanneroo Recycling Strategy

Case Study W1: by Su Wild River, with Robert Elliott (Manager, Environmental Waste Services, Wanneroo City).

Comparative Statistics for Wanneroo City

Category	Measure	Comparison
Area (Sq/Km)	6,817.51	Top 18%
Population	72,033	Top 12%
Pop Sq/Km	11	Top 40%
Total Income ($)	49,792,515	Top 16%
Rate Content ($)	18,212,846	Top 19%
Expenditure ($)	53,208,155	Top 14%

Information Australia, 2000

The Western Australian government requires local governments to reduce the amount of waste going to landfill by 50%. The City of Wanneroo decided to trial divided recycling cartsand took the advice of a statistical consultant in designing the trial. But the statistical experiment was met with community anger when residents realised that different systems were being trialled in different areas of the one City. The sensationalising of the issues by the media made accurate communication with the public more difficult.

Wanneroo City includes much of Perth's north coast area. The city is developing rapidly, with new housing estates and shopping centres being built in most of the remaining undeveloped land.

In 1989 the Western Australian state government announced a policy to reduce waste to landfill by 50% within 10 years (see Department of Environmental Protection 1998, p. 7).

Wanneroo/Joondalup had some good information to build on, in deciding how to develop its new waste system. Since 1992, the City of Wanneroo had conducted a limited recycling service, involving a bag system for the recyclable wastes, and hand-sorting at a local Municipal Recycling Facility (MRF).

In 1995, Wanneroo City Council was under increased pressure from the state government to expand this system, and resolved to develop an Ecologically Sustainable Waste Minimisation and Recycling Strategy, involving consultation, research and action. In the absence of an off the shelf model for the consultation, Wanneroo hired a research team from Edith Cowan University, who worked to ensure that consultation was meaningful, and inclusive of the entire community. The consultation confirmed strong community support for "Council's involvement in environmental issues, particularly education, reducing the enhanced greenhouse effect, sustainable development and recycling" (Elliott. Undated.)

However several issues required resolution for council to ensure a cost-effective system that would meet the community's recycling needs. For instance, there were a range of possible systems, ranging from the existing bag-system, to a cart where wastes would be co-mingled, to a split bin, where residents would separate different types of recyclable materials themselves. These systems had different costs associated with them, which would also vary depending on the effectiveness of the systems for sorting wastes. In particular, Wanneroo's existing MRF could be used if the recyclable materials were well separated, but the material would have to be sent to a neighbouring council's MRF if the wastes were co-mingled. The cost of the system would also vary depending on which system was used (Elliott. Undated).

The cost of the proposed service was another central issue requiring resolution. The previous consultation had shown that around half of the local residents were prepared to pay more for recycling services, and the rest were not. With all of these issues in mind, council engaged in a trial to provide information on which to base its decision on a waste and recycling system. The trial would involve provision of split-recycling carts for no up-front charge to one group of residents, who would eventually pay for the system through their rates. A second group would be offered the carts on a voluntary basis, including an up-front charge for the cost of the cart. The remaining council residents would continue with the existing bag system.

The trial was specifically intended to answer the following questions:

1. Would residents really support a use pay system?
2. Would a divided cart system significantly reduce contamination compared with a co-mingled cart system?
3. Would there be significant variation in the way use pay (voluntary) residents used the

recycling carts compared with the control group (compulsory)? And

4. If contamination rates are reduced with the divided recycling carts, is it sufficient to compensate for the more expensive system?

The trial gained initial community support, as several thousand local residents rang up to sign up for the voluntary system. A total of 2,223 households were issued with the bins on the 'compulsory' basis, while 6,974 households joined the voluntary trial. The decision was made not to publish the details of the compulsory/voluntary system trial, as this might have influenced people's behaviour during the trial. Unfortunately for council and the community, some hold-ups with the delivery of the carts for the optional trial meant that those who had paid for their carts were still awaiting delivery some time later. Meanwhile some of their neighbours and local friends had already received a cart under the 'compulsory' trial, without having asked or paid for it.

Some local residents became angry at the apparent disparity in the systems applying across the city. They alerted the media, who took on the story as a sensational case of council blundering (although the same journalists also acknowledged the benefits of taking a statistical approach). The experiment immediately became a public relations nightmare. However council was eventually able to explain some of the issues to the wider community, and the trial continued.

Despite the problems that the trial encountered, its outcomes have been positive for council and the community. It was found that users of the voluntary system sorted their wastes better than those in the compulsory system. The voluntary users' separation was sufficient to make it cost effective for council to continue to use its existing MRF to further sort the recyclable materials. They have since instituted a voluntary system across the council area, that provides for cost-recovery. Council has received over 1000 phone calls from residents wanting a recycling cart and the rate of calls continues at about 20 per week, a year after the last promotional material was issued.

References

Department of Environmental Protection. 1998. *Western Australian Waste Management Strategy.* Perth: Department of Environmental Protection.

Elliott, R. Undated. User Pay Voluntary Recycling. Unpublished report to the City of Wanneroo, Perth.

Project Report. 1999. Former City of Wanneroo divided cart trial. Unpublished report to the City of Wanneroo, Perth.

W1: Waneroo/Joondalup Recycling Experiment

Perspective: LG
Role: Manager
LG type: Capital fringe (rich, compact, populous)
Focus: Protection

Context Issues
Strong regional advances in waste management systems recently. State Government policy requirement to reduce waste to landfill by 50%

Context continuums

Scale
<local local regional state national international

Flexibility of Process
Full mostly equal partial none

Origins of initiative
<local local regional state national international

Goals
- Increase recycling,
- Meet SG targets for waste minimisation,
- Find out whether people recycle more efficiently if they pay for the service.

Drivers
- State Government policies requiring increased recycling,
- Neighbouring LGs MRF able to take co-mingled wastes from Wanneroo for sorting,
- Researcher's with ideas for trials and consultation processes,
- Local community interest and support for recycling, with half the residents indicating that they would pay for an improved recycling service.

Processes
- 1993-94 economic evaluation showed recycling of plastics etc. not cost-effective ($1200/T),
- Nov. 1997 – community consultation report to Council showed support for recycling, and that many would be prepared to pay more for better recycling services,
- 'experimental' version of community consultation. Different waste systems applied to different suburbs.

Constraints
- Challenge to design and select best system for waste collection, sorting, recycling and disposal,
- Challenge to inform community of recycling options, and to gauge their responses to different options,
- Poor program delivery – recycling bins delivered in wrong order to ratepayers,
- Community opposition to experiment about pricing and service options,
- Negative media coverage of issue,
- Time pressure due to negative responses from community, media, Council.

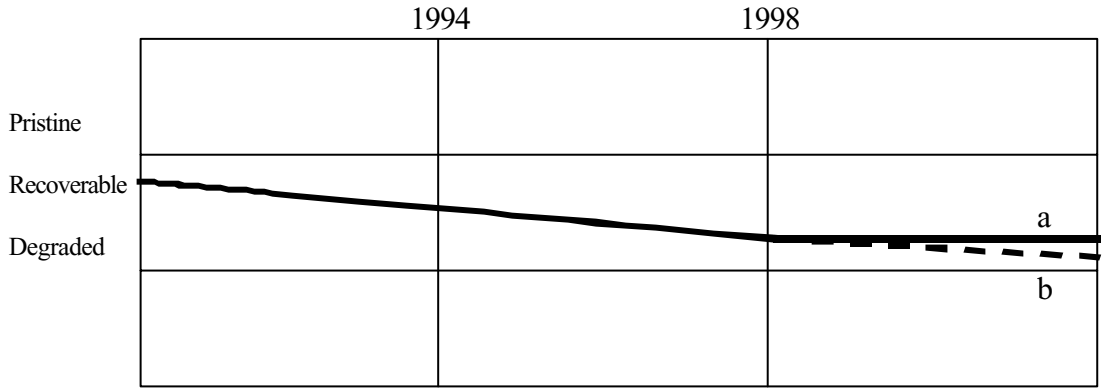
Outcomes
- In the short term- negative community attitudes towards LG and its recycling initiatives,
- In the long term, a cost-effective recycling system that appears to meet the community's demand for recycling services.

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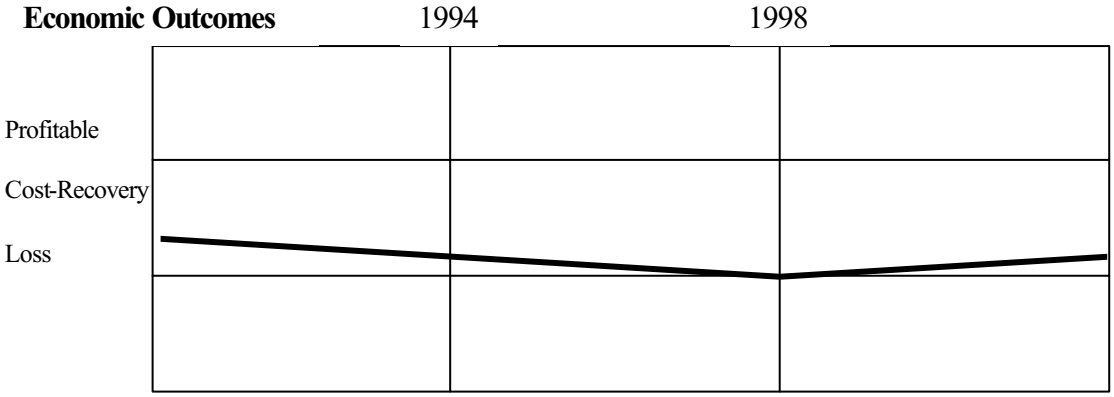
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Environmental Outcomes



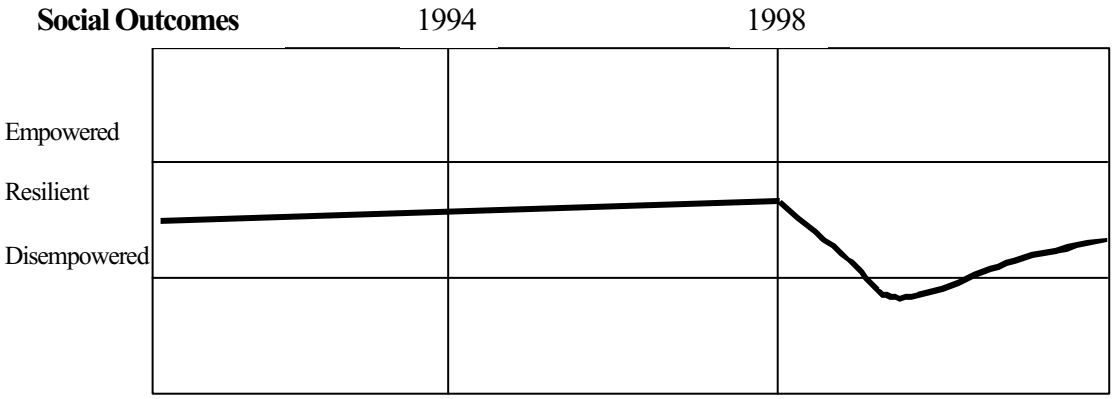
The recycling initiative aimed to reduce resource wastage in the local area, and therefore to reduce the rate of degradation of environmental values (a). The negative media response to the issue probably constrained the effectiveness of the trial, and subsequent uptake of recycling (b). However recycling continues to increase in Wanneroo, suggesting that the long-term outcomes are likely to continue to improve.

Economic Outcomes



Waste systems such as those in place at Joondalup/Wanneroo prior to the experiment are typically costly to run. As a result of the recycling initiatives, council has managed to put a cost-recovery, user-pay system in place, that will help to deliver cost-effective recycling in the long run.

Social Outcomes



Council's preparatory work leading up to this initiative would have had empowering impacts on the local area. The community consultation showing public support for recycling initiatives and that around half of the residents were prepared to pay for improved recycling services. The initiative aimed to continue this empowering trend, but ensuring that the most popular initiative was adopted. The trial, and negative publicity over it were disempowering for the community, and also angered many of the most supportive individuals (those who had volunteered to pay for recycling). Over the longer term, the level of support for the system appears to be continuing to slowly improve.

Stirling City Waste Minimisation

Case Study W2: by Su Wild River, with Viet Nysen (Manager, Stirling City)

Comparative Statistics for Stirling City

Category	Measure	Comparison
Area (Sq/Km)	100	Bottom 17%
Population	175,569	Top 2%
Pop Sq/Km	1,756	Top 9%
Total Income ($)	78,885,314	Top 6%
Rate Content ($)	47,029,011	Top 5%
Expenditure ($)	76,252,413	Top 7%

Information Australia, 2000

Stirling City's long-term research, and consideration of local waste issues has paid off for the City. It has strategically outsourced its recycling and waste disposal functions to an innovative private company. Stirling has far exceeded the government's waste reduction targets, with only 24% of the City's waste now going to landfill.

Stirling City is a relatively large local government in Perth's northern metropolitan area.

Lateral thinking and long-term research into local waste issues has paid off well for Stirling City. Many local governments (LGs) around Australia responded to waste reduction requirements with their own targets, for significant reductions of waste to landfill by the year 2000. Many introduced a new residential bin for 'recyclable' wastes (primarily discarded packaging and paper products), and asked the community to sort them waste home. Stirling was in a strong position to work out its own targeted response to waste reduction requirements, since it had been carefully analysing its waste stream since 1969. This research showed that the proportions of waste being thrown out in Stirling City were as follows.

Table: Makeup of Stirling City Waste

Waste group	Percentage of Waste
Paper and cardboard	21
Food, Garden, other organic	57
Glass	5
Plastic	10
Metal	3
Hazardous and Soil	4

City of Stirling 1998. p.3

Stirling recognised that recycling discarded packaging alone would never achieve their goal of a 50% reduction of landfill waste. Council also recognised that discarded packaging did not contribute to the immediate problems of landfill gas emissions, caused by organic wastes, which comprise the largest proportion of landfill wastes. Recycling packaging would also not solve the equally pressing leachate problem in landfill sites. Stirling found that it was also not cost-effective to recycle many of these materials in Perth. For instance, the closest plastic recycler is thousands of kilometres away, and the shipping costs for the wastes could far outweigh any possible financial returns from recycling.

Stirling also noted that their own City, all of Perth and indeed most of the State of Western Australia, lies on deep, sandy soils. These soils usually lack the organic material needed to hold nutrients and water for crop growth. These soils were also being destroyed through increasing salinity and acidification, which has been reducing the amount of land available for agriculture each year. Stirling realised that the large proportion of organic material in its residential waste stream probably had great potential for recycling by conversion in to compost.

Another difference between Stirling City's approach, and that of most Australian LGs, is that they have not operated a landfill since 1984. An area within the city serves as a landfill, but is operated by Stirling's long-term waste contractor, Atlas, which also owns large tracts of farmland. The company was also confronted with the need to introduce leachate controls on its landfill. Rather than install a synthetic liner, the company examined the option of removing the organic fraction from the domestic waste and only landfilling the residual inert fraction.

Working together, within the confines of the existing contract, the City of Stirling and Atlas have developed a new process that incorporates the recycling of organic materials and the recovery of other materials such as discarded beverage containers. Atlas designed and constructed a new waste sorting facility. This uses mechanical processes incorporated in "trommels" to remove the organic fraction of the waste stream. Magnets are used to recover the ferrous waste. Conveyor belts then carry the inert residual wastes past workers who pull out the packaging wastes that cannot be sorted

mechanically. Figure 1 shows the sorting facility in action.

Figure 1. Waste sorting in the Atlas Plant, Stirling City.



The separated wastes are each directed to a chosen disposal or recycling area. One feature of this intensive sorting is that any wastes that are not currently recycled, can be carefully stockpiled for any future markets that develop for these materials. So non-recyclable plastics and other inanimate objects are compacted into large blocks of similar material. These are stored together in a landfill site, thus ensuring that they can be readily recovered if required in the future. Research will soon commence with a view to converting this residue to energy through a gasification process.

The organic material is readily sorted in the plant. Over 50% of the waste that enters the plant is recovered as organics. Small particles of glass and gravel stones are screened out at the Atlas Farm in Calingiri after a 14 week windrow composting process. The compost made to date has met the Australian Standard 4454-1999 and can be used in playgrounds, sports fields, or other areas. However the Atlas group believes that the highest priority market for the compost is on Western Australia's depleted agricultural soils. At present, the organic material is taken to Atlas' land outside Perth, and composted in an area where the resulting mature compost will be used

The long-term plan for the organic waste however, is even more innovative. Atlas has designed a system for vertical composting of Stirling's organic waste. The Atlas plant in Stirling already has three large anaerobic composting units. These are designed to process all of Stirling's organic waste, in an air tight environment for the production of methane gas. The digestion process takes 20 days, for the transition from waste, to a denatured organic sludge and methane gas. The denatured sludge is then added to the windrow composting process at the Atlas farm in Calingiri and matured through a 14 week process. After the screening process, the compost can be pelletised for storage purposes and for compatability with contemporary farming practices. It takes around 20 years for the same decomposition to occur naturally in a landfill environment (City of Stirling 1998. p.10).

Due to limited financial resources and a contractual commitment to manage the City's waste stream, Atlas has concentrated on the refinement of the sorting plant and the aerobic composting process and postponed the commissioning of the three anaerobic digestion tanks,. Figure 2 shows two of the large, vertical composters in place, but not yet operational.

Figure 2: Vertical composters



Cultural factors have influenced Stirling's waste system. Although the City recycles a far more of its waste than most Australian LGs local community members continue to campaign for a better recycling system. Many equate good recycling with the presence of a 'recycling' wheelie bin in addition to the normal waste bin, with good recycling practices. But since the Atlas plant sorts all wastes, the extra bin is unnecessary.

Community education has worked in other ways though. In order to produce a high quality compost, the City recognised that toxic and hazardous materials should not be disposed of in the domestic rubbish bin. To recover these materials the City started educating its schoolchildren about the environmental hazards of some household waste. Dry cell batteries were used as the example for school children. The City also maintains a hazardous household waste collection facility to support this.

References

Information Australia. 2000. Australian Local Government Guide. 28th edition, July 2000-November 2000. Melbourne: Information Australia.

City of Stirling. 1998. *Case for the 1998* City of Stirling. 1998. *Case for the 1998 Recycling and Waste Reduction Awards.* Stirling: City of Stirling.

W2: Stirling City Waste Minimisation

Perspective: LG
Role: Manager
LG type: Capital (rich, compact, populous)
Focus: Protection

Context Issues

The process itself was mostly flexible, with constraints to that deriving from origins, including SG 1988 policy, and entrenched views of various stakeholders.

Context continuums

Scale

<local local regional state national international

Flexibility of Process

Full mostly equal partial none

Origins of initiative

<local local regional state national international

Goals

- Achieve targets from the national campaign of 50% reduction of waste to landfill,
- Achieve outcomes envisaged at the Rio Earth Summit in 1992,
- Achieve the intended outcomes of a Local Agenda 21 (not the detailed off-the-shelf model),
- Provide a cost-effective system for waste reduction and disposal in Stirling City,
- Reduce greenhouse gases and leachate associated with landfill waste,
- Improve the sustainability of waste management practices in Stirling City.

Drivers

- Lack of a landfill suitable for mixed waste, so all waste services contracted out,
- Broad technical base of the waste consultants (Atlas), and innovative attitude,
- Strategies in place in the Regional Organisation of Councils,
- Consolidation, toughening of SG waste requirements,
- Research findings that have identified the most cost-effective components of landfill waste to tackle for recycling (organics),
- Community education campaign,
- The need to produce a net environmental benefit from recycling.

Processes

- Still using 'old-style' waste collection system (bags, not wheelie bins for recycling),
- Exploration of options for waste management – incineration anaerobic digestion, etc.
- Selection of anaerobic digestion for organics,
- Education campaign targeting teachers, schools, on recycling issues (batteries, regulated wastes),
- 'junk' collection scheme in addition to existing 'green waste' collection,
- charging for costly waste sorting (garden, regulated),
- full-time inspector at transfer stations,
- Atlas sorting infrastructure built, and brought on line May 1997.

Constraints

- Community perception that optimal recycling only occurs where LG provides two wheelie bins.
- Government Bureaucracy that was focussed on recycling of packaging waste and that regulated rather than facilitated.
- No immediate government support for the production of Green energy.

Outcomes

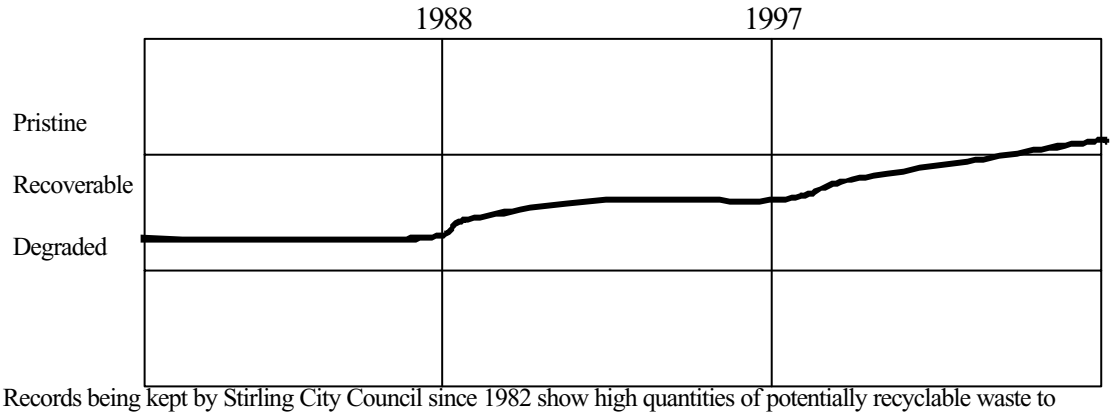
- Best quality organic waste removal from landfill, and used to improve the quality of agricultural farmland etc,
- Have almost cleaned out garden and food waste from landfill, eliminating greenhouse gas and leachate emissions associated with landfill.
- Mechanical and hand sorting operation sorts out most recyclable wastes,
- Only 24% of City waste now goes to landfill,
- Stirling City/Atlas a model for national waste management – award won.

About the Models

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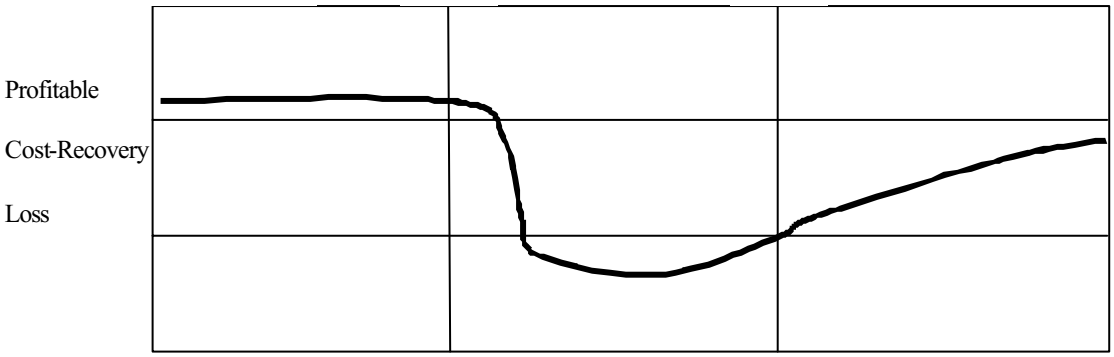
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Ecological Outcomes



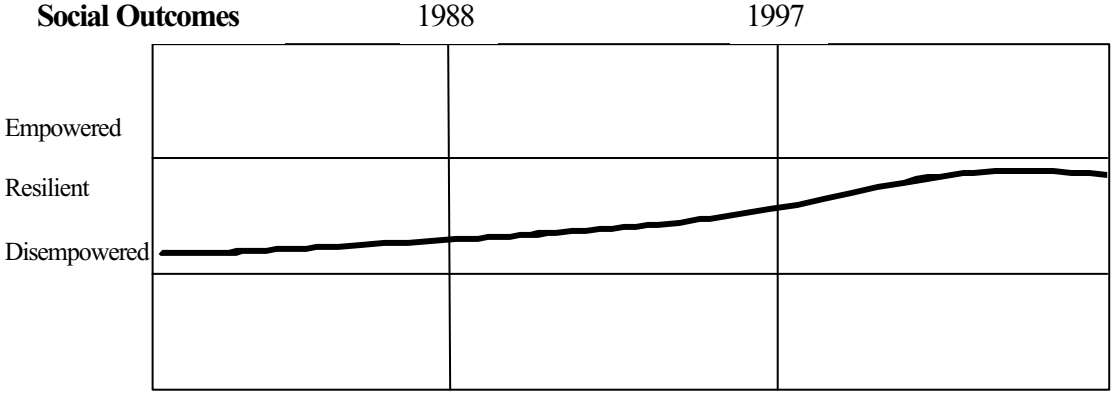
Records being kept by Stirling City Council since 1982 show high quantities of potentially recyclable waste to landfill prior to these initiatives. Sustainability literature and the 1992 Rio Earth Summit goal of a 50% reduction in waste to landfill by 2001 spurred Council's actions from 1988. By 1997, Stirling had achieved a 74% reduction in the quantity of waste going to landfill. Now, todays food becomes tomorrows compost, then tomorrows food, as well as today's energy at Stirling.

Economic Outcomes



Waste management activities were profitable before 1988, when glass and metal packaging were being removed from landfill through an existing recycling program. Profitability of glass recycling has since declined. In addition, the State Government brought in new requirements for LGs to recycle paper and plastics. Recycling became a costly process due to the need to conduct multiple collections, a lack of market demand for the materials collected and oversupply. The new systems in place, including organic waste recycling, are probably now verging back on profitable.

Social Outcomes



Prior to 1988 there was a low level of community awareness about waste issues, and a low degree of recycling. The combination of community awareness campaigns started to increase community awareness of waste issues and recycling from 1988. School awareness programs focus on recycling, and kerbside pickups, as the new waste systems have increased the proportion and type of waste that are actively recycled by the community.

City of Nedlands Tree Protection Policy

Case Study W3: by Su Wild River.

Comparative Statistics City of Nedlands

Category	Measure	Comparison
Area (Sq/Km)	20.6	Bottom 7%
Population	21,000	Top 31%
Pop Sq/Km	1,019	Top 12%
Total Income ($)	14,634,800	Top 40%
Rate Content ($)	7,693,943	Top 34%
Expenditure ($)	23,142,534	Top 31%

Information Australia 2000

A large part of Nedlands' environmental and cultural heritage is held in its trees. An enforceable Tree Protection Policy has been successful in protecting trees, but has drawn community opposition because of threats to perceived personal property rights.

Nedlands is one of Perth's oldest suburbs. The local native vegetation was a mixed sandy scrub, but included some tuart, jarrah, and other highly prized tree species. Throughout the 1800s and 1900s, the city became populated until residential development covered 90% of the land area. This brought houses, but also many new trees, with some of the residents planting productive exotic and other valuable trees. Figure 1 shows a typical tree-lined streetscape from the City of Nedlands.

Figure 1: Tree-lined street in the City of Nedlands



A building boom in the 1990s brought a new threat to Nedland's green character. Many small detached houses located on large lots with plenty of room for trees were replaced by larger dwellings. These had multiple garages, swimming pools and extensive paved areas. Many established trees were removed with little thought, to provide 'a clean slate' and make the new building simpler.

Through the 1990s, the City of Nedlands had several councillors who were originally from outside of Western Australia. Some also had experience of local governments protecting trees as part of their planning schemes, or through local laws. One had experience in England, from a local government which has had tree protection in place for 20 years. Seeing the distinctive streetscapes, and large, old trees throughout Nedlands City, these officials councillors realised that they formed a special part of Nedlands' local character and decided to protect them. Fortunately the City had some officials with experience elsewhere, including interstate with local governments whose planning policies aimed to retain and build on environmental values, in order to facilitate conservation of its trees.

Nedlands opted to develop a tree protection policy, linked to its planning scheme. The policy was developed through of community consultation and education. This included wide publication of the policy through Nedlands' news page in the local newspaper. There was a very good initial response to the policy from within the local area.

Part of the consultation involved surveys to determine public opinion about tree protection. The results showed that 80% of residents didn't care one way or the other about the tree preservation. This group just wanted to know what the rules were and they would abide by them. Of the remaining 20%, about half were strongly in favour and half strongly against tree protection.

Because the policy was linked to the planning scheme, Council needed to obtain state government approval for it. There were no model tree protection policies, or other supportive legislation in place to assist in developing the tree protection policy. Neither the WA Planning Commission nor the Planning Minister initially resisted the idea.

The changes to the City's Town Planning Scheme were passed in 1997, and commenced without problem. The changes required that landowners obtain approval from Nedlands City before removing mature trees from their properties, unless those trees were exempted because of their closeness to buildings or power lines, or for other reasons. The Planning Scheme also established an Inventory of Significant Trees. A proposed publication, called Significant Trees in Nedlands reports the following about the tree protection initiatives.

> "The tree management provisions were operated for more than two years, during which time approximately 1300 trees were approved for removal. Of these, 65 were of old growth tuart or jarrah species. Over the same period, approximately 130 applications

> "The tree management provisions were operated for more than two years, during which time approximately 1300 trees were approved for removal. Of these, 65 were of old growth tuart or jarrah species. Over the same period, approximately 130 applications for removal were refused.
>
> While there were many requests (successful more often than not) for the Council to reconsider its refusals, only one formal town planning appeal relating to tree management was made, and that was upheld.
>
> Greatest gains were made with rebuilding. Hundreds of trees that would have been lost were retained, through negotiations with owners, builders and architects during redevelopments. Tree management was administered by a part-time Environmental Officer." (*Significant Trees in the City of Nedlands* - unpublished)

As well as directly saving these trees, it is likely that the policy indirectly saved thousands of others. These were retained because people did not bother applying for removal because they thought it may not be given. Some were also more cooperative in redesigning the layout of their homes to retain trees because they knew council had the power to refuse approval in order to protect trees.

However the first prosecution under the policy caused many problems for the Council. A landowner had removed a tree without permission and was angry that his perceived property rights had been restricted. The local newspaper took the side of the landowner, and criticised Council and its policy. The resentment over the issue became so strong that several prominent residents formed an action group to lobby against tree preservation. Although clearly standing against any form of tree protection, the group called themselves "People for a Fair Tree Policy". They posted leaflets in opposition to tree protection in letterboxes, and took out full page advertisements in the local newspaper to promote their cause.

In 1999, half the Council was up for re-election. This included the retiring Mayor, who had supported tree protection, and the Councillor who had been its strongest advocate. The election was fought almost wholly on tree preservation. The new Mayor and all but one of the new Councillors were anti-tree preservation, and this shifted the balance of power in the Council. The Town Planning Scheme was amended to delete Council tree preservation. For a time it seemed possible that a voluntary *Register of Significant Trees* might be retained, but it too was finally scrapped.

The official policy of the new Council was to encourage tree protection in subtle ways, rather than punishing tree removal. The proposed publication of a book on *Significant Trees in the City of Nedlands* was consistent with the new approach, and a budget was provided for the publication. However Council stepped in to halt the publication, after it had been commissioned.

Some important lessons emerge from this experience. They are:

- This was a particularly difficult initiative since the City of Nedlands was the first Western Australian local government to attempt to implement tree protection. It seems that it is tough being a pioneer when trying anything new.
- With hindsight, it would have been better to go easy on individual cases of tree removal, to lose the battle in 10% of examples, to achieve a 90% success rate. If such an approach was followed, this possibly would not have produced the supporters of People for a Fair Tree Policy.
- Many other Councils were watching the Nedlands approach with a view to implementing their own tree protection policies. The failure of this approach probably set back tree preservation by many years in Western Australia.

References.

Information Australia. 2000. Australian Local Government Guide. 28th edition, July 2000-November 2000. Melbourne.

Interview with Max Hipkins, Executive Manager Environmental Services, City of Nedlands 1997-2000.

Significant Trees in the City of Nedlands. unpublished. City of Nedlands: Perth.

W3: City of Nedlands Tree Protection Policy

Perspective: Local Government
Role: Manager
LG type: Capital (rich, compact, populous)
Focus: Management

Context Issues

-

Context continuums

Scale
<local local regional state national international

Flexibility of Process
Full mostly equal partial none

Origins of initiative
<local local regional state national international

Goals

- Preserve green character in the City of Nedlands,
- Continue the perception of Nedlands as 'different', and 'greener' than surrounding local areas,
- Green inner-city areas.

Drivers

- Councillors coming from elsewhere where Tree Protection Orders were in force (eg Sydney, and England, with tree protection spanning 20 years),
- Belief by planners managers that tree protection should be part of the planning scheme,
- Planning manager with experience in other WA LGs that had formalised tree protection into Planning requirements,
- Good initial community response to policy,
- Wide publication of initiative through LG news page.

Processes

- Councillors pushing for tree protection,
- Good community responses to wide publication of tree protection policy,
- Bad community response to media reports about restrictions due to policy now it is in place,
- Some Councillors now worried because people have threatened to oppose them at the next election, on anti-tree protection stances.

Constraints

- No supportive legislation in place (state or local) prior to the Policy,
- No support from Planning Minister or Planning Department,
- Community opposition stemming from first prosecution (6 months after the policy commenced),
- Media sensationalism over prosecution – 'property rights' issue.

Outcomes

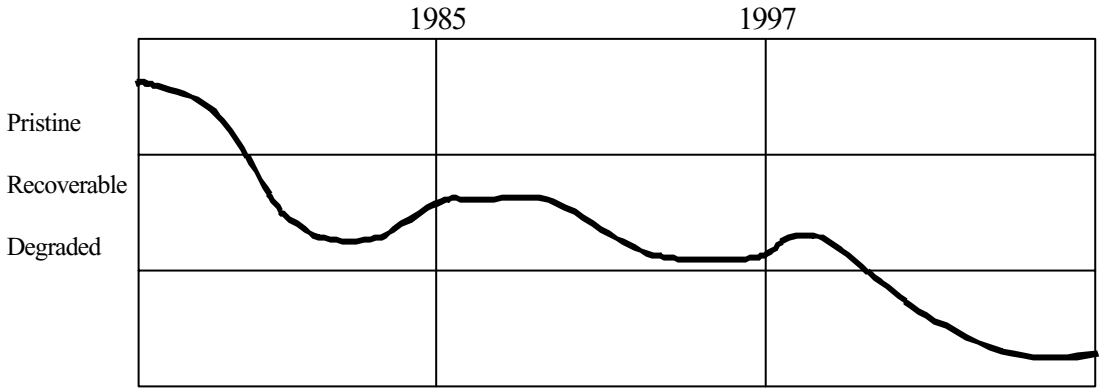
- More trees to remain in Nedlands than would otherwise be the case,
- Local people more aware of trees and tree management issues than without the initiative,
- Tree protection policy now removed from Planning Scheme,
- Register of significant trees partly developed but now scrapped,
- book on *Significant Trees in Nedlands* written, but seems unlikely to be published,
- General discussion and awareness of greening issues in the local area.

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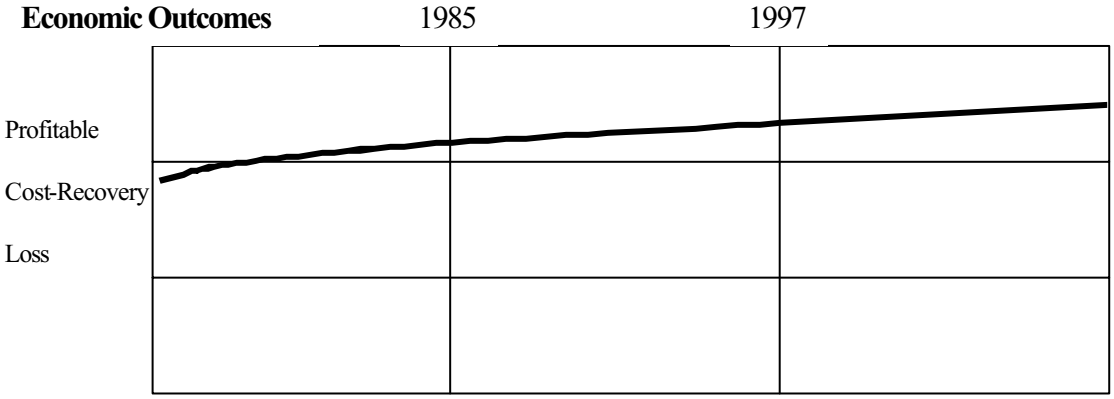
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Ecological Outcomes



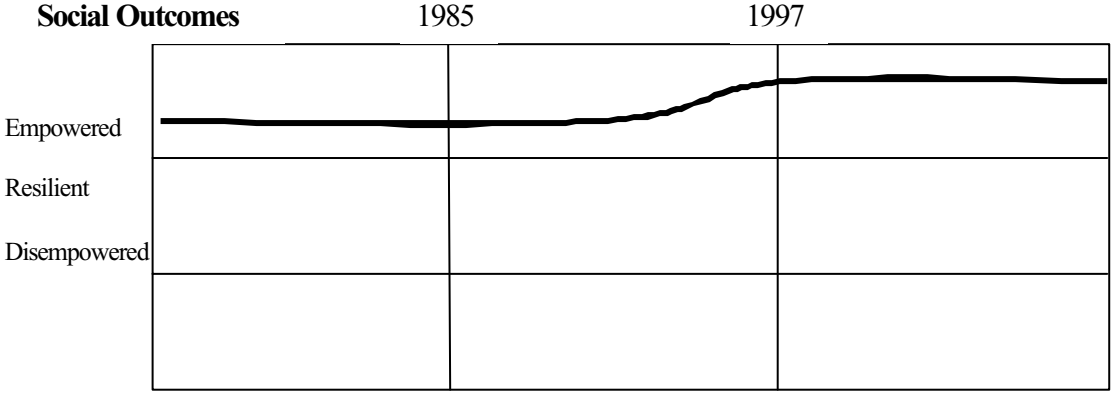
Prior to the 1960s, trees in Nedlands were gradually being cut down to make way for development in this inner-metropolitan area. During the 1960s, there was an increase in trees in Nedlands, from state government requirements that all residential development have 50% landscaped open space. The requirement was removed during the 1980s, and development pressure led to the removal of many trees. The tree protection policies that constrained the removal of old trees, and promoted indigenous planting, have slowed down the tree removal trends, and temporarily reversed them. Without the policies, the trend towards greater tree clearing, and reduced ecological values has resumed.

Economic Outcomes



Nedlands has enjoyed a strong economic base over its life. Residents have always been upper income, many are retired, with time on their hands for gardening. The private and public management of green spaces has probably contributed positively to Nedland's sound economic base over the years. Despite some recent poor publicity for the tree protection policies, these are also likely to help with the retention of high land values in the local area over time.

Social Outcomes



Community empowerment has been at a high level for decades in Nedlands, with some individuals satisfied, and some dissatisfied with the various and changing government requirements about green space. At present, some locals are happy with their 'rights' as landowners, but many still seem to regret the lack of support for the concept and detail of the Tree Protection Policies.

Greening Gosnells Advisory Committee

Case Study W4: By Su Wild River, with Greg Allen (Western Australian Department of Environmental Protection), Wayne van Lieven (City of Gosnells).

Comparative Statistics for Gosnells

Category	Measure	Comparison
Area (Sq/Km)	127	Bottom 20%
Population	79,372	Top 11%
Pop Sq/Km	625	Top 16%
Total Income ($)	35,301,224	Top 20%
Rate Content ($)	18,757,560	Top 19%
Expenditure ($)	31,524,314	Top 24%

Information Australia, 2000

The Greening Gosnells Advisory Committee , a Committee of Council with majority community membership, has assisted the Gosnells City Council to deliver some important environmental outcomes. The Committee and Council supported a botanical survey that has mapped out the ecological values of remnant native vegetation within the City. This and other initiatives have helped to identify, protect and enhance many environmental features of the local area.

The City of Gosnells is located on the south-eastern edge of the Perth metropolitan area. Approximately 30% of the City remains under native vegetation. The City has a predominantly blue-collar population, but recent estate-type residential developments and a projected population growth of 25% in the next 5 to 10 years are driving change in population demographics.

Gosnells has been steadily improving its environmental management over recent years. This has been largely due to increasing awareness about local environmental values, within both the council and community. The City of Gosnells engages in regular community attitude surveying, with the environment consistently being listed as the highest priority.

The City's first major environmental management initiative, originated by the Greening Gosnells Advisory Committee, was a survey of remnant native vegetation in those areas generally facing future urbanisation. Natural Heritage Trust funding provided for a comprehensive report to be produced. This report has provided the City with immediate information on its own natural assets, and has been a significant factor in the assessment of areas for conservation under the State Government's *Bush Forever* planning strategy.

There were many immediate outcomes from local vegetation mapping. Most were positive, but there were some negatives. For instance, vegetation on one 5-acre block was allegedly burnt to avoid the risk that significant vegetation might be found there. Council initially expressed concern as to the ramifications of the report, with a number of Councillors concerned that if it produced strong arguments for the protection of environmental values, this might constrain broader local development.

Gosnells City Council also supported other local environmental initiatives raised by the Greening Gosnells Advisory Committee in many important ways. They created an Environmental Coordinator position within the Council. This has been a great stimulus for ongoing environmental action in the local area, and more broadly within the Upper Canning River Catchment.

Other Council initiatives included strong encouragement from the Mayor for the coordination of environmentally relevant work within the City. Planners, engineers and others were encouraged to work together on environmental issues. The Local Agenda 21 framework proved a useful model in the development of the City's Environmental Management Plan. Gosnells was one of Western Australia's first Councils to consider Local Agenda 21 initiatives.

Council created the Greening Gosnells Advisory Committee in 1989, and ensured broad community representation and relevant staff representation in its membership. The Committee was initially convened to devise and promote tree-planting projects within the City. Broader emerging issues included the protection of remnant vegetation. Further goals were to be decided, following the release of the local botanical survey.

Together, these efforts raised local awareness of environmental issues, and have provided the means for Council to take action to improve local environmental performance.

W4: Greening Gosnells Advisory Committee

Perspective: Local Government/ State Government
Role: Officer
LG type: Capital fringe (rich, compact, populous)
Focus: Management

Context Issues

-

Context continuums

Scale
<local local regional state national international

Flexibility of Process
Full mostly equal partial none

Origins of initiative
<local local regional state national international

Goals

- Gosnells City Council established the Committee, with a clear goal of coordinating tree-planting projects. Committee reported direct to Council and gained approval to broaden objectives.
- Committee members had goals to protect the undeveloped bushland in Gosnells.

Drivers

- City staff with clear ideas about key environmental issues,
- Report and botanical survey in 1995 showed special features of much of the remaining bush in Gosnells,
- Natural Heritage Trust funding enabled mapping and preparation of the report,
- Individual committee members commitment,
- Appointment of Environmental Coordinator,
- Encouragement from Mayor for environment, planning and engineering officers to work together,
- Local Agenda 21 framework.

Processes

- Council establishment of the Advisory Committee,
- Staff personal interest and commitment,

Local Agenda 21 model used to guide development of Environmental Management Plan

Constraints

- Some negative community response to the botanical report. One 5 acre bushland area allegedly burnt to avoid the 'risk' that threatened species might be found there,

Council in general initially concerned about the botanical report and its strong arguments for greater protection of environmental values.

Outcomes

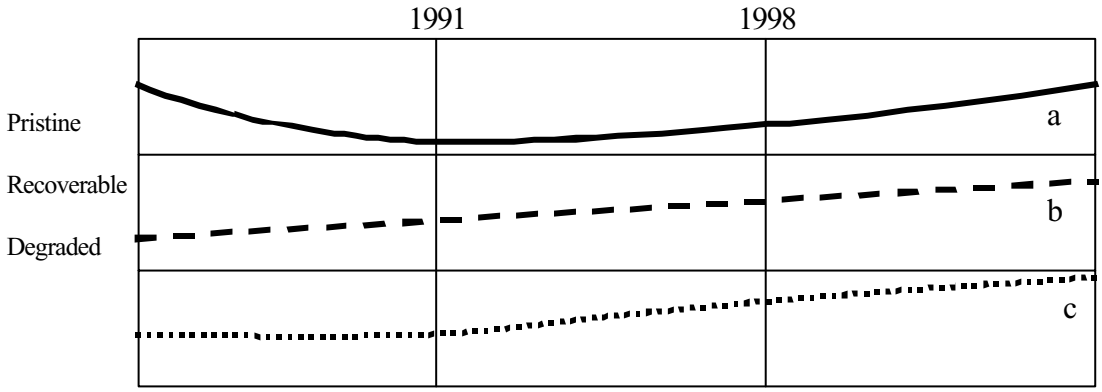
- Environment Coordinator position in Council,
- Bushland inventory and botanical survey complete,
- Change, and some improvement in Councillor attitudes to environmental management,
- One of the first 10 LGs in Western Australia to consider a Local Agenda 21 framework,
- Mayor involved in Committee for 2-3 years, and sympathetic to environmental issues,
- Good work between different professions within LG.

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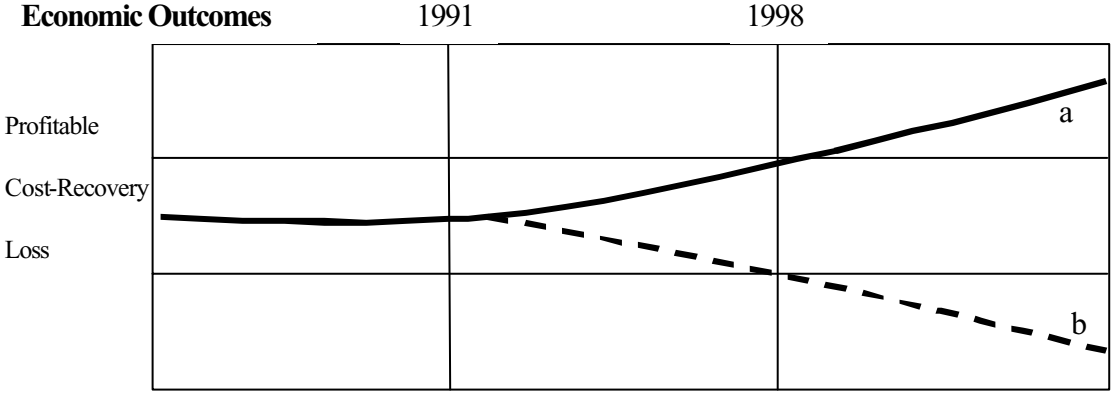
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Ecological Outcomes



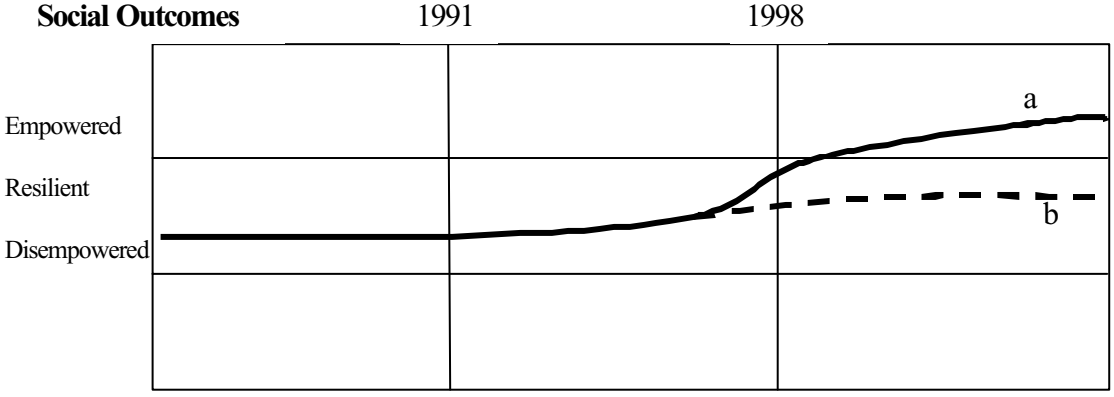
Gosnells has several different qualities of environmental values in the local area, each of which has had a positive input as a result of the Greening Gosnells initiatives. Some pristine areas that have been under threat from development have now been earmarked for acquisition by the State Government (a). Many of the areas that are already developed are now covered by management plans for the creeks, and some community groups are involved in managing them better (b). The contaminated site also has the potential for improved management, since groundwater quality is being assessed, and management strategies are being developed (c).

Economic Outcomes



Gosnells is generally an area with low socioeconomic status, which also has a high indigenous population. The economic impacts of the Greening Gosnells initiatives are currently a matter of perspective. There is a good chance that these initiatives will lead to increased land values in the local area over time (a). However, some members of Council and the community also believe that restrictions to development are a net cost (b).

Social Outcomes



Different members of the population have had different levels of involvement in the Greening Gosnells initiative. Those few that are heavily involved have had a significant increase in their sense of empowerment to improve their local environmental and community values (a). However the vast majority have only been slightly involved, and are just slightly more aware of their ability to impact on the local environment and decision-making (b).

Ground-up regional environmental planning in South West Western Australia

Case Study W5: by Su Wild River, with John Sherwood, South West Environment Centre (former Executive Officer of SWWA Local Governmment Association) and Keith Bradby (landcare consultant).

The South West Western Australia (SWWA) Environmental Strategy pulled diverse groups and individuals together in deciding actions for sustainable regional futures. However after the project's funding ran out, and another, similar project was overlaid on a larger, overlapping region, momentum for implementing the strategy was lost.

SWWA is a small, diverse, productive corner of a large, dry state. It is the only part of WA where forest is the dominant indigenous vegetation. It has WA's largest concentration of rural people, is the state's main focus for tourist and recreational visitors, and is an area where mining and heavy industry are developing rapidly. In contrast to other parts of the state, the area has managed to maintain much of its environmental health and integrity, despite ongoing and increasing residential, tourist and other development pressures (Bradby and Pearce 1997a, p.11).

Figure 1: Jarrah forest in SWWA



However there are some serious environmental problems, that will worsen unless they are effectively tackled. Many waterways in the region are becoming increasingly saline, and algal blooms are now common in river pools and estuaries. Some waterways are filling with silt and many aquatic species are becoming rare. Salinity of agricultural land is increasing, and hazardous wastes from current and past practices threaten long-term contamination of land and ground water. Biodiversity has decreased

significantly, largely because of feral animals, weeds and agricultural expansion. Other environmental values, such as air quality and ambience, are largely retained in most of the region (Bradby 1997a and b). Figure 1 shows a track through one of the Jarrah and Karri forests for which the region is famous.

In 1994, the Federal Government's *Working Nation* policy statement allocated money to a Regional Environmental Employment Program. Under this program $1.4 billion was to be made available "projects that reverse environmental degradation". (Finn 1997. p124). This work was to proceed within "regional environmental plans", a requirement that led to funding being made available for the development of six pilot environmental plans throughout Australia. These were developed by regional local government associations.

The SWWA Local Government Association, an organisation only just forming at the time,was one of the bodies who received funding under the program to develop a strategy. The Australian Local Government Association coordinated and supported the development of the environmental strategies, but each region developed its own strategy autonomously. While the funding was only sufficient for a short term project, there was a requirement for extensive community consultation. In SWWA this was achieved through a representative steering committee (described below) and through producing three widely circulated discussion papers. These were then re-written and produced as a green jobs strategy (Bradby and Pearce 1997b), a regional state of the environment report (Bradby 1997a) and the overarching environmental strategy (Bradby and Pearce 1997a). Additionally a set of environmental indicators (Galloway and Pearce 1997) was also produced, using funding gained during the initial project.

Consultation with various agencies, and with individual community members played a large part in developing the SWWA environmental strategy. For instance, the project steering committee included one representative from each of seven government agencies and seven non-government organisations. The steering committee led a consensus-building process throughout strategy development. While there were not large workshops, small meetings about the strategy were held with many groups across the region. Indigenous groups, foresters, environmentalists, farmers and tourist operators were among those consulted in this way.

This approach led to a very broad-reaching strategy with surprisingly strong consensus even about very radical environmental initiatives. These always considered ecological, economic and social issues, and aimed for long-term improvements to each of these values. For instance, consensus was reached on some guiding principles, applicable to all regional groups. These included:

"Development in Western Australia should be

> sustainable. It should not exceed the environment's capacity to assimilate its impacts. It should never jeopardise the wellbeing of future generations. Western Austrlaian have the right to know about and take part in major decisions affecting the environment" (Bradby and Pearce 1997a. p.5).

The premise that environmental and economic goals are fundamentally linked underlies the strategy, and is evident in most recommendations. Specific issues covered in the final strategy include the need for clarity and cohesion in government work, democracy, labour market programs, water quality, land, biodiversity, atmosphere and ambience. The strategy also identified processes for achieving environmental outcomes. These include asserting the right to work from the ground up, and using regional planning frameworks, rather than ad hoc decision making.

Several initiatives were quickly commenced during, or soon after the strategy was developed. These included a recycling strategy, which established kerbside recycling for the first time in the region.

The strategy identified a lack of resources as a major impediment to this, but rather than look for external funding, they sought a revision of federal/ state/local funding programs and responsibilities. Their justification for this was:

> Both the State Government and Federal Government have established a wide range of programs. While this has allowed some money to reach the ground, much is lost in the production of paper to service "big picture" planning and research needs. To meet the well recognised on ground needs, local councils and community groups are constantly involved in a short term scramble for funding, which has none of the continuity that environmental work needs. Additionally, the funding programs tend to promote competition between local allies who should be cooperating" (Bradby and Pearce 1997a. p.13).

Unfortunately, these concerns foreshadowed the future of the strategy itself. Before the strategy could be completed, the Regional Environmental Employment program was disbanded, following a change of government. This removed the primary funding target the strategy was aimed at, and through which significant elements could be implemented. Momentum was further lost when the National Heritage Trust provided funding for a second strategy, with a larger, overlapping area, but coordinated by a state agency. After this, even the LGs who had been the strongest drivers, became disillusioned or distracted and failed to effectively implement key parts of the strategy (Sherwood 1998). Finally, only three years after the strategy was completed, the SWWA Local Government Association itself was disbanded. Months later, some of the most successful environmental programs, such as the regional recycling strategy, were also wound up (Brown 2000. p.1).

However, this may reflect the difficulties faced by local government in Western Australia during this period. The development of regional coordination was in its infancy and local government was having extreme difficulty competing with state agencies for scarce environmental funding.

As it was, only two Regional Environmental Employment Programs were ever funded in Western Australia. One was along the Blackwood River where a detailed catchment strategy already existed, and one was managed by a group prepared to draft and complete a regional environmental strategy in two weeks, so as to meet the funding deadline. Both programs had budgets well over the million dollar mark, both employed hundreds of trainees, both did a wide range of useful environmental work on the ground and both were operating before the SW strategy even commenced (Bradby & Mates 1994).

But there is some evidence that the SW strategy may be continuing to have some influence. Three years after its completion a new regional organisation had been established, the South West Catchments Council. This represents the main catchment coordinating groups in the region, and is currently preparing a natural resource strategy that draws heavily on the original Regional Environmental Strategy.

References

Bradby, K. 1997a. *State of the Environment in Australia's South West.* Bunbury: SWWA Local Government Association.

Bradby, K. 1997b. *Peel-Harvey: the decline and rescue of an ecosystem.* Mandurah: Greening the Catchment Taskforce.

Bradby & Mates (1994) *Peel Regional Environmental Plan*. Mandurah: Greening the Catchment Taskforce.

Bradby, K. and Pearce, D. 1997a. *South West Environmental Strategy*. Bunbury: SWWA Local Government Association.

Bradby, K. and Pearce, D. 1997b. *Green Jobs for Australia's South West*. Bunbury: SWWA Local Government Association.

Brown, K. 2000. Shires attack Bunbury. In *Bunbury Herald*. Bunbury: Thursday June 8:1.

Finn, D. 1997. Working Nation: Welfare reform and the Australian Job Compact for the long term unemployed. Canberra: Australian Council of Social Services.

Galloway, D. and Pearce, D. 1997. *South West Environmental Indicators Project.* Bunbury: SWWA Local Government Association.

Sherwood, J. 1998. Unpublished interview with Su Wild River. Bunbury.

W5: Ground-up regional environmental planning in South West Western Australia

Perspective: Mixed/Other
Role: Councillor/Consultant
LG type: Region
Focus: Planning

Context Issues
This small, wet, forested region of a large, dry, desert-state has inspired many regional initiatives, usually with inconsistent boundaries.

Context continuums

Scale
<local **local** **regional** state national international

Flexibility of Process
Full **mostly** equal partial none

Origins of initiative
<local local **regional** state national international

Goals
- Establish strategic environmental plans, processes and partnerships in SWWA,
- Ensure that regional issues are reflected in future development decisions in SWWA,
- Increase ability of region to tap Regional Environmental Employment Funding
- Create new 'green jobs' in SWWA.

Drivers
- SWWA Local Government Association, and members' enthusiasm,
- Strategy coordinator and his enthusiasm,
- Voluntary Regional Organisation of Council structure and lead agency work,
- Australian Local Government Association, and its environmental officer, providing funding and other support,
- Autonomy provided by funding etc,
- Enthusiasm and participation from the stakeholder groups.

Processes
- 14 stakeholder agencies involved, including 7 government agencies, and 7 non-government organisation. This provided a balance,
- This was a 'brave' project, since only 1 of the 12 Councils involved had any clear environmental vision, and all had limited environmental budgets, and council cultures were non-environmental prior to the strategy,
- Public consultation on the strategy and its key issues.

Constraints
- National Heritage Trust funding for a similar but different regional strategy. The new strategy covered a bigger region with no identity, that was selected by Agriculture WA.
- Competition between groups to obtain funding under the new strategy,
- SWWA Local Government Association coordinator of the project left. His replacement was less interested in environmental issues,
- Change of government led to reduced support for the project.

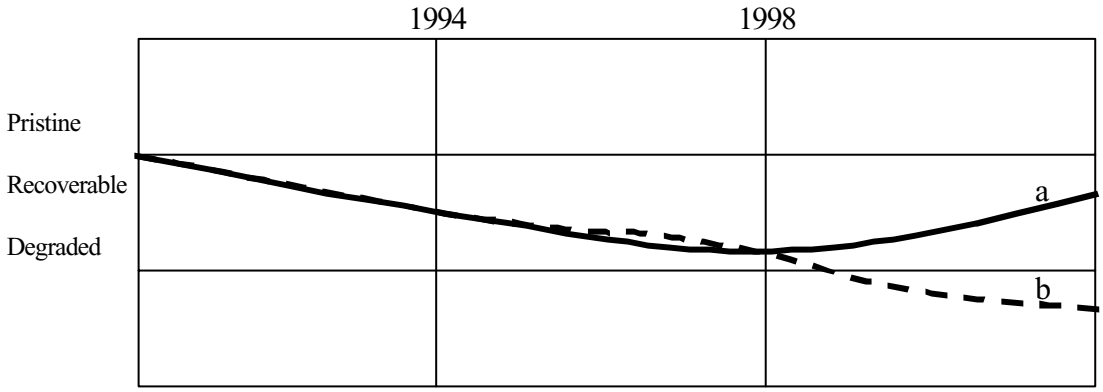
Outcomes
- 4 publications. Strategy, Green Jobs, Environmental Indicators, State of Environment Report.
- SWWA strategy rated as the best environmental strategy in Australia. One of only three Voluntary Regional Organisations of Councils to receive extra funding for environmental indicators project.
- Poor take-up of strategy elements by responsible agencies (even SWWA Local Government Association, which had led the project, did not take on the recommendations),
- No coordinated follow-up to the strategy.

About the Models

The Comparative Case Study Model records an attempt to deliver environmental outcomes in a simple, general format enabling comparative analysis of issues. Key elements of attempts, and their contexts are recorded. The graphs across the page show the ecological, economic and social values before, during and after the attempt, and how these changed as a result of initiatives. The graphs are often 'split', indicating different outcomes for different sectors simultaneously, or different possible outcomes.

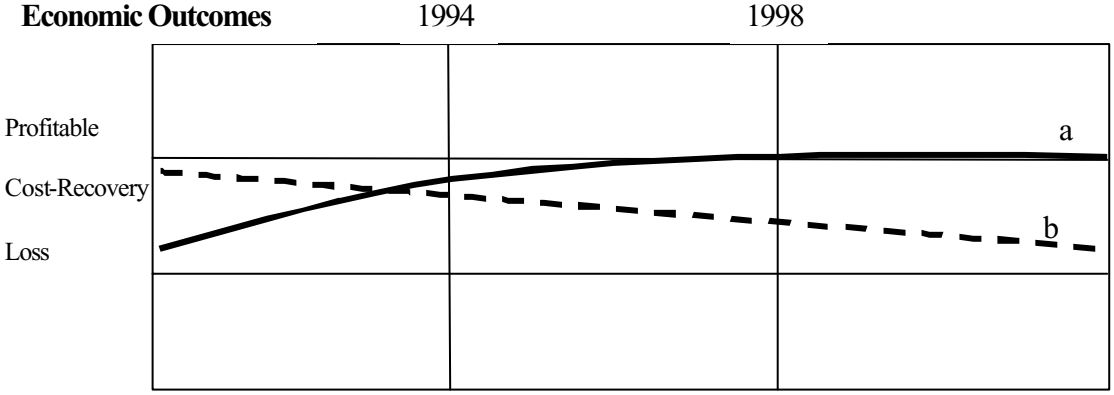
Notes: This is one of 34 case studies produced for Su Wild River's PhD research, undertaken through the Centre of Resource and Environmental Studies, Australian National University.

Ecological Outcomes



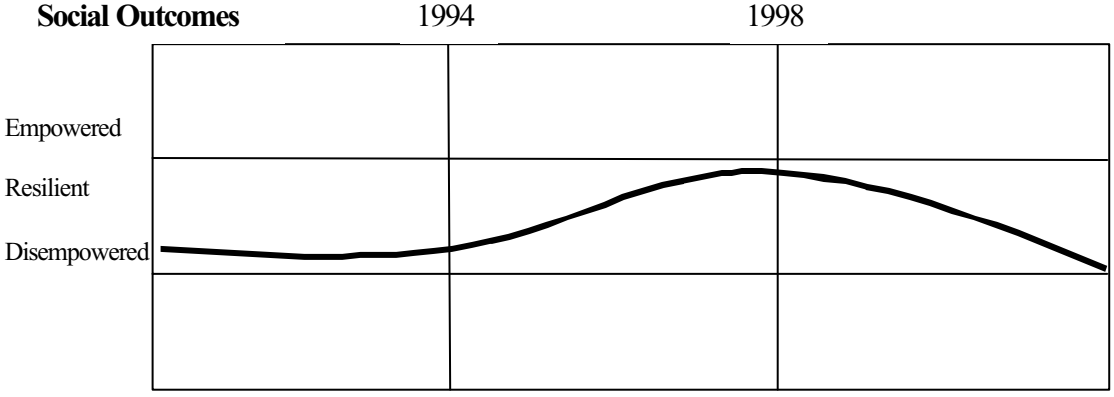
Environmental values have been diminishing in SWWA for many decades. Continued development pressure threatens many near-pristine, and often delicate environments. The strategic directions in the SWWA Environmental Strategy opens up the possibility of reduced environmental harm in the future. Some areas that are degraded could also be improved, and this might even improve the environmental values (a). However, without effective implementation, the Strategy will not stop the degradation (b).

Economic Outcomes



The economic impacts of the Strategy have been different for 'green' and 'non-green' industries and employment. Since the start of the SWWA environmental projects, the number of people employed in 'green jobs' has steadily increased. These include work in ecotourism, recycling, and other environmental areas (a). In contrast, the work available in non-green areas is declining. These include forestry and related work (b).

Social Outcomes



The social impact of the SWWA environmental strategy was initially positive. Many stakeholder and general community groups were involved. It was empowering for them to see their work translated into the final strategy. However the loss of momentum for strategy projects after the start of the alternative regional strategy has resulted in widespread disappointment. In some ways, this has led to less community empowerment than was the case prior to the commencement of the strategy processes.

Preserving ecological values in Busselton Shire

Case Study W6: By Su Wild River, with Illya Hastings and John Wroth (Busselton Shire Council).

Comparative Statistics for Busselton

Category	Measure	Comparison
Area (Sq/Km)	1,454	Bottom 40%
Population	19,000	Top 32%
Pop Sq/Km	13	Top 37%
Total Income ($)	17,230,699	Top 36%
Rate Content ($)	7,040,816	Top 37%
Expenditure ($)	17,045,158	Top 39%

Information Australia, 2000

Busselton Shire's efforts to protect local environmental values have been assisted by some broader policy and statutory directions. Some environmental gains have been achieved, however opposition from some local landowners, and strong development pressures have constrained environmental outcomes.

Busselton Shire lies on Australia's south-western corner. This is just one of the features that underpin its unique environmental values. Its region, south west western Australia, is the small, diverse, productive corner of Australia's largest, driest state. It has Western Australia's largest concentration of rural people, and is the state's main focus for tourist and recreational visitors (Bradby 1997).

Busselton itself is largely an agricultural district, as well as a major tourist destination. Figure 1 shows a vineyard in Busselton, bordering natural bushland.

The intense development in the south west places considerable pressure on Busselton's local environmental values. It has also stimulated broad interest in the region, and encouraged several initiatives aiming to retain the region's environmental values. The *South West Western Australian Environmental Strategy,* driven by local governments was one such initiative. A second strategy funded by the National Heritage Trust also focused on the south west. Unfortunately, these failed to build on one another, with the second strategy instead draining some resources and partnerships from the first strategy.

Other regional initiatives have proven to be of more long-term practical value to Busselton Shire's environmental efforts. This was the Western Australian Planning Department's *State Planning Policy* for the area. This policy provides the statutory backing for local environmental planning initiatives. It has proved valuable, partly because the State Planning Act requires that local government planning decisions must be consistent with relevant State Planning Policies. The policy sets out provisions for conservation zones to be identified and protected.

Figure 1: A vineyard in Busselton.



However the planning policy on its own would have been of little ecological value to Busselton, had it not funded its own environmental initiatives. A key action was to hire enthusiastic environmental strategists to some key positions within the local government. An environmental strategic planner has been working to identify and formalise key conservation zones within Busselton. Without this detail, the state planning policies are mostly indicative, and very difficult to enforce. However, once conservation zones are formally specified, enforcement becomes possible.

The potential to enforce conservation zones is further helped by provisions in the Planning Act, enabling some limited enforcement by local governments. Without this, enforcement would be very difficult, because state government enforcement officers are rarely on the spot to deal with breaches when they occur.

Another seemingly effective regional initiative is the GeoCatch Catchment Council. This regional group was established by the Water and Rivers Commission in 1997, in response to the local community's call for a coordinated approach to managing the natural resources of the Geographe catchment. Four local governments, including Busselton lie partly in the Geographe Bay Catchment, and they are all involved in this regional initiative. GeoCatch is helping to support Busselton Shire's efforts to investigate water quality problems in the lower Vasse River, in the mouth of that catchment

(Geocatch 1998). Figure 2 shows a structure set up to aid the aeration of the lower Vasse River in Busselton.



Figure 2:

Aerating the lower Vasse River

Some national and international agreements also help Busselton Shire's environmental work. Several of the waterways in the shire are internationally recognised Ramsar wetlands. These are rich and diverse refuges for migratory birds, as well as hundreds of other species. Such local wetlands include the Vasse-Wannerup wetlands, which is visited by at least 75 species of waterbird, and is the breeding ground for at least 9. Australia is committed to protecting the ecological values of Ramsar wetlands. The formal recognition of these ecological values makes it easy to include each wetland in a conservation zone. Ramsar agreements also provide for buffer zones to be protected around the wetlands. Again, this extends the local area that can readily have its ecological features identified and protected, regardless of whether those features are on private or public land (see Weaving 1998. P.16). Figure 3 shows a wetland in Busselton, on the border of privately-owned farmland.

The history of settlement at Busselton Shire provides the local backdrop for these environmental initiatives, and also much of the constraints to environmental protection. In the past, shire planning has been fairly ad hoc.

Many land boundaries are unclear, and there have been few



restrictions on land use. Property owners tend to believe that they have a right to do anything they want on their own land. Some of the conservation zone initiatives impact on activities that have been considered legitimate for decades. For instance, many of the Ramsar wetland buffers are on good farmland. Farmers are reluctant to halt farming in these areas, regardless of the ecological significance.

Figure 3: Ramsar wetlands on the boundaries for private farmland.

W6: Preserving Ecological Values in Busselton Shire

Perspective: Local Government
Role: Officer
LG type: Other LG (rich, compact, populous)
Focus: Management

Context Issues

Busselton makes up the distinctive South West corner of Australia. This is a readily identifiable and dynamic region.

Context continuums

Scale

<local | local | regional | state | national | international

Flexibility of Process

Full | mostly | equal | partial | none

Origins of initiative

<local | local | regional | state | national | international

Goals

- Protect ecological processes on both public and private land,
- Protect vegetation on both public and private land,
- Protect local and regional ecosystems,
- Protect the aesthetic sense of Busselton Shire,
- Retain buffers around areas of high ecological value.

Drivers

- Strong statewide interest in the South West Region, which fuels big picture strategic decisions about the local area,
- Local acknowledgement of highly diverse and unique values in the region,
- Ramsar wetlands and other areas with internationally recognised high ecological values,
- SG pushing a conservation agenda with its strategic environmental plans, especially the *State Planning Policy*.
- SG support for the conservation zone initiatives,
- Limited capacity for LG to take on enforcement role for SG conservation policies,
- Council staff committed to conservation zones and strategic environmental planning,
- Supportive regional initiatives, eg. GeoCatch.

Processes

- In the past, planning decisions have been ad hoc for environmental issues. Land boundaries are now being formalised, and fenced,
- Establishment of conservation zone controls over many areas, eg wetlands, areas with visual prominence. Restrictions on development potential and other activities in those areas,
- Some recognition of previous land use in new controls.

Constraints

- Expectations of property owners that they can do anything on their land,
- Political pressure on conservation decisions (eg on good farming land with proposal to subdivide, Council may agree with landowner's wishes),
- Lack of or ad hoc SG enforcement of conservation-oriented SG policies. SG reports are often too late, not specific or not available. This can make it worse if the proponent obtains the report,
- Current SG tends to favour developers if a subjective environmental argument opposes them.

Outcomes

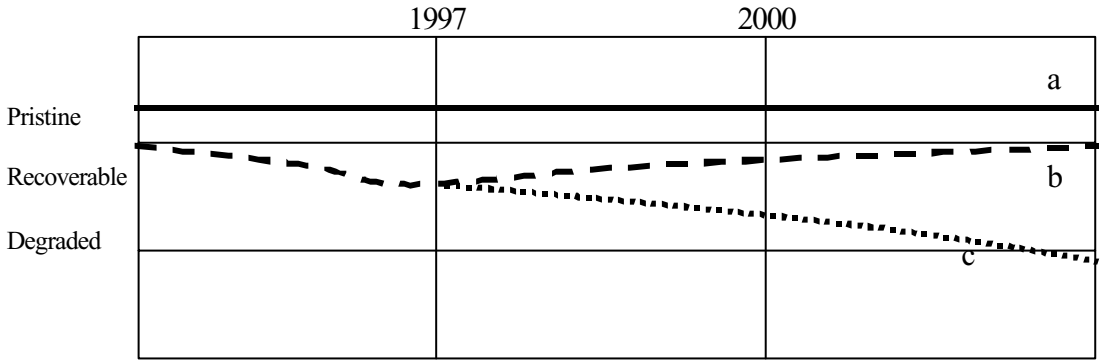
- Conservation zones applied to many areas and blocks,
- Some areas listed as Ramsar wetlands in conservation zones,
- Boundaries formalised for private properties, conservation zones and other areas.

About the Models

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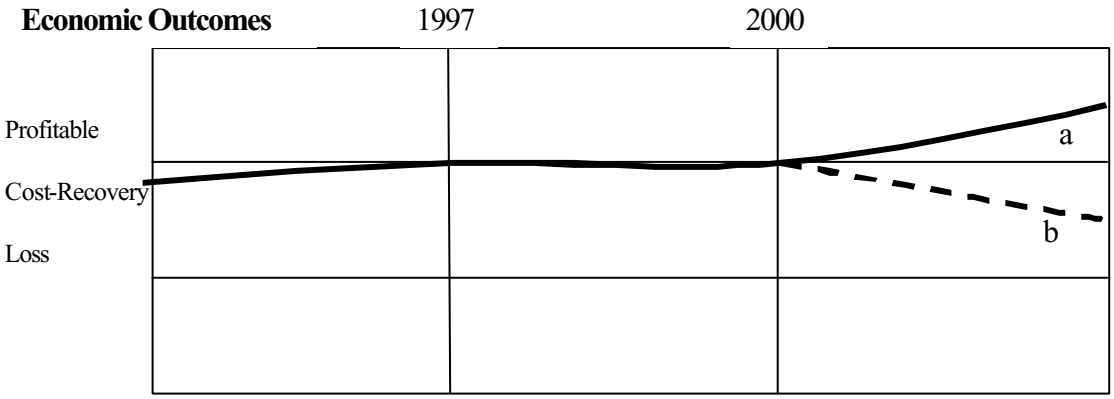
Other Notes

Ecological Outcomes



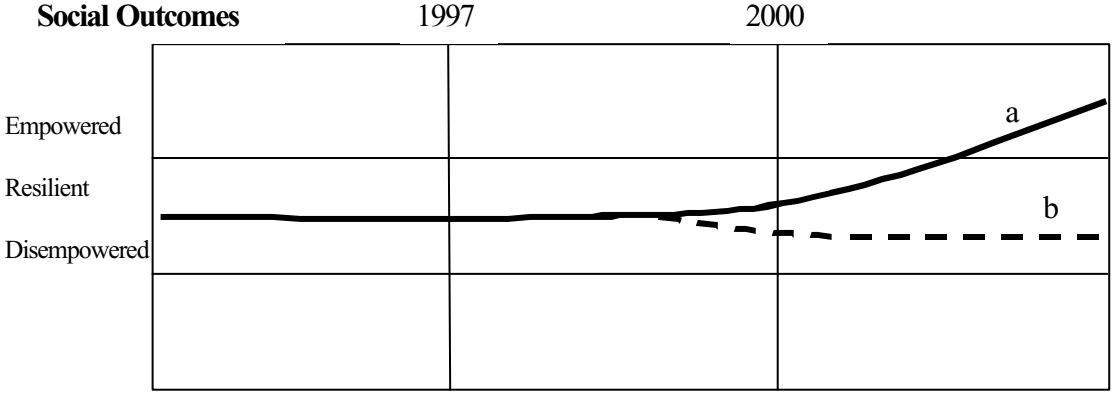
Busselton Shire includes many areas with pristine environmental values. Much of this will be protected over the long-term due to measures such as the conservation zones (a). Many other areas, such as farmland adjoining or including significant ecological values has been gradually degrading, but will be protected through the clear criteria for protecting significant values. Identification and protection of buffers could further help some of these areas to recover from past damage, as well as protecting it from future problems (b). Some decisions are still being made that are inconsistent with the conservation initiatives, and degradation is occurring and will continue in those areas (c).

Economic Outcomes



Busselton has been enjoying a fairly prosperous time for some time, predominantly as a result of tourism and primary industries across the region and in the local area. Both rely on broad environmental values for ongoing success. Protection of environmental values such as soil and water quality will ensure continued economic growth in the future (a). Poor management of these natural resources, and resulting environmental degradation will most likely reduce local economic performance in the long run (b).

Social Outcomes



Responses to the preservation of ecological values in Busselton Shire have been mixed. Many in the population have been involved in the strategic planning initiatives, and strongly support the protection of ecological values through conservation zoning and other measures (a). Others, including some landowners, and developers, have felt that they have had rights eroded as a result of the changes (b).

Albany Coastal Strategy

Case Study W7. By Su Wild River with Melanie Price (Albany City Environmental Planner).

Comparative Statistics for Albany City

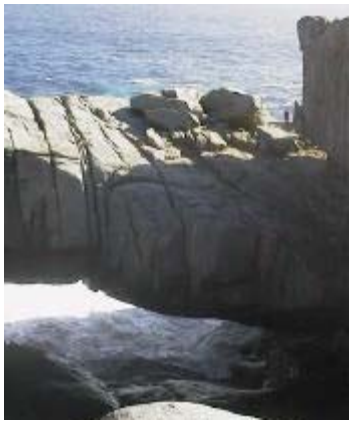
Category	Measure	Comparison
Area (Sq/Km)	4803.7	Top 26%
Population	28668	Top 25%
Pop Sq/Km	6	Top 44%

Information Australia 2000.

Albany City Council is seeking to protect its coastlines and waters from development and damage. Local knowledge of environmental protection issues has been increased, and some environmental gains have been made. Some locals believe that this has also restricted their recreational activities.

Albany lies on Western Australia's South Coast. It is the most remote of Western Australia's south coastal cities. Its magnificent coastline of huge, pink granite boulders has been protected in some areas in national parks. Figure 1 shows 'the Natural Bridge at the Torndirrup National Park in Albany. The immense size of this feature can be judged from the small dot of a person standing in the upper right-hand corner of the picture.

Figure 1: The Natural Bridge at Torndirrup National Park in Albany



Environmental degradation has been quite pronounced in some non-protected coastal areas. Problems such as dune destabilisation, and resulting erosion are common. These problems extend up the local rivers, where clearing for agriculture, water-skiing, and other activities have caused erosion.

Several officers and managers have a keen environmental interest. They have been influential in establishing programs to protect the local environmental values. As a result of their efforts, Albany City established a permanent position for an environmental planner. The first incumbent was trained in geology and planning. His background, training and ecological interests gave him considerable awareness of many fundamental environmental issues underlying the apparent problems. The new environmental planner is actively building on the projects that were already in place before her arrival.

A key initiative of the environmental planner is to develop the Coastal Strategy. This will identify areas for protection, and outline actions to be taken to achieve it. Council directors have been involved in developing the strategy. This has ensured a high level of understanding of the strategy and its goals, and is likely to result in broad council support for coastal protection initiatives.

Community consultation has also been a feature of the coastal strategy. The National Heritage Trust provided some funding towards this consultation. The result was the successful inclusion of many community members in the planning process.

As part of its ongoing community liaison, Council supports a South Coast Management Group, with broad membership. The group has been active in developing local beach management plans. These outline areas for protection, and actions to take in order to achieve that.

The beach management plans specify actions to be taken to protect or restore beach stability. Actions include building walkways, fencing off destabilised dune areas and using various materials to cover and stabilise the areas. Albany City has successfully applied for various grants to assist with these efforts. However although the programs have often been funded, few have included a budget for the practical work of building fences, paths and making other physical improvements. Instead, many of the federal and state government grants focus on planning and reporting on actions.

Community support has also been undermined in two important ways. First, many in the community believe that their recreational rights

are being restricted under the strategy. This is because driving on beaches, activities on destabilised dunes and, other damaging practices are now being controlled in some places. Second, the local media has reported issues in favour of these disgruntled recreationists. Council recognises that better liaison with the local media is essential, so that future reports might be more balanced.

Figure 2: Beachside toilet block managed by Albany City Council



Another challenge faced by Albany City Council is the State Government's views on the inherent duties of a local government. One example is that many beach-front areas are without toilet blocks. Albany City has tried to encourage the state government to support the building of such amenities. However the state government responded with the argument that the provision of public toilets is a local government responsibility, and would not help with funding. This is perplexing to Albany City, since the Local Government Act does not specify anything about public toilets, and they have no available budget for such facilities. Figure 2 shows one of the many beachside toilet blocks that Albany does manage, although this particular one is recognised as substandard. This site has also been the focus of coastal management work involving the community.

Albany's experiences highlight the need for environmental assistance programs for local governments to address a full range of policy development and implementation issues. Without effective means to implement the initiatives, even the best ideas will fail to deliver improvements on the ground.

References

Information Australia. 2000. *Australian Guide to Local Government. 28th Edition, July-November 2000.* Melbourne: Information Australia.

W7: Albany coastal strategy

Perspective: Local Government
Role: Officer
LG type: Other centre (extensive, populous)
Focus: Management

Context Issues

-

Context continuums

Scale

<local local regional state national international

Flexibility of Process

Full mostly equal partial none

Origins of initiative

<local local regional state national international

Goals

- Protect coastlines and other waters from development and damage,
- Supply and maintain infrastructure when needed and affordable,
- work with the community to define and achieve environmental goals.

Drivers

- Environmental strategists amongst Council officers and managers. Previous worker on this program was a geologist and planner,
- Permanent position for an environmental planner,
- South Coast Management Group with long-term outlook. Currently working on Phase 1, a Coastal Strategy,
- National Heritage Trust funding for community consultation,
- Successful inclusion of community in planning processes.

Processes

- Process started in 1995,
- Newly appointed officer is on steep learning curve to come to grips with the strategy,
- Local Beach Management Plans being developed,
- Hoping to adopt the Management Plans as policies under the broad strategy,
- Directors are involved, and have had input to the process and strategy,
- Strategic plans have short, medium and long-term components.

Constraints

- Challenges with much for the new Officer to learn quickly,
- Some conflict over the sand-trapping fences, which some locals say inhibit recreation,
- Poor media reporting of these issues, and the need for better liaison with the media,
- No grants available for the actual work. Council has funds for aspects of the programs, but not the humanpower needed,
- Other spheres of Government have inaccurate views of LG roles (eg think LG core business includes toilet blocks on all reserves).

Outcomes

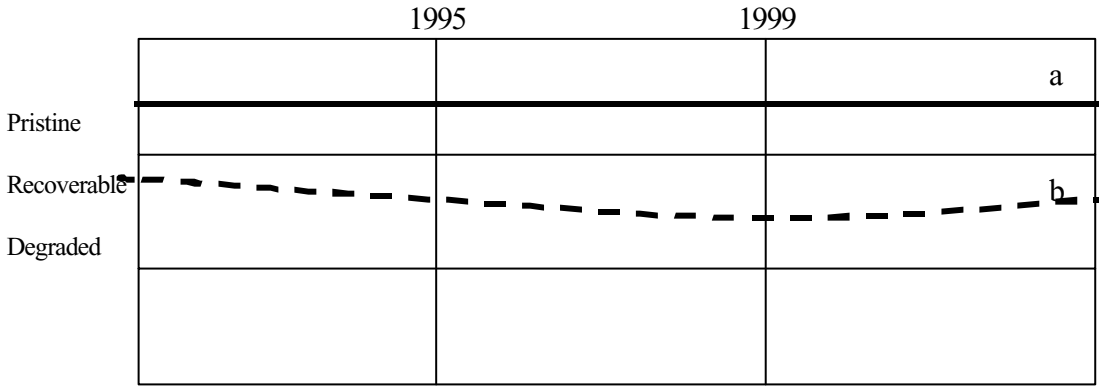
- Directors aware of the strategy, and have ownership of it, due to long-term involvement,
- Beach Management Plans developed with community involvement (both in writing and implementing them,
- Some practical improvements to coastal areas, through erosion control etc.

About the Models

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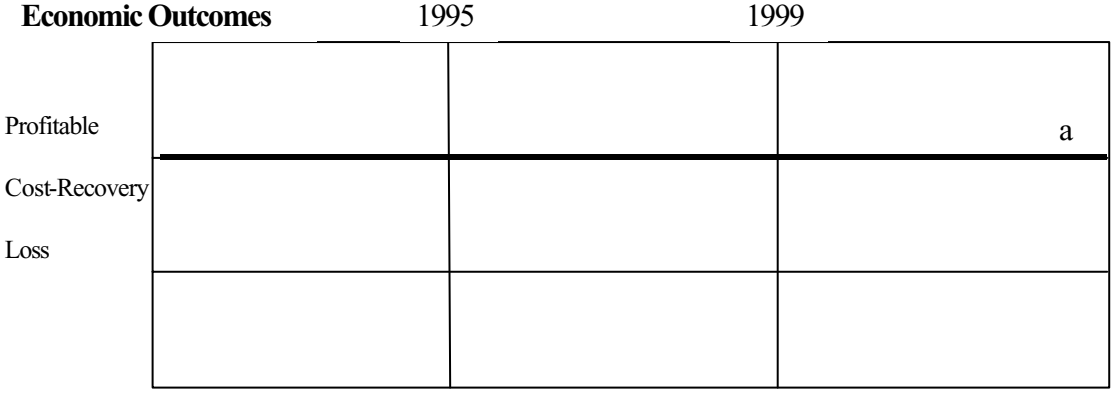
Note: This case study is one of 34 produced by Su Wild River's PhD rersearch, undertaken through the Centre of Environmental Studies, Australian National University.

Ecological Outcomes



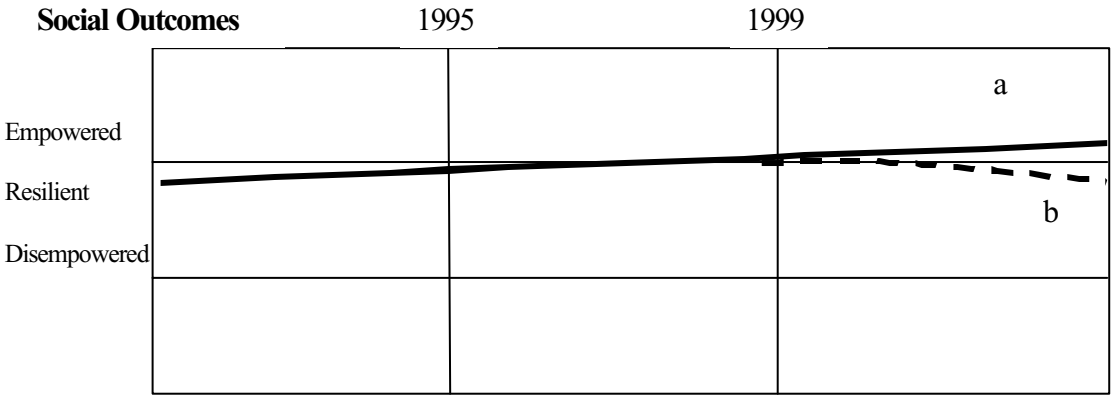
Many of Albany's beaches are in pristine condition, and some very special environmental values are protected in National Parks. Sensitive management of these areas will retain their high environmental values (a). Erosion, loss of vegetation and other damage has occurred on many other beaches and waterways. Progress to improve these is slow, due to the time needed to establish planning controls, management plans and groups. In addition, the lack of funding to employ people to do the physical work of beach maintenance has slowed progress.

Economic Outcomes



There are few direct economic impacts from these initiatives. The cost of Council of the strategic planning position is probably off-set by the benefits it accrues in terms of avoiding degradation, and inappropriate development. Some funding has been obtained for initiatives, but without budgets for a workforce to implement initiatives, there is little economic flow-on from the planning activities.

Social Outcomes



Developing the Albany Coastal Strategy has been an empowering process for Albany Shire and the Local Community. There has been good community involvement in the development of the Strategy and the associated Beach Management Plans (a). Some sections of the community have opposed elements of the protection measures, such as the sand-fences that aim to stop erosion, but have also been seen to inhibit recreational activities (b).

Showcasing urban environmental management in Moreland City

Case Study V1: By Su Wild River, with Richard Jennings (Moreland City Council Conservation Team Leader), Mike Hill (Victorian Local Governance Association).

Comparative Statistics for Moreland City

Category	Measure	Comparison
Area (Sq/Km)	51	Bottom 13%
Population	137,258	Top 5%
Pop Sq/Km	2,691	Top 4%
Total Income ($)	66,175,958	Top 9%
Rate Content ($)	36,837,451	Top 8%
Expenditure ($)	73,158,410	Top 8%

Information Australia, 2000

When Moreland City Council was created in 1994 from the amalgamation of the previous local governments of Brunswick, Coburg and the southern part of Broadmeadows, several opportunities followed. One was the renovation of the existing civic centre to accommodate the larger staff. Moreland worked strategically to build environmentally sustainable premises. These now also act as a showcase for responsible building design and construction. Environmental and social benefits have been achieved at no additional economic cost.

Moreland City covers much of inner-north Melbourne. It is a densely-populated, and politically outspoken area. The Kennett government reforms to local government replaced democratically elected councillors with appointed commissioners in the mid 1990s. Anticipating this, several inner City Councillors, including some from the then Brunswick City Council, established the Victorian Local Governance Association, as a new peak body that would go on to lobby on issues of democracy, as well as social and ecological responsibility. Many of these outspoken individuals were re-elected once democracy was returned to Moreland at elections held in March 1996. Moreland's proactive, and brave approach to problem-solving is exemplified by such issues and actions.

Moreland City also took environmental advantage of the amalgamations. The larger local government meant a bigger workforce. Moreland decided to house most of the staff in the existing Coburg office building. It also made the decision to develop the building into a showcase of ecological sustainability, to provide environmental leadership to the local community. For instance, they aimed to house twice as many people, while reducing energy costs. They also aimed to design within a conventional building budget, but to build with reused and recycled materials wherever practical. Other goals included reducing water use, discouraging staff and visitors from driving to work, using indigenous native plant species, and avoiding negative off-site impacts of construction work.

Moreland drew on several existing conceptual models in developing this practical environmental showcase. The principles of ecologically sustainable development were drawn on heavily, articulating them as key principles in the whole policy process. Ideas from Local Agenda 21 (LA21) were also adopted. Since most of the councillors were Labor Party members, they also utilised the Party's environmental commitment. Together, these models helped to generate a consistent cultural commitment to the environment amongst many of the councillors, managers and officers.

The redevelopment project also faced several hurdles. There was little available information on environmentally sustainable building products ad lifecycles, making it difficult to identify appropriate materials quickly. This lack of information was compounded by the need to complete the building in a tight time frame.

There were also practical problems once appropriate materials were identified. Project managers found that it was difficult to obtain the preferred materials in the small quantities that were needed. Also, although materials were saved through reuse and recycling, the labour costs involved sometimes meant that the total cost of these was similar to the more destructive virgin alternatives. Higher prices were also charged for some of the 'boutique' items selected to solve specific problems. Together, these factors meant that the final building was subject to compromises due to availability, price and practicality of implementing sustainability components, while the cost was kept in line with the alternative of using standard building processes.

Despite these challenges, the outcomes for

Moreland have been very positive overall. For instance, there has been a 35 per cent drop in the cost of energy . Energy savings are being used to purchase 'green power'. This was partly achieved by the installation of the 'solar pergola' at the entrance to the Council. This is a key element of the environmental showcase. All visitors to the council enter underneath the array of solar voltaic cells that helps power the civic centre, and feeds excess power into the electricity grid (see Figure 1). Energy efficient light fittings, and automatic sensors to turn lights off when rooms are empty are also used (see Hill and Kyle 1999).

Figure 1: Solar Pergola



Another feature of the sustainability showcase is the group of 'environmental watch ducks' that overlook the council chambers. These are a sculpture of a local, indigenous, endangered cormorant species. It is acknowledged rumoured that councillors voting on issues with environmental impacts are reminded of their environmental responsibilities after glancing up at the watch ducks (see Figure 2).

Figure 2: Environmental watch ducks overlooking the Moreland City Council Chambers



Council has also had some success with its transport initiatives. Bike racks are provided for staff (see Figure 3). Interest free loans are also made available to help staff to buy bicycles and long-term public transport tickets. These initiatives have resulted in a doubling in the number of staff members cycling to work, and more are also taking public transport.

Figure 3. Internal bicycle parking



Moreland was also successful in reducing water use. Stormwater is harnessed for watering gardens at the civic centre. The gardens also have minimal water needs, because of the use of indigenous native species.

Moreland staff involved in the civic centre redevelopment recognise that building for sustainability is only the first step in their showcase. Long term environmental performance of the centre is dependent on how it is used. Cycling to work, minimising water use, avoiding overuse of energy all still require diligence and management on the part of all council staff. The active promotion of the initiatives to the local community and beyond are also essential if the initiatives are to lead to broader changes.

References

Hill, A. and Kyle, L. 1999. *Moreland Civic Centre Redevelopment Project: Stage 1 – Coburg Offices.* Melbourne: Moreland City Council.

Information Australia. 2000. *Australian Guide to Local Government. 28th Edition, July-November 2000*. Melbourne: Information Australia.

V1: Showcasing Urban Environmental Management in Moreland City

Perspective: LG/Mixed
Role: Officer/Councillor
LG type: Capital city (rich, compact, populous).
Focus: Management

Context Issues
Moreland was recently amalgamated under the Kennett Government reforms. It is an inner-city LG with a history of outspoken Councillors.

Context continuums

Scale
<local **local** regional state national international

Flexibility of Process
Full mostly equal partial none

Origins of initiative
<local **local** regional state national **international**

Goals
- House twice as many people, while reducing energy costs,
- Design and build within a conventional building budget, but reuse and recycle materials,
- Consolidate several work areas into one building following the amalgamations,
- Achieve goals for energy efficiency and air quality management from Local Agenda 21,
- Avoid negative off-site impacts of construction and operation of building (dust, stormwater),
- Address structural and behavioural environmental issues (eg encourage cycling to work),
- Use native plant species (also aiming to minimise water needs).

Drivers
- Councillors and ex-councillors with a keen interest in the project,
- Local Agenda 21 (LA21) ideas,
- Principles of Ecologically Sustainable Development (ESD), and their articulation as key principles through the whole process,
- Continuity of Australian Labor Party affiliations of most of Council, with environmental commitment,
- Cultural commitment to environmental objectives among many Managers and Officers.

Processes
- Dismantled old building and re-used the materials in the new building,
- ESD principles incorporated as primary success criteria for building (included in defining and assessing briefs, detail of contracts, reviews),
- Provided internal bicycle parking room,
- Reinforce LA 21 principles in structures (eg cycling, recycling),
- Provided interest-free loans to officials to buy bicycles, and for public transport,
- Transport impacts considered with access to bike paths.

Constraints
- Little information around on product/building materials and life-cycles,
- Time pressure to construct the new building,
- Identifying ESD-consistent materials in a timely manner,
- Expense of labour for recycling activities,
- Demolition systems hard to establish for extracting reusables,
- Difficult to specify ESD products for small lots of materials,
- High prices charged for 'boutique' items,
- Supply of specified materials constrained.

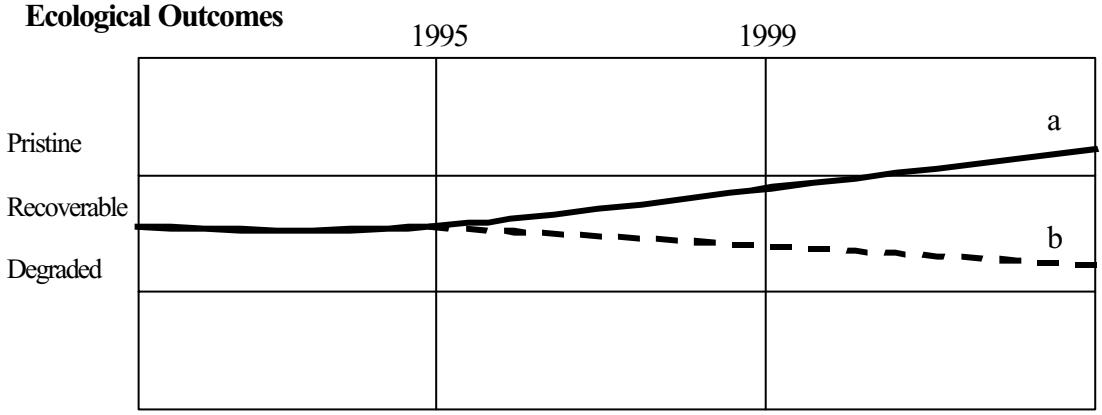
Outcomes
- 35% reduction in energy use per person achieved, and savings used to purchase green power,
- Bicycle parking rooms and showers available, with 10% more workers riding than before,
- New Council Civic Centre completed, operational,
- High level of recycled materials in new building (saved on resources, but not money),
- Energy efficient appliances, and waste avoidance (eg movement sensors in meeting rooms etc),
- Use of green power for remaining energy use,
- Water conservation through stormwater collection and reuse,
- Public displays of environmental messages (environmental watch-ducks, solar pergola).

About the Models

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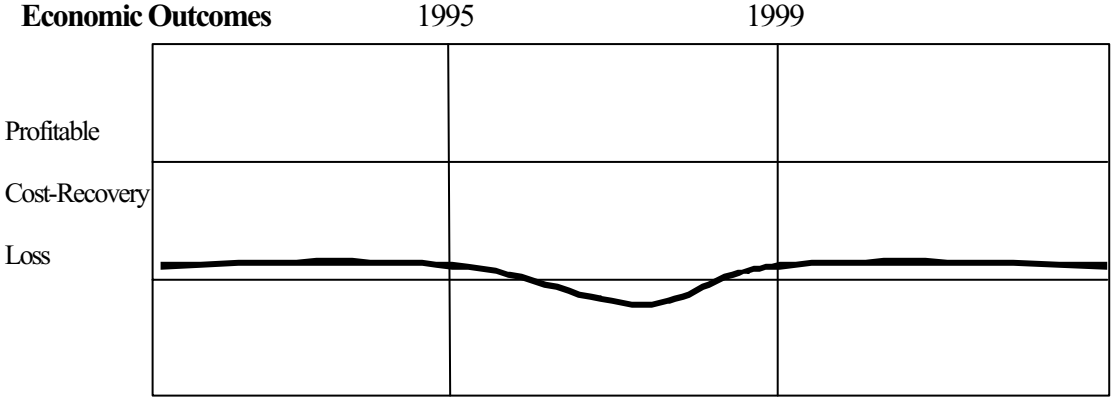
Other Notes
Moreland recognises that it has built for top environmental potential, but performance will remain dependent on how it is used.

Ecological Outcomes



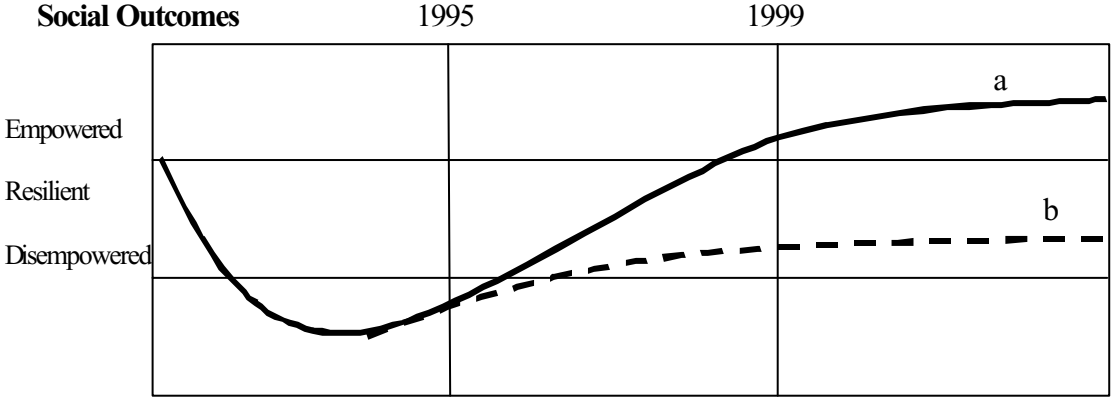
The various council buildings inherited by Moreland City were of standard environmental performance, and little effort had been made to minimise energy or water use, or achieve other environmental goals on those sites. The visionary, innovative and diligent efforts made by Moreland during site redevelopment meant that environmental improvements were made to materials, energy and water use. These gains could continue into the future if workers make good use of the environmental opportunities (a). The alternative approach of following conventional design and building options would have been more resource-intensive during construction, and more environmentally costly throughout the life of the building.

Economic Outcomes



The economic impacts of the Moreland Civic Centre redevelopment were essentially equivalent to those of conventional building options. Both approaches are costly during the building design and construction stage, and both building types have some associated running costs. The money that was saved through the reuse of building materials was off-set by the added expense of many of the environmentally sustainable materials that were also used. In the operational phase of the building, cost savings result from lower per capita energy use, but the savings are redirected into more expensive green energy. Many of the intended building materials and design features were compromised so as to meet the equivalent budget of a conventional building. Additional cost for green energy actually increases the savings arising from energy conservation. The savings reinvested into green power are a council commitment for all its contestable power, not just the Coburg offices

Social Outcomes



The period leading up to the Civic Centre redevelopment was a disempowering one for the Moreland community. Local residents strongly resented the abolition of local democracy in favour of appointed administrators. Empowerment has gradually been restored through the reintroduction of local elections, and in many of the design aspects of the new Civic Centre. For council workers, the integration of public transport, cycling, and other accessible transport options has assisted. For the general population, features such as the glass-walled council chambers, and the solar pergola are physical demonstrations both of the transparency of the new local government, and of its environmental commitments in action (a). Without these concerted efforts, simple resilience may have prevailed (b).

Port Phillip sustainable community housing project and depot redevelopment

Case Study V2: By Su Wild River. With assistance from Gary Spivak (Port Phillip City Council).

Comparative Statistics for Port Phillip

Category	Measure	Comparison
Area (Sq/Km)	20	Bottom 7%
Population	73,092	Top 12%
Pop Sq/Km	3,655	Top 2%
Total Income ($)	69,665,000	Top 8%
Rate Content ($)	37,598,700	Top 8%

Information Australia 2000.

Port Phillip City Council found innovative ways to fund a showcase of sustainability when it redeveloped an old council depot. It invested in designing the redevelopment using environmental principles. But it recovered these costs, and guaranteed 27 new public housing units during the transfer of the site to developers. The outcome provided environmental and social benefits without net costs to council or the developer.

Port Phillip is a densely populated, industrial city on Melbourne's central waterfront. Like most other Victorian local governments, it exists as a result of the forced amalgamations in the mid 1990s. And along with many other proactive Victorian councils, Port Phillip recognised and harnessed various opportunities as result of the amalgamations. A key opportunity from the consolidation of several previous local governments into fewer sites was the availability of the now disused sites for redevelopment. Rather than simply selling off these sites, Port Phillip has developed some into showcases of sustainability. Such initiatives have provided cost-neutral ways to achieve social and environmental outcomes.

An old St. Kilda council depot in the heart of St. Kilda, near the beach provided an ideal site for redevelopment. The easiest action for council to take would have been to simply sell the site to a developer, on the open market. This would have earned council a one-off profit of around $5.2 million.

However Port Phillip had other goals, beyond simple profit-making. It had an obligation to provide some new community housing to poor local residents. Several council officials also had strong environmental beliefs, and wanted the site to be a showcase of environmental sustainability in action. The *City of Port Phillip Housing Strategy* also articulates goals and objectives such as maintaining social diversity and encouraging neighbourhood villages (City of Port Phillip 1997). And both the housing and *Sustainable Development Strategy* outline goals for using solar energy, and ensuring clean, green and diverse environments (City of Port Phillip 1996).

So rather than simply selling the site, Port Phillip instead found an innovative developer, that was sensitive to difficult sites and willing to work with council to design an unusual development. Port Phillip council invested $625,000 investigating and designing a master plan for the site. This cost was ultimately reimbursed by the developer as part of the development agreement, rather than leaving them to the highest-bidding developer. This move was supported by existing council policies, including its corporate plan and housing and sustainability strategies. Some provisions in the state Planning Act also supported the approach of making voluntary agreements with developers on the contract of sale (S. 173). This provision enabled a legal mechanism to affect a partnership between the local government and developer.

Council identified several core goals for the site. One was that the site provide 28 units for community housing. This meant that the developer would be making its profit from the sale of the remaining private units, but not these ones. A second requirement was that the development achieve best environmental practices to support ecologically sustainable development in the city. The developer used computer simulations to analyse the solar and wind conditions of the site. Onsite stormwater recycling and reuse was also called for by council. This was assisted by a $260,000 government grant from the *Living Cities/Urban Stormwater* Initiative. This was very much supported and extended by the developer.

In addition, council wanted the site to be friendly for the community. Cars were to be kept out of sight, with green spaces available to the community while integrating art into living

spaces. This was achieved by designing an underground car park, with gardens, lawns and ventilation integrated art featured, and with natural light and trees growing through the podium.. Finally, council required that the developer use recycled materials, cross ventilation, and a range of other environmental measures where practical in the building. Again, the selected developers were happy to oblige where possible. Figure 1 shows some of the resulting design features.

Figure 1: Redevelopment design sketch.



Another feature of the site was that some useable structures remained from the original depot. In particular, a 'destructor' building located in the centre of the block, provided a distinctive landmark, with early 20th century architectural value (see Figure 2). Council encouraged the developers to make use of this structure in their design and construction, and to integrate it into the new buildings. The use of the existing structure did not save any money, since significant refurbishing was required. But it did provide a good starting point for architectural diversity across the site and integrating the overall development into the local area.

Several features of the site were also important constraints to the development. For instance, the site is sometimes subject to flooding, and required very effective means for water management. This constraint was used creatively as an opportunity, and the developers worked hard to find ways to use and dispose of water on site. It also reinforced the benefits of a wetland as a secondary treatment element of the grey water recycling primary treatment of stormwater recycling. The final design included less extensive roof gardens, and greater water recycling than in the original plan, since this was finally considered to be more important.

Finally, council decision making about the details of the redevelopment was also problematic. Some elected councillors considered that Port Phillip City would benefit most from a traditional approach to such a site. The direct financial gain from the land sale would have been a significant addition to the council budget, and could have been another way to fund the community housing units that council was obliged to build. However the project proceeded ultimately with council support on the recommendations of officers.

Council also had other costs from the redevelopment to deal with. For instance, the site was contaminated because of its previous use as a depot. Decontaminating the site was an expensive and risky process, in addition to the costs of planning the new development on the site. This was resolved by council taking the risk by remediating the site and the developer paying the estimated cost of the settlement at the contract of sale. Figure 2 shows the 'tent' structure that was set up to during site decontamination, to ensure that the surrounding area was not polluted during the redevelopment.

Figure 2. Decontamination 'tent' and old 'destructor building'.



Despite these challenges, the environmental showcase has been built, and many of the innovative goals have been achieved. There have been many positive outcomes from the project. As well as fulfilling local community housing needs, the educational benefits of the project, as a showcase of sustainability will continue well into the future.

References

City of Port Phillip. 1996. *City of Port Phillip's Sustainable Development Strategy*. Melbourne: City of Port Phillip.

City of Port Phillip. 1997. *Housing Strategy*. Melbourne: City of Port Phillip.

City of Port Phillip. 1999. *Corporate Plan 1999/01-2001/02*. Port Phillip.

Information Australia. 2000. *Australian Guide to Local Government. 28th Edition*. July 2000-November 2000. Melbourne.

V2: Port Phillip sustainable community housing project and depot redevelopment

Perspective: Local Government
Role: Officer
LG type: Capital (rich, compact, populous)
Focus: Planning

Context Issues
-

Context continuums

Scale
<local local regional state national international

Flexibility of Process
Full mostly equal partial none

Origins of initiative
<local local regional state national international

Goals
- Provide an optimal amount of community housing without paying the construction costs,
- Set benchmark for sustainability in housing, by demonstrating good urban form,
- Use a broad range of ecologically sustainable building techniques and features,
- Provide bicycle and pedestrian access,
- Integrate art into living spaces.

Drivers
- LG lead by example,
- LG amalgamation Vic,
- LG housing and sustainability strategies and corporate plan suggested take on development risk, rather than sell land,
- Developer with sensitivity to difficult sites – innovative and prepared to take risks,
- Computer simulations based on plans allowed analysis of solar, wind,
- Grant for stormwater reuse,
- Quality and value of site attractive to developers,
- Innovative ideas about land-for-units swap,
- Existing building used during community consultation to help set height benchmark,
- ESD as a marketable design

Processes
- Site worth $5.2m plus $1.7m for remediation exchanged for 28 units to be provided by developer,
- Community homes plus private dwellings, will make site worth $7.5m,
- Section 173 (Planning Act) agreement with developer on Contract of Sale means an effective partnership,
- $625,000 spent preparing council's master plan,
- Existing historic buildings used to help community,
- elements of LG master plan uneconomic to developer, but compromise acceptable to both LG and developer.

Constraints
- Pressure for selling the site rather than the demonstration project overcome by ability to achieve objectives,
- Floodplain and other site constraints creatively used as opportunities for waste water recycling,
- Unavailability of environmentally sound materials at an acceptable price and guaranteed quality to developer,
- Unavailability of acceptable technologies (eg photovoltaics),
- Risk to LG of large expenditure on

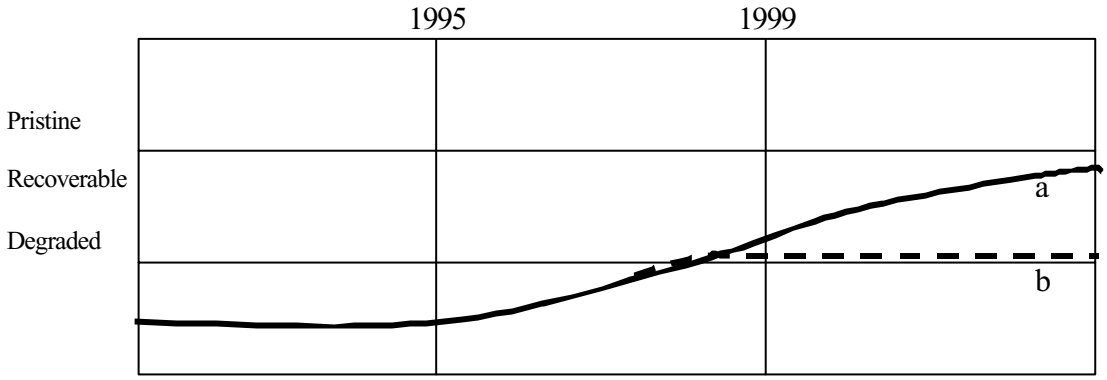
Outcomes
- Developer goal to average 4 star energy rate, other environmental and marketing benefits,
- Effective partnership between LG and developer, and developer now marketing envt benefits,
- Contract of sale to provide legal protection to LG, and minimise risk. Financially sound project,
- Commercially viable project that also meets councils objectives, and energy systems designed so that photovoltaics can be installed at a later stage without any major alterations.
- Open public pedestrian areas, cars underground, 66% north-east and west facing units,
- Many goals of the master plan achieved, including stormwater reuse, passive solar, bike access.

About the Models

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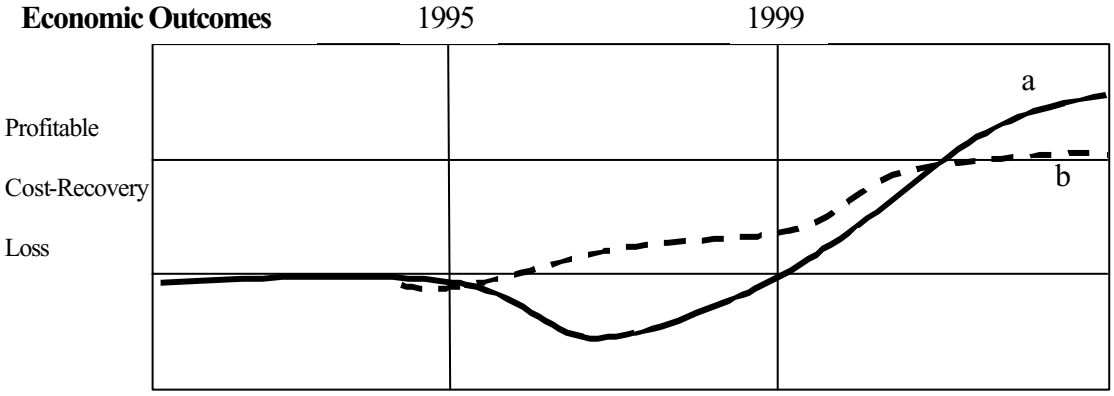
Note: This case study is one of 34 produced for Su Wild River's PhD research, undertaken through the Centre for Resource and Environment Studies, Australian National University.

Ecological Outcomes



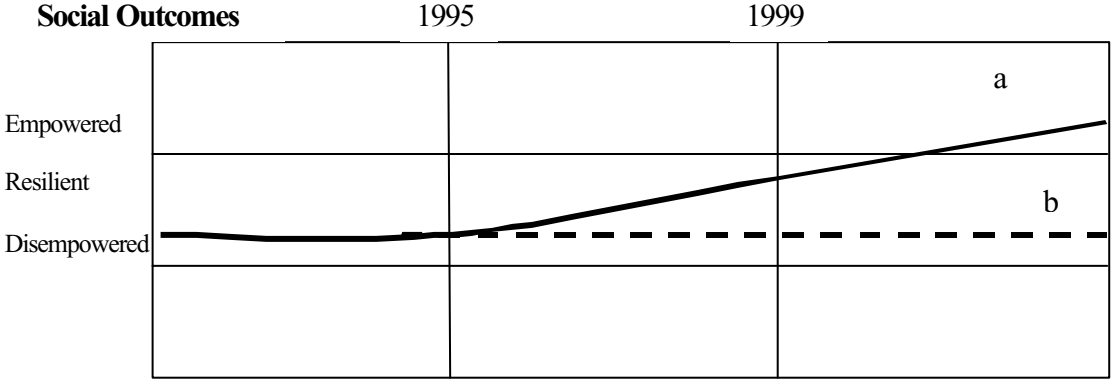
Prior to the new development proposal, the old depot was a highly degraded site, situated on contaminated land. Preparing for sale and redevelopment of the site has required intensive site rehabilitation work, which has improved the environmental quality of the land, even before development. The final development will be a showcase of best practice in urban sustainability, including stormwater reuse, passive solar energy use, and other features (a). The outcome is certainly of higher environmental value than if simply sold without conditions (b).

Economic Outcomes



Council took an economic risk by developing this site as an environmental showcase. The decision to do so meant extra costs in the short term, due to the $625,000 needed to design the project master plan. The 'safest' economic decision in the short term, would have been to do the minimal required decontamination of the site, and sell it off to a developer with standard building conditions. This would have minimised costs to the LG, and resulted in a sound profit (b). The extra costs in the start of the project however, look like being offset by additional economic benefits, and the up-front costs were reimbursed through the $650,000 sale of two housing units. . The environmentally-sensitive, architecturally-designed units with solar features will sell at a higher price on the private market than units in a standard development would have. Port Phillip Council also saves an opportunity cost, since it meets some of its obligations to provide community housing through this project (a).

Social Outcomes



This project brings substantial social benefits to the local area. The community were actively consulted on the intention to redevelop the land. Issues such as the emphasis on environmental initiatives, and the inclusion of some community housing units were discussed with local residents during the formulation of the Master Plan. Further benefits will occur in the future, once tenants are located into the community housing units, and other residents buy the remaining dwellings (a). The alternative option, where land was simply sold to a developer with few restrictions, would have had few or none of these social benefits.

Waste Minimisation in Darebin City

Case Study V3. By Su Wild River, with Libby Hynes (Darebin City Council Waste Officer)

Comparative Statistics for Darebin

Category	Measure	Comparison
Area (Sq/Km)	55	Bottom 13%
Population	125,484	Top 6%
Pop Sq/Km	2,282	Top 5%
Total Income ($)	73,138,614	Top 7%
Rate Content ($)	38,823,729	Top 7%
Expenditure ($)	75,339,528	Top 8%

Information Australia, 2000

Council initiatives for waste minimisation have been a feature in Darebin City for years. They predate Darebin itself, since the predecessor councils were involved in waste minimisation before Darebin formed in 1994. The initiatives also predate state government-imposed waste reduction targets. This proactive approach has imposed distinctive constraints on initiatives. Achieving environmental goals has required highly strategic, and sometimes counterintuitive action.

Darebin City is in inner-North Melbourne, and is a densely populated, culturally diverse local area. The Council was formed through the amalgamation of Northcote and Preston City Councils. Such amalgamations were imposed on all but one Victorian local government during the Kennet government reforms in 1994. As in most of Victoria, local governments and communities responded to this removal of local democracy with anger and resentment. Similarly, the ensuing compulsory competitive tendering of most council services, initially dismayed those responsible for its implementation. However, like many other proactive councils, Darebin has been able to adapt to the changes. Improved service delivery has sometimes resulted.

Some of Darebin City's waste initiatives were driven by local community interest in the environment. For instance, one of Darebin's boundaries is on Merry Creek. The highly active 'Merry Creek Management Committee' has worked with, and lobbied local governments in the catchment to reduce pollution and other impacts on the creek. In response, council installed litter traps to help keep the creek and surrounds cleaner. The initiative has been demonstrably successful. Platypus have recently returned to the Darebin section of the creek, despite its inner-city location. Figure 1 shows a part of Merry Creek, bordering Darebin City on the left.

Figure 1: Merry Creek.



Before their amalgamation, Northcote and Preston Cities were already attempting to reduce local waste to landfill. This initiative sprung partly from the local governments' recognition that landfill space was becoming an increasingly scarce and valuable resource.

Local government research showed that a high proportion of the waste going to landfill was green waste. This is a relatively easy waste to divert to other purposes, and it became an early focus of the council's internally-driven waste reduction strategies. Council established various collection, mulching and other services to deal with the green waste problem.

In December 1996, Victoria passed the Environment Protection Amendment Act. This extended an existing metropolitan landfill levy to country Victoria. The government also brought in waste reduction targets, and established a new agency called 'Ecorecycle' to assist local governments to reach these targets. Ecorecycle coordinates regional waste management groups and research efforts to identify and solve waste problems. It also makes a range of grants available to local governments and assists them in other practical ways.

Ironically, these state government initiatives disadvantaged some of the more proactive local governments. For instance, although Ecorecycle was issuing grants for just the type of strategies that were already being implemented in Darebin, they were not available to that local government. This was because they were targeted towards new initiatives, and could not be used to help implement existing programs. And the funding that was available to help with existing programs did not target green wastes. So Darebin received little assistance, and was often short of funding for its initiatives.

There were also some apparently fundamental problems with the emerging waste system. A key element of most of Victoria's reforms to public institutions was the new compulsory competitive tendering requirement. Under this, local governments were forced to identify all of the services they provided, to clarify the goals and processes of the services, and where practical, to commercialise their operations. These reforms were in line with Australia's National Competition Policy, and aimed to increase the efficiency, accountability and transparency of public service delivery.

Another issue is that the full environmental costs of 'new' products are *not* accounted for when the products are sold in Australian markets. But recycling usually involves hard work, and often uses expensive equipment. The costs of these *are* included in the cost of the recycled products. This gives 'new' products a market advantage, compared to the recycled goods. It follows that recycled goods will rarely compete effectively with new products under a system of competitive tendering.

Darebin also found it difficult to engage the community in debate about key issues of waste service delivery. This was partly because the community became disillusioned about local democratic and participatory processes after the elected council was sacked in the 1994 reforms. It was also because waste is not a 'sexy' issue. It is rarely one that inspires positive community action and support.

Yet at the same time, Darebin received strong criticism for some of its waste management strategies. Many residents for instance, complained that the bins were the wrong size, while volumes decreased to promote reduction of waste to landfill (see Figure 2). They also complained when recycling bins were inconsistent throughout the city. The greater standardisation of waste in Darebin results partly from this, as well as from the amalgamation of the previous cities. Figures 3 and 4 show different recycling and other waste systems operating in Darebin.

Community demand for recycling is also one of the key reasons that the practice has remained in Darebin. As in most of Australia, recycling is not cost effective for local governments. But, although communities rarely engage in debates about broader waste issues, ratepayers are quick to complain if recycling programs are removed.

Figure 2:

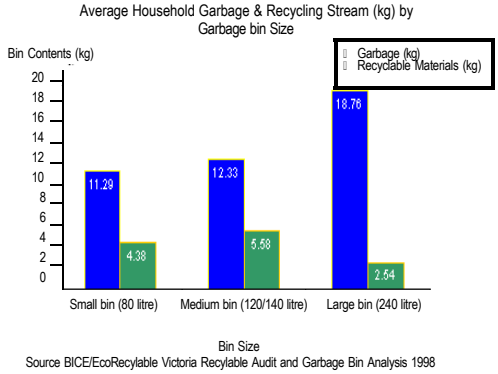


Figure 3: waste cardboard, plastic and pavers outside Darebin house.



Figure 4. Recycling and waste bins outside flats in Darebin.



References

BIEC/Ecorecycle Victoria Recycling Audit and Garbage Bin Analysis 1998. Source:

http://www.ecorecycle.vic.gov.au

Government of Victoria. 1996. *Environment Protection Amendment Act.* Melbourne: Government of Victoria.

Information Australia. 2000. *Australian Local Guide to Government.* Melbourne: Information Australia.

V3: Waste Minimisation in Darebin City

Perspective: Local Government
Role: Officer
LG type: Capital (rich, compact, populous)
Focus: Protection

Context Issues
Darebin was formed through the amalgamation of Northcote and Preston City Councils during the 1994 Victorian Local Government reforms.

Context continuums

Scale
<local **local** **regional** state national international

Flexibility of Process
Full **mostly** **equal** **partial** none

Origins of initiative
<local **local** **regional** **state** national international

Goals
- Achieve waste minimisation targets set by the State-Government
- Achieve council's own green-waste targets, that were established before State Government requirements,
- Clean up the city by reducing litter, and other problem waste.

Drivers
- Recognition of lack of landfill space, and the need to reduce local waste,
- State government legislation, with statutory goals to reduce waste to landfill by 50%,
- Waste management regional groups,
- Eco-recycle, with models, policies and staff to advise and assist,
- Local environmental features and initiatives (eg Merry Creek and its active management committee).

Processes
- Establish measures to reduce green waste to landfill (preceded State Government requirements),
- Gradually change over waste systems to minimise costs of the transition,
- Establish litter traps as part of associated efforts to clean up the city.

Constraints
- SG funding sometimes not available in line with Darebin's priorities (eg green waste),
- Existing programs not funded by SG, so needed to be more strategic,
- Failure to learn from past mistakes,
- Problem with corporatising these services is that minimising a resource is not a marketable service (so there were no good tenders for waste minimisation, and Darebin found it couldn't rely on market mechanisms for this),
- Lack of democratic representation during strategy development, since the commissioners were in charge of them,
- Low community interest in key issues (petty issues like size of bin mattered),
- Hard to cover all variables, and determine why waste was increasing or decreasing.

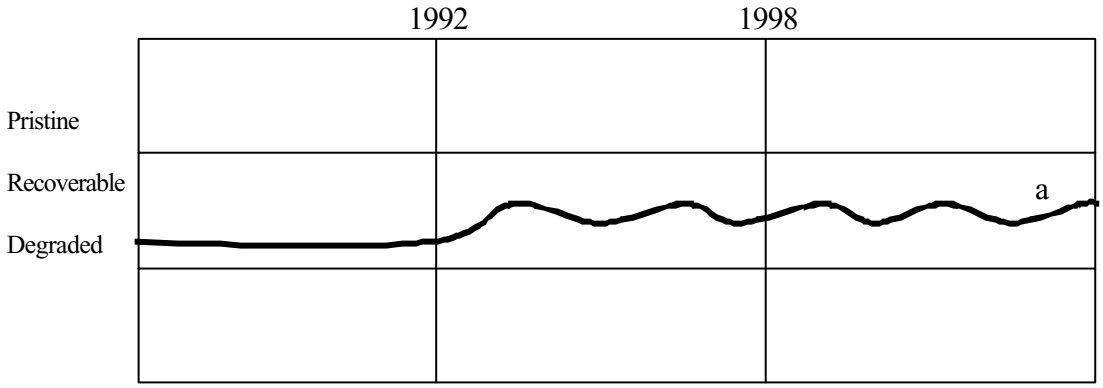
Outcomes
- Green waste collection services established, operational and succeeding in reducing waste to landfill,
- Greater standardisation of waste in the City.

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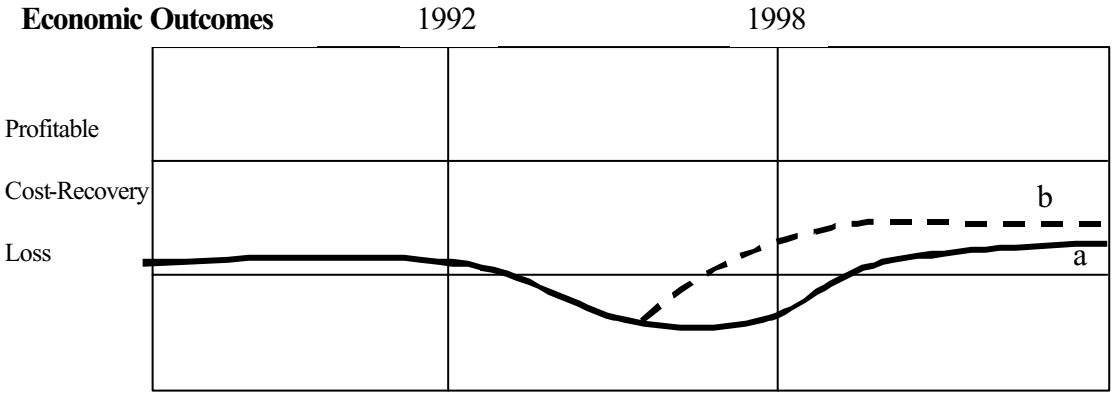
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Ecological Outcomes



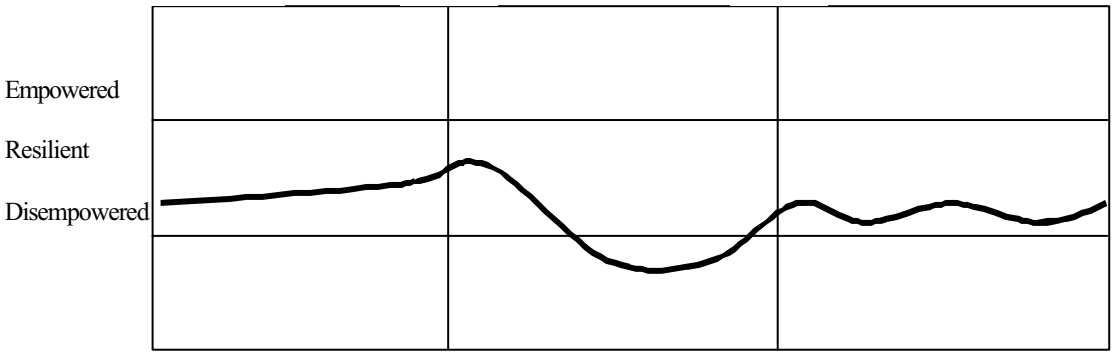
Waste avoidance and minimisation were not key priorities for Darebin until the initial, Council-initiated green waste strategy in 199?). Since then, green waste to landfill has reduced, and sustainable reuse of green waste has increased. However the amounts of various waste streams directed to landfill continues to vary, and it is not clear why.

Economic Outcomes



Research into green waste avoidance options, and the establishment of programs was a costly exercise for Council. However, the strong interest in waste minimisation issues by various agencies has assisted in providing information and support needed to reduce those costs in the long run. Other local governments within the inner-city region, and central agencies such as Ecorecycle have been important players in this research and action (a). However Darebin's costs could have been further reduced if State Government funds had been made available to support pre-existing programs that were consistent with State goals (b).

Social Outcomes



Early, council-driven efforts at waste minimisation in Darebin were slightly empowering for local residents, as these gave them better options and information for dealing with their green wastes. The forced Council amalgamations were disempowering for communities, who lost access to local democratic representation for a time. Darebin's further efforts to provide green waste and other waste minimisation strategies have received mixed responses. There is some conflict between local areas about the size of bins, and the detail of the waste services provided. Although these issues have little impact on waste services actually provided, they do cause community concerns over time.

The 'Buy-Recycled' Initiative at Yarra City

Case Study V4. By Su Wild River, with Meryl Triggs, (Waste Management Project Officer) and Libby Chaplin (Arcadian Solutions).

Comparative Statistics for Yarra City Council

Category	Measure	Comparison
Area (Sq/Km)	19	Bottom 7%
Population	65,000	Top 13%
Pop Sq/Km	3,421	Top 2%
Total Income ($)	66,109,000	Top 9%
Rate Content ($)	35,438,000	Top 9%
Expenditure ($)	62,606,000	Top 11%

Information Australia, 2000

The Buy Recycled initiative was part of the Waste Management Strategy introduced by Yarra City Council. It encouraged and showcased innovative ways to reduce local waste problems. The initiative stimulated local businesses to help avoid waste by reusing and recycling materials in their products. Council also adopted policies to provide leadership for waste reduction by buying recycled goods wherever possible. Recycling in the City increased as a result of the Waste Management Strategy, but the total volume of waste produced in the city was not reduced.

Yarra City is a densely populated, inner city area of Melbourne. It has significant shopping and restaurant precincts and a decidedly inner urban environment. It has high ethnic diversity, a high proportion of people aged between 18 and 34, and a highly mobile population. Yarra City was formed through the amalgamation of Richmond, Fitzroy, Collingwood and part of Northcote and Melbourne cities, during the Victorian local government reforms of 1994 (City of Yarra, 1997. p.2). These same reforms also brought in compulsory competitive tendering (CCT) of most council services.

Waste services were some of the first council activities to be affected by CCT requirements. Prior to this, local governments usually operated the landfills that received wastes, and hired local contractors for residential waste collection and transfer to the landfills. The first stage in the transition to CCT for waste collection, transfer and disposal required local governments to rethink their entire waste services, and to consider why and how they undertook each component task.

Broader government initiatives focusing on waste minimisation also affected Yarra City's own policies. The National Waste Minimisation Strategy (Commonwealth Environmental Protection Agency 1992) and the National Kerbside Recycling Strategy (Australia New Zealand Environment Council, 1992) had recently helped to define Australia's national framework for waste minimisation. In addition, the Victorian Government committed the state to achieve a 50 per cent reduction in waste to landfill by 2000, based on 1990 waste quantities. It also legislated landfill levies for all Victorian wastes (City of Yarra 1997, p.2). The waste levy helped to fund the establishment of *EcoRecycle.* This statutory authority provides research, information, practical support and other assistance to local governments, on waste issues.

Yarra City's *buy-recycled* activities were developed partly as a result of a waste audit of Council offices, which identified opportunities for waste reduction including the purchase of recycled products. It was also assisted by some council processes like the need to update and renew contracts for various suppliers of council products. New contracts afforded an opportunity to build environmental goals into a range of council activities which had not previously prioritised them. There were also several enthusiastic potential buy-recycled clients. These included a local supplier of recycled printer toner cartridges and a local company making office chairs from recycled plastics.

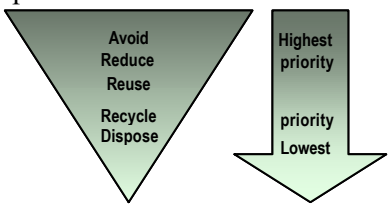


Figure 1: Waste Hierarchy

The principle that underpins the Buy Recycled program is that of the 'waste hierarchy' as shown in Figure 1. The hierarchy encapsulates the observation that the greatest gains in waste minimisation are achieved through work at the top of the hierarchy. So waste avoidance efforts result in greater waste reduction than do recycling, which give greater benefits than reuse and so on. Fewest real environmental gains are made when efforts focus on the waste disposal section of the hierarchy. *Buy recycled* initiatives are distinctive in their focus on developing markets for recycled products, rather than on the processes of recycling themselves.

Some important technical issues needed to be addressed in the buy-recycled initiative. For

instance, when a recycled product competes with a standard alternative, there is a need to demonstrate that it meets all of the performance requirements of the product it replaces. The challenge of ensuring that design specifications and costs are adequate was larger than the council initiative, and Yarra City worked with EcoRecycle to address these issues.

Acting on a recommendation of the Local Government Buy Recycle Reference Group, EcoRecycle Victoria produced the publication: *Products Made from Recycled Materials* (EcoRecycle 1999) and the Buy-Recycled Resource Kit for Local Government. This kit (prepared by consultants *Arcadian Solutions*) gives information on recycled products, materials being recycled and used to make the product, a description and supplier for the product. Importantly, the description specifies product standard, in relation to recognised criteria. This level of detail ensures that local governments and other purchasers can readily purchase the recycled products without needing to shop around each time to find and test them. The success of these initiatives led to the establishment of the Local Government Buy Recycle Alliance at the Municipal Association of Victoria. Over 30 councils in Victoria have now signed onto the program.

Figure 2: Recycled concrete, bluestone*



Buy Recycled initiatives undertaken by Yarra include:

- construction of roads and footpath using recycled asphalt and concrete (Figure 2),
- use of reusable plastic kerbing,
- blue stone reuse in kerb reconstruction,
- purchasing 50% recycled office paper,
- refunding 50% of cost to traders if they purchased recycled packaging for the Yarra Community Day,
- the successful tender for 33,000 Mobile Garbage Bins and 27,000 recycling crates made from recycled plastic,
- worm farms and compost bins for sale to the public are made from recycled plastic,
- recycled paper hand towels, toilet paper,
- synthetic soft fall made from recycled tyres (Figure 3),
- cornstarch pens,
- tub chair from recycled toner cartridges,
- subsidising reusable cloth shopping bags for residents.

Figure 3: Recycled tyres for soft fall*



* photographs by Yarra City Council.

Yarra City's experiences also highlight the significance of the criteria that are used to measure success in delivering environmental outcomes. For example, concil waste initiatives were successful in increasing recycling. But waste to landfill was maintained at existing levels, because of the combination of increased recycling, and increased waste production. In this sense, implementing the policy has helped to identify criteria for assessing the success of waste management initiatives. But it has not addressed the related question of why waste production from households has increased recently in Yarra City.

References

Australia New Zealand Environment Council. 1992. *National Kerbside Recycling Strategy*. ANZECC.

City of Yarra. 1997. *Waste Management Strategy July 1997*. Melbourne: City of Yarra.

Commonwealth Environmental Protection Agency. 1992. *National Waste Minimisation Strategy*. Canberra: AGPS.

EcoRecycle Victoria. 1999. *Products made from recycled materials: a guide for purchasing officers in government and industry*. Melbourne: EcoRecycle Victoria.

EcoRecycle Victoria. 2000. *Buy Recycled Resource Kit for Local Government* Melbourne: EcoRecycle Victoria.

Information Australia. 2000. *Australian Local Guide to Government 28th Edition: July-November 2000.* Melbourne: Information Australia.

Local Government Buy Recycled Alliance website: http://www.mav.asn.au/buyrecycled/

V4: Introducing the 'Buy Recycled' Policy for Yarra City

Perspective: Local Government/ Mixed
Role: Officer
LG type: Capital (rich, compact, populous)
Focus: Protection

Context Issues
Following the Victorian LG amalgamations, the State Government set up 'Ecorecycle' to support LGs in meeting waste reduction targets.

Context continuums

Scale
<local local regional state national international

Flexibility of Process
Full mostly equal partial none

Origins of initiative
<local local regional state national international

Goals
- Apply innovative strategies to increase the local market share of recycled products,
- Show leadership to local industry and residents, in buying and promoting recycled products,
- Achieve the opportunity to reduce waste through effective recycling,
- Target waste minimisation, rather than just recycling, in broad waste reduction strategies.

Drivers
- Consultant report and process which helped people to know what buy-recycled and related initiatives were in progress elsewhere,
- Stimulus to action when contractors contracts come up for tender,
- Enthusiastic clients (supplier of recycled toner cartridges),
- Enthusiastic group within LG, 25 staff volunteered to be in working party,
- LG traditional and inherent roles as waste managers, financial interest in reducing waste to landfill,
- Compulsory Competitive Tendering provided opportunity to learn value of contracts,
- LA 21 had model for some environmental policies, attracts State, Federal support.

Processes
- Council carried out internal waste audit January '98,
- Consultant developed options for recycling/ reducing waste,
- Working party within LG achieved various targets,
- LG was developing an environment strategy, but may call it LA21 because of broader government support for those initiatives,
- Encouraged staff to buy recycled goods, by using recycled products in Council.

Constraints
- Inflexibility of contracts set up several years ago without waste reduction requirements,
- Opposition within LG to using some recycled products (eg recycled paper and cartridges in printers),
- Low interest in waste initiatives across LG, probably because the issues cross boundaries, staff sabotage trials,
- Staff turnover in supportive peak bodies, eg. Municipal Association of Victoria, Ecorecycle.

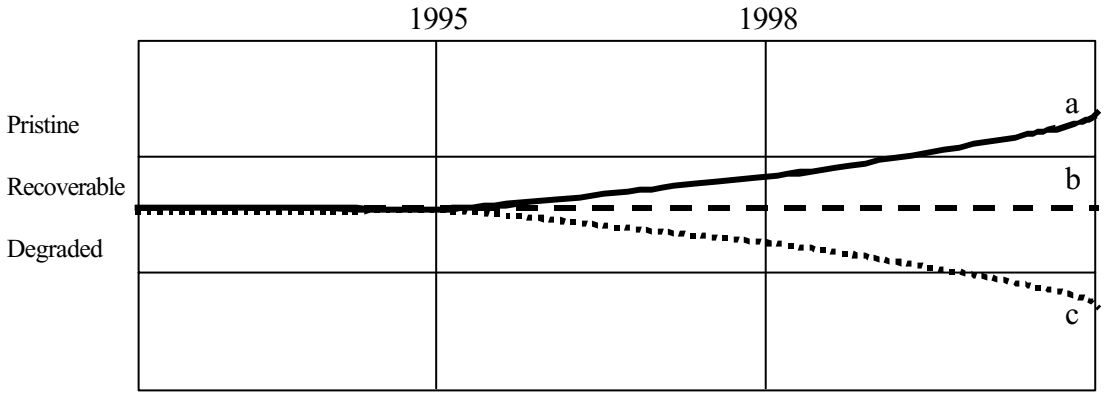
Outcomes
- Achieved internal change, through increased use of recycled products by LG,
- Encouraged local businesses to develop recycled products, eg chair made from reycled toner cartridges,
- Buy-recycled policy nearly completed,
- Ecorecycle reference group and alliance to be set up.

About the Models

The Comparative Case Study Model records an attempt to deliver environmental outcomes in a simple, general format enabling comparative analysis of issues. Key elements of attempts, and their contexts are recorded. The graphs across the page show the ecological, economic and social values before, during and after the attempt, and how these changed as a result of initiatives. The graphs are often 'split', indicating different outcomes for different sectors simultaneously, or different possible outcomes.

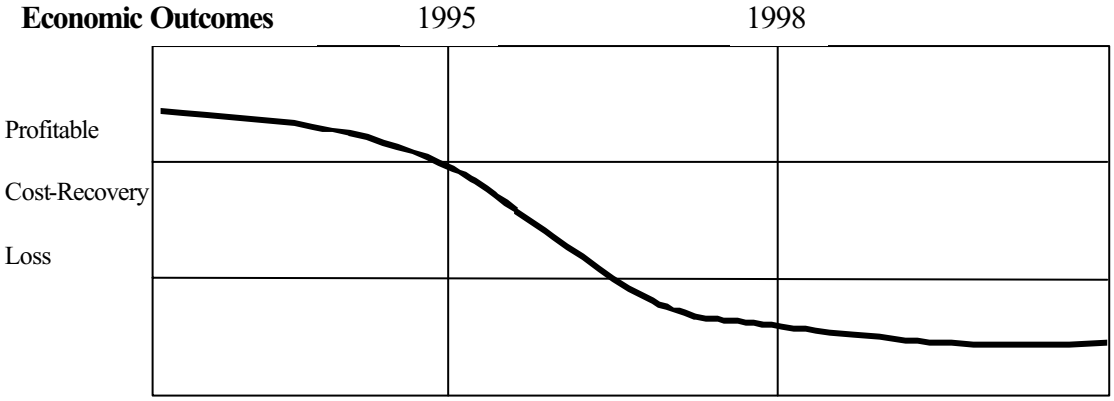
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Ecological Outcomes



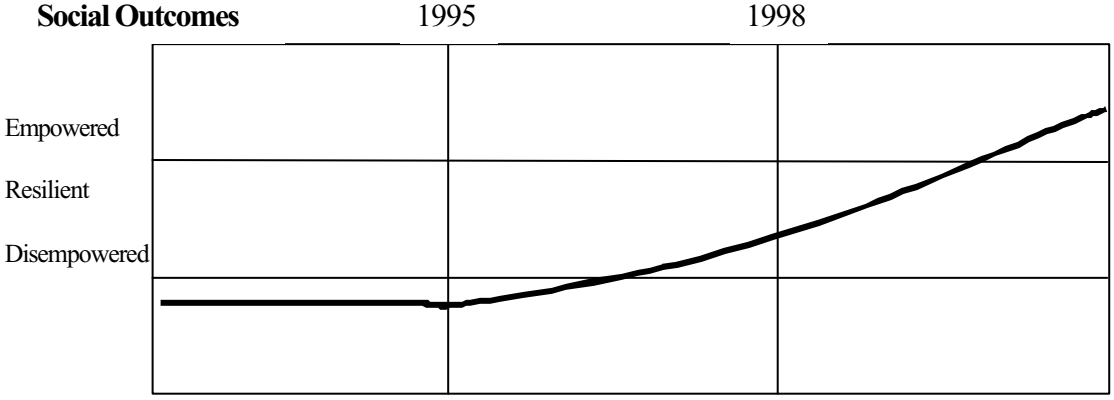
The environmental outcomes here are stated in terms of three possible measures for waste management policies. The top line (a) indicates the increased use of recycling systems and recycled products in Yarra City, as a result of the buy-recycled, and related initiatives. The middle line (b) shows the amount of waste going to landfill, which has remained unchanged, despite increased recycling. The bottom line (c) shows the overall increase in resources being directed from households to waste systems. This example demonstrates the importance of carefully defining the measures used to determine the success of environmental policies.

Economic Outcomes



Waste management programs at Yarra City were operating at a profit, in that Council's budget for running its landfill was sufficient. In addition, some money could be recouped from recycling some materials, such as aluminium. Increased environmental controls on landfills, and recycling systems have added significantly to the costs of running Council's waste systems. 30% of the waste stream is now recycled, and the total cost to Council of its waste services is $1.5million. To date, recycling has proven more expensive than landfill as a waste management strategy.

Social Outcomes



The Victorian local government amalgamations before were disempowering for the Yarra City community, since they lost local democratic representation. As democracy has been reinstated, and various waste management strategies have been put in place, empowerment has increased. Council is now in the difficult position, where many of the recycling services are not cost effective, yet the community continues to demand that they are maintained. This is a case where the community is so empowered as to constrain the Council from making cost-effective decisions about some waste management options.

Bushland Management in Mullum Mullum Creek, Manningham City

Case Study V5: by Su Wild River with Jane Pammer (Bushland Management Officer, Manningham City)

Comparative Statistics for Manningham

Category	Measure	Comparison
Area (Sq/Km)	114	Bottom 18%
Population	112,503	Top 10%
Pop Sq/Km	987	Top 13%
Rate Content ($)	32,551,000	Top 10%
Expenditure ($)	66,651,000	Top 9%

Information Australia, 2000

Environmental values in Mullum Mullum Creek have been substantially improved by intensive efforts by the Manningham City bushcrew. Workers on the project have found that the native vegetation is quickly returning due to their efforts in ongoing hand-weeding, spot-spraying, and other land management tasks. But these are ongoing and meticulous processes that have required work every 10-12 weeks throughout the year, for over seven years.

Manningham City Council is a wealthy residential area of Melbourne with a large population. The city has densely populated areas, balanced by large areas of native bushland, and rural residential areas. Many of these are along creeks and include significant patches of remnant native vegetation. The city council places a high value on its environment, and has developed a reputation for environmental work through a number of its innovative programs and projects. These include the bush regeneration work at Mullum Mullum Creek.

Mullum Mullum Creek provides a green-belt between urbanised sections of Manningham City. Council has made concerted efforts over recent years to enhance native riparian vegetation to the catchment. It is also working to increase the Creek's values for recreation, and as a cycle and walk way through the Shire.

In 1993, Manningham City hired Jane Pammer as a gardener, supervising a team of unemployed people, who worked mostly on weed management. Jane has continued working as a gardener at Mullum Mullum Creek and other local sites since then. Other contractors have also been working on bushland management in the shire, initially on fairly short contracts, and now on a more permanent or ongoing basis. These initiatives have led to substantial improvements in vegetation values along the creek. But it has not been a quick or easy task.

Initial work on the project involved large-scale direct planting of local native species. While some of them survived, many did not, partly because of pressure to plant at the wrong time of the year. This approach also turned out to be wasteful of resources, since the site contained a significant amount of remnant vegetation, from which natural regeneration could occur if the site was managed in such a way to facilitate this.

This observation has led to a detailed focus on the weed problem. The teams now work their way through the rehabilitation area, using systematic methods to thoroughly remove all of the target weeds. One method involves placing bags as markers, and moving them once all weeds have been removed from an area. In higher quality sites where the weeds are very dense, ropes are laid out in two metre wide strips, and weeds are removed between them before one rope is shifted to mark the next section. Figure 1 shows this technique being used over a grassy slope. This two-metre by 20 metre strip would take between one and three hours to hand-weed.

Figure 1: Tapes marking sections for weeding.



This meticulous process is also governed by environmental conditions. One issue is that Manningham's section of the creek lies downstream from other weed-infested areas. Because of this, the creek carries weed seeds down to the rehabilitated section of the creek-.

flats each year. Because of this, the flats are weeded approximately four times each year, while the top of the slope is checked only once a year. Timing is also critical to optimising the weed management. The teams focus on areas where weed seeds are about to drop.

Larger 'woody weeds' are also being removed, but again this is a gradual process. The rehabilitation teams chose not to remove all of the weed trees since these provide habitat for native animals.

Figure 2: Riffle in Mullum Mullum Creek



The bushcrew also liaise with other agencies doing related work in Mullum Mullum Creek. For instance, specialist contractors for Melbourne Water manage the bed and banks for all Melbourne waterways. They work to moderate the flow of creeks such as Mullum Mullum since the houses, roads and other built structures all reduce the infiltration of water into soil. This means that more stormwater flows directly into the creek when it rains. That can increase erosion within and around the creek bed. In response. One approach to accommodating the increased peak flows is by slowing the creek. This is achieved by lining the outside edges of some of the creek's bends to reduce scouring of the soil there. Pools have been built in some places to slow the water even further. Rock 'riffles' have also been put in place, to form non-erosive areas when the water flows down a drop. Figure 2 shows one of these structures in place.

The rehabilitation team's efforts have already transformed a very degraded, and weedy area into a showcase of remnant vegetation management. Bikeways also now run along the creek, and it has become a major recreation and transport corridor for walkers and cyclists. The initiatives have clearly delivered major ecological and social benefits.

The Manningham City Council bushcrew is also a good local employer. The crew includes a mix of permanent, casual and contract labour, who mostly live locally. 75% of the casual contractors have been on the crew for over 4 years, with the permanent staff having been involved for even longer.

The state government considers weeds to be mostly a state issue, although there is one local government weed program. This is a called 'local government waging a war on weeds'. It involves $12million over 4 years. Manningham has not been one of the recipient councils, despite its intensive, ongoing work (Victoria's Weeds Initiative. 1999). This state government-funded program also only tackles about 20 identified 'environmental weeds'. By comparison, the Manningham initiative deals with around 200 locally-significant weed species.

References

Information Australia. 2000. *Australian Local Government Guide. 28th Edition, July-November 2000.* Melbourne: information Australia.

Victoria's Weeds Initiative. 1999. *Local government waging a war on weeds: innovations in weed management.* Melbourne: Victorian Department of Natural Resources and Environment.

V5: Bushland Management in Mullum Mullum Creek, Manningham City

Perspective: Local Government
Role: Manager
LG type: Capital Fringe (rich, compact, populous)
Focus: Management

Context Issues
-

Context continuums

Scale
<local local regional state national international

Flexibility of Process
Full mostly equal partial none

Origins of initiative
<local local regional state national international

Goals
- Care for all native remnants in the Mullum Mullum Creek Catchment, with particular emphasis on the ground-storey,
- Protect habitat for native animals, through either indigenous or weed species (ie, resist the urge to manicure the site),
- Spot plant trees and shrubs into the weedscapes

Drivers
- Officer available with perpetual funding,
- Same officer in position long-term, allowing learning, flexibility,
- Flexible funding arrangements so that savings in one area can be redirected to others,
- The bush's capacity to resist weed invasion if healthy and to regenerate,
- Perpetual funding for each site,
- Ability and willingness of workers prioritise weed management efforts,
- Some community education.

Processes
- Arrange perpetual funding for workers to define goals relative to bush needs,
- Tackle erosion using rock riffles, so that sediment collects in creek bed,
- Strategic revegetation effort and weed removal from Mullum Mullum Creek side. Has increased native vegetation,
- Plant indigenous trees and shrubs into weedscapes, then leave them while they establish,
- Not much planting needed since weed removal allows remnants to recolonise,
- Strip weeding techniques to achieve thoroughness.

Constraints
- Resources were used ineffectively in the first phase of the project, since too much was taken on too quickly, and with not enough knowledge. (eg planting done before weed removal),
- The project involves very hard physical work over years. Some weeds in particular are very hard to remove,
- Community knowledge of issues and processes lacking,
- Weed seeds still arrive from upstream, wind etc

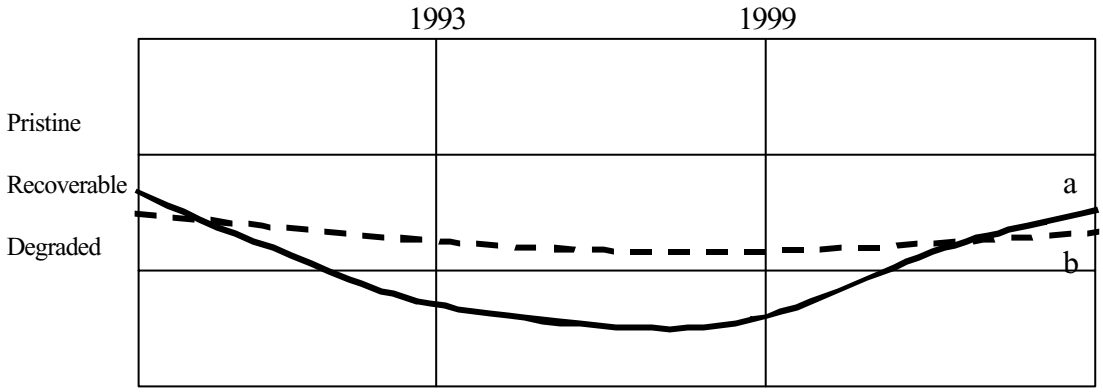
Outcomes
- Groundstory vegetation now effectively managed, although regular work is still needed,
- Some serious weeds removed from large areas (eg blackberry),
- 25-30% of the understory was indigenous at project start. Now nearly 100%,
- Knowledge gained about effective ways to clear weeds and regenerate natives,
- Improvement in natural vegetation in all sites along the creek.

About the Models

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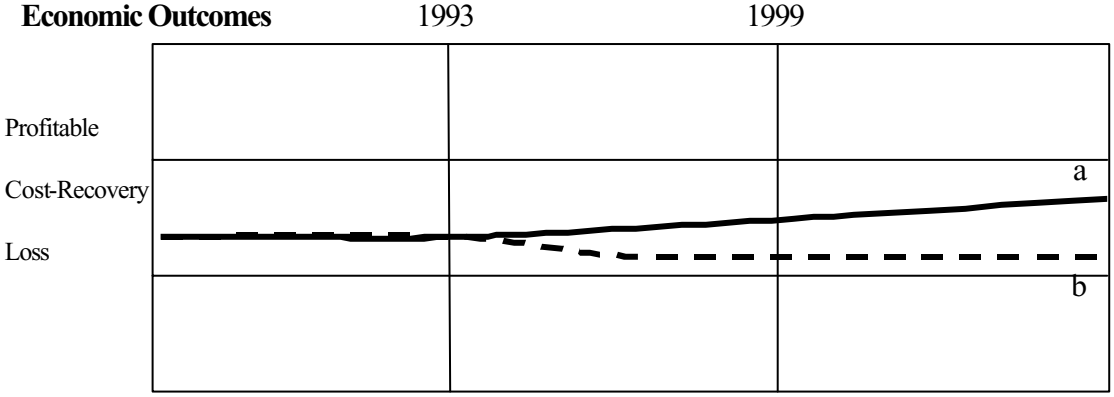
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Ecological Outcomes



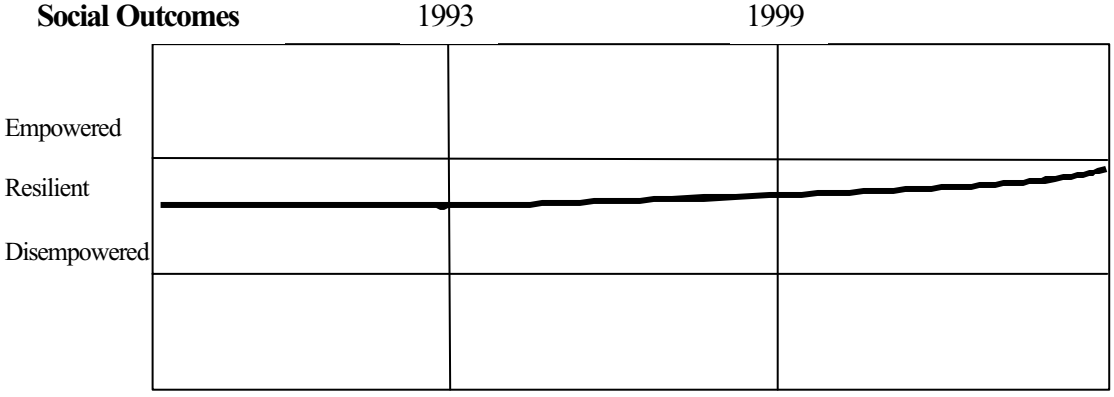
Prior to this project on Mullum Mullum Creek, the environmental values were continuously decreasing. A range of weeds were steadily and aggressively taking over most of the creek edge, increased runoff from sealed surfaces in the catchment were placing an extra load on the creek during rain episodes. Strategic, flexible approaches to weeding and replanting have led to significant environmental improvements at all work sites along Mullum Mullum Creek (a). However, the impact for the City as a whole is relatively low (b). This is partly because the Creek is only a small part of the City, and partly because efforts at revegetating public space have a relatively small impact, because most of the open-space in the City is privately-owned.

Economic Outcomes



The project has had public costs, and private benefits within the City. Manningham City Council has paid the wages of staff who have performed the weeding, planting and creek management work for the 7 years of the project (b). There have been some public benefits associated with these costs, and they include increased public access and enjoyment of the creek environment. There have also been private benefits, since residential blocks near the creek will have increased in value as a result of the greater environmental values on the creek now (a).

Social Outcomes



The project has been beneficial to social values since it has improved the aesthetic, recreation and transport value of the creek. The bushcrew also talk to a lot of 'walkers' and other creek users, who are mostly very positive about the work. The initiative is also directly empowering for the bushcrew members, many of whom live locally, and enjoy the chance to enhance their own local environment.

Improving Vegetation Management on Private Land in Manningham City

Case Study V6: by Su Wild River, with Samantha Bradly (Manningham City Council).

Comparative Statistics for Manningham

Category	Measure	Comparison
Area (Sq/Km)	114	Bottom 18%
Population	112,503	Top 10%
Pop Sq/Km	987	Top 13%
Rate Content ($)	32,551,000	Top 10%
Expenditure ($)	66,651,000	Top 9%

Information Australia, 2000

Manningham City's Local Environmental Assistance Fund has helped to improve land management in the local area. Rural residents have developed farm management plans, built rabbit-proof fences, and formed communities of informed and cooperative neighbours.

Manningham City Council is a wealthy residential area of Melbourne with a large population. The city has densely populated areas, balanced by large areas of native bushland, and rural residential areas. Many of these are along steep creeks and include significant patches of remnant native vegetation. The city council places a high value on its environment, and has developed a reputation for environmental work through a number of its innovative programs and projects.

Most of the significant areas of native vegetation within Manningham City are on private land. These are under threat of clearing, grazing and weed invasion. It is administratively easy (although costly) for Manningham to manage vegetation on council-owned land. It is more challenging to encourage private land-owners to protect ecological values on their properties. Manningham City's Local Environmental Assistant Fund (LEAF) and associated programs have been effective and innovative in this important area.

Manningham started making concerted efforts to protect native vegetation on private land in 1995, with the subdivision of the 'Green Wedge'. Council approved the subdivision on this steep area along a creek, where native vegetation was already facing weed infestation. Because of the special environmental values of the area, Council committed itself to provide education and support to retain some of its natural values. Several strategies have been used to meet these commitments, including financial support, training and community development.

One program provided each landowner with $800 towards rabbit-proof fencing, providing this funding was matched with equal funding from the landholder. This encouraged many landholders to put rabbit-proof fences in place. The initiative involved neighbours working together, so that the fences form a consistent barrier around groups of properties. This is more cost effective than if each farmer tried to rabbit proof their own property individually, on every boundary. Figure 1 shows a rabbit proof fence, built with the aid of the LEAF program, and

Figure 1. Rabbit proof fence.



In another initiative, Council staff went on to properties to identify native flora and fauna with ecological significance. The goal was to improve landholder knowledge and responsibility for native vegetation management. But this proved a relatively costly and time consuming approach.

Manningham replaced that initiative with a Property Management Training Course. When the course was initially held, Council staff would develop property management plans for participants. This again had limited success because of a lack of 'ownership' of the plans by participant landowners.

That approach was later replaced by a course costing $50 per session, for 7 sessions, during which participants developed their own plans. The plans include fire management strategies,

with mosaic burning plans, weed and feral animal controls, and identification of native grasses and other plants. Figure 2 shows kangaroo grass protected on one property as a result of these initiatives.

At the time of writing, Manningham has held 5 training courses, that have been completed by 51 landholders. Each of these landholders now increased their knowledge of land capability and economically efficient land management practices, as well as ecological sustainability issues.

Figure 2. Kangaroo grass identified and protected by private land owner.



An unanticipated benefit of these courses was the relationships that have been developed between neighboring landowners. Often, these neighbors would meet for the first time during the course, and would realise the benefits of working together on some issues. As a result of these meetings, farmers now often work together on vegetation management initiatives beyond the rabbit-proof fencing. Many also rotate stock between properties, to reduce the ongoing impact on each small block. Council also notes that people completing the course often become advocates of the environmental management issues they cover in it.

Interestingly, Manningham City Council staff argue that some of these initiatives have been benefited by the forced amalgamations of Victorian Local Governments. They argue that the greater size and budgets of the amalgamated Local Governments gives opportunities such as a greater funding base for initiatives such as these.

References

Information Australia. 2000. *Australian Guide to Local Government. 28th Edition, July-November 2000.* Melbourne.

V6: Improving Vegetation Management on Private land in Manningham		**Context Issues**	**Context continuums**
Perspective:	LG	-	**Scale**
Role:	Manager		<u><local</u> local regional state national international
LG type	Capital fringe (rich, compact, populous)		**Flexibility of Process**
Focus:	Management		<u>Full</u> mostly equal partial none
			Origins of initiative
			<local <u>local</u> regional state national international

Goals

- Improve environmental management on private land,
- Encourage informed, cooperative, practical, open land management with rigorous controls,
- Optimise the costs to Council and the public and private benefits, by making initiatives self-managing and simple.

Drivers

- 1995 panel meeting on a proposal to subdivide the 'Green Wedge' saw that community education would be needed to preserve and manage ecological values on the subdivided land,
- Council agreement to provide education and training of land owners,
- Establishment of community networks during training courses,
- Learning and teaching by community members about local environmental issues,
- Funds to assist with fencing, training etc (including rate rebates for course attendance).

Processes

- Several consecutive attempts to improve the management of private land. These included the following,
- Council identification of significant flora and fauna on properties,
- Training course supported by Council-written land management plans,
- Training courses where participants wrote their land management plans,

Rate rebates for those who attend training courses.

Constraints

- Lack of success in obtaining outside grants,
- Budget constraints,

Real estate agents not helpful in informing potential landowners land values, threats and responsibilities.

Outcomes

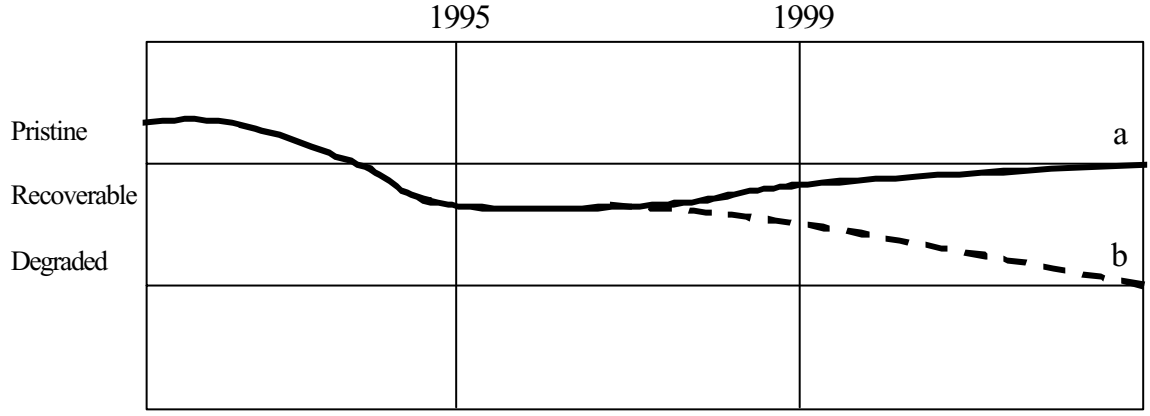
- 60-70 properties in the 'rabbit action group', putting rabbit-proof fences on grouped properties,
- Local environmentally significant properties in private ownership more sensitively managed,
- Community network involving rotating of grazing animals (eg horses, cattle),
- Fencing and replanting of gully and other key areas,
- 5 courses run, and 51 landowners have completed courses subsidised by Council,
- Course covers land capability and economically efficient land management practices. It involves developing a 3-5 year action plan with zones, how to achieve goals, contact people for help, a weed map, fire plan, pest animal plan and revegetation plan,
- People completing the course become advocates for environmental management.

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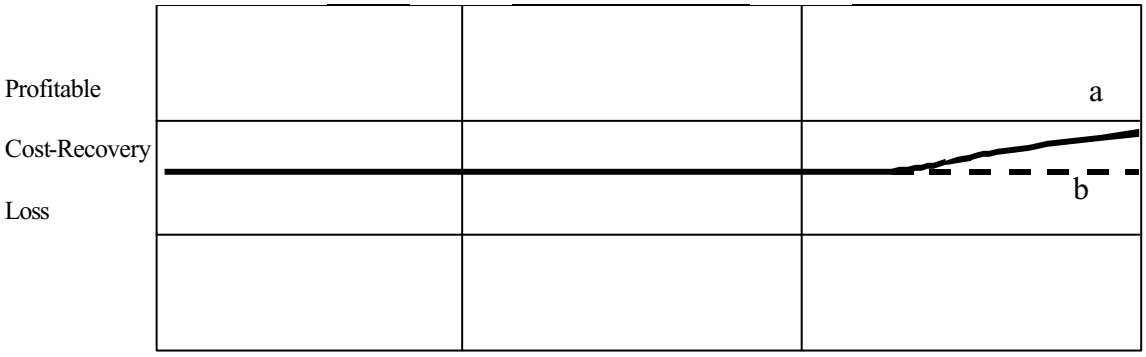
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Ecological Outcomes



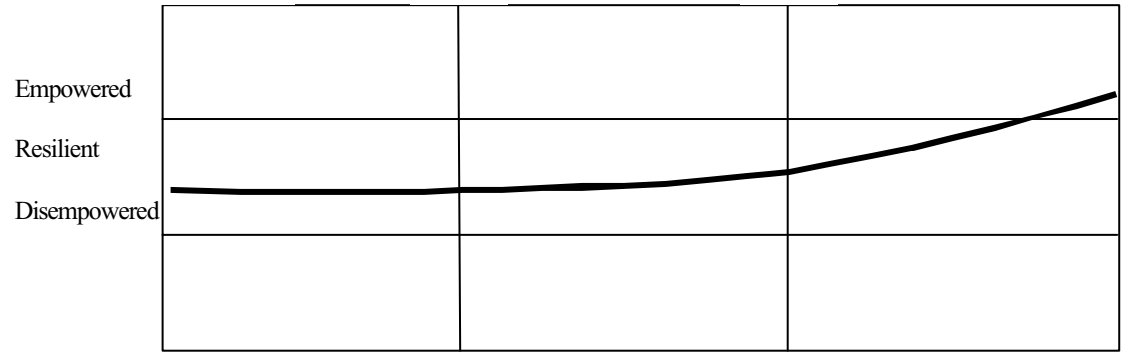
Before these initiatives, land in the 'Green Wedge' was already deteriorating with invasion by rabbits and weeds. Environmental values were further threatened by the proposed subdivision and sale of small blocks of land. Each block could legally be cleared. The various training and support programs initiated by Council helped not only to retain the environmental values despite the subdivision, but have also led to some improvements to rabbit and weed control (a). Without the initiatives, environmental quality would have continued to degrade.

Economic Outcomes



The economic impact of these efforts at improved land management are not yet fully clear. Since external funding was not available for the initiatives, Council sought to develop cost-effective programs, with some success. The subdivided land brings more rates to Council than before the subdivision, so the rate reductions, traded against practical environmental improvements is fairly cost-neutral. It is possible that the improvements to land management practices will raise property values over time (a). However while this is not yet certainl it is at least clear that land values have not been reduced through these initiatives.

Social Outcomes



There have been clear social benefits as a result of these initiatives. These have been most pronounced when neighboring landowners have attended the same courses, while developing their land management plans. In these cases, they have usually formed friendly, informal alliances, that have led to practical land management partnerships. Opportunities to shift grazing animals between properties, and to coordinate the rabbit-proof fencing are important practical outcomes from this community empowerment.

Environmental Strategies for the City of Greater Dandenong

Case Study V7: By Su Wild River. With assistance from Lorraine Nelson (previous Manager Environmental Systems, City of Greater Dandenong)

Comparative Statistics for the City of Greater Dandenong

Category	Measure	Comparison
Area (Sq/Km)	130	Bottom 20%
Population	132,000	Top 5%
Pop Sq/Km	1,015	Top 12%
Total Income ($)	56,265,000	Top 12%
Rate Content ($)	33,210,000	Top 10%

Information Australia, 2000

Following Council amalgamations in 1994, the City of Greater Dandenong commenced processes to strategically plan, and implement holistic environmental goals. Key sections of the local government helped to articulate these goals, and committed resources to achieving them.

Greater Dandenong is an industrial and residential City. It is located on Melbourne's eastern suburbs, at the foot of the Dandenong Ranges. As with almost all Victorian local governments, it formed as a result of the forced amalgamation of previous local governments, under the local government reforms of 1994. The amalgamations had both advantages and disadvantages for environmental efforts in Greater Dandenong.

Several significant environmental initiatives had preceded the amalgamation. In particular, previous state governments had encouraged local governments to develop local conservation strategies. The Cities that would later make up Greater Dandenong had approached this challenge with enthusiasm, and had undertaken extensive community consultation in developing their strategies. Many community members became highly active, and gained a high sense of ownership of the resulting strategies.

The amalgamation of previous local governments to form the City of Greater Dandenong in 1994 had both advantages and disadvantages for environmental initiatives. Local government officials at all levels were aware that new strategic planning frameworks would be needed for the new city. Support for environmental initiatives was provided by managers and councillors throughout the new city. There was also better resourcing of environmental initiatives, following the amalgamation. In addition, the Chief Executive Officer, and many other officers in key positions had a keen environmental interest.

The new local government also gained some useful environmental information. Soon after the amalgamation, it hired a risk management consultant. The resulting study highlighted some important environmental issues facing the city, providing the stimulus to take action on them.

New council processes also had environmental benefits. Compulsory competitive tendering of most council services was required of the new Victorian local governments. This process required a re-evaluation of the purpose, nature, and operation of the services, along with consideration of other possible ways of delivering them. This process provided an opportunity to formalise environmental requirements through the delivery of a range of Council activities. Greater Dandenong made a concerted effort to achieve environmental goals by way of contract specifications.

The City of Greater Dandenong appointed a 'Manager Environmental Systems' in 1997, and this officer was well placed to scrutinise the environmental implications of proposed tenders, and to enhance the environmental outcomes that would result from these. Some bidders in the tender process also independently saw the environment as a marketing opportunity. So efforts to realise environmental opportunities from competitive tendering came from both the public and private sectors.

But there were also some important environmental disadvantages resulting from the amalgamation. The relationship between the local government and the community suffered drastically for several years. The community felt disempowered as a result of losing their democratically elected council. Elected councillors were replaced by government-appointed administrators during the amalgamation process. This led to some public opposition to the new council, which many considered to be undemocratic. Efforts by

officials to update the conservation strategies so that they addressed issues on the new city-wide scale also received minimal community support. Even those community members who were typically very active, and had been highly involved in developing the previous conservation strategies, took little interest in working on the new strategies. They found it difficult to believe the new plan was building on the previous one, instead feeling that all of their previous efforts had been wasted.

In this light, the amalgamation was a period of high stress for the local government and community. It was difficult to maintain momentum, and hard to prioritise the environment among all of the other new challenges. Despite this, there is widespread views amongst council officials that the new local government is better placed to address environmental issues, than the previous cities were. Compulsory competitive tendering was also seen as a mechanism by which environmental outcomes could be achieved in the City of Greater Dandenong.

References

Environs Australia. 1996 *Accounting for the Environment: A Manual for Contract Specifications.* Melbourne: Environs Australia.

Information Australia. 2000. *The Australian Local Guide to Government.* Melbourne: Information Australia.

V7: Environmental Strategies for the City of Greater Dandenong

Perspective: LG
Role: Mixed
LG type: Capital (rich, compact, populous)
Focus: Management

Context Issues
Amalgamations and other changes have meant that recent environmental strategies have had to be replaced. New strategies have different boundaries and terms of reference.

Context continuums

Scale
<local | local | regional | state | national | international

Flexibility of Process
Full | mostly | equal | partial | none

Origins of initiative
<local | local | regional | state | national | international

Goals
- Develop a distinctive environmental strategy for the new City of Greater Dandenong
- Address long-term issues holistically,
- Involve Council and the community in deciding and implementing initiatives.

Drivers
- Recognition that new initiatives, and new strategic planning frameworks would be needed for the new City Council,
- Support from high level Managers and Councillors,
- Resourcing of strategic initiatives better after amalgamations,
- Committed Officers and Chief Executive Officer,
- Risk management consultant's findings,
- Compulsory competitive tendering processes, with some bidders seeing envt as a marketing opportunity.

Processes
- Community consultation across the City, and across cultures,
- Community participation was less than in the previous strategies, developed by Councils, now amalgamated.
- Many drafts of strategy out for public comment,
- Education and promotional efforts to inform and invite comment.

Constraints
- Lack of local democracy discouraged participation, and some opposition to the new amalgamated Council,
- Many typically active community members felt overloaded by the consecutive strategies. Didn't see this as 'building' on past initiatives, but as throwing out old work,
- Amalgamations a period of high stress and change for LG. Hard for officials to cope with own jobs, and to prioritise environment for all,
- Hard to maintain momentum of new initiatives.

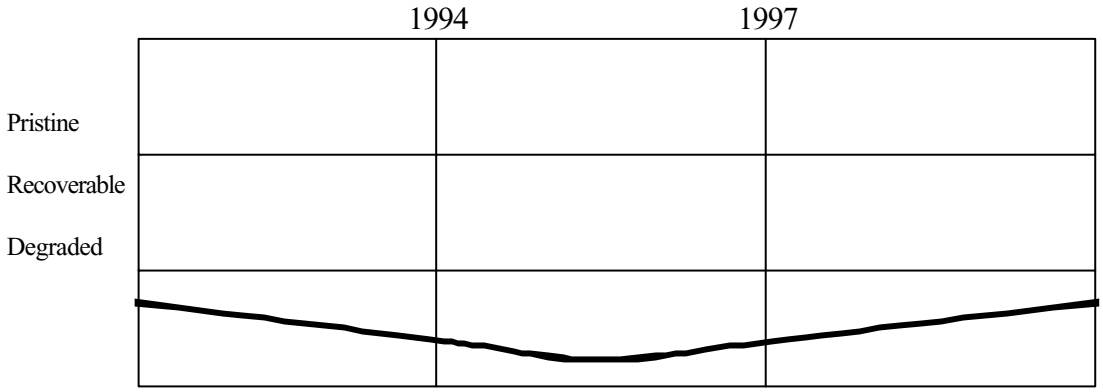
Outcomes
- Progress towards articulation and achievement of identified, strategic goals,
- Key sections of LG have committed to environmental goals and are meeting commitments,
- New 'Environmental Management Systems Officer' position established to improve operations,
- Kerbside recycling strategy and systems inplace, and tenders for recycling and green waste reduction in place.

About the Models

The Comparative Case Study Model records an attempt to deliver environmental outcomes in a simple, general format enabling comparative analysis of issues. Key elements of attempts, and their contexts are recorded. The graphs across the page show the ecological, economic and social values before, during and after the attempt, and how these changed as a result of initiatives. The graphs are often 'split', indicating different outcomes for different sectors simultaneously, or different possible outcomes.

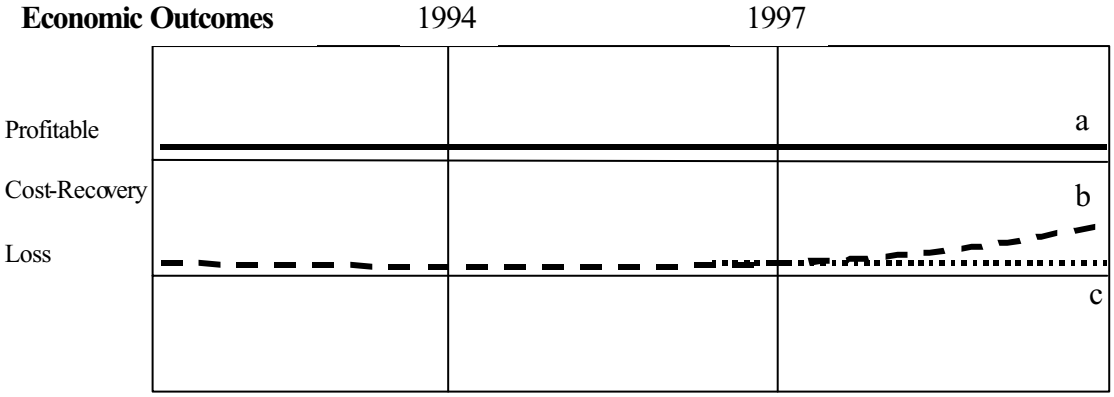
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Ecological Outcomes



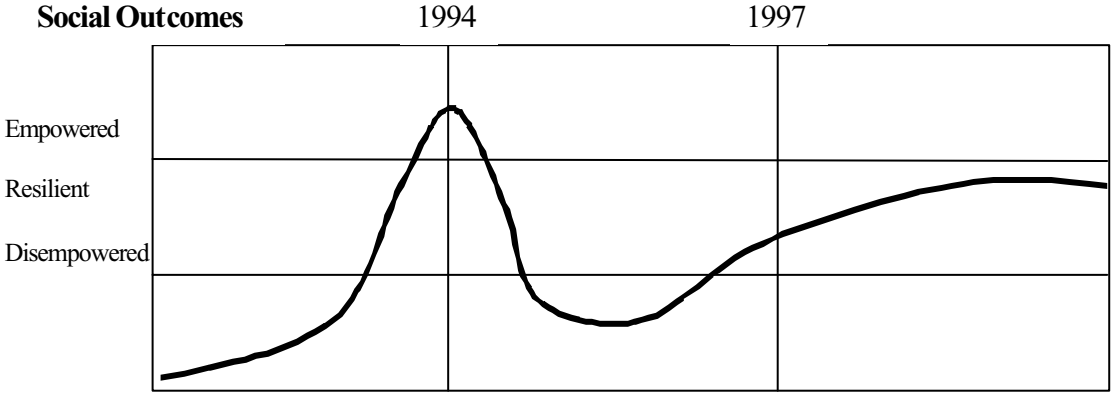
The City of Greater Dandenong is a highly industrialised area of Melbourne. Few natural environmental values remain in the local area, and some of those that do are under continued development pressure. The environmental strategy puts some limits on, and structure these developments. It also encourages consideration of environmental issues in all Council decisions. In this way, it has the potential to gradually enhance environmental values over time.

Economic Outcomes



Council and local economies and profitability have remained fairly stable through recent years. The City of Greater Dandenong enjoys a fairly strong and stable financial base (a). This is despite the low socioeconomic area of the City overall (c). A minority of local businesses have profited slightly from Cleaner Production initiatives (c).

Social Outcomes



Community empowerment throughout the City peaked before the forced amalgamations, when the previous Local Governments worked closely with local communities to develop conservation plans. Many agencies and enthusiastic individuals were brought together during this process, and worked effectively together to identify priorities, and design strategies to achieve them. Disempowerment and frustration followed the amalgamations, along with a strong sense that the local communities had little say in the makeup or policies of their Local Government. The consultative process undertaken for the new Environmental Strategy is gradually rebuilding community trust in the Council.

Regional Environmental Strategy for the Yarra Ranges

Case Study V8: By Su Wild River, with Di Moore (Councillor, Yarra Ranges Shire Council)

Comparative Statistics for Yarra Ranges

Information Australia, 2000

Category	Measure	Comparison
Area (Sq/Km)	2,471.60	Top 47%
Population	141,170	Top 4%
Pop Sq/Km	56	Top 29%
Rate Content ($)	43,700,000	Top 6%

Yarra Ranges Shire Council has managed to retain and build on previous environmental strategies, since its formation through amalgamation in 1994. The new environmental strategy has wider powers to protect trees in develope d areas, and to avoid forest loss to agriculture.

Yarra Ranges Shire is by far the largest outer-metropolitan local government bordering Melbourne. It takes in most of the Dandenong Ranges, that are a dominant, 'green' environmental feature to the East of Melbourne and the upper Yarra Valley. Yarra Ranges Shire was formed by amalgamation (during the Victorian local government reforms of 1994). At this time, as with nearly all Victorian local governments, the elected council was replaced by appointed commissioners for transition to the new Shire.

Before amalgamation, the four Councils that now make up Yarra Ranges had spent 20 years developing and working within a regional environmental plan. The State Government's *Upper Yarra and Dandenong Ranges Authority Act, 1986* formalised the regional initiatives, and provided the statutory basis for ongoing dynamic regional planning and action in the ranges. The Act established the Upper Yarra and Dandenong Ranges Authority (UYDRA) with two councilor representatives from each of the four local governments and seven community members.

The Authority developed and managed a regional strategy that reflected the planning requirements at the State, regional and local levels. The strategy gave councillors and the community the ability to reject development proposals that did not conform to strategic environmental goals for the region.

Strategic environmental planning in the Yarra Ranges had been important, because of the high development pressure that has been experienced there over recent decades.

The Shire contains some of the most environmentally significant areas of the State and serves as the major water supply catchment for Melbourne. Historically many tracts of land have been developed for agricultural purposes, mainly viticulture, horticulture, floriculture and grazing. As a result the Shire contains some of the most productive rural land in the State. Figure 1 shows part of the shire, including many natural and agricultural areas.

Figure 1: Yarra Ranges*



* photo courtesy of Yarra Ranges Shire.

The region, until the enactment of the UYDRA Act, had been designated as an urban growth corridor. The urban encroachment, particularly in the Dandenong Ranges, has impacted significantly on both indigenous ecological values, rural productivity and in some areas the stability of the land. The latter issue was confirmed by a landslip study, which showed a high amount of slip potential in much of the steeper regions of the Shire.

Council and community members who attained a regional perspective could clearly see that the significant environmental values in the region - now the Shire of Yarra Ranges, would soon be lost if uncontrolled development and land clearing continued.

The regional strategic planning work that preceded the formation of Yarra Ranges Shire provided a good basis for the environmental planning that would follow. However the transition was not entirely smooth. Upon amalgamation the Authority (UYDRA) ceased to exist. A review of the Strategy Plan occurred, under the direction of the then State Minister for Planning and Environment, and as

a result had its strength reduced. This reviewed Plan was incorporated into the Shire's Planning Scheme by means of over 400 overlays. This has resulted in the Shire having one of the most complex planning schemes in the State.

Planning in the Shire has remained difficult and complex. Particularly in the years following the amalgamation, where enormous effort was required to integrate four disparate planning schemes. These problems have been compounded by a statewide shortage of skilled planning staff.

As well as changing the local government structures for planning in the region, the amalgamations also immediately changed many of the statutory planning tools. Statutory obligations placed on local government require the production of a Municipal Strategic Statement and statewide changes to local planning schemes.

These factors, together with the organisational and structural issues associated with amalgamation, have resulted in poor planning performance by the Shire.

A recent study confirmed this problem, placing Yarra Ranges in the lowest 25% of planning performance.

In recent times Council has allocated significant resources into its Planning department. It has recruited more staff and is focusing on improving its compliance and educational capacity.

While improving the outputs of the Planning department has been a key focus it is important that the success of the department is also measured by their outcomes. Particularly in terms of in terms of social, economic and environmental value.

When democracy was reinstated in March 1997, six of the nine people elected had been councillors in the previous local governments. Each of the six had knowledge about issues and processes that had underpinned the previous regional environmental strategy.

This high level of background knowledge of regional environmental issues helped the new councillors to steer Yarra Ranges Shire towards a strong and holistic new plan. The new council started to review the social, environmental and economic issues impacting on the Shire. This led to the development of a strategic community plan, named the 'Vision 2020', which picked up on and strengthened the previous environmental values of the region.

Through Vision 2020 and its Planning Schemes the Shire of Yarra Ranges seeks to strengthen the environmental, social and economic sustainability of the Region.

The Planning Scheme for instance, includes strong vegetation protection measures. Land-owners must obtain approval from council before removing any indigenous vegetation from their land.

Council employs trained arborists, has a strong roadside management plan and policies to educate its contractors. Also, a sub-committee of Council officers form the "Tree Task Force" to oversee the removal, or not, of indigenous vegetation on Council land.

The development of Viticulture and other guidelines support the Planning Scheme by encouraging would be farmers to buy already suitably zoned and cleared land for their purposes and discourages large-scale land clearing for development.

Council's Environment department was established in February 2000 to support environmental initiatives across Council,

Some problems with environmental planning in the shire however, remain in place. For instance, in Victoria, appeals against Council's development approval decisions can bypass the formal appeal process and be forwarded directly to the Planning Minister. In the first years after the amalgamation, the Minister often ignored the environmental and social advice of the council when deciding on development applications.

At the time of writing, it is not yet clear how effective the new plan will be.

References

Information Australia. 2000. *Australian Guide to Local Government. 28th Edition, July-November 2000.* Melbourne: Information Australia.

Yarra Ranges Shire Council. 2000. *Vision 2020: Yarra Ranges.* Melbourne: Yarra Ranges Shire Council.

V8: Regional Environmental Strategy for the Yarra Ranges

Perspective:	LG
Role:	Councillor
LG type:	Capital fringe (extensive populous)
Focus:	Management

Context Issues

Amalgamations and other changes have meant that regional strategies have had to be re-done in recent times, with slightly different boundaries and terms of reference.

Context continuums

Scale

<local | local | regional | state | national | international

Flexibility of Process

Full | mostly | equal | partial | none

Origins of initiative

<local | local | regional | state | national | international

Goals

- Protect environmental values in the Yarra Valley and Dandenong Ranges,
- Implement vision of the Shire of Yarra Ranges as having great environmental values, with its communities sustained by a strong economic base,
- Look after the Shire in terms of tree removal, biodiversity loss, and other problems. Address issues associated with having Victoria's highest rate of planning applications.

Drivers

- Realisation that if subdivisions continue at historic rates, all environmental values will quickly be lost,
- Landslip study showed high amount of slip potential in Shire,
- Upper Yarra and Dandenong Ranges Act of Parliament 1986 (which established UY&DR Authority with 2 reps of each of the 4 Councils),
- Elections following the amalgamations brought back 6 of 9 Councillors, with knowledge of previous visions,
- Many Councillors elected on strong environmental agendas, balanced with economic and social goals.

Processes

- Strategic environmental planning commenced 20 years ago. In'94, the Regional Strategic Plan was kept, but the Authority was lost,
- The Authority had allowed Councils and community to reject proposals, that didn't conform to the strategy,
- The UY&DR Strategy was technically replaced by a (similar) Municipal Strategic Statement during the time of Commissioners. It has been followed by "Vision 2020" covering environmental, social and economic issues and a revised Planning Scheme.

Constraints

- Difficult and diverse area to manage. This is reflected in the complexity of the Planning Scheme.
- Environmentally sensitive area which also exhibits high economic and social value.
- State-wide shortages of skilled planning staff and the demands placed on existing resources makes acquisition and retention of trained staff difficult.
- 'Success' in the industry is currently measured in terms of 'outputs' and not 'outcomes'.

Outcomes

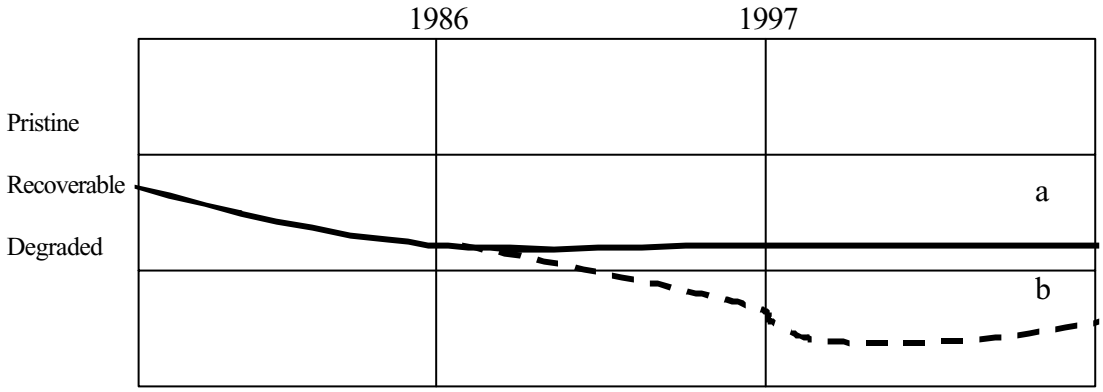
- On the whole, the strategic plan has stayed, including environmental and social aspects,
- The plan that has been produced focuses on natural rather than built environments,
- The new Planning Scheme is has been approved by Government,
- The new Scheme includes strong tree protection - Council check before removal of any tree,
- Guidelines include for example, land not to be cleared for vineyards, but cleared land sought.

About the Models

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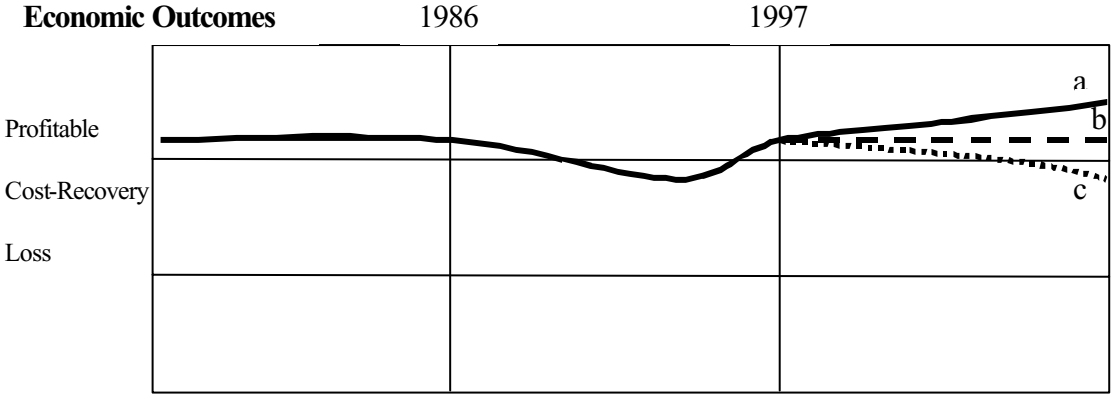
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Ecological Outcomes



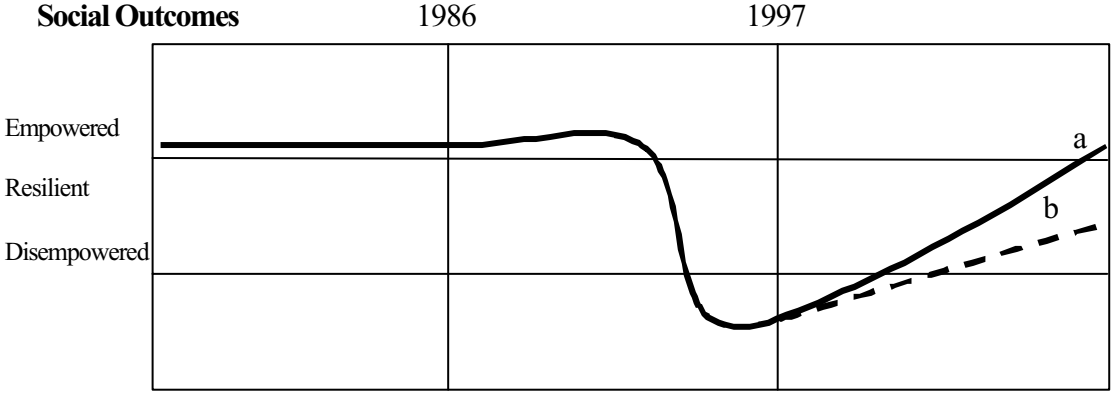
Over the past 20 years, yarra Ranges have experienced gradual, continuous environmental degradation, due to the ongoing 'development' (and clearing) of bushland. Old planning schemes restricted the number of houses allowed on blocks, which encouraged more land clearing per new household. Increased, higher density residential development from the late 80's meant less degradation per residential household (a), but agricultural land sales still involved significant clearing (b).

Economic Outcomes



Increasing residential development in smaller, urban areas, rather than continuing to clear large blocks would have been cost-neutral between 1986 and 1997. However the uncertainty associated with the changed status of the existing strategic plan, along with the continuation of the UY&D Act, would have caused a dip in economic activity associated with development. The new regional plan, and *Vision 2020* plan addresses environmental, social and economic issues. This plan, and controls on vegetation clearing may enhance the Shire's economic base, through broadly sustainable practices (a). Some activities will remain at previous cost levels, including vineyard activities where cleared land is found for grapes, rather than clearing forests (b). Some land owners may experience losses if their land use plans differ greatly from the strategic plans (c).

Social Outcomes



The Kennett Government reforms, that removed local democracy, were disempowering for this community. One impact was that the necessity of replacing existing strategic plans and structures, with new ones, meant that community involvement had to be repeated, and this frustrated those who had been involved in earlier processes. The new planning processes have involved successful community consultation, and the current draft plan reflects dominant local views (a). However sections of the community would disagree with sections of the plan, and it is also possible that the Government will reject popular aspects of the new plans (b).

South Sydney City Community Gardens

Case Study N1: By Su Wild River, with Janet Broady (Waste Education Officer), Rhonda Hunt (Waste Project Officer).

Comparative Statistics for South Sydney

Category	Measure	Comparison
Area (Sq/Km)	17.8	Bottom 6%
Population	82,960	Top 10%
Pop Sq/Km	4,661	Top 1%
Total Income ($)	99,754,663	Top 5%
Rate Content ($)	46,321,284	Top 5%
Expenditure ($)	105,773,501	Top 4%

Information Australia, 2000

South Sydney City Council is a densely populated inner area of Sydney. Landmarks such as King's Cross, Sydney University, Oxford Street and King Street are within the City. It is one of the richest, and most densely populated Local Governments in Australia.

Many residents live in highrise buildings in the City. There is limited urban space for gardening. Many residents originally come from overseas or Australian regions with better access to green areas. These residents often miss the chance to make their own gardens for flowers or foods.

Figure 1: Sharing knowledge



25% of the population are from non-English speaking backgrounds and the average stay for half of the entire population is one year. Over the past 10 years, a total of nine community gardens have been established in Redfern, Newtown, Woolloomoolloo and Waterloo.

South Sydney City Council has increased its level of support since 1993 for these community gardens, and now actively encourages and assists them. Council's Food Policy sets goals for providing food security and Council's Local Waste Plan emphasizes food and garden organic recycling priorities for the community.

The community gardens provide some strong coherence for residents and reflect the nature of the groups that work in them. For instance, an organic permaculture garden has plant species that have several practical and related values. Another garden has almost exclusively Russian gardeners and comprises mostly food plants, with one gardener bragging that she hasn't bought any greens for a year. Figure 1 shows some city gardeners sharing their knowledge.

Most of the gardens have individual plots where a particular family or other small group has a garden within a broader area, also gardened by others. All have communal composting or vermicomposting systems that use food and garden organics mixed with NSW police stable straw and manure in their composting process. The straw is delivered for free by the local Police, and this community service is great way to reduce waste, transport and costs.

Some community gardeners have proven to be competent composters, and can sometimes dispose of their own food, and that of other neighbors as well. Several composting systems have been used in the 9 gardens and successful production of compost is linked to: energy, enthusiasm, skill base and knowledge of the gardeners as well as provision of materials and assistance with mantenance and training.

Figure 2: Compost bays



The environmental benefits of the gardens are very important. All Councils in the region are trying to reduce waste to landfill. One major way of doing this is to increase the amount of organic waste that is recycled. This is a high priority since organic waste makes up to 50% of the average Sydney's householder's waste (Community Gardens Network. p.2). Figure 2 shows compost bays at one of the gardens.

Council has supported the gardens with:

- infrastructure,
- education,
- workshops for composting, seed saving,

healthy soil, organic pest management,

- bus trips to other gardens,
- administration and resourcing for committees,
- promotion, and
- an officer as a point of contact in South Sydney City Council.

Council approval is not required for a community garden to start up. If a garden is on Council land then a process of consultation and incorporation into the *Open Space Plan of Management* would be required. A Community Gardens Policy is in draft form.

Neither gardeners nor Council always own or lease the land gardens are built on. Landholders include Department of Education, Department of Housing and various Churches.

Figure 3: Raised garde n beds



Following a report on Community Gardens written in 1998. It is assumed that all of the gardens are on contaminated sites until proven otherwise. All of the soil and compost at the working gardens have now been tested. Recommendations from the Sydney Soil Laboratory included the use of protective factors such as raised garden beds and a diversity of crop planting. The results did not indicate that gardening should cease on any sites, as it showed that the risk to the gardeners from eating the food grown in South Sydney is low. Figure 3 shows some raised garden beds that produce healthy food.

Based on popularity with residents, community development and waste minimisation potential, community gardens have attracted other government and NGO's including NSW Housing, Royal Botanic Gardens, Waste Boards, Ethnic Communities Council, NSW University and Aids Council of NSW Street Jungle Project.

A new role, previously unforeseen by Council, is to network, liaise, advocate and manage these sometimes competing stakeholders in such a way that the gardeners can be properly resourced and enjoy the benefits these stakeholders have to offer.

Community gardening, growing food, fruit and flowers, enjoying urban biodiversity, and getting to know their neighbours are some of the benefits for these gardeners.

It can't be emphasized strongly enough how much time, effort and love is required for these projects to get off the ground. A dedicated council officer as a point of contact and resource is an essential ingredient to the success or failure as well as an enthusiastic group of gardeners and a parcel of land.

Future plans for community gardens in South Sydney include: a Council Community Garden Policy; planting small community orchards on suitable land; a new community garden in Zetland; a demonstration site and possible city farm and education centre in Sydney Park; further development of the community garden network; and a seminar or conference on community gardening for both gardeners and stakeholders.

References

Community Gardens Network. 1998. *Community Gardens in South Sydney*. Sydney: South Sydney City Council.

Information Australia. 2000. *Australian Guide to Local Government. 28th Edition, July-November 2000.* Melbourne: Information Australia.

N: South Sydney City Gardens

Perspective Mixed
Role: Officer
LG type: Capital

Context Issues

-

Context continuums

Scale

<local local regional state national international

Flexibility of Process

Full mostly equal partial none

Origins of initiative

<local local regional state national international

Goals

- Community goal to have open space to grow plants,
- Community goal to have social space for community-building and networking,
- The gardens are consistent with many Council policies, including its Local Waste Plan - encouraging composting, its Food Policy, encouraging people to grow their own food, and an Open Space policy that identifies potential for orchards and gardens.

Drivers

- Councillor recognition and support of these gardens,
- Waste Project Officer role in community gardens,
- Waste Education Officer with an interest in communal composting, and budget available for training and resources,
- Initiative from residents,
- Good Community development project to engage residents on non-english speaking backgrounds,
- Availability of land,
- EPA Waste minimisation grant 1998 $60,000 CG report and appointment of 2 officers for 6 months,
- Southern Sydney Waste Board Green Gardens Project 1999-2000 - $20,000.

Processes

- Cooperation between the Local Government and gardeners has developed,
- Promotion, launches, tours, by Council outsiders to inspect the gardens,
- Multitude of communities involved including Russian, Vietnamese, HIV positive, permaculturists, Australian City Farms Network,
- Most gardens are single plots in shared gardens, but some groups work together on a whole lot,
- Longest garden has been running 9 years,
- Land selection has developed through new Open Space Policy

Constraints

- Lack of Council ownership of the land,
- CG report focused on risk issues, rather than opportunities and positive issues,
- Role in council could sit in Parks, Community Services or Waste,
- Funds presently from waste education and landscaping budget,
- Community stakeholders from govt and NGO's,
- No forum provided to discuss issues, successes, failures,
- Communal composting systems require ample resoucing,
- Compost education for people of non-english speaking backgroundsis costly and difficult.

Outcomes

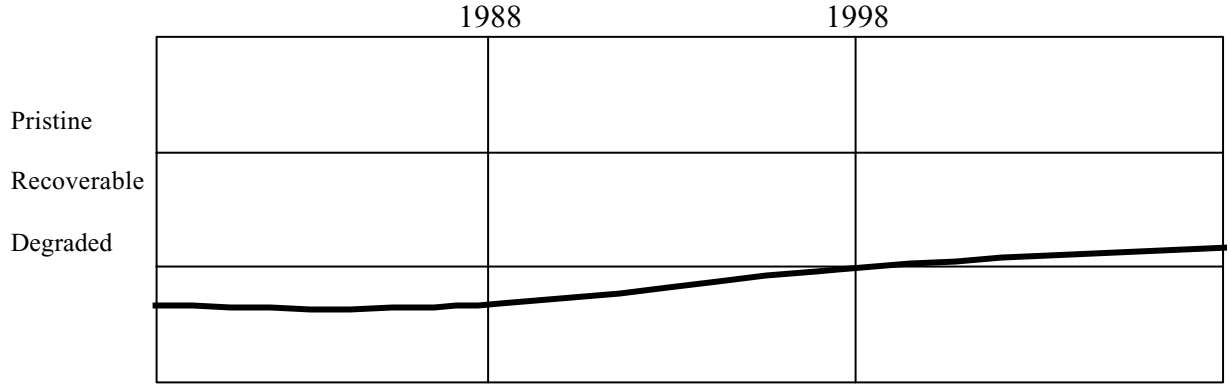
- Seeding program for more gardens, 6 established gardens, 3 new and 2 more proposed,
- Community-building has fostered links between people of varied backgrounds,
- Decreased garden and food organics to landfill,
- Biodiversity in the urban environment,
- Cold empty open spaces look cared for and are used well - demonstration sites,
- Stakeholders working together which has spin-offs for other projects.

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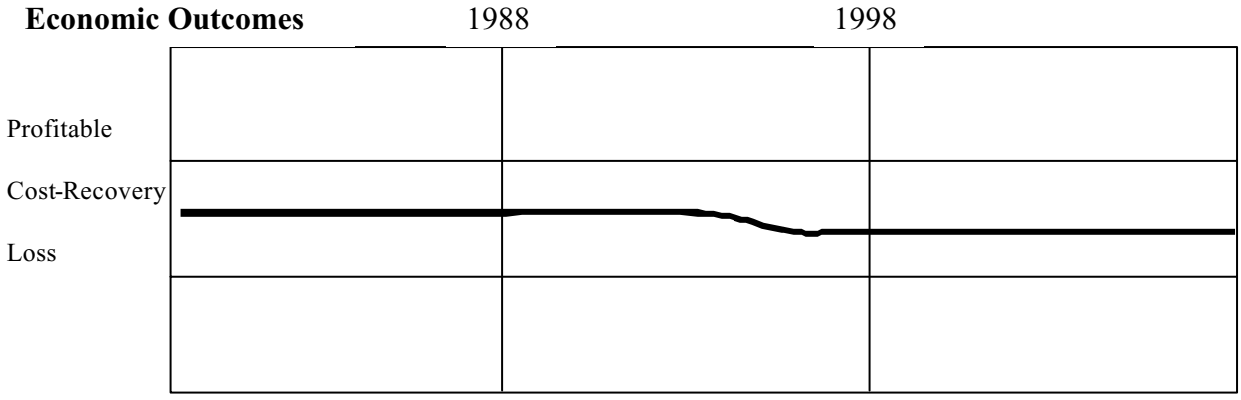
Note: This case study is one of 34 produced for Su Wild River's PhD research, undertaken through the Centre for Resource and Environmental Studies, Australian National University.

Ecological Outcomes



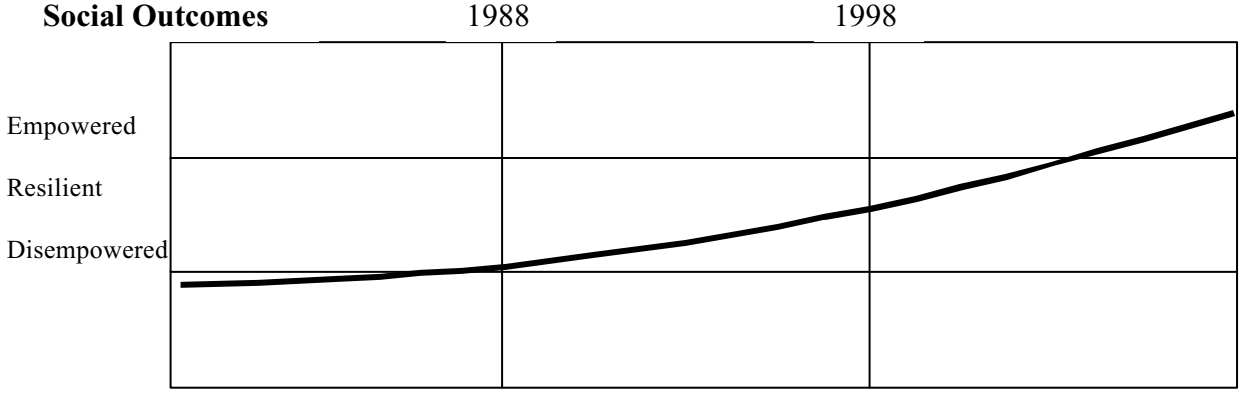
Most of the city gardens were in highly degraded sites. Clearing of rubbbish, building rubble and other waste materials was required before gardening could take place. The areas are now productive, green spaces, with far more ecological values than in the past. Few however, boast native plants, or any diversity of native animals, contamination has been investigated and alleviated.

Economic Outcomes



The city gardens are not a costly initiative. The main costs to Council have been building of infrastructure of new gardens, compost maintenance, translation, publications, equipment. . Other than that, the contact that Council has had with the Community Gardens has been through the normal operation of its other programs, such as waste minimisation. In these cases, the gardens provide a saving to Council, since they provide opportunities for Council to discuss issues, or provide training to many people at one time.

Social Outcomes



The community gardens have been empowering features of South Sydney City Council over the last decade. They have directly enabled many people to make productive gardens, despite not owning land. They have also provided a strong sense of community to many people with common backgrounds and interests. They have also cleaned up several messy, and dangerous-feeling areas, instead converting them to productive, friendly places to meet and work together. Finally, they have improved relations between the South Sydney City Council, and many residents from a range of backgrounds as well as other stakeholders from Government and NGO's.

Cultural Greening at Kogarah Council

Case Study N2. by Su Wild River, with Bruce Taper and Mike Mouritz,(Kogarah Council).

Comparative Statistics for Kogarah

Category	Measure	Comparison
Area (Sq/Km)	19	Bottom 7%
Population	50,000	Top 17%
Pop Sq/Km	2,632	Top 4%
Total Income ($)	20,991,680	Top 30%
Rate Content ($)	11,946,270	Top 27%
Expenditure ($)	22,687,823	Top 32%

Information Australia, 2000

Kogarah Council has run several successful environmental initiatives in recent years. Each has delivered its own environmental outcomes. But more importantly, this combination of initiatives has helped to inform council and the community of environmental problems, and have shifted local thinking towards sustainability.

Kogarah Council is on the shores of the Georges River in Sydney's South and just inland from Botany Bay. It is a densely populated area that still manages to retain some special environmental values. Its proximity to Botany Bay affords cool sea breezes to most of Kogarah. Several small creeks flow through Kogarah, which is bounded by the Georges River. There are large areas of river foreshore that remain as public open space, despite the dense population (see Figure 1).



Figure 1: Aerial View of Kogarah Municipality

Kogarah has a distinct Town Centre, boasting several major work places. These include the St George Private and Public Hospitals, head office of St. George Bank, and a large college of Technical and Further Education. Kogarah also has excellent public transport features. A suburban Sydney railway line runs through the Town Centre. The station is in close proximity to the St George Hospital, St George Bank Head office, the TAFE, and hundreds of other smaller employers (see Figure 2). Kogarah is also only a few kilometres from Sydney's controversial East - West runway. However Kogarah does not lie under any flight paths, and avoids associated noise pollution almost completely.

In 1998 Kogarah had the chance to redevelop an old



Figure 2: Aerial View of Kogarah Town Centre

petrol station site, situated on land purchased by Council in the suburb of Allawah. The conventional approach to redevelopment would be first to ensure that no contamination remained from the previous land use. Council would then rezone the land for (in this case medium density residential) development, and sell it off to a developer. The financial costs of this approach would be minimal, the returns high, however Council would have little control over the form of the new development.

Instead, Kogarah decided to take the project through to its design stage, so that it could ensure that the final development was of broader benefit to the Municipality. Kogarah Council hired a firm of leading, environmentally-aware architects to design control guidelines for the site. The architects wrote design specifications that would maximise the benefits from the sea breezes, and other microclimatic conditions. Stormwater reuse systems, and solar energy generating facilities were incorporated into the roof of the design to minimise environmental impact. These considerations were included when council then went to tender with the design specifications, and the site was sold to developers who undertook to meet the required design standards.

Unfortunately, the developers did not meet the sustainability obligations for this site. They did not provide for stormwater reuse or solar photovoltaic energy. The use of passive solar designs, was also less effective than in the original design. This was disappointing but not devastating to Kogarah Council. It showed that the developers were not ready for the sustainability initiative, and that cultural learning was needed amongst the development community.

The Moore Reserve Wetland project at Oatley Bay followed soon after. This initiative stemmed from the need to improve the management of stormwater from developments in Kogarah, which ultimately enter local creeks, and through them into the Georges River and ultimately Botany Bay. A system had to be designed that could cope with the increased peak flows due to urbanisation, which reduces water infiltration to soil, since most areas become covered with buildings, roads and other hard

pollutants and contaminants. Kogarah proposed to build an artificial wetland near the creek mouth at Oatley Bay, to address both goals (Figure 3).



Figure 3: Moore Reserve with artificial wetland

Kogarah approached the project with community education in mind. Intensive consultation was undertaken with residents of the suburbs surrounding the proposed wetland. This was a time-consuming process that ensured that local residents were aware of the issues, before construction commenced. The result was that most people supported the wetland construction, and also learned about local environmental and pollution issues at the same time.

A third initiative was the Kid's Earth Fund representing Kogarah's involvement in World Environment Day 1999, through an art exhibition and other initiatives. The exhibition had traveled around the world, and when Kogarah learned that it was coming to Sydney, they wrote to organisers, successfully requesting that it be located at the TAFE in Kogarah. In conjunction with the exhibition, Council arranged for TAFE students to run art workshops for local children. Promotions for the day cost just $5,000 and attracted over a thousand local children to the workshops. These also provided a chance for the children to have their questions about environmental issues answered by local experts. Several of the paintings done by the Kogarah children later traveled the world with the rest of the exhibition.

A fourth initiative involved the redevelopment of a large carpark space in the central business district at Kogarah. This provided council with the opportunity to build upon previous experience and provide a showcase of sustainable urban living. In 1995 the original plan for a 13-15 storey complex was rejected by the local community, which wanted a more appealing structure.

Council's response was to re-use the concepts that were developed for the initial redevelopment site. Again, Council was aiming for stormwater reuse, and passive solar design to maximise the light, heat and breeze for all units in the development. Once again, Council hopes that this might become a showcase of environmental sustainability that could inspire sustainable building within and beyond the Municipality. The building will also be able to house a new Library, a Town Square public space with a water feature, a public carpark, 193 residential units, 4500m^2 of retail space and a proposed Centre for Contemporary Culture centre (Figure 4).



Figure 4: Artists impression of the Kogarah Town Square redevelopment. All images supplied by Kogarah City Council.

Each of these initiatives provided social and ecological benefits to Kogarah. These benefits are significant when compared with the outcomes that would have been delivered without these concerted environmental efforts. Each initiative was also done for little or no additional cost, beyond what would have been spent by addressing the issues in 'traditional' ways, with most of these costs deferred to others later. And importantly, officials in Kogarah Council and the local community are now more aware of environmental issues, committed to their solution, and knowledgeable about ways to tackle them effectively.

References

Information Australia. 2000. ***Australian Local Government Guide. 28th Edition, July-November 2000.***

N2: Cultural greening of Kogarah Municipality

Perspective: Local government
Role: Officer/Manager
LG type: Capital (populous, compact, rich)
Focus: Management

Context Issues

Context continuums

Scale
<local local regional state national international

Flexibility of Process
Full mostly equal partial none

Origins of initiative
<local local regional state national international

Goals
- Achieve sustainability in Kogarah Municipality.

Drivers
- Key core group of environmental strategists employed at Kogarah,
- General Manager with strong environmental commitments, good ideas,
- Tangible outcomes from ongoing initiatives have inspired further actions,
- Community support for initiatives followed careful, respectful consultation,
- Capacity to reuse the development control ideas from the first to the fifth project,
- Approx. $2 million in State & Federal government funding to support the new, sustainable approach to urban design in Kogarah Town Square Redevelopment.

Processes
Initiatives include:
- Development controls established for Allawah petrol station redevelopment site. Aimed to maximise solar energy, reuse stormwater, and provide liveability.
- Extensive consultation and research before building artificial wetlands for stormwater management,
- World environment day with international 'Kid's Earth Fund' art exhibition at Kogarah. Over a thousand local children participating,
- Redevelopment of Kogarah Town Square using design features from Allawah project. Passive solar, stormwater reuse and other features.

Constraints
- Usually expressed as financial issues. But this is often a perception not a reality. Creative solutions can be used to find innovative ways to fund environmental initiatives.
- Developers and others bring their old assumptions to the planning and building processes,
- Need to continually inform local residents of environmental issues, and knowledge is built slowly.

Outcomes (associated with each of the process steps above)
1. Disappointingly low achievement of design innovations. Less solar, stormwater use than planned,
2. Local community now more aware of stormwater issues. Wetlands built to state of the art level,
3. Over a thousand local children participated in the exhibition. Some resulting artwork now travelling with the exhibition,
4. Redevelopment showcase well underway. Potential to achieve and exceed goals of first project.

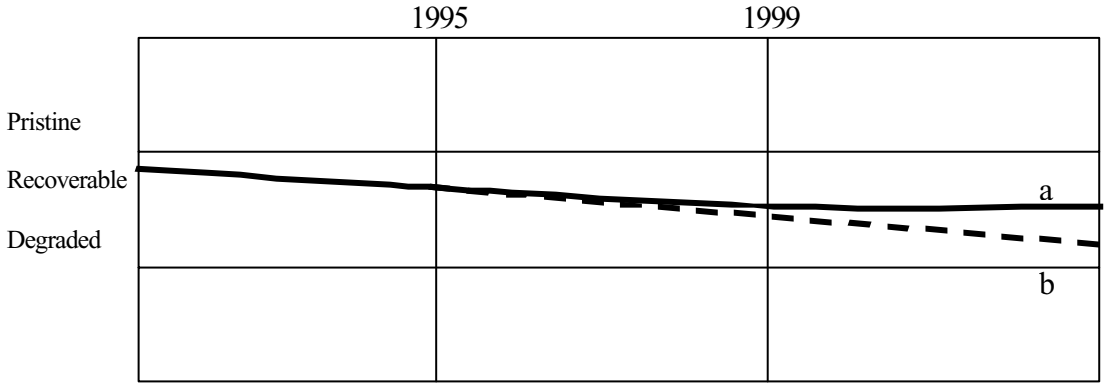
About the Models

The Comparative Case Study Model records an attempt to deliver environmental outcomes in a simple, general format enabling comparative analysis of issues. Key elements of attempts, and their contexts are recorded. The graphs across the page show the ecological, economic and social values before, during and after the attempt, and how these changed as a result of initiatives. The graphs are often 'split', indicating different outcomes for different sectors simultaneously, or different possible outcomes.

Other Notes

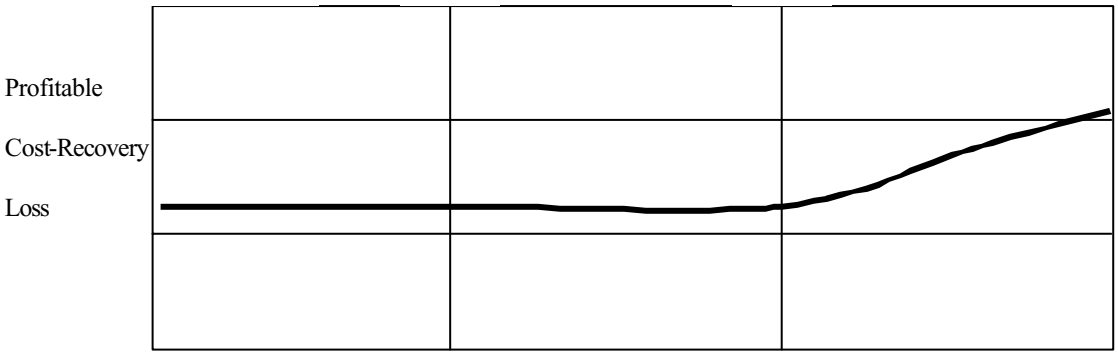
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Ecological Outcomes



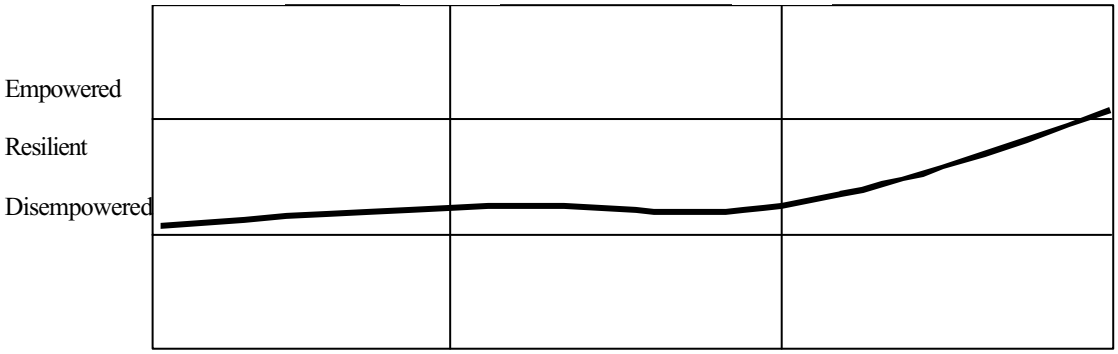
Ecological values at Kogarah Council have been degrading for hundreds of years, in the face of continued development and population pressures. However recent initiatives have helped to slow the rate of degradation. The sustainable building specifications will ensure that some ecological resources are being used at a slower rate than would otherwise be the case. The artificial wetland is also minimising damage to waterways, and pollution to the bay and beyond.

Economic Outcomes



The environmental initiatives in Kogarah have been cost-neutral, or financially beneficial to Council. For the redevelopments, Council invested some of the money that would have been made available from the sale of the land, into the design specifications. This provided the budget for the projects at no additional cost. Very minor marketing costs for the art exhibition were balanced by the contributions of the crowds that attended the shows. Funding has now been provided by both state and federal governments to help progress Kogarah's environmental initiatives, thus injecting money into the local area.

Social Outcomes



Kogarah's environmental initiatives have been increasingly empowering for local residents. The public education and consultation campaign for the artificial wetland helped locals to understand environmental issues and recognise the benefits of the proposed solution. The participation of children and others in the World Environment Day art exhibition also provided a great opportunity for local residents to learn about local environmental issues. The Kogarah Town Square Redevelopment's solar energy generation and stormwater recycling features have further potential to increase knowledge of environmental problems and their solutions for both local residents, professionals and academics.

Case Study A1. ANU Environment Management Planning

Interviewee Bart Meehan, Executive Officer, Facilities and Services, Australian National University.

In recent years, the Australian National University (ANU) has extended and formalised its long-term commitment to environmental goals. ANU recognises an obligation to lead in environmental initiatives, and has traditionally conducted ground-breaking environmental research, and maintained sound environmental management practices on campus. In seeking to further improve site management, it has established an Environmental Management Planning Committee (EMPC) with broad, and senior representation from core areas of the University to advise management on key environmental issues. It has developed a comprehensive Environmental Plan aiming to move the ANU towards world's best practice in environmental management. The Plan is promoted on the 'ANUGreen' Website, which was launched in 2000 by the ANU's Vice Chancellor, along with the Federal Environment Minister. Some of the many associated initiatives are discussed below.

ANU's environmental policy commits it to:

> "promote environmental awareness and responsibility among all members of the University community;
>
> promote the principles and practices of environmental responsibility by sharing knowledge and experience with our stakeholders;
>
> identify, monitor and report on its community, legal and ethical environmental obligations;
>
> strive for environmental best practice, and as befits an international educational and research institution, lead the way in defining best practice;
>
> continue the ANU's high level of research and teaching in environmental areas with particular reference to ecologically sustainable development;
>
> recognise its obligations, both locally and globally, to present and succeeding generations.
>
> develop a balanced approach designed to meet the needs of the organisation, while allowing it to fulfil its environmental obligations." (anugreen website, 2000)

The EMP Committee was established in mid 1998, by the Vice Chancellor, Professor Deane Terrell, with a brief to implement the principles of the University Environmental Management policy. The committee membership consists of representatives of various groups, including University management, general and academic staff and students.

The ANUgreen program was formally launched by the Vice-Chancellor, Professor Terrell and Senator Robert Hill, Minister for the Environment and Heritage on 16 March 2000. The launch, which was attended by a number of invited guests from the University community and public and private sectors, received both electronic and print media coverage and proved to be a successful mechanism for promoting environmental issues within the University community.

Other community awareness initiatives implemented during the past 12 months include:

The establishment of an Environmental Excellence Award to be presented to staff and students who have undertaken projects to improve environmental performance on campus.

Development and launch of an ANUgreen website (www.anu.edu.au/facilities/anugreen)

Publication of a brochure titled "Energy Management", which is designed to encourage individuals to be better energy managers.

Sponsorship of the ANU Green Guide, produced by the Student Association's Environment Collective

Sponsorship of the production of calico bags for distribution to students during "Orientation Week". The ANUgreen logo and website details were printed on the bags.

Various advertisements, publicising the ANUgreen program and the website details, placed in the Student Diary and Woroni.

The Committee also commissioned an environmental risk audit of the Acton and Mt Stromlo campuses using the Comparative Environmental Risk Assessment Method developed by Su Wild River.

As part of the launch of the ANUgreen Program, the Vice-Chancellor signed an

agreement committing the ANU to becoming a participant in the Commonwealth's Greenhouse Challenge Program. The primary aim of this program is to encourage various organisations from the public and private sectors to reduce their overall greenhouse gas emissions. The University has committed to reduce its emissions by a minimum of 5% by 31 December 2002. As part of achieving that commitment it recently agreed to purchase 2% of its total energy requirements from renewable sources (ie. hydro, biomass and photovoltaic).

Other initiatives undertaken by the University in the past three years include:

> Water audits completed of all University buildings. These audits identified a number of savings and problems, including a major leak in a pipe under the foundations of HC Coombs Building. The leak was repaired saving approximately 12 million litres of water per year.
>
> Improved water use infrastructure in many areas, including dual flush toilets, water recycling to cool scientific equipment, water reuse systems in two locations to process sewage and waste water, stormwater reuse systems, tap aerators fitted as taps are replaced, energy/water efficient shower heads on all showers, identifying and replacing inefficient hot water systems, auto sprinkler systems and a reverse-osmosis filtered water system installed to reduce water use by 700% in one building.
>
> The replacement of all existing lighting systems with "low loss ballast" systems in many areas. The new lighting systems are more energy efficient, in that they use 33% less energy to start up and reduce total energy usage by up to 50%. Also lasting longer than the fittings they replaced.
>
> Replacement of large mechanical plant (such as air conditioning units and cool rooms which use CFCs as a refrigerant) with more energy efficient equipment in many areas.
>
> Installation of lighting motion sensors in one Library, all lecture theatres and tutorial rooms.
>
> Installation of skylights to promote use of natural light in the many areas.
>
> Installation of solar efficient (reflective) coating on the roofs of the many buildings, to reduce cooling loss (reduces temperature in the roof space by up to 15 degrees).
>
> Upgrading of BAS28000 Building Management System. The new version now allows for better control of energy use in buildings (i.e. allows system start/stop times to be defined to the minute).
>
> Thermal insulation installed in roof replacement programs.
>
> Redrafting of "Design Guidelines for Consultants", with an increased emphasis on ESD principles being included in design submissions. While budget often limits the extent to which these principles can be incorporated into the final design there has been some significant successes in recent building projects. There are now examples which have improved air circulation use more natural light, have double glazed windows, greater thermal mass. (anugreen website. 2000)

Waste management initiatives include establishment of a campus wide system to recycle paper products, metals plastics, grease and glass. Since 1996, the amount of material recycled has grown from an estimated 90K kgs per year to 400K kgs per year. However, there is still 700K kg per year of waste being sent to landfill and consequently, the environmental strategy has several objectives aimed at reducing the overall amount of waste produced and wherever practical, recycling the remainder. An organic waste recycling system is planned, and waste audits and initiatives continue.

In the next year, the main focus of the EMP will be to promote community awareness. Current initiatives, such as an environmental art exhibition, demonstrate the potential for this leading university to combine science, art, management and local enthusiasm to deliver sustainable environmental outcomes.

Figure 1. Poster describing the waste water disposal system on ANU land at Mount Stromlo.



References

Anugreen website. 2000.

www//anu.edu.au/facilities/anugreen

A1: Australian National University Environment Management Planning

Perspective: Other
Role: Manager
LG type: Capital (compact, rich, populous)
Focus: Management

Context Issues
ANU is the authority closest to the environment (therefore a Local Government) within the Australian Capital Territory. ACT is both a local and State level

Context continuums

Scale
<local local regional state national international

Flexibility of Process
Full mostly equal partial none

Origins of initiative
<local local regional state national international

Goals
- Achieve best practice environmental management for ANU.
- Fully comply with all relevant environmental legislation.
- Avoid any possible environmental enforcement action against ANU,
- Encourage community knowledge, ownership and participation in all efforts.

Drivers
- Perception that universities, and especially ANU, need to lead the adoption of new standards in areas that are well supported by research.
- Environmental Management Planning Committee, high level of trust and, long-term, membership by key people,
- Management responsibility to achieve environmental outcomes,
- ANU senior management support for environmental improvements,
- Related government initiatives, including greenfleet, greenhouse challenge, green energy,
- Expertise and interest amongst many in university community,
- Environmentally appealing campus, Sullivan's creek, old trees, and other local values.

Processes
- ANUGreen Website and
- Environmental Plan (using International Standards Organisation 14000 models and others where relevant)
- Greenfleet, greenhouse challenge, composting and other recycling initiatives,
- Cooperation between different campus experts - energy researchers, workplace health and safety officers, site management, others.
- Innovative actions, including green office inspections, art display, climate music,

Constraints
- Cost of initiatives - organic recycling, other recycling, green energy, tree planting.
- Challenge to communicate plans, policies and actions to the entire community,
- ANU managers have very little control over actions by most of the community

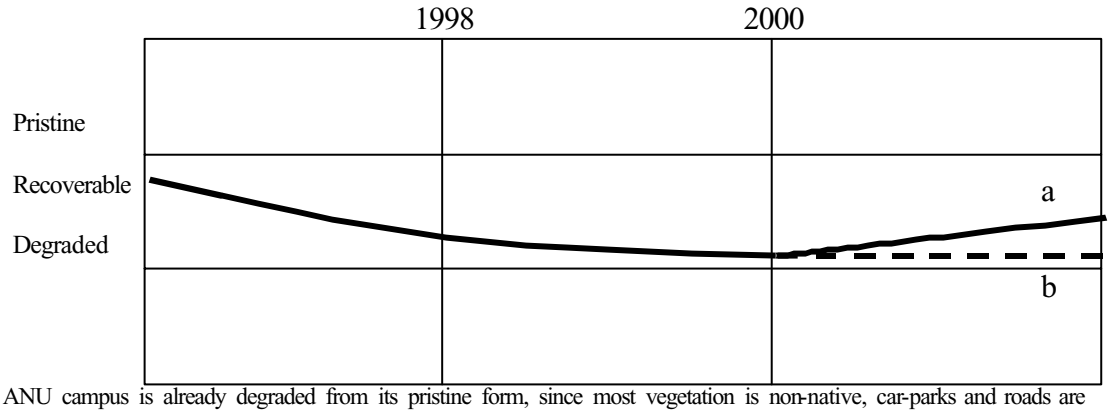
Outcomes
- Senior management launch of ANU Environmental Management Plan,
- ANU Green advertised widely to students and
- Innovative, practical, appealing actions, such as art displays, climate music, environment award
- Ongoing work towards organic recycling (composting), car-pooling, energy savings.

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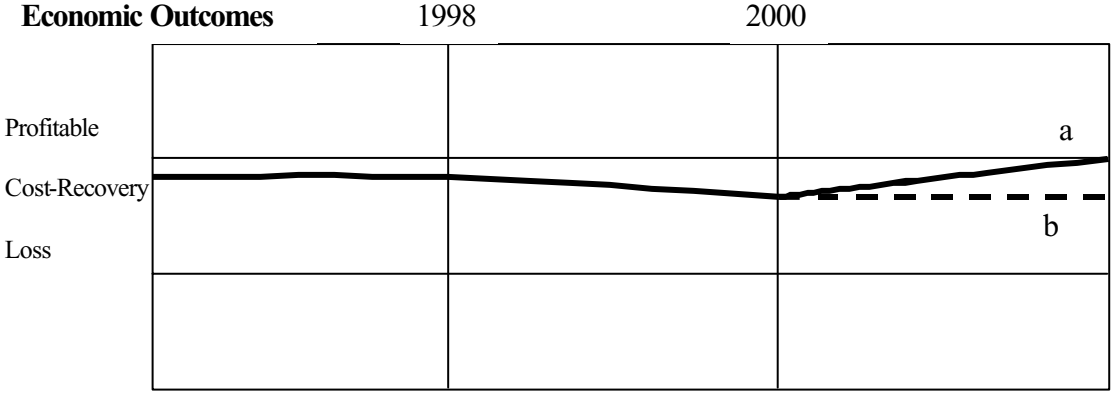
Other Notes
See further discussion in Chapter 4 of the Thesis.

Ecological Outcomes



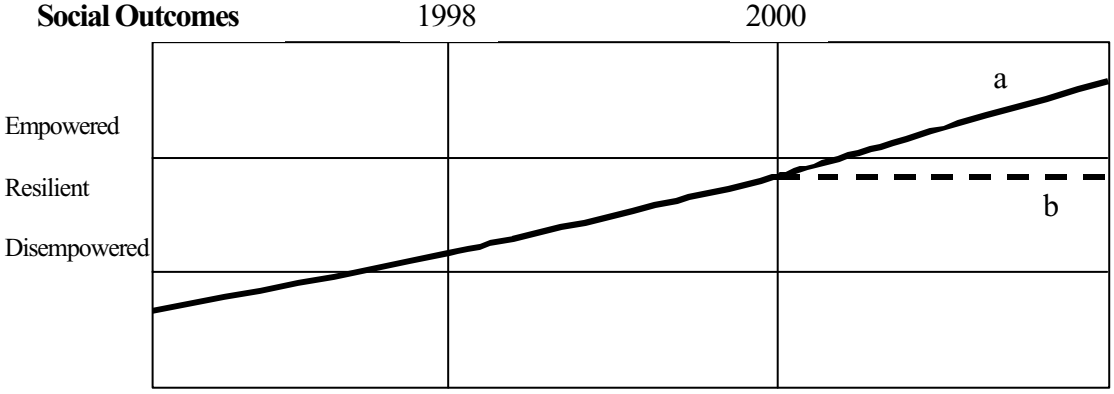
ANU campus is already degraded from its pristine form, since most vegetation is non-native, car-parks and roads are ubiquitous, and potential pollutants are used for various activities. However, the Environmental Management Plan and other environmental initiatives have already made an impact. Tree planting, and energy, water and risk audits have delivered environmental outcomes that have reduced environmental degradation from the ANU. There is a good chance of further improvements that may deliver clear environmental benefits. Composting, tree planting and green energy could provide these (a). Continuing existing programs could stabilise degradation in the long term (b).

Economic Outcomes



ANU is not strictly in the business of making profits, but certainly needs to cover its own costs. The true cost of pollution and resource use are excluded from current economic systems, meaning that environmental improvements register as net costs. Such false costs include the use of 'green' energy, tree planting for carbon credits and organic recycling (composting). However these initiatives have the capacity to improve the public image of ANU as an environmental leader, which could balance the financial outlays (b). As a leader in economic modelling and policy commentary, ANU may also have the potential to shift thinking and recording of environmental costs, and thereby register these costs as the social, and true economic benefits that they truly are (a).

Social Outcomes



ANU has historically suffered from disjointed efforts to address environmental problems. The longevity of the Environmental Management Planning Committee, its student involvement, and the commitment of many on campus to environmental improvements are shifting this pattern. Commitments by the most senior managers to improved environmental performance, and organised undergraduate initiatives show changes at both ends of the university power structure, with cooperative efforts in between. There is the potential for greater community involvement and empowerment in achieving environmental outcomes (a). There is also the chance that cooperation between parties could remain at current levels, or that inherent turnover of community members through natural attrition will constrain advances (b).