

Part 2

Methods and findings from two studies

Chapter 5. Environmental risk study methods¹

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).

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 Queensland² 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 (DoE³). 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

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.3⁵). 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 development 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 community 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 Queensland⁶. 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 1994⁷). 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 definitions⁸.

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 too 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 prior 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 roles⁹.

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 sample¹⁰

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 be 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 town¹¹. 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

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.

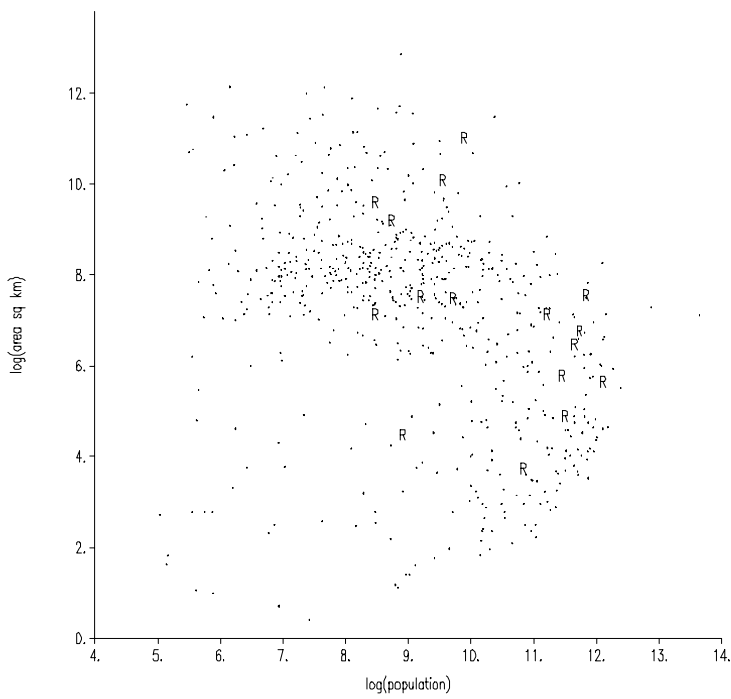
Table 5.2 Local Government Selection

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.

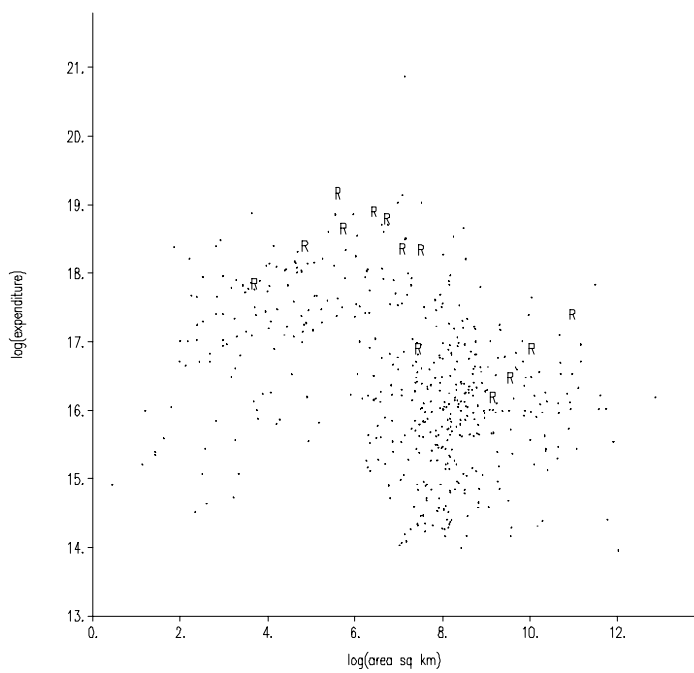
Figure 5.2 a Sampled local governments, population by area



R = LGs selected for risk assessment

Source: Information Australia 2000.

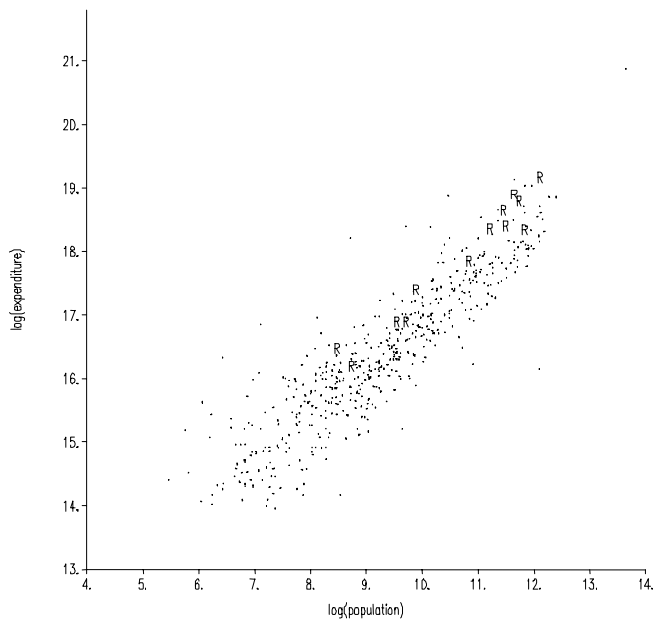
Figure 5.2b Sampled local governments, area by expenditure



R = LGs selected for risk assessment

Source: Information Australia 2000.

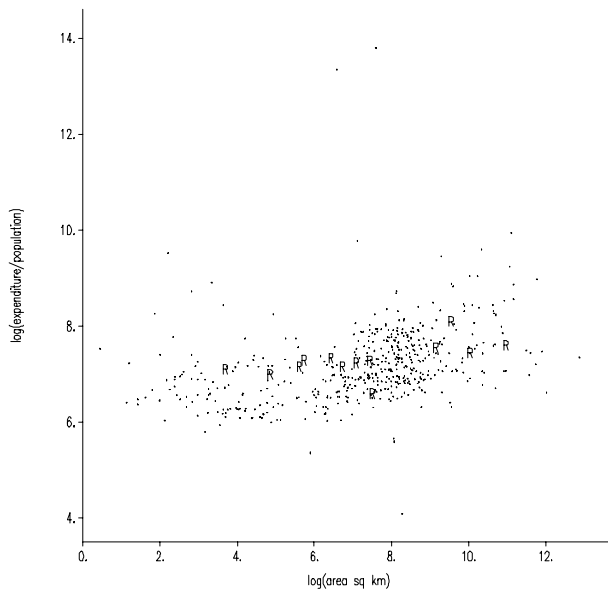
Figure 5.2c Sampled local governments, population by expenditure



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.

Queensland Environment Protection Act
statewide benchmarking study:
participating local governments

 Study area

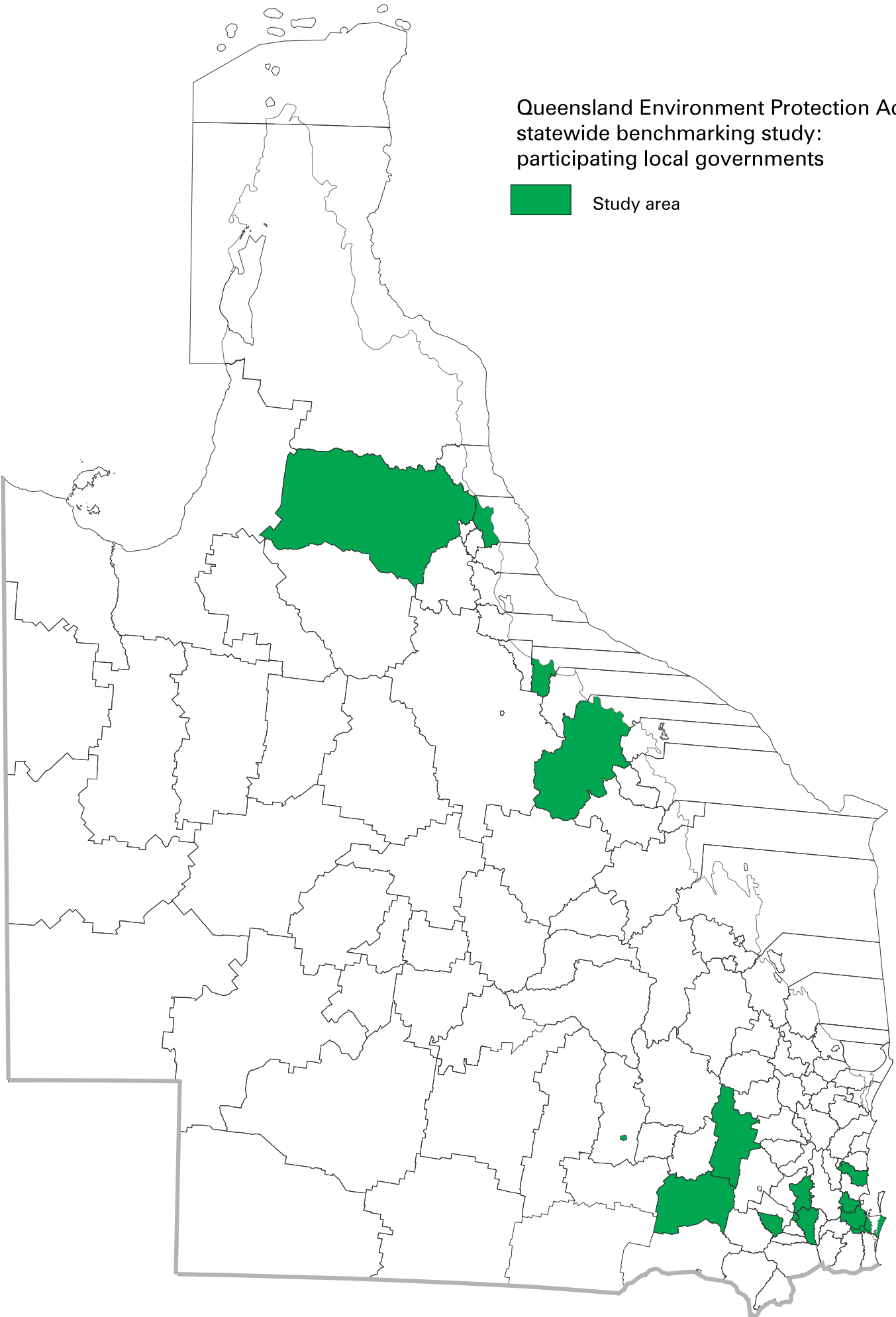


Table 5.3 Population and Sample Characteristics by Characterising Variables

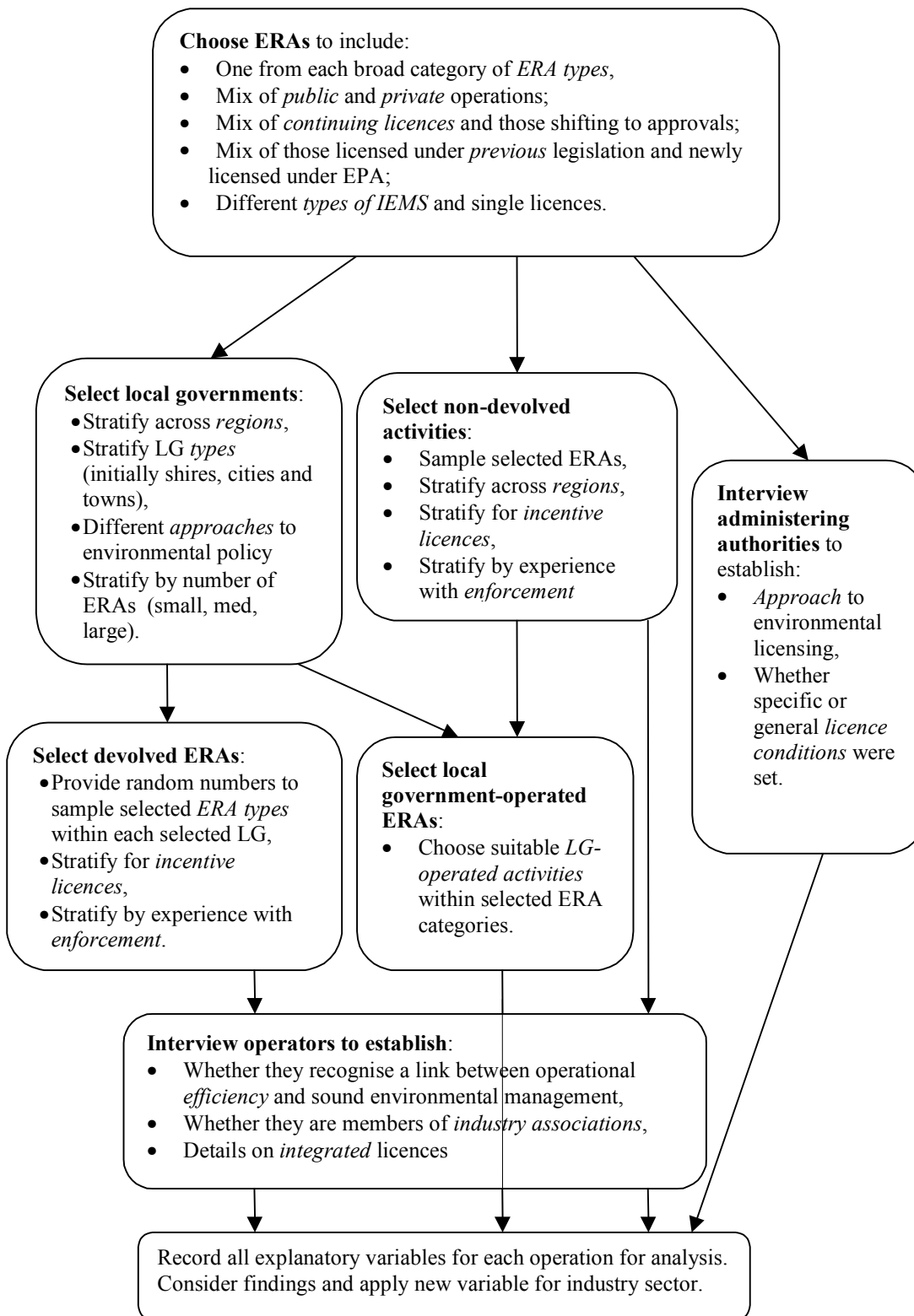
Characterising Variable	Description	Levels	Population	Sample
<i>Variables used in selecting which ERAs to include</i>				
Previously licensed	Whether the activity was required to be licensed under the repealed <i>Clean Air or Water Act</i> .	Not licensed under old envt legislation (No) Licensed under 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 <i>EP Regulation 1998</i>	Dropping to Level 2 under 1998 Regulation (No) Staying Level 1 (Yes)	N/A	86 324
<i>Variables used in stratified random sampling</i>				
ERA type and broad 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
<i>Variables established during interviews with administering authorities</i>				
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
<i>Variables established during interviews with operators</i>				
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
<i>Variables induced during subsequent analysis, and applied to existing sample</i>				
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 groundbreaking 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 bunded¹³ 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 occur 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 made¹⁵. 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? <i>If yes to industry association</i>	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?
<i>IEMS status</i>	Do you have an IEMS licence? (If yes) are all of the activities on the one site, or on different sites?
<i>If IEMS.</i> 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?
<i>(renting)</i>	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 findings¹

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 initiative².

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 unpublished³.

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 analysed⁴, 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.

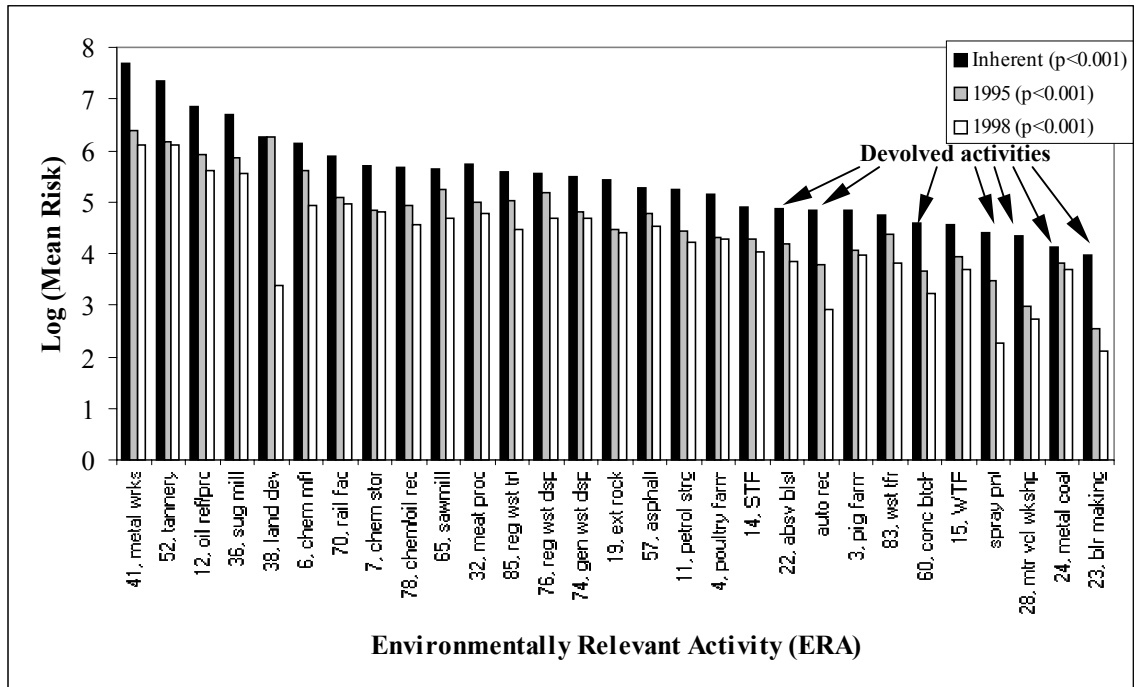
⁴ Risk reductions were calculated as $Risk\ Reduction = Log(1995\ Environmental\ Risk - 1998\ Environmental\ Risk)$. A discussion of this calculation is in Section 3.3.4 of [the Queensland Benchmarking Study Scientific Report on Detailed Methods and Findings](#) in Appendix 3.

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



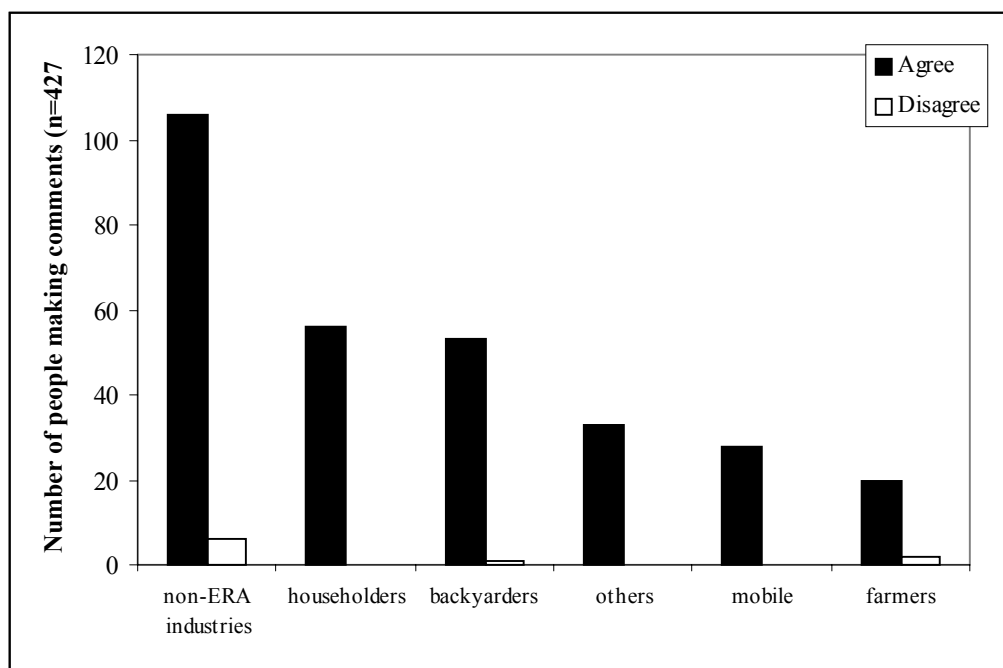
Source: Queensland statewide benchmarking study database

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



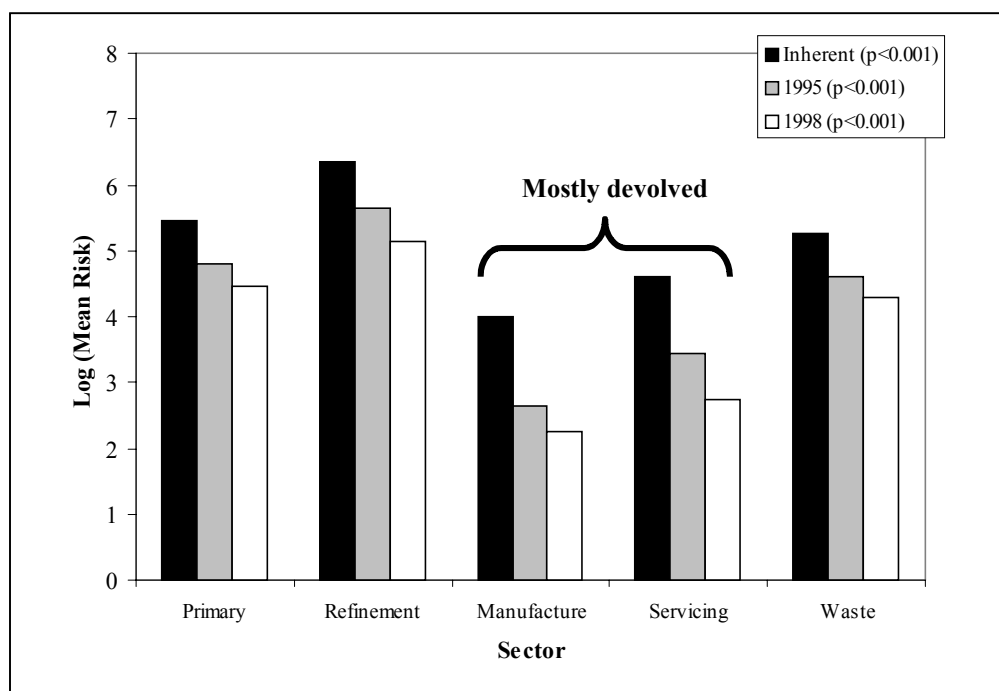
Source: Queensland statewide benchmarking study database

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 units⁵. 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.

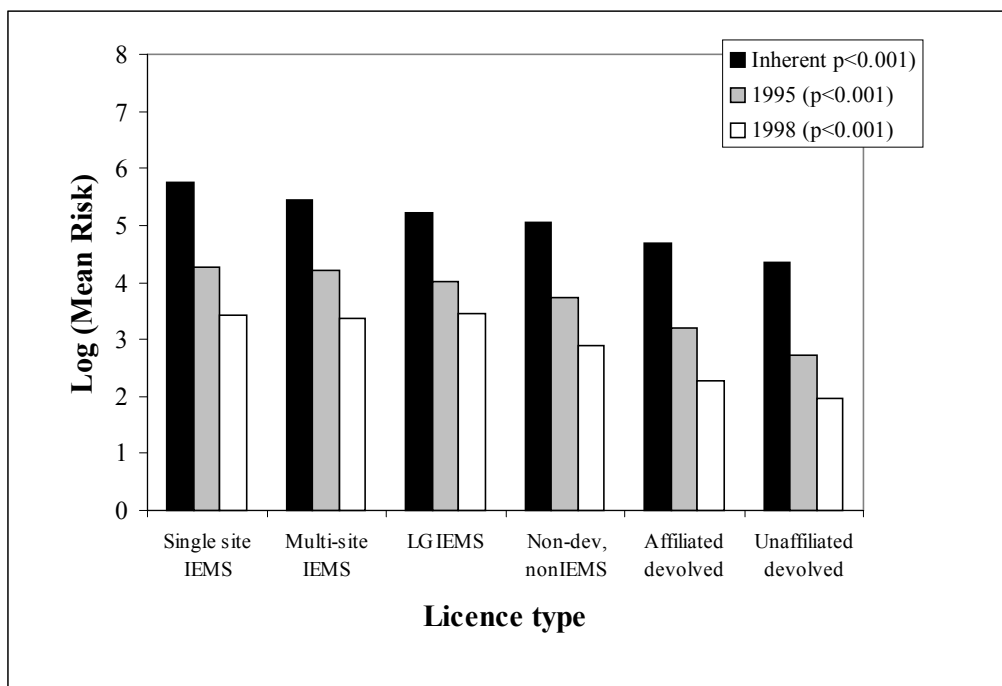
Table 6.2 Environmental Investment and Budget Due to EPA

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 activities	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 premises⁷. 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:

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

Another way to describe this relationship is that:

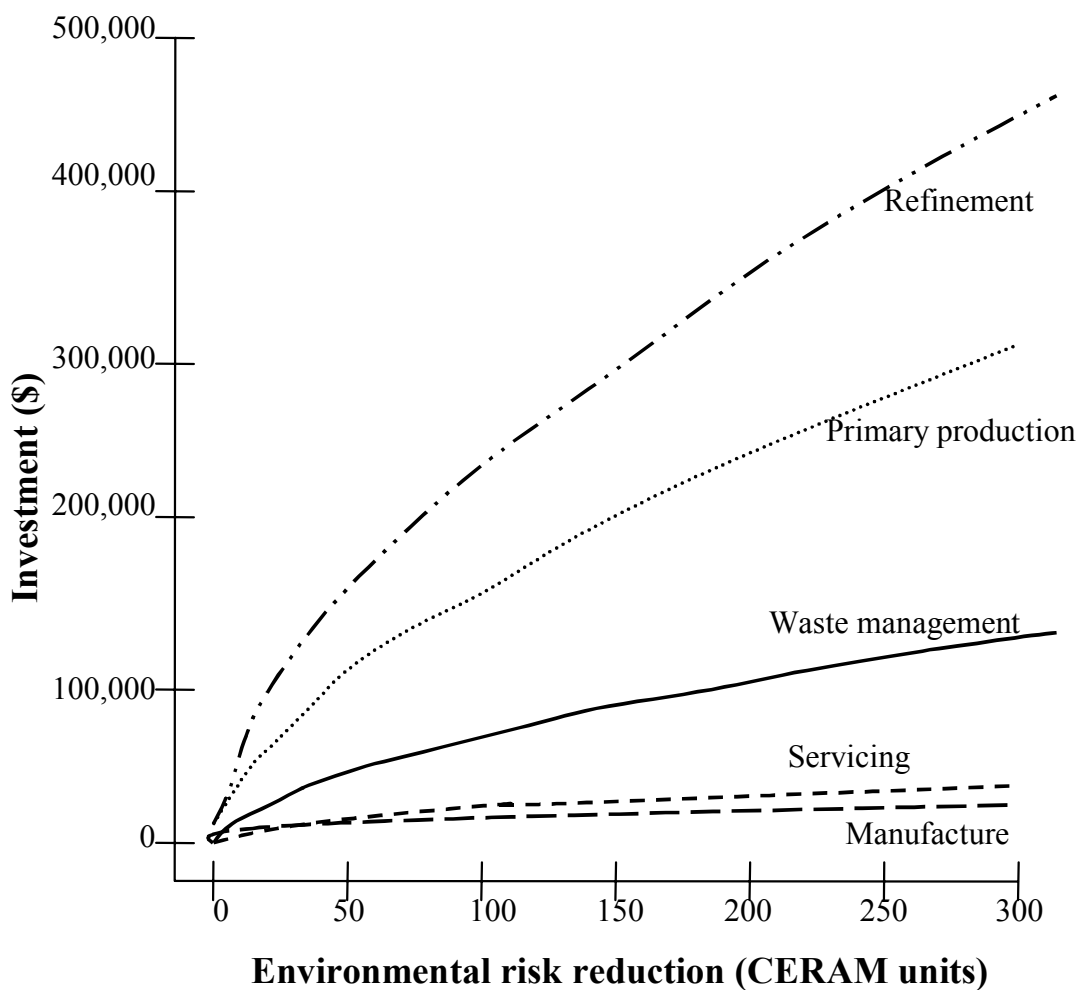
$$\text{Log cost} = \text{constant} + 1.5 \log \text{risk}$$

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 3⁸.

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

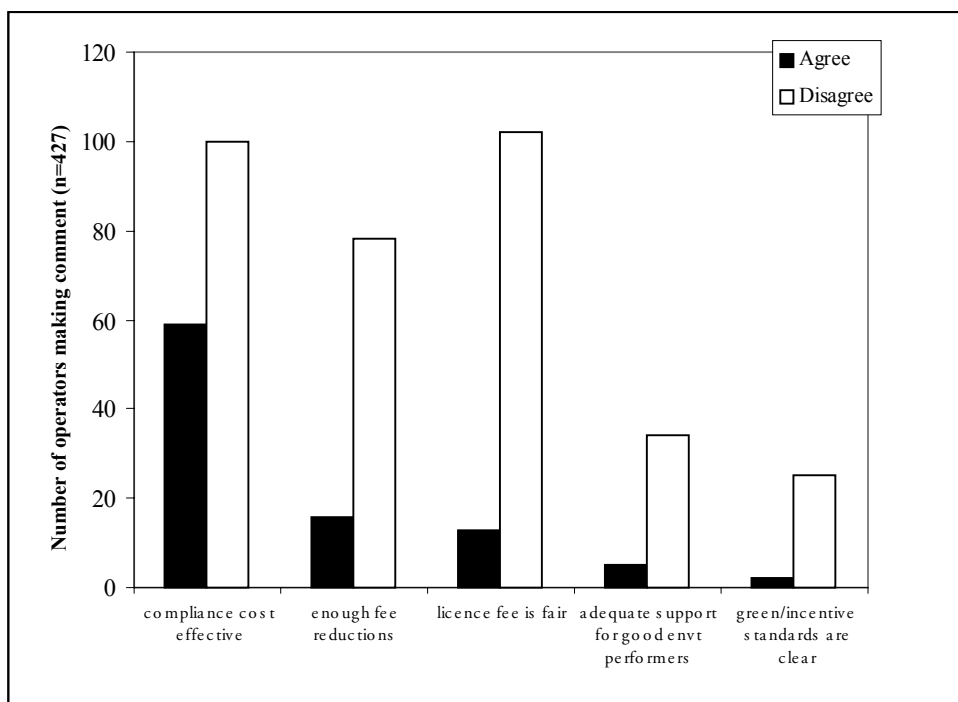
	Full Scheduled Fee	Standard Reduction	Incentive Licence
Populous Councils	Often	Rarely	Sometimes
Sparse Councils	Rarely	Often	Rarely
High Level Approach	Sometimes	Rarely	Often
Moderate Level Approach	Often	Sometimes	Sometimes
Minimal Level Approach	Rarely	Often	Never
Local Economy OK⁹	Sometimes	Sometimes	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

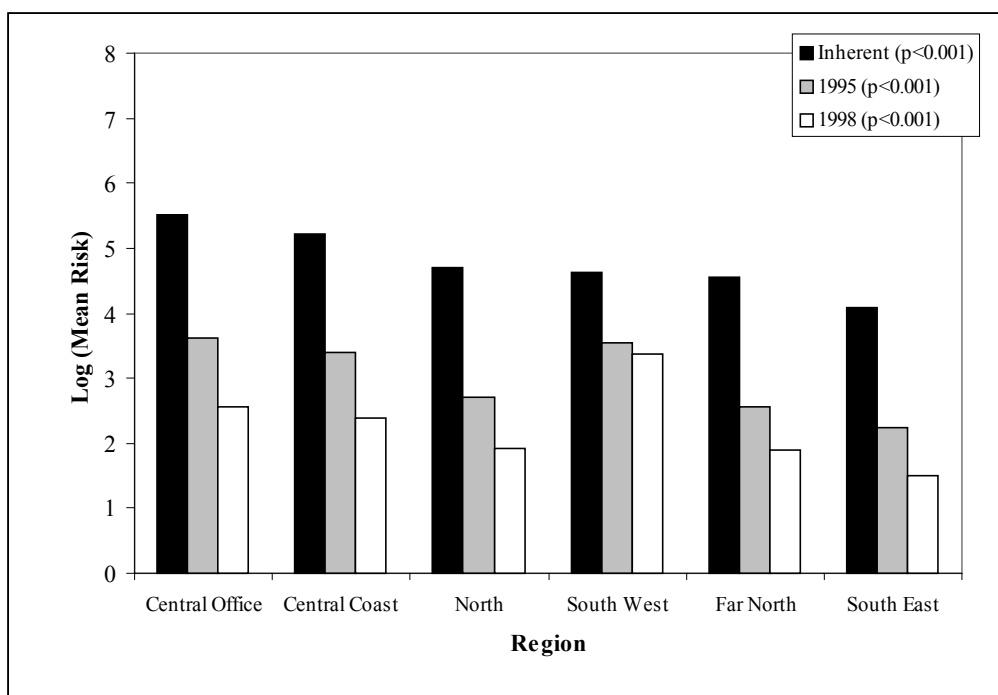
One of the most surprising outcomes from the Queensland Benchmarking Study was that there was no evidence that LGs and SG administering authorities had achieved different outcomes under the EPA. This was both in relation to environmental risk reductions, and also other responses to pollution prevention 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 them¹⁰.

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 knowledgeable 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

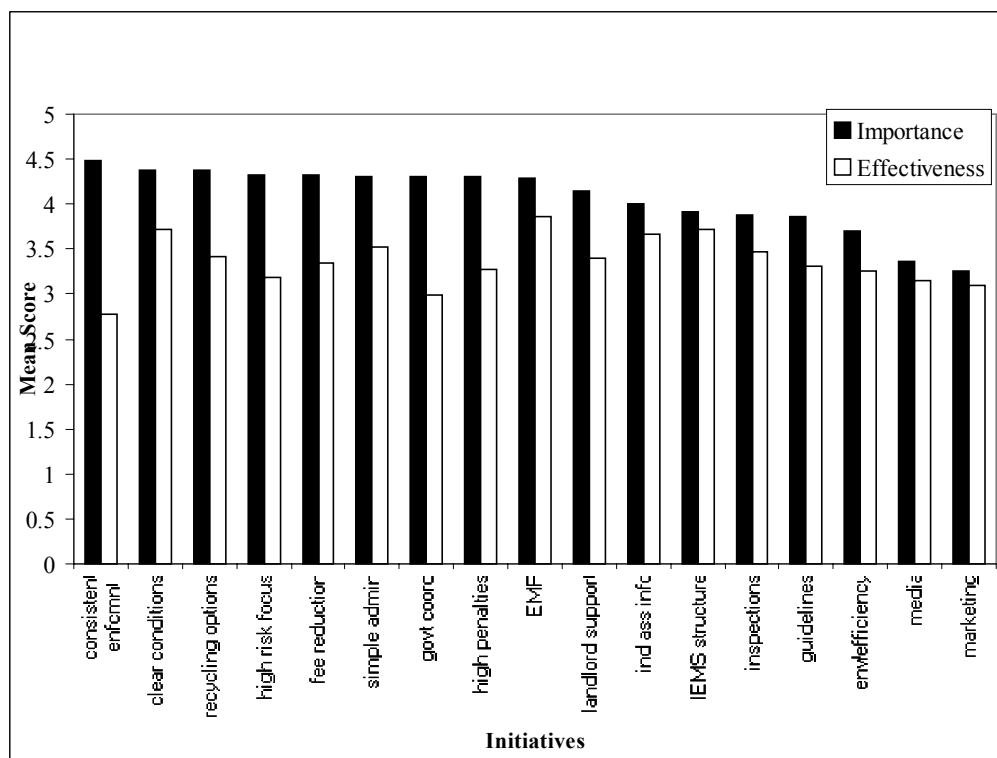
outcomes. There are strong potential benefits for industry-government relations and environmental improvements when sufficient flexibility is built into a statutory system to support regional variations in implementation strategies. Consistent outcomes between regions may be a less important goal in 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 High risk waste storage	Do	FN	✓	-	4,000	500
		E	CC	✓	-	5,000	*
		Do					
S70, Breach of licence conditions	Poor storage of contaminants Waste transport wrong vehicle	LG	SE	✓	-	2,000	-
		Do	SE	-	-	8,000	1,376
		E					
S112, Wilfully contravening EP Order	High risk waste storage Piggery discharge to creek	Do	CC	✓	✓	5,000	*
		E	SW	-	-	10,000	55
		DP					
		I					
S119, Wilfully contravening EP Order	High risk storage toxic waste	Do	SE	✓	✓	*	*
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 10,000L sewage to mountain High risk waste storage 2-300KL organic waste to river Discharge pesticides to water	LG	SE	✓	-	10,000	13,552
		Do	FN	✓	✓	25,000	8,512
		E	CC	✓	✓	5,000	15,727
		Do	SE	-	-	1,000	21,178
		E	SE	-	-	30,000	21,139
		Do					
		E					
S123, Unlawfully causing an environmental nuisance	Odours from gelatin factory Nuisance from dust offence	Do	SE	✓	-	50,000	24,219
		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 Fuel/water mix to stormwater High risk storage toxic waste Syphoning fuel mixture to road Waste boxes stored in gully, rain washed waste to river	Do	SE	✓	-	7,500	576
		E	SE	✓	-	2,000	1,166
		LG	SE	✓	-	10,000	80,000
		Do	CC	✓	-	200	285
		E	FN	-	-	1,000	1,057
		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

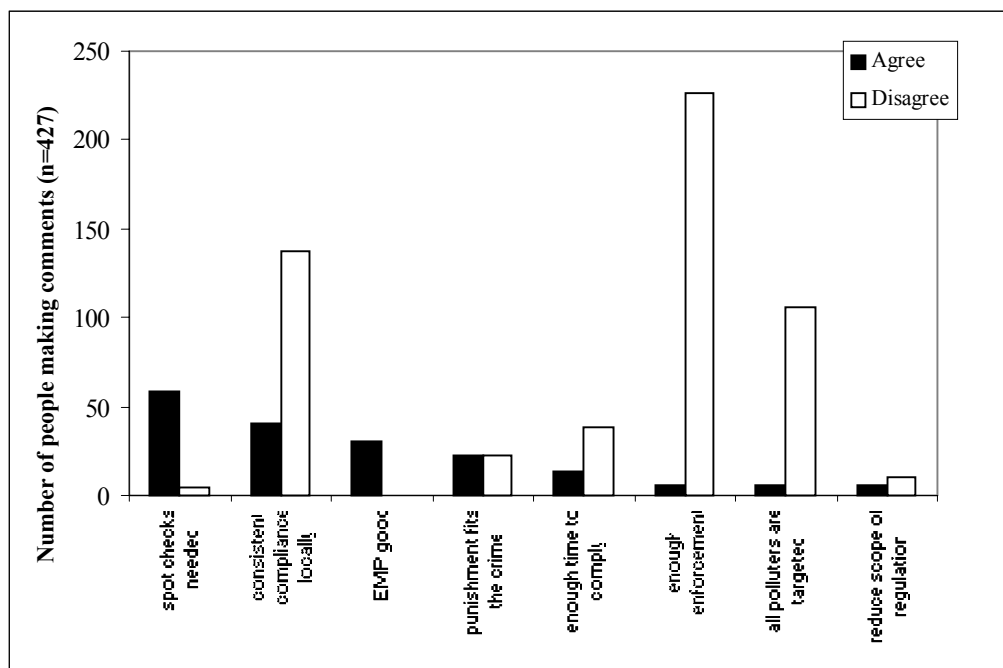
Source: [Wild River et al 1998](#). From DoE internal documents made available for the Benchmarking Studies.

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.

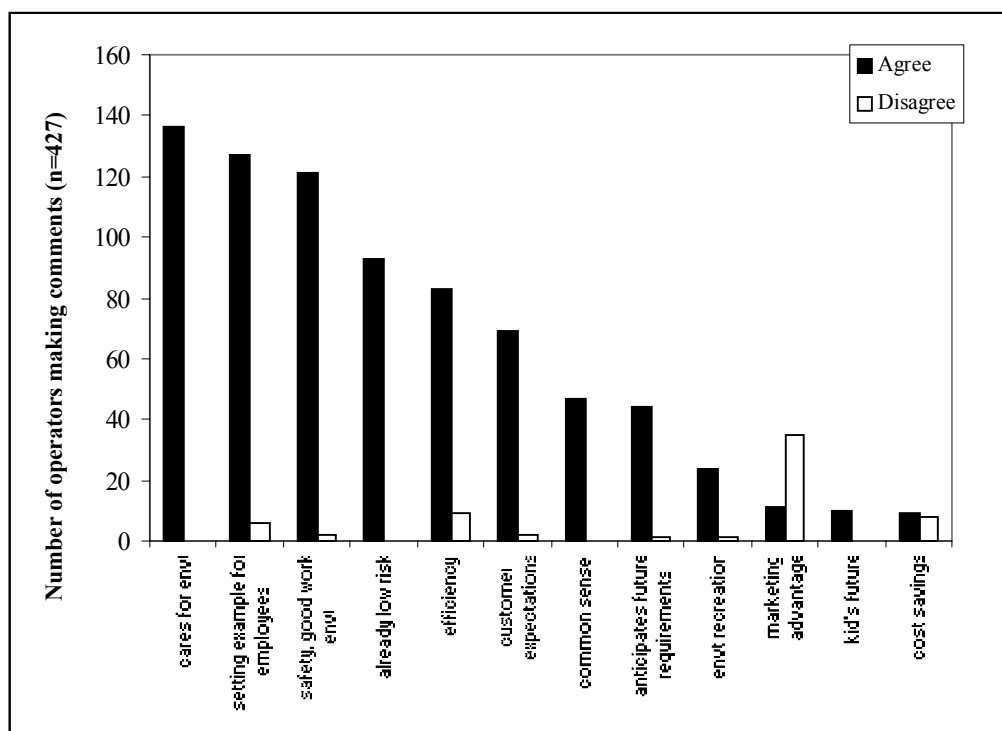
Figure 6.9 Operator comments about enforcement



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 competitor¹¹. 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.

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 unpublished¹².

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 Officers¹³. 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

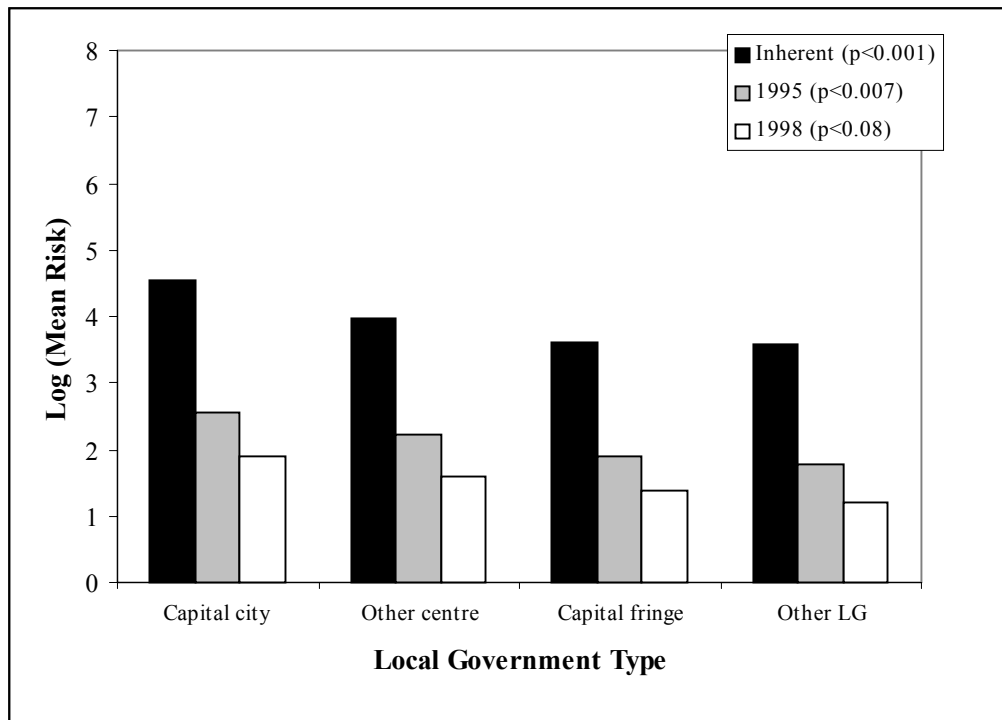
¹³ This view of the LG hierarchy was expressed repeatedly in Devolution Working Group Meetings, as well as during Benchmarking Study interviews. It is also implicitly expressed in the average wages of the different professions, which are typically higher for engineers than for Environmental Health Officers.

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 quickly¹⁴. 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

		
<p>6.11a. Full separation of wastes in bunded area within workshop. Capital City, South East.</p>	<p>6.11b. Large bunded area for multiple storage and forklift access. Other Centre, Central Coast.</p>	
		
<p>6.11c. Dirt bunded fuel storage. Other LG, South West Region.</p>	<p>6.11d. Triple-bunded chemical manufacturing plant. Other centre, South West Region.</p>	<p>6.11e. Covered, locked, bunded fuel and other chemical storage. Other Centre. Northern Region.</p>

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

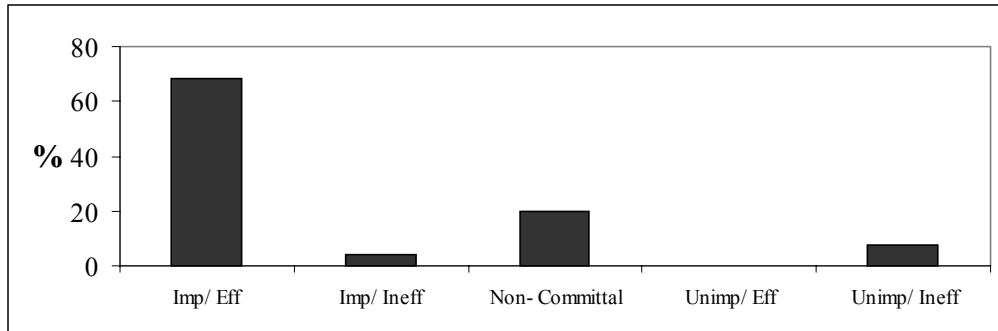
Prior to the EPA, LG Environmental Health Officers often had fairly limited knowledge of industrial pollution issues, and faced a steep learning curve during early EPA implementation. As was stated in Chapter 5, they were assisted in this by the provision of industry-specific guidelines, developed by 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.

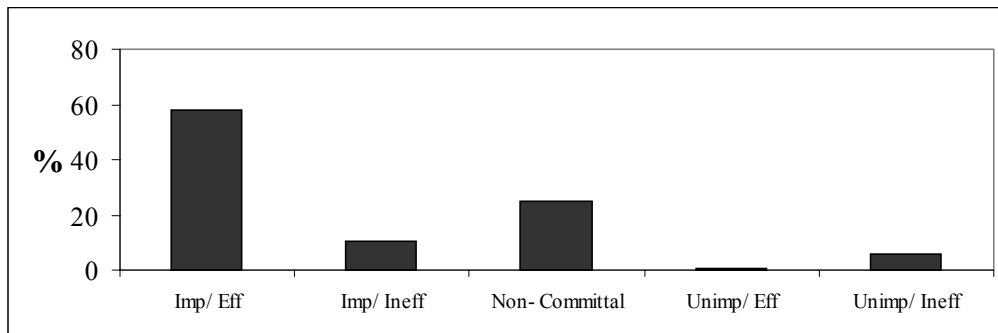
The lessons from this section are that LG relations with industry can be positive when the LG officers strive to be helpful, even if they lack some technical knowledge, but also that such technical knowledge is extremely valuable. Written guidelines may have limited value for operators compared with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

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



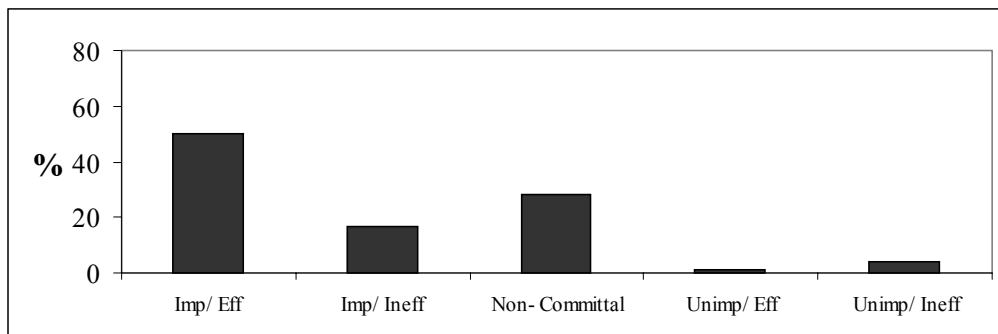
Source: Queensland statewide benchmarking study database.

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



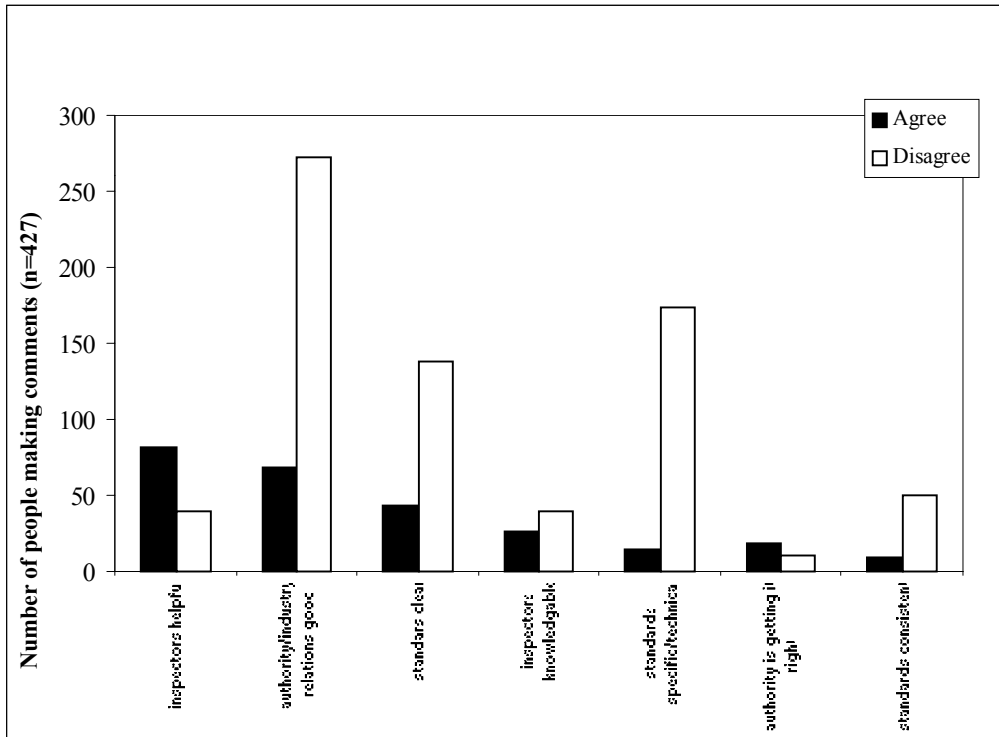
Source: Queensland statewide benchmarking study database.

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.

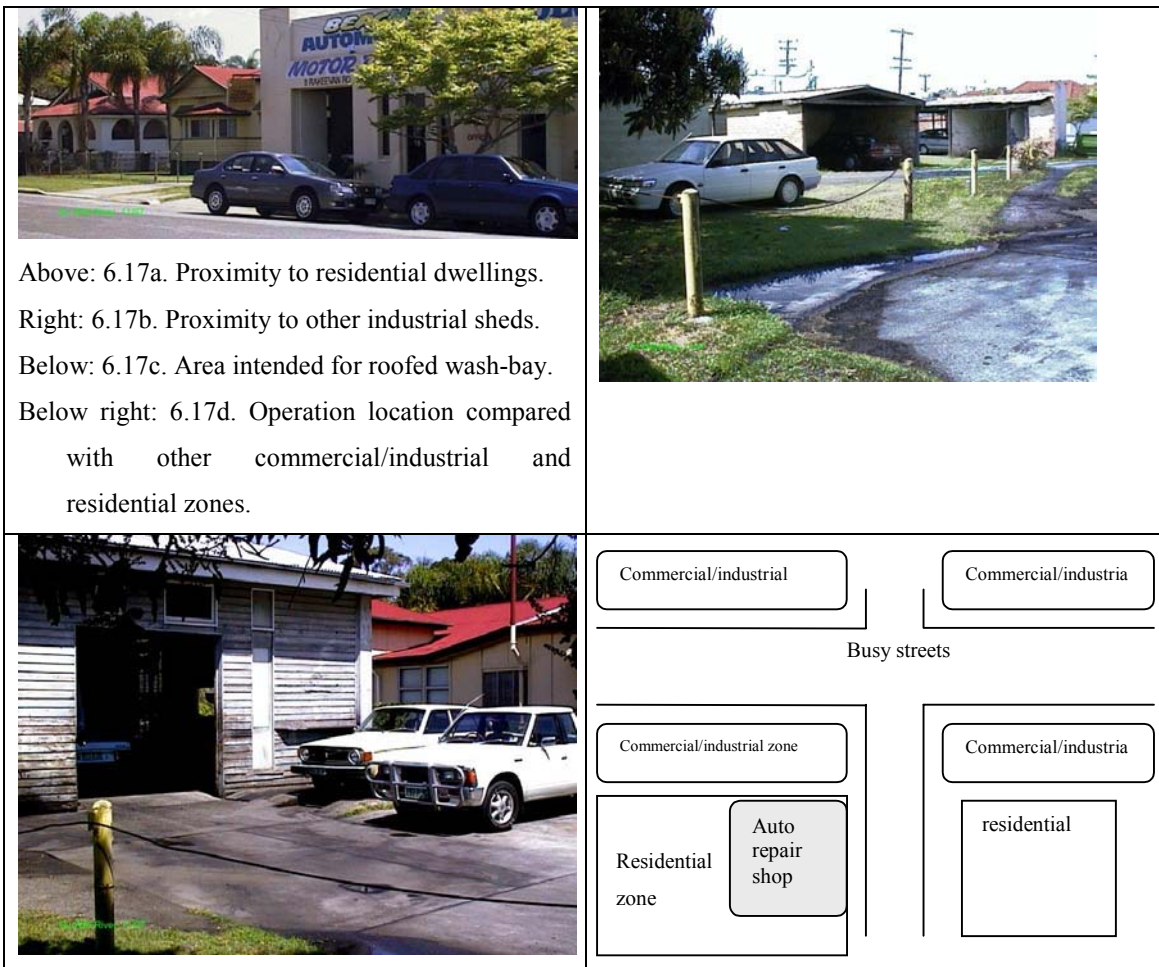
Figure 6.17 shows an automotive repair shop that was operating in a densely populated suburb of Brisbane at the time of the Brisbane Benchmarking Study. The operation had been running successfully on that site for over 50 years, and the current owner had worked there for over 25 years. The business held 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.



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.

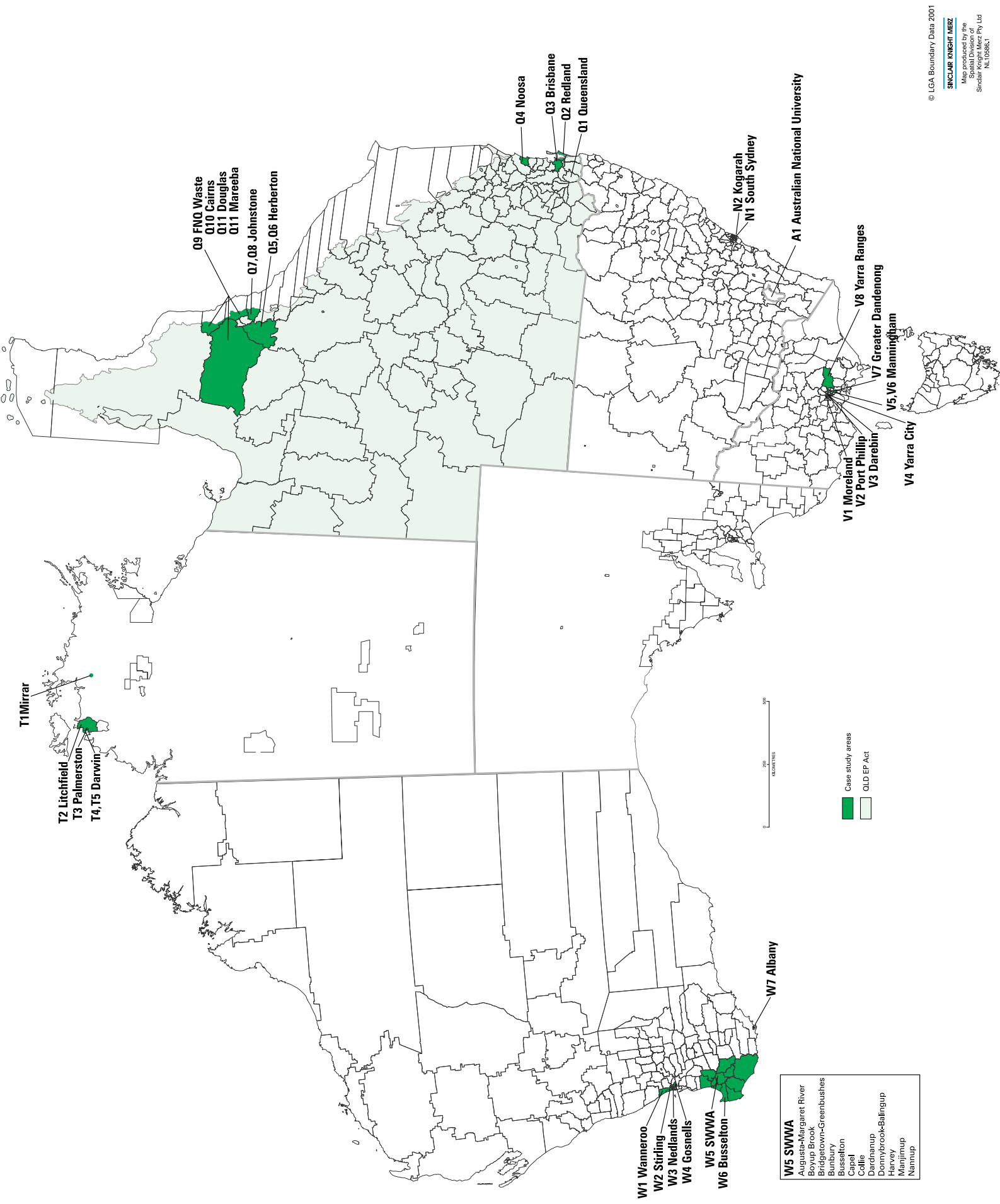
The case study codes are also evident from Figure 7.1. Note that each case study has both an alphabetic and numeric code. The former indicates which state of Australia the case study relates to. As you can see on the map, Queensland case studies start with 'Q', Northern Territory ones with 'T' and so 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.



T1 Mirrar

T2 Litchfield
T3 Palmerston
T4, T5 Darwin

Q9 FNO Waste
Q10 Cairns
Q11 Douglas
Q11 Mareeba
Q7, Q8 Johnstone
Q5, Q6 Herberton

Q4 Noosa
Q3 Brisbane
Q2 Redland
Q1 Queensland

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

W1 Wanneroo
W2 Stirling
W3 Nedlands
W4 Gosnells
W5 SWWA
W6 Busselton
W7 Albany

- W5 SWWA
- Augusta-Margaret River
- Boyup Brook
- Bridgetown-Greenbushes
- Bunbury
- Busselton
- Capel
- Collie
- Dardanup
- Donnybrook-Balingup
- Harvey
- Manjimup
- Nannup

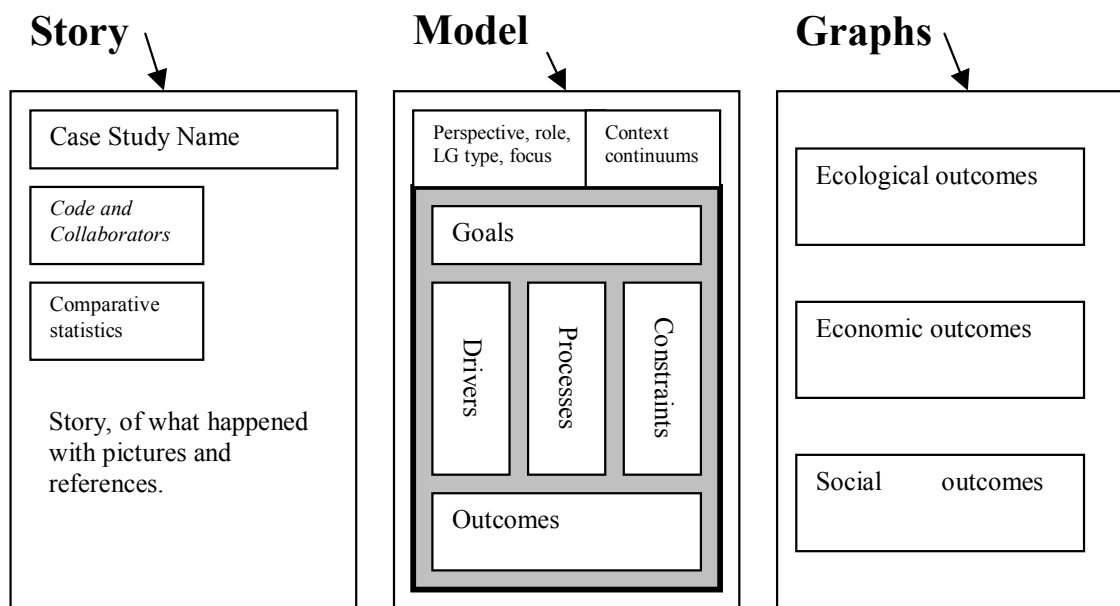
Case study areas
QLD EP Act

0 200 400
KILOMETRES

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. <i>“what was the scale of the attempt? Was it just within this LG, or did it extend further than that?”</i>
Origins	Where the stimulus of the attempt is from. The range is the same as for <i>scale</i> . <i>“where did the idea for the attempt originate? Within this LG, or from outside?”</i>
Flexibility	How much choice the LG had in deciding how to progress with the attempt. The range is from none to full. <i>“what level of flexibility was there in this attempt? Could you decide how you went about it yourself, or were constrained in some way?”</i>
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. <i>“what were the goals that you aimed to achieve?”</i>
Processes	The important steps on the way to achieving outcomes. <i>“what were the important processes that you went through in achieving the goals?”</i>
Outcomes	The achievements resulting from the attempt. <i>“what were the outcomes from the attempt? What did you achieve?”</i>
Drivers	A force causing or assisting an attempt. <i>“What were the drivers, that helped you with the attempt?”</i>
Constraints	A confinement or restraint that hinders an attempt. <i>“What were the constraints that made it harder to achieve the attempt?”</i>

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 well 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.

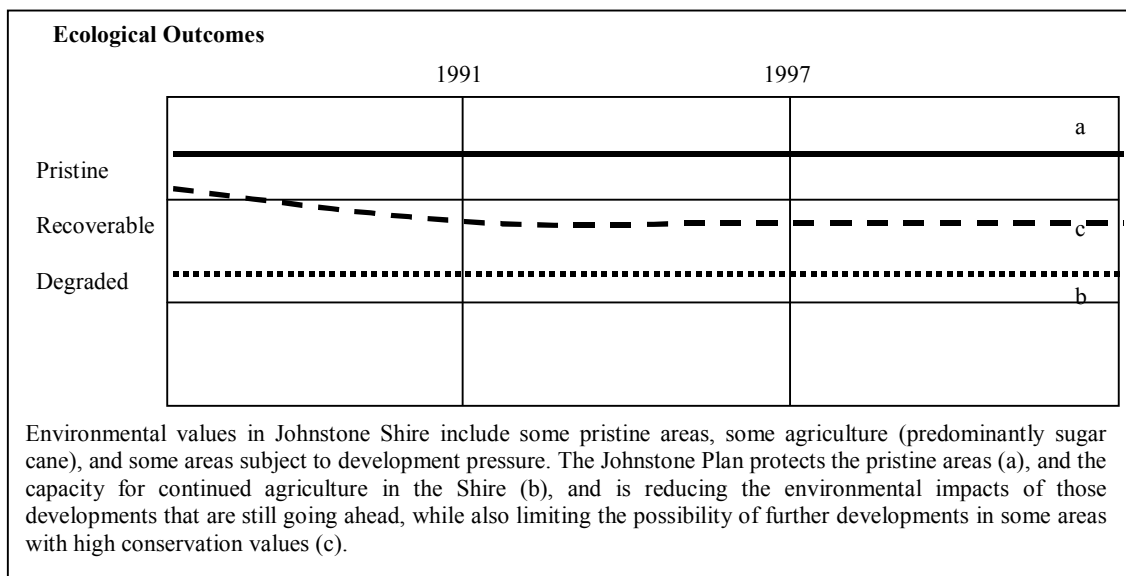
Graphs

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



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	<p>Pristine</p> <p>Ecological systems are largely or entirely unchanged since European colonisation. Biodiversity and species richness are high, and ecosystems are intact and sustainable.</p>	<p>Profitable</p> <p>Economic systems are functioning well, and delivering strong and sustainable profits.</p>	<p>Empowered</p> <p>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.</p>
Medium	<p>Recoverable</p> <p>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.</p>	<p>Cost-recovery</p> <p>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.</p>	<p>Resilient</p> <p>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.</p>
Low	<p>Degraded</p> <p>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.</p>	<p>Loss</p> <p>The economic systems are costing more than they are earning. There is no benefit in continuing investment in these conditions.</p>	<p>Disempowered</p> <p>Community members know little of the policy decisions and actions taken by governments. They have no access to</p>

Source: [Appendix 1. Thesis category map.](#)

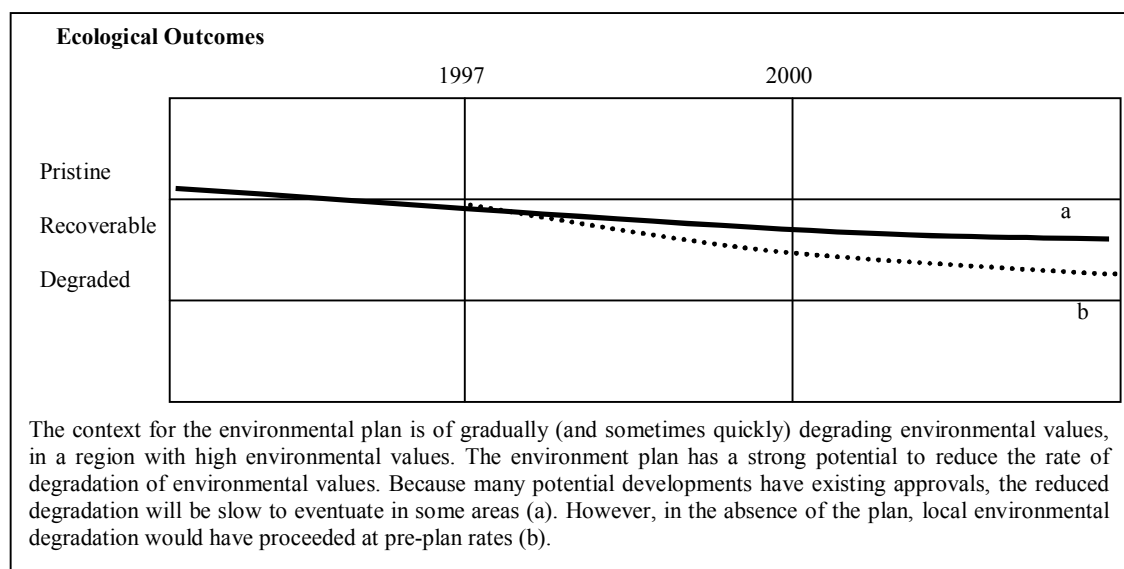
The horizontal axis shows the timing of environmental attempts. Again, there are three zones. The left-hand time frame shows the status and trends in environmental values that were present before the attempt, and is an indication of the context within which the attempt was made. The middle time frame 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



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 Melbourne¹. 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 state 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	Roles	Totals	LG Types	Totals
Local government	26	Councillor (Mayor)	8 (6)	Capital city	10
Mixed	7	Manager (CEO)	10 (1)	Capital fringe	7
State/federal govt	1	Officer (envt)	16 (16)	Other centre	6
Other	9	Total LG + mixed roles	34	Other LG	5
Total perspectives in interviews	43			Region	5
				Double-up	4
				Total Case Studies	37

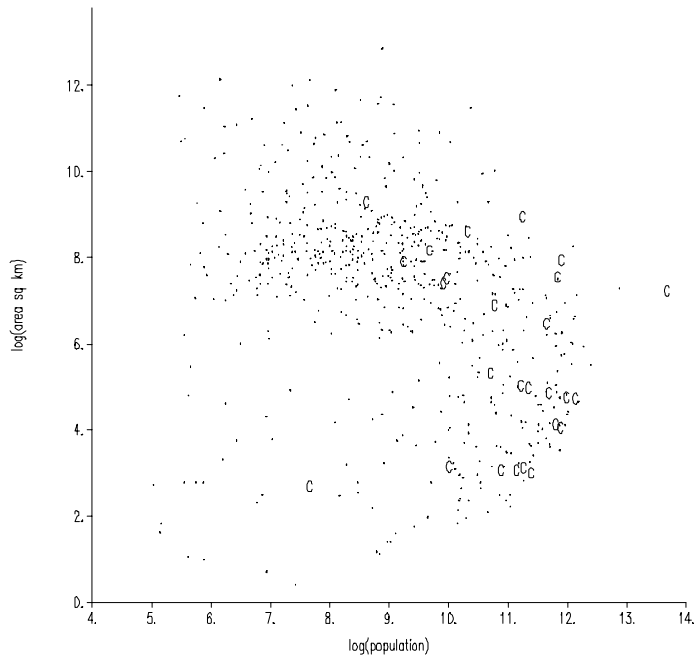
Table 7.3b Perspective, roles, LG type and environmental focus area by state

	Queensland	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							
Planning	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.

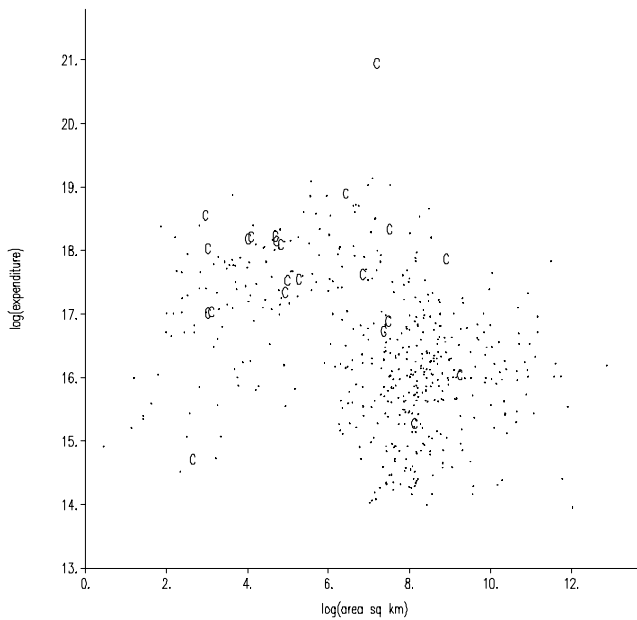
Figure 7.5a Case study local governments, by population and area



C = LGs selected for case studies

Source: Information Australia 2000.

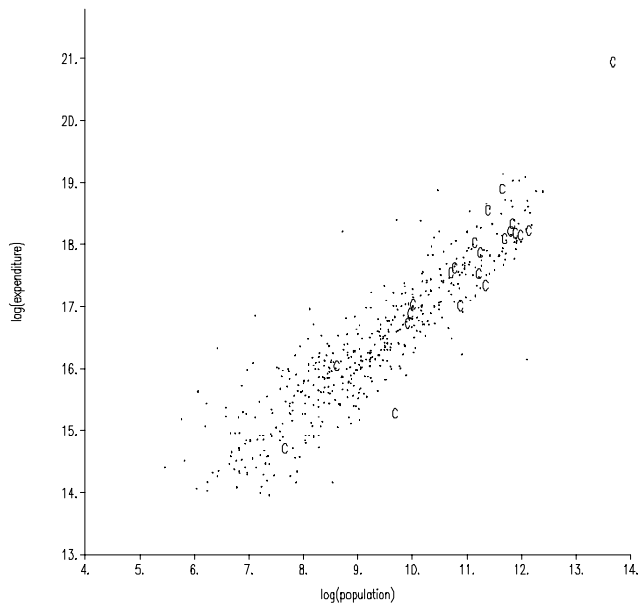
Figure 7.5b Case study local governments, by area and expenditure



C = LGs selected for case studies

Source: Information Australia 2000.

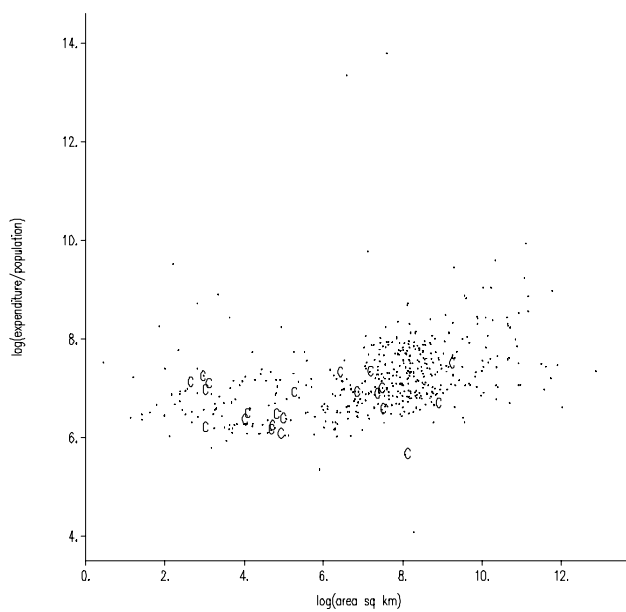
Figure 7.5c Case study local governments, by population and expenditure



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

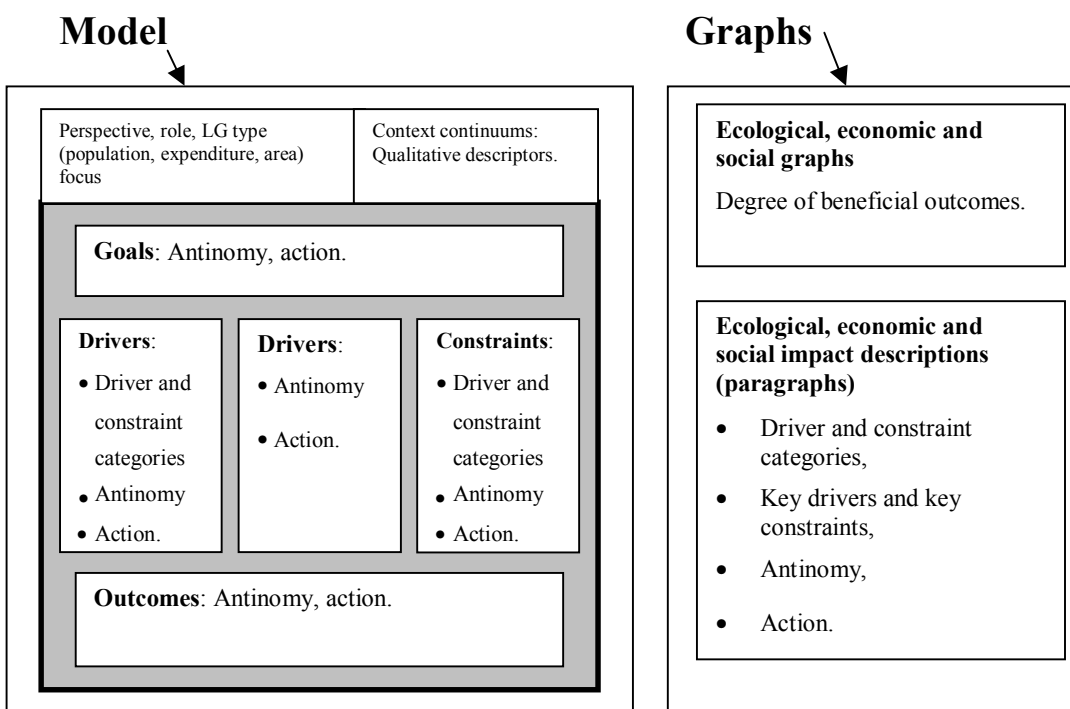
As described above, the generation of analytical categories is a central goal of grounded theory building. This research generated a range of analytical categories from through case study analysis, and those that served as explanatory variables have already been described in this chapter. This section 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-Vivo², 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 lessons¹. 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	<ul style="list-style-type: none"> • Flexibility • Attempt origins or impacts • Drivers and constraints 	<ul style="list-style-type: none"> • Broad driver and constraint categories • Attempt components • Initiatives/Beliefs/commitments (subcategories of a broad driver and constraint category)
Resource shortages	<ul style="list-style-type: none"> • Drivers and constraints • Key drivers and key constraints 	<ul style="list-style-type: none"> • Broad driver and constraint categories • Practical resources (subcategories of a broad driver and constraint category).
The potential for partnerships between LGs and others	<ul style="list-style-type: none"> • Drivers and constraints 	<ul style="list-style-type: none"> • Institutions (subcategories of a broad driver and constraint category).
LG efficiency and effectiveness	<ul style="list-style-type: none"> • Environmental focus areas 	<ul style="list-style-type: none"> • Degree of beneficial outcomes (from the graphs)
LG leading the community	<ul style="list-style-type: none"> • Drivers and constraints • Environmental focus areas 	<ul style="list-style-type: none"> • Rights and responsibilities (subcategories of a broad driver and constraint category).
The politics of LG	<ul style="list-style-type: none"> • LG type 	<ul style="list-style-type: none"> • Winners and losers
The diversity between LGs	<ul style="list-style-type: none"> • LG type 	<ul style="list-style-type: none"> • Environmental focus areas
The knowledge base of LG	<ul style="list-style-type: none"> • Action categories 	<ul style="list-style-type: none"> • Attempt components
The integration of policy that occurs in LG.	<ul style="list-style-type: none"> • Perspectives 	<ul style="list-style-type: none"> • 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

-
- 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.

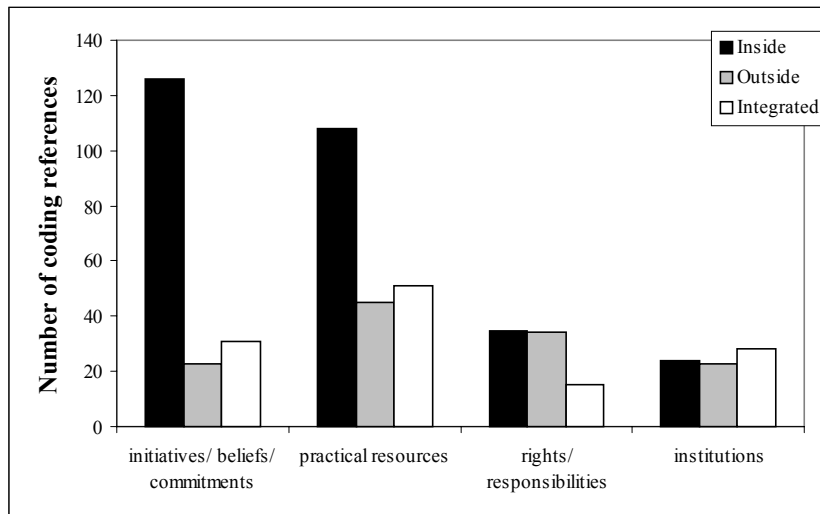
8.2 Local government responsiveness to the community

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 strategies². 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.

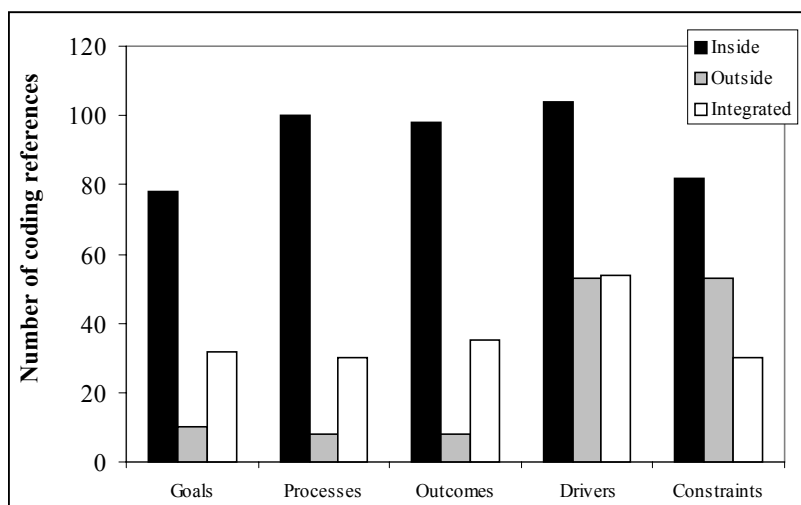
² See for example [Q1](#), [Q10](#), [T3](#), [T5](#), [W1](#), [W4](#), [W5](#), [W7](#), [V7](#), [V8](#), [N2](#).

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

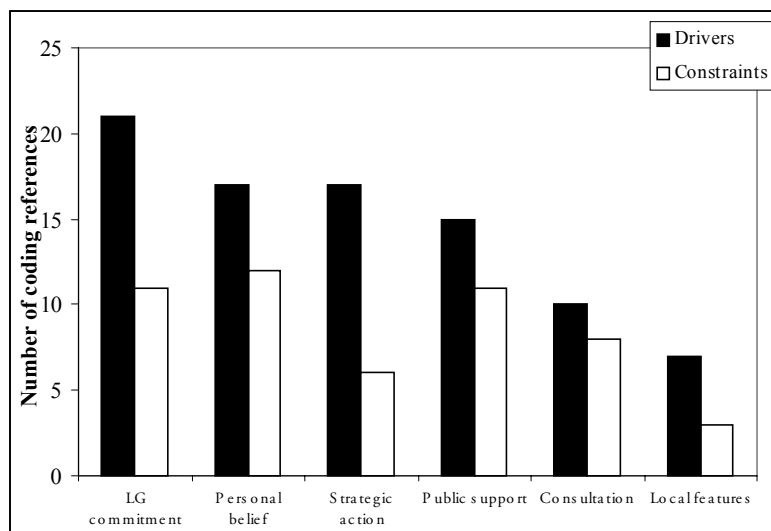


Source: Coded comparative case study database

Subcategories of initiatives /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 4³.

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 flexibility⁴. 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 *initiatives/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	<p>Q11: Supportive population, environmental mandate through election campaign.</p> <p>V6: Establishment of community networks during training courses.</p> <p>Q4: Dedicated individuals working for decades from different angles.</p> <p>Q7: Enthusiasm and vision within Council and senior LG managers, especially Mayor, CEO.</p>	<p>Q4: Shifting and not always ‘green’ councils.</p> <p>W2: Community perception that optimal recycling only occurs where LG provides two wheelie bins.</p> <p>V2: Pressure for selling the site rather than the demonstration project (overcome by ability to achieve objectives).</p>
Low Flexibility	<p>V8: Elections following the amalgamations brought back 6 of 9 Councillors with knowledge of previous visions.</p> <p>V8: The new planning processes have involved successful community consultation and the current draft plan reflects dominant local views.</p>	<p>Q5: Local business people were fairly opposed to the EP Act, considering themselves to be causing little pollution.</p> <p>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.</p>

Source: Coded comparative case study database

Table 8.3 Generalised features of initiatives/beliefs/commitments as drivers and constraints

	Drivers	Constraints
LG commitments	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.
Consultation	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.

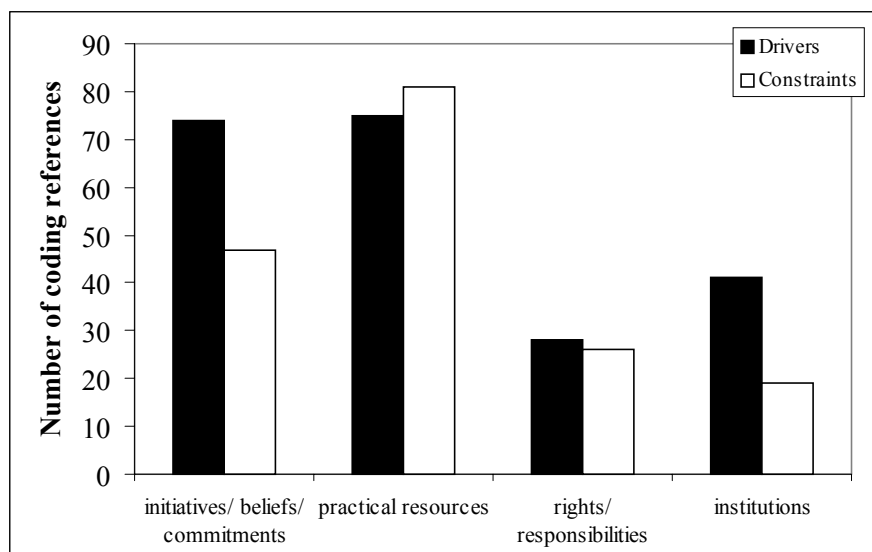
Many of the case studies contain insights into LG environmental resourcing issues that might surprise outsiders to LG. For instance, lack of financial resources were rarely a fundamental constraint that undermined an entire attempt. The only case study in which this occurred was [Q5](#), in which Herberton 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.

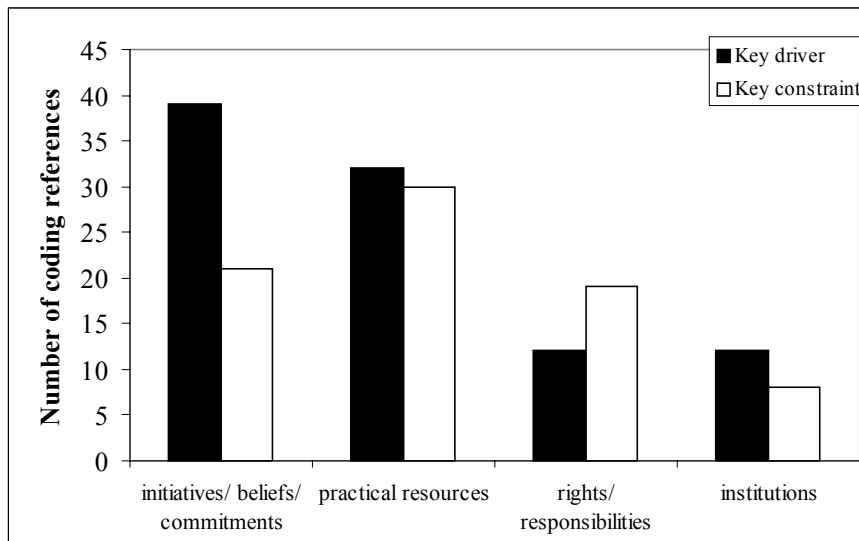
The main analytical category dealing with resourcing issues is the broad driver and constraint category for *practical resources*. Figure 8.4 shows the number of coding references from the case study model, to each of the four broad driver and constraint categories. This shows that a lack of, or inappropriate 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

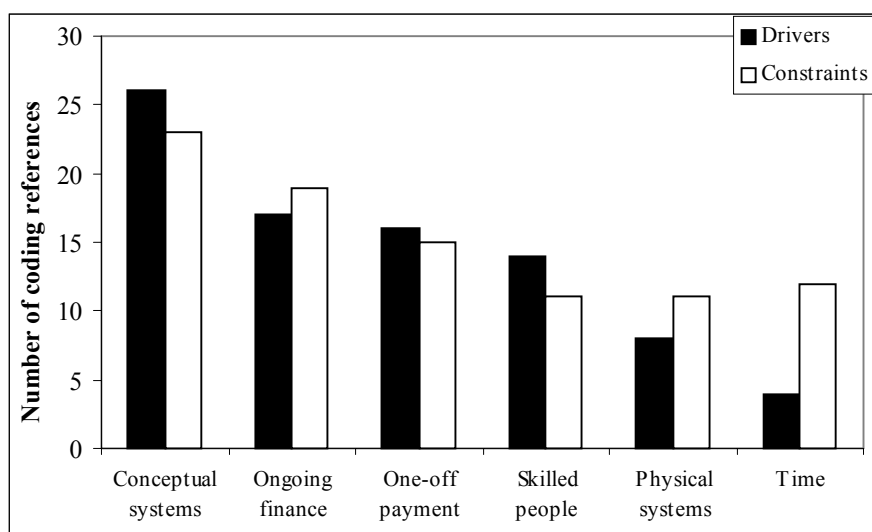


Source: Coded comparative case study database

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 4⁵.

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 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.

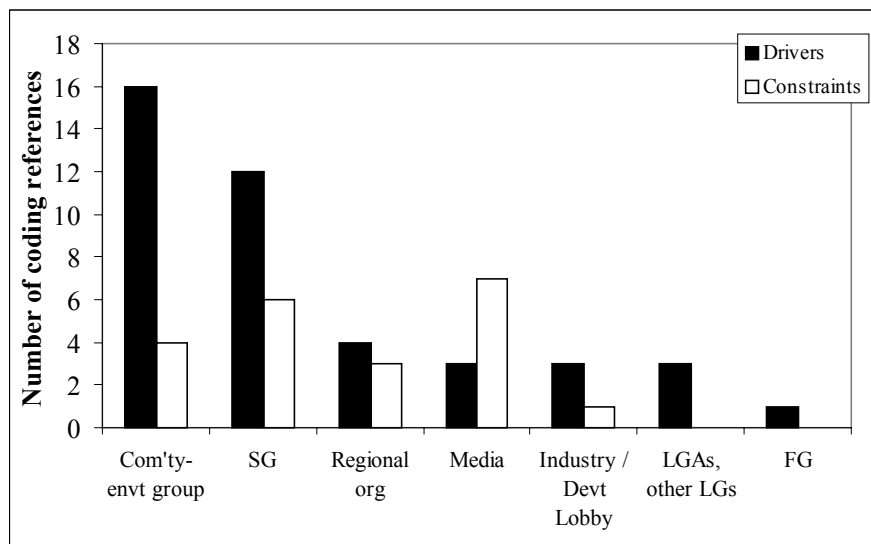
In summary, practical resources were often both drivers and constraints to attempts, and while financial resources were important, they were not the only major resource issues. So long as strong support for an attempt existed, a poor funding base was more often a stimulus to creative solutions than a 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 4⁶.

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-term⁷. 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 problems⁸.

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 outcome⁹. 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 values¹⁰. 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 prevention¹¹.

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 studies¹². 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 4¹³ 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 decades¹⁴. 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 areas¹⁵. 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

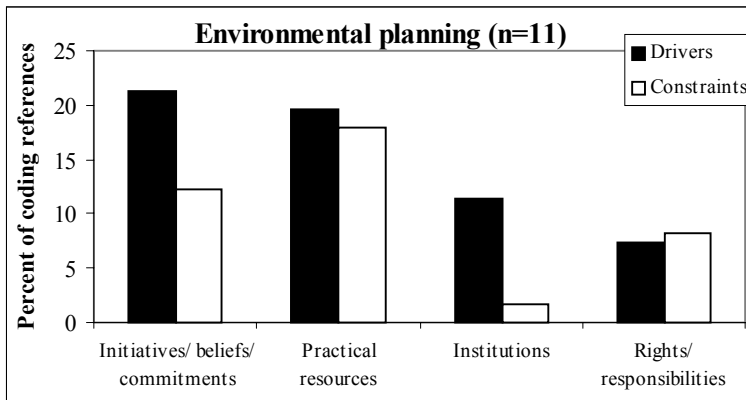
¹⁴ These include [Q4](#), [Q7](#), [Q11](#), [T1](#), [T2](#).

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

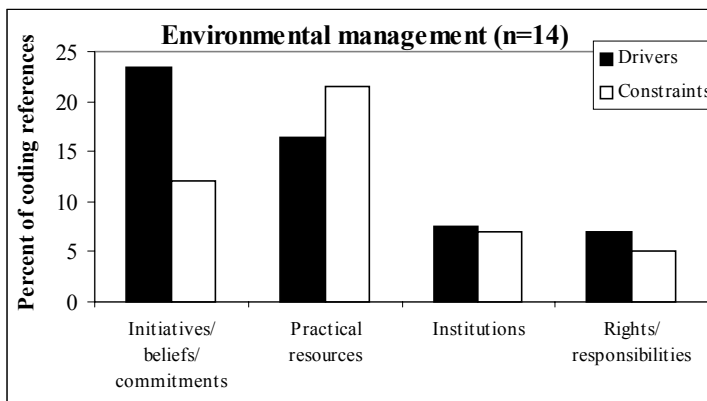
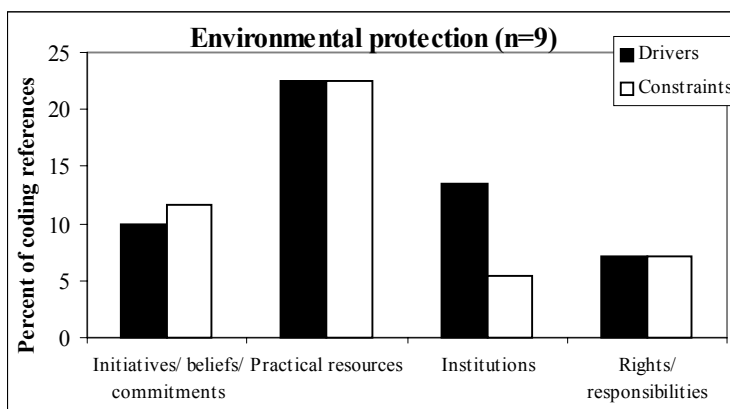


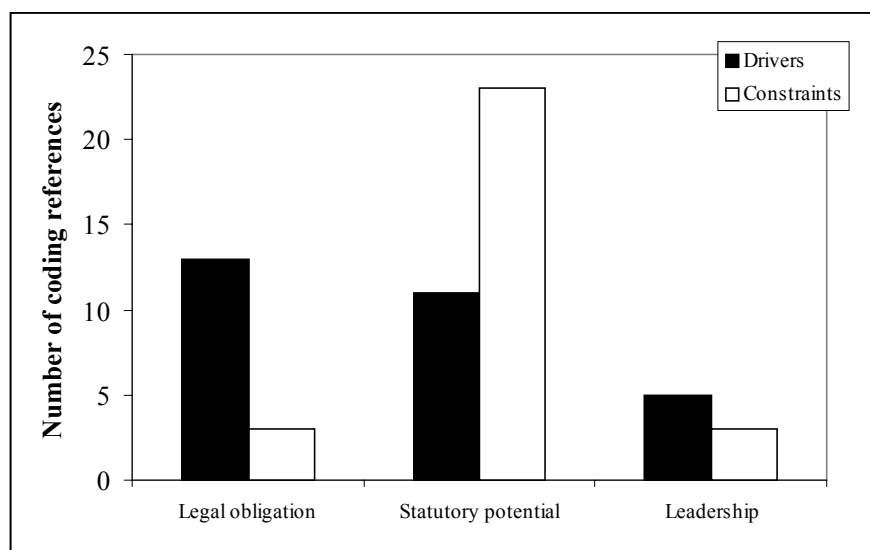
Figure 8.9 Driver and constraint categories in environmental protection case studies



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 4¹⁶.

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 an 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 cases¹⁷. 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* or *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. 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 benefits¹⁸.

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.

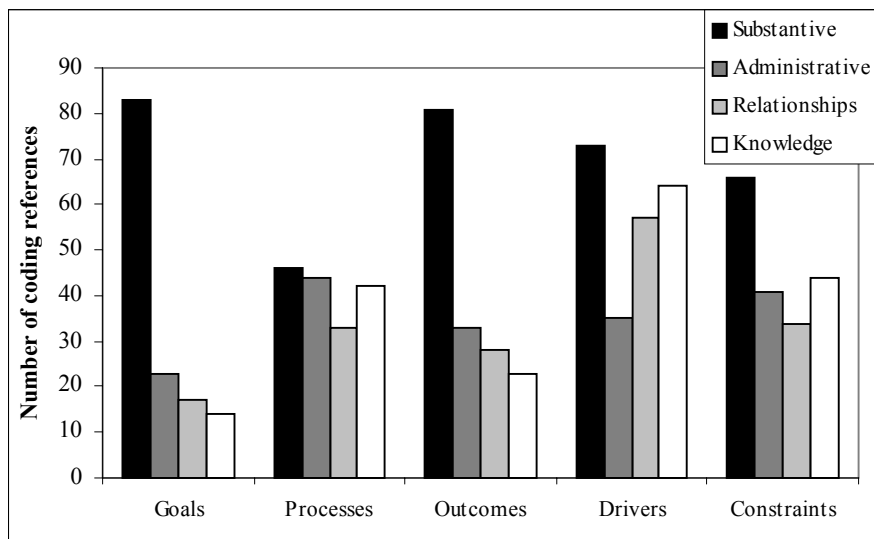
This section has argued that despite efforts to the contrary, many LGs are under-represented in the case studies. In particular, poor, extensive and sparse LGs were rarely included, and it is likely that these LG features, combined with the risks associated with attempts, can inhibit their involvement 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 4¹⁹.

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 improvements²⁰. 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 attempts²¹. 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.

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 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 levels¹. 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 point². 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 Territory³. 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 overlap⁴. 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 strategy⁵. However some regional initiatives were successful, including the Far North Queensland waste strategy, at least for those LGs that could participate⁶. 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-developments⁷. In other cases though, amalgamations interfered with pre-existing momentum, and alienated previously enthusiastic local community members⁸. 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.

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 studies⁹, 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 Kogarah¹⁰ 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 outcomes¹¹. 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](#), [O6](#), [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.

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