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Best Practice in voluntary environmental approaches: a preliminary evaluation of five New Zealand local authority pollution prevention programmes.

A Dissertation
submitted in partial fulfilment
of the requirements for the Degree of
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Environmental Management

at

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by

D. G. Chittock

Lincoln University

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Te Whare Wānaka o Aoraki

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Abstract of a dissertation submitted in partial fulfilment of the requirements for the Degree of M. Prof. Studs

Best Practice in voluntary environmental approaches: a preliminary evaluation of five New Zealand council pollution prevention programmes.

By D. G. Chittock

Worldwide, voluntary environmental approaches have been operating for over 50 years. This dissertation reviews voluntary environmental programmes for pollution prevention from five countries to create 'best practice' design criteria. Currently New Zealand has five councils implementing voluntary pollution prevention programmes for industry; these programmes are surveyed and compared to the 'best practice' design criteria. Voluntary approaches require policy support, this review identifies policy mechanisms that support voluntary environmental approaches. New Zealand national and local environmental policy is analysed and compared to the identified policy mechanisms and recommendations are made.

Key Words: Voluntary environmental approaches; Voluntary pollution prevention programmes; policy mechanisms

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1.0 Introduction

1.1 Background

Global warming may dominate headlines today, but as early as 1898 Swedish scientist Svant Ahrrenius warned that carbon dioxide emissions could lead to global warming (Williams 1997). It was not until the 1970s that scientists' growing understanding of the Earth's atmosphere brought this issue to wider public attention. At the 1992 Earth Summit in Rio de Janeiro 152 countries adopted the United Nations Framework Convention on Climate Change, this has been the focus of global efforts to combat global warming (Williams 1997).

Sharing information is central to how the Climate Change Convention works with developed countries exploring a wide range of policies and measures. Policies governments choose are generally dictated by national circumstances such as political structure and the overall economic situation. In addition to regulatory and economic instruments, governments are promoting voluntary agreements with industry and public authorities (Williams 1997). The Australian Minister for Environment and Heritage, Senator the Hon. Ian Campbell (December 2005) supports this approach and implementing climate change measures will require immense co-operation and action. This co-operation is not just by governments, it will also involve input from industry and the research community.

The international discussion and reporting of these issues and concerns has raised the level of awareness of the general population. The public is increasing the pressure on business and industry to account for their impact on the environment and report on it in their business publications. Banks are showing an increased recognition of the environment as an element of investment risk. Insurers, lenders, buyers and shareholders are increasingly reluctant to get involved with properties or businesses with environmental liabilities. They now routinely check that the businesses and the properties they deal with have addressed their environmental risks and operate in a responsible manner.

Correspondingly, there has been a pronounced trend in many leading industrialised countries away from a solely "command and control" policy approach and a move towards an integrated approach including voluntary approaches in environmental compliance. Voluntary

approaches have been in use for over 50 years, countries like Canada, Japan, the United Kingdom, Australia and the United States having implemented both regulatory and voluntary approaches.

Voluntary approaches can be defined in several ways, from the broader definition of the OECD (1997) that connects government, industry and community into a definition of; "an agreement between government and industry to facilitate voluntary action with a desirable social outcome, which is encouraged by the government, to be undertaken by the participant based on the participant's self interest;" to a brief statement by Carraro and Leveque (1999) that describes voluntary approaches as "commitments from polluting firms in improving their environmental performances."

Voluntary environmental approaches can range from collaborative arrangements between individual businesses, industry associations and regulatory agencies or central governments; the industry participants commit in either a formal or non-formal context. The spectrum of voluntary approaches can also include industry-initiated and developed guidelines for pollution prevention, codes of practice, or cleaner production principles through to international organisational standards (ISO). The geographical boundaries of voluntary approaches can be vast, from international, national, regional to local initiatives. These range from being solely industry instigated and privately led due to public pressure, to combined public and private arrangements, to wholly private voluntary agreements that are independently audited.

Within the term 'voluntary approaches' there are four main types of programmes that are used and there has been varying degrees of research undertaken into the use and effectiveness of these approaches. The four types distinguished by Borkey et al. (1999) are defined in Box 1.

Voluntary approaches to pollution prevention deal with many different subjects and are initiated for a variety of reasons, from reducing greenhouse gas emissions in the Cities for Climate Protection in Australia, waste minimisation in East Anglia, to the reduction in use, discharge and disposal rates of targeted chemicals in the United States 33/50 programme.

Voluntary approaches can be used by legislators to pre-empt and speed up the implementation of regulation, through promotion of new regulatory requirements.

Box 1: Types of Voluntary Approaches

♦ **Public Voluntary Programmes** that involve commitments set by an environmental authority that invites individual firms to participate: this gives industry choice to be involved.

♦ Both public authorities and industry through a bargaining process develop **Negotiated Agreements** or **Bilateral Agreements**, these agreements generally occur at a national level, but individual agreements are also possible.

♦ **Unilateral Commitments** are set by industry, individually or collectively, without input from an overseeing authority, trying to establish standards or self regulate.

♦ The fourth category of voluntary approaches is **Private Agreements**; these are contracts reached through direct bargaining between polluters and one or more affected parties and can involve the establishment of environmental management programmes and /or the installation of pollution abatement devices.

Source: Borkey et al. 1999.

Legislators can also use voluntary pollution prevention approaches to reduce their operational costs by having self-reporting carried out by industry to show they are meeting the negotiated terms. Research has also highlighted a risk that voluntary approaches between regulators and industry may set soft targets, where the objectives are the same as a business as usual scenario, or where industry knows that more ambitious environmental targets will not be enforced (Borkey et al. 1999). The industrial sector should not be portrayed as the 'villain', the European Union's Fifth Action Plan points out: "the growing realisation in industry and in the business world that not only is industry a significant part of the problem but it must also be part of the solution" (Gunningham & Sinclair 2002).

There is limited evidence on the effectiveness of voluntary approaches. They are generally used in the policy mix as a support to regulation or to explore new policy areas. Substantial

evidence suggests the relationship between voluntary approaches and regulation is reciprocal; voluntary approaches provide flexibility and cost effectiveness (Borkey et al. 1999).

Due to the subjects and reasons voluntary approaches are implemented, there is no preferred form of voluntary approaches and no single approach is likely to work in all circumstances or industries (Gunningham & Sinclair 2002). Borkey et al. (1999) researched their strengths and weaknesses and established a list of implementation recommendations. These recommendations included; clearly defined targets, credible regulatory threats and support from credible and reliable monitoring as features to be included in the design or structure of a voluntary approach.

The Resource Management Act 1991 (RMA) is the cornerstone of New Zealand's environmental management, an effects based and non-prescriptive regulatory framework for the sustainable management of natural and physical resources. This regulatory approach is used to manage single medium point sources of pollution, through the issuing of permits or resource consents. This non-prescriptive framework allows approaches other than regulation to be considered.

Environmental regulation incurs costs on industry especially when environmental incidents occur; the view of the New Zealand government's Ministry for the Environment (MfE) is that "doing something to harm the environment, whether deliberately or through carelessness, can carry heavy penalties. It is often cheaper to fix the problem than pay the fine, or avoid harming the environment in the first place. As well as the financial cost, a prosecution under the RMA can cause a lot of damage to someone's personal or business reputation" (MfE, 2004). Industry or businesses generally do not want to be perceived as irresponsible or careless, investors, bankers, landlords and insurers all check the history or risk profile of prospective investments or clients before committing to them. Prevention is better than prosecution and the majority of businesses realise this and look at ways to reduce their environmental risk, one way is to join or commit to a pollution prevention programme implemented by regional or local councils. To date at least four regional councils and one known city council have initiated voluntary approaches focussed on pollution prevention in New Zealand.

Evidence of the value of voluntary approaches is limited, but there has been a lot of research undertaken on the design features required to provide a credible programme for regulators and industry. Canada has developed a national framework for voluntary programme design, covering description, core design, policy support and circumstances for entering into them. There is no system established by government or any authority in New Zealand to provide guidance in the implementation or establishment of voluntary approaches.

Voluntary approaches and pollution prevention programmes implemented by New Zealand councils are increasing. Since starting this area of research in January 2006 a further four regional councils are implementing or planning to implement voluntary pollution prevention programmes. All these council programmes are funded with public money generated through levied rates. With the volumes of programmes being implemented, millions of New Zealand ratepayer dollars are used to run these programmes; I believe this level of funding requires that there should be validation of the design of council operated voluntary pollution prevention programmes.

This raises the question of how well designed the known five current rate payer funded council voluntary pollution prevention programmes in New Zealand are. Do these council run programmes meet or comply with any established programme design criteria, what are these design criteria? Environmental policy is interwoven with voluntary approaches, it provides the necessary support mechanisms for their inclusion so what support does New Zealand policy provide for voluntary approaches if any?

1.2 Hypothesis

That New Zealand councils voluntary pollution prevention programmes are designed in accordance with international 'best practice' criteria, are supported by appropriate policy mechanisms and are an effective instrument for improved environmental management.

1.3 Study Objectives

The research objectives are:

(i)   Review the international literature to determine 'best practice' design for voluntary pollution prevention approaches.

(ii)   Review and highlight effective mechanisms within international environmental policy that support voluntary approaches to pollution prevention.

(iii)   Review New Zealand environmental policy, concentrating on central government and five regional or district councils, to see what mechanisms exist to support voluntary approaches and where appropriate provide recommendations for policy changes.

(iv)   Evaluate and discuss the design features of five council voluntary pollution prevention programmes, compare these to the 'best practice' design criteria, and recommend appropriate improvements.

1.4 Methods

Comparative to the countries reviewed, voluntary approaches in New Zealand are relatively young. No survey or analysis of council pollution prevention programmes has been undertaken, this is the first. Because it is a new area of research a mixed methodology approach has been used, with a review of literature on voluntary approaches overseas, personal interviews and discussion with New Zealand council personnel, a questionnaire and focus group material.

Five countries were selected to be reviewed in this research, the reasons for selecting these countries is based on the following reasoning: Japan is a pioneer of voluntary agreements; the United Kingdom has historic trade agreements with New Zealand and linkages to the European Union; Australia is New Zealand's closet economic partner and has an economy of a similar age; the United States, a non signatory of the Kyoto Protocol and at the time of writing the world's largest greenhouse gas emitter; and Canada a commonwealth country neighbouring the United States and a Kyoto signatory.

The review of literature on voluntary environmental approaches or agreements was the major focus of this research; early research found that voluntary approaches are directly influenced by environmental policy. It was discovered that it was impossible to undertake valid research on the topic of voluntary approaches without including policy mechanisms, as voluntary approaches can support or supplement environmental policy. All reviewed literature and

authors were researched and obtained from published international journals or peer supported work.

Over the last 28 months informal personal interviews and discussions with the personnel of the five councils with pollution prevention programmes in New Zealand have been conducted. These interviews and discussions have occurred either on the telephone, email or face-to-face at national meetings.

The face-to-face discussions with people was not focussed fully on this research or conducted in a structured way. It involved the implementation of the pollution prevention programme at the Canterbury Regional Council and discussions revolved around how each council tackles an issue or area in relation to issues occurring in the Canterbury programme. The Auckland Regional Council programme was visited to specifically see how the programme operates, including discussions on the programmes structure and procedures, this visit also included witnessing and participating in site assessments.

Consistent contact has occurred with all councils at regular six-month meetings on compliance, enforcement and prevention issues. This has been supplemented with regular emails and telephone conversations on pollution prevention issues, industry issues and programme design. A weakness of this type of research method is that it is subjective to personal opinion or bias and misinterpretation. To validate this method all findings and analysis of the council programmes have been reviewed by each council's senior pollution prevention programme staff before dissertation submission. A strength of this research is that it is primary and current, it has not been obtained indirectly through a literature review or other past research.

The informal approach was supported with a formal questionnaire. The questionnaire was developed after preliminary readings on the topic of voluntary approaches, environmental management systems and pollution prevention with industry. Preliminary readings provided direction and focus for this research and background for the question design. The final questionnaire design was not piloted but was evaluated by Professor Ken Hughey of Lincoln University. Ken is an expert in environmental management systems, sustainability and business, and integrated environmental management.

1.5 Study Approach

Chapter two will review international literature on the effectiveness of public-private voluntary approaches. Globally voluntary approaches have been in use for over five decades with over 300 systems in use in European Union countries, 40,000 pollution control agreements in Japan and over 40 programmes managed by the United States government. This review will look at the development and structure of these overseas approaches and supporting policy mechanisms; conclusions will be drawn from this review to develop the framework for the 'best practice' guideline for voluntary approaches.

Chapter three will review literature on New Zealand national environmental policy, including a brief background on legislative history to current day findings and reviews of policy. The objective is to find any mechanisms that support voluntary approaches and compare the policy structure in New Zealand to the five countries reviewed. Following this a local policy review will be carried out on the Northland Regional Council, Auckland Regional Council, North Shore City Council, Greater Wellington Regional Council and Canterbury Regional Council. They are five known council's that operate pollution prevention programmes. Their environmental policy relevant to voluntary approaches will be reviewed and evaluated to establish what mechanisms they contain to support voluntary approaches.

Chapter four will review five New Zealand pollution prevention programmes currently in use by regional and city councils. The objective of this chapter is to compare these programmes' design to the 'best practice' criteria established in chapter two and comment on the results of this comparison. These local pollution prevention programmes vary in the length of time they have been functioning from 20 years down to less than 12 months. Analysis will focus on these programmes designs. The information for this analysis was collected from questionnaires filled in by senior programme staff involved in the operation of these programmes.

The fifth chapter will detail the 'best practice' design features of voluntary approaches with statements of definition, as analysed from the literature reviewed. Discussion and recommendations for mechanisms in New Zealand environmental policy that support voluntary approaches to pollution prevention will be provided following this. A final analysis of the five New Zealand pollution prevention programmes will be carried out and

recommendations made for the programmes' design. An overall conclusion of New Zealand environmental policy mechanisms and the five-pollution prevention programmes features and directions will complete this research dissertation.

2.0 Literature Review

2.1 Introduction

Voluntary approaches in pollution prevention have been in use in many countries for over five decades and during this time there has been a great deal of research undertaken on their design features, implementation structures and achievements. Five countries, Japan, Canada, United States, Australia and the United Kingdom, have been chosen in order to research voluntary approaches implemented from the inception of this approach through to current agreements. The method for selecting these countries was outlined in section 1.4.

The main focus of this international review is to determine how relevant voluntary environmental policy evolved in each country and what the design features or design principles of these countries voluntary approaches/programme are. The objective is to develop a 'best practice' set of design features or principles for voluntary environmental programmes.

Interwoven with this review is the relationship between environmental policy and voluntary agreements. This review therefore also aims to provide recommendations of what policy mechanisms are required to facilitate the effective development of voluntary agreements?

2.2 Japan

Japan is one of the earliest known adopters of voluntary approach programmes with pollution prevention related memos traced back to 1952 (Welch & Hibriki 2002). There have been around 40,000 'Pollution Control Agreements' (PCA) implemented since 1964 (Sugiyama & Imura 1999). Generally, voluntary agreements were developed between local government and industry to suit local environmental conditions.

Historically Japan has a strong reliance on centralised national legislation using 'command and control' regulation. This centralised approach allowed Japan's government to rule with high levels of intervention, this allowed early programmes to be driven by government bodies or local authorities. But, in the late 1950s and early 1960s there was rapid industrial growth and the laws offered inadequate environmental protection at a local level. More recent reports

show that regulatory instruments are effective and widely used to implement environmental policy in Japan, with media-specific nationwide environmental quality standards in place for air, soil, noise, surface waters and groundwater (OECD 2002).

According to Welch and Hibriki (2002) Japan's policies contradict the economic and regulatory agreements of western countries. They found that voluntary approaches are typically non statutory and they are created outside established legislative channels. Welch and Hibriki (2002) put this down to cultural differences, Japanese culture places great importance on Japanese people maintaining their public profile. In terms of voluntary agreements with local government, industry management personnel made sure they adhered to the negotiated terms for fear of tarnishing their image.

The first reported modern voluntary programme was instigated in 1964, when Yokohama City negotiated a PCA with a company that was building a coal fired thermal power plant near the city. At this time most voluntary approaches were implemented during the planning and construction phases of a site and placed conditions on operation, using best available technology and setting emission levels (Tsutsumi 2001). Yokohama City's negotiated agreement involved the setting of more stringent emission levels than national law at the time; in some cases PCAs were precursors to future regulation rather than complementary (Welch & Hibriki 2002).

Sugiyama and Imura (1999) stated that PCAs benefited local government as they could relatively quickly implement strict voluntary measures when national law was weak and design approaches to meet relevant local environmental issues. The business benefited by developing a good relationship with local government and a good image with the community. The community also benefited as they got to have some input into industrial development in their area and protecting their local environment.

The PCA process started in an open or public context, with public pressure and protests by local residents, e.g., in cities in Shizuoka Prefecture residents blocked the building of a petrochemical complex (Imura & Watanabe 2003). The negotiating occurred mainly between local mayors and industry heads and was not that transparent and it would be questionable in some cases if some of these agreements were really voluntary.

Sugiyama and Imura (1999) questioned the environmental effectiveness of these agreements as there was a lack of adequate monitoring. Tsutsumi (2001) found that in some cases reporting information was not always publicised, even though voluntary agreements stated the industry participants must report emission data at specified intervals, however these intervals were inconsistent. There is also a lack of public transparency, with reports remaining confidential between local authorities and business (Welch & Hibriki, 2002). The 2002 Organisation for Economic Cooperation and Development (OECD) Environmental Performance review of Japan reported that only 12% of negotiated agreements have public input. In addition, there is no regulatory requirement for government to monitor or enforce agreements and therefore penalise non-complying voluntary participants.

In the 1990s a pattern of change occurred; Japan started to focus more on global issues and environmental issues with its agreements and industry wanted less government intervention. Voluntary programmes began to emerge from within industry and were labelled Voluntary Action Plans. A plan set up by Japan's Federation of Economic Organisations in 1991 called 'Keidanren' is one of these industry initiatives. This type of approach has been classified as a unilateral commitment and research has been carried out by Sugiyama and Imura (1999) on its design.

The Keidanren plan promoted voluntary methods to achieve environmental conservation and pushed for concrete measures to be used. Participants in the plan are fully voluntary with no compulsion by government, a wide range of industry participate away from purely manufacturing, quantitative targets are set and the plan and process are reviewed annually and made public.

Preliminary findings by Sugiyama and Imura (1999) find that the targets were not that ambitious, the industry review of its own work is questionable and lacks transparency and there is no penalty for not achieving set targets and results are not always made public. This also ties into the moral issue that the programme is run by industry for industry and could be influenced by economic measures rather than consumer and market environment concerns. The Keidanren plan focussed mainly on large businesses with opportunity for free riding by small and medium sized companies.

2.3 Canada

Canadian environmental policy has been described as one of the most decentralised forms of any Western nation (Rabe 1999). The Waste Management Act of 1982 (WMA) was one of the key regulatory tools among other statutes for the control, monitoring and reduction of industrial discharges. These forms of legislation tended mainly to be reactive, focusing on end-of-pipe treatment solutions.

The WMA inhibited provincial authorities implementing proactive environmental programmes. Instead local authorities had to rely on organisations voluntarily adopting adequate environmental policies to achieve regulation requirements. Other stakeholders including employees, lending institutes, suppliers and consumers were pushing organisations for improved environmental performance, many responded by implementing environmental management systems into their operations (Hagarty, 1991).

During the late 1980s and early 1990s Canadian public authorities became increasingly interested in alternatives to traditional environmental regulatory approaches. The Canadian Environmental Protection Act (CEPA) was introduced in 1988 with the public supporting a shift from control and management to the prevention of pollution. Voluntary initiatives occurred at federal and provincial levels and focussed on targets to reduce chemicals or hazardous by-products from production processes.

In Ontario in 1991 a provincial government pollution prevention strategy was implemented in partnership with motivated industry sectors with emphasis on voluntary control at source rather than enforcement at end-of-pipe. Two sectors (metal finishing and printing and graphics) with serious pollution issues were targeted and a memorandum of understanding (MOU) developed and signed off between industry and federal and provincial governments. Government funded the project co-ordinator, with an industry specific programme developed using a design template from the Motor Vehicle Manufacturers Association.

The programme was introduced to metal finishing companies through a workshop in late 1992. Companies were invited to participate and become signatories. An initial group of companies came on board and worked with government to develop a pollution prevention programme specifically for the industry. This included drawing up draft guidelines, as well as

putting together auditing and training packages; the outcome is a pilot programme specifically for the metal finishing industry.

The success of these pilot participants is promoted to the rest of the metal finishing industry and is the 'carrot' to draw more sites into the programme. The programme evolved to include a Pollution Prevention Resource Centre that provides results from research findings, information clearing and industry expertise. Industry expertise encompasses site assessments, access to cost effective technology evaluation, development and demonstration and subsidies are available for metal finishing participants to undertake other industry related programmes.

After two years the programme participants' sites are re-assessed and another two year term MOU is signed off and progress reports are compiled of participants' actions. However, any programme or site shortcomings are only documented without being rectified.

The Accelerated Reduction/Elimination of Toxics (ARET) programme was the first formal government issued voluntary "challenge" agreement - it aimed to reduce or eliminate releases of 117 toxic substances that potentially had impacts on human health and the environment, running from 1994 to 2000. The programme was designed to be complementary to government regulation and other policy instruments at that time.

A multi stakeholder committee developed the ARET programme (government, industry and non-governmental organisations), with 90% of the funding from central government and the remaining 10% from Industry Canada. However, governmental staff time and input was considered to be inadequate during the programme's lifetime (Middelkoop 2003).

A 2003 published OECD report reviewed the effectiveness and design features of the ARET programme and identified four principles (see box 2) that future voluntary programmes in Canada should follow. The Canadian government realised in the late 1990s that there was a need to expand the existing command-and-control mechanisms of environmental regulation to include voluntary or cooperative programmes. Environment Canada (Government Department) realised that for environmental agreements to be successful, set objectives were needed with a supporting framework for industry and regulatory authorities to follow.

Box 2: ARET Principles and Design Features

 Principles

- Effectiveness – Environmental Performance Agreements must achieve measurable environmental results;

- Credibility – the public must have confidence in the approach and in the parties' capacity to deliver on their commitments;

- Transparency/Accountability – all parties to an Environmental Performance Agreement must be publicly accountable for the commitments they make and for the performance against the commitments; and

- Efficiency - Environmental Performance Agreements should be no more expensive to the parties than alternatives for environmental results.

Design Criteria

- Senior Management Commitment
- Clear Environmental objectives & Measurable Results
- Clearly Defined Roles & Responsibilities
- Provision for Consultation
- Public Reporting
- Verification of Results
- Incentives and Consequences
- Continual Improvement

Source: Middelkoop et al. 2003

In March 2000 the CEPA was re-enacted in a stronger form. New powers increased government requirements for pollution prevention planning, including the preparation of environmental emergency plans and environmental management systems. With the strengthening of legislation implementation, Canada's decentralised policy framework creates some doubt about the ability of the federal government to implement and enforce legislation and standards (OECD, 2004).

However in 1998 the federal government, nine provinces and two territories signed the Canada-Wide Accord on Environmental Harmonisation, designed to improve co-operation,

better environmental protection, create greater effectiveness and clarity in environmental management of national issues. Also around this time an intergovernmental forum called the Canadian Council of Ministers of the Environment (CCME) was created, co-ordinating policy, one such example is progress made in aligning and updating air quality standards.

In August 2000, Environment Canada published a discussion paper on environmental performance agreements that laid out the conditions under which the government (federal, provincial, territorial or municipal) would enter into an agreement with an enterprise or industry sector (Policy Framework for Environmental Performance Agreements, June 2001). The policy framework covers four areas:

- describes Environmental Performance Agreements;
- stipulates the core design criteria for agreements;
- sets out Environment Canada's role in support of this policy; and
- identifies the circumstances in which Environment Canada will consider entering into the agreements**.**

In July 2004 the Government of Ontario proposed a Framework for Ontario's Environmental Leaders Program (aligned with national framework) aimed at establishing new norms in environmental protection through government and industry partnership agreements. The objective of this proposal was to launch an "*integrated approach to environmental compliance assurance"* to establish Ontario as a leading environmental authority.

The benefits of these types of voluntary approaches have been: a specific focus on industry environmental issues, greater access to industry members through partnerships with industry associations and the future introduction of incentives for participating industry to move beyond environmental compliance. This is being achieved using a consistent format for federal, provincial, territorial or municipal authorities when implementing voluntary approach programmes (Commission for Environmental Cooperation, 2004).

In Canada the impact of voluntary agreements is difficult to distinguish from changes in regulation or site operating practices. The recently developed policy framework on voluntary approaches states they will complement regulatory or economic instruments not provide an alternative. Experience in Canada suggests that in some cases voluntary approaches can be effective provided they include clearly defined targets, with third party auditing and further

action if targets are not achieved (OECD 2004). The implementation of this policy may provide clearer results on the effectiveness of future voluntary approaches.

2.4 United States of America

The core environmental policy in the United States was established in the 1960s and 1970s, with the major statutes focussed on end-of-pipe remediation and pollution control issues. Environmental issues were regulated by single-medium approaches, with the enacted policies based around air, land or water. This media specific approach is the main regulatory tool at federal level today.

Zarker and Kerr (2007) state that command and control style regulation is still needed, but this approach is running into the law of diminishing returns. Environmental issues are becoming less apparent at a local level but cumulatively have greater global cost, such as global climate change.

The Nixon administration created the Environmental Protection Agency (EPA) in 1970, with a national approach to environmental management (OECD, 2005). Alternatives to the regulatory approach were discussed in 1976 with source reduction listed in approaches to reducing and managing solid waste. Industry led the way when 3M initiated the 3P program (Pollution Prevention Pays) company wide in 1975.

The Commission for Environmental Cooperation (2004) claims the federal Pollution Prevention Act of 1990 provided a basic foundation for the adoption of pollution prevention (P2) and lifted its profile to the top of the environmental management hierarchy.

An important feature of the Pollution Prevention Act of 1990 is that it is almost entirely voluntary and focuses on industry reaching regulatory compliance. The Act is directed mainly at the EPA who is responsible for implementing strategies for reducing pollution, funding the process and reporting on the results achieved.

Full funding of state and federal pollution prevention groups and programmes has never exceeded $6 million annually (Zarker and Kerr 2007), representing less than 1% of the allocated funding for state regulatory programmes (CEC, 2004). Some states implement fee

funded programmes to supplement federal funding; these programmes have mixed results and generally remained under funded. Changes in government have also affected the levels of funding for P2 programmes and groups.

Throughout the early 1990s changes occurred in several state authority levels, pollution prevention requirements are included in industry permits with some limited multi media monitoring approaches used. Generally the lack of cohesion between agencies meant infrequent monitoring of facilities and permit holders. This has been addressed with the passing of the Government Performance and Results Act (1993), with a "managing for results" approach, a catalyst for better environment-related programming that was performance-oriented. State authorities have now taken an active role initiating policy in response to regional issues, as well as urged greater federal leadership on far-reaching (global) environmental issues (OECD, 2005).

In late 1990 the EPA launched the public voluntary 33/50 programme. Participant companies that used any of the 17 targeted chemicals were committed to reducing their usage, discharge and disposal rates to 33% of 1988 levels by 1992 and 50% of 1988 levels by 1995. Pollution prevention techniques were the main emphasis of this federal instigated voluntary approach. Targeted chemicals ranged from Benzene to Mercury compounds to Xylenes.

The goal of the 33/50 programmes was achieved in 1994, one year ahead of schedule; this was primarily achieved by the efforts of the programme participants (Borkey et al. 1999). Factors that led to this success are provided in box 3.

While voluntary and P2 initiatives continued to expand in the late 1990s, there was congressional criticism of the EPA's role and it re-launched initiatives modelled on the earlier 33/50 programme and energy efficiency initiatives.

Some state and local governments established programmes and beyond compliance plans in an EMS context. An example of this was Oregon's Green Permits program for facilities developing beyond compliance performance plans in an EMS context. The focus of this program was on Green Environmental Management System Permits (GEMS Permits), these were ranked into three levels; Participant, Achiever and Leader, the latter two required an

ISO14001 certified EMS (Funk 2002), the design features of this programme are shown in box 4.

Targets and goals were set for further exceeding regulatory compliance and reducing environmental impacts, at the higher levels this also includes non-regulated pollutants and sustainable development practices. Participants paid to join this voluntary programme; an applicant submitted a $5,000 deposit with their application. The agency administered the whole process and estimates a budget for the three-year term of the programme for developing, reviewing and monitoring the GEMS Permit.

The GEMS beyond compliance programme focused on recognition, technical assistance and collaborative problem solving with industry. There was community involvement in this programme, a stakeholder involvement plan had to be drawn up, but only Achiever and Leader needed to implement and report to their stakeholders on their plans and progress.

Due to federal funding cuts in May 2003 the programme was wound down. The programme ran for four years and had six participants, with achiever the highest level attained by a number of participants.

Box 4: <u>Design features of the GEMS Permits (all participants)</u>

- a single point of contact within the state agency (Department of Environmental Quality, DEQ) for all permits held by the participant, using a holistic or multi-media approach to facilities, this also included technical assistance as well.
- enforcement dispensation, with a focus on correcting problems that arose, not prosecuting, provided that overall a high environmental performance was maintained.
- official public recognition of the participant's environmental leadership.

<u>Further benefits for achievers included</u>:
- consolidated reporting for all facility operations,
- quicker planning process and
- extended permit terms with lower monitoring

<u>A leader participant's higher commitment to sustainable development meant</u>:
- inclusion of upstream suppliers and downstream customers in their programme,
- regulatory flexibility could be applied to these allowing custom permit packages for multiple sites.

Source: Funk 2002

In 2000 the EPA established National Environmental Performance Track; this programme was of similar design to Oregon's Green permits without the regulatory flexibility. Participants pledged to beyond-compliance performance improvements and had an operating EMS. The primary benefits of this programme were recognition and greater collaboration with EPA and state regulators (Zarker & Kerr, 2007).

The 2003 Progress report stated that the highest motivating factor for a site joining Performance Track was developing a collaborative relationship with the EPA or state

authorities; state buy-in of the whole process ranked highly; as did wanting to advertise membership to the local community and authorities. Regulatory incentives were not the reason for many joining it came in fifth with members asking for the expansion of current incentives (USEPA, 2005).

Forty-seven states currently have facilities participating in the programme, with 470 member sites (as at August 2006) that have set 1,500 environmental commitments. A large number of industry groups and associations support the programme as network partners, this also allows negotiation and the identification of similarities and collaboration of industry established voluntary programmes already underway (USEPA, 2007).

In 1999 Mazurek reported that the effectiveness of voluntary approaches in the United States would require legislative remedy, as they remained marginal in their effects. Implementation problems had led to lower than expected results through poor evaluation methods, lack of data and weak metering; these issues may have caused the EPA at this time to overstate the effectiveness of programmes. His findings at this time showed that the main benefit of voluntary programmes was the promoted interaction between industry, regulators and stakeholders (Mazurek, 1999).

Legislative issues still provide an obstacle for voluntary programmes in the United States. At a federal level the regulations are overly prescriptive and need to focus more on desired environmental results, this will allow greater use of innovative tools and voluntary approaches. The major issue is that federal statutes contain no specific language authorising the use of voluntary approaches in lieu of regulatory requirements. Significant progress has been achieved with voluntary programmes, however greater public recognition of the benefits is required alongside additional funding to bring pollution prevention and performance-based regulation into mainstream national environmental management (Zarker & Kerr 2007).

The key considerations for developing voluntary programmes is senior management commitment, transparency through public reporting, approaches to this include auditing, performance measures, enhanced public/private monitoring networks and strong enforcement measures (Zarker & Kerr 2007).

2.5 Australia

Industry and its environmental impact, especially pollution, has been addressed by regulation in Australia for at least the last three decades. These regulations through command and control have achieved a degree of success. Gunningham (2004) describes command and control as a 'blunt tool' that has picked 'the low hanging fruit'. Policy makers recognise that command and control has its limitations and provides only part of the policy solution in a rapidly changing and increasingly complex interdependent world (Gunningham 2004). There is a need for a broader mix of measures to maintain and increase these improvements.

Environmental management in Australia is often described as a partnership approach, with a mix of regulatory, economic and voluntary instruments and is relatively transparent. Voluntary measures and agreements exist between government, industry and community groups and play a central part in environmental management process. In its 1998 Environmental Performance Review the OECD stated that one way the Australian government could improve the effectiveness and efficiency of environmental management was by setting environmental standards. At the time the OECD report was being written, these standards were being defined in the National Environment Protection Measures.

A number of states have Environmental Protection Authorities (EPA), this single agency is responsible for the integrated management of the natural resource base. The legislation that created it in 1970 was the first in the world to provide a framework for an integrated approach to managing the environment (OECD 1998).

State Governments in Australia have the major responsibility for environmental policy. The National Environmental Protection Council (NEPC) was established in 1995 to oversee the development of national environmental regulatory measures and the national harmonisation of a range of environmental regulatory measures, such as standards for ambient air quality and the management of waste and contaminated sites.

There is a move towards the use of industry guidelines or codes of practice at State government level for certain industries, these would be worked out in co-operation with industry and eventually replace licensing (OECD, 1998). There have been a number of

programmes implemented throughout Australia based on voluntary approaches; these have occurred at federal, state and local government levels and from within industry.

A federal programme developed in 1993 and implemented in 1997, Cities for Climate Protection (CCP) Australia, was designed to reduce greenhouse gas emissions. Box 5 provides the key factors that contributed to the success of the programme. This programme was described by the Minister for Environment and Heritage, Senator the Hon. Ian Campbell (December 2005) as 'the best local government sustainability programme in the world'. No other voluntary environmental programme in Australia has had the level or length of support from the federal government.

The framework of this programme was based around a formal commitment made by the council participant, this led to the establishment and design of five 'milestones'. Milestones were established by first measuring the status quo to setting reduction targets, setting and implementing action plans and finally monitoring and reviewing the results.

Box 5: <u>The key factors that contributed to Cities for Climate Protection:</u>

- the level of commitment by local government to make it work,
- this was supported in turn by the performance-based programmes of the International Councils for Local Environmental Initiatives,
- actions implemented were practical and affordable,
- most importantly was the continuous and consistent funding by the Australian government for eight consecutive years.

Source: Campbell 2005

At a state government level, voluntary environmental audits (VEA) are available to industry in New South Wales, as stated in the State Protection of the Environment Operations Act 1997. Independent environmental consultants are contracted and funded by the business to carry out environmental audits; the results of these audits are 'protected documents'. The key benefit of this piece of legislation is that the audit results cannot be used in enforcement or prosecution actions against the business site or owner. Other benefits include; information that identifies areas of environmental risk, pollution reduction programmes can be developed as well as cost benefits through reduced insurance premiums.

From an industry perspective this approach could be seen as a way to check if it is compliant without the repercussions of any regulatory action and allow it the opportunity to develop a plan to improve its performance if needed. From a regulatory perspective, local regulatory staff are reliant on environmental consultants providing the right information for a business to improve its performance. Furthermore, it is up to the business that is audited to decide if it wants to implement any advised changes brought to its attention by the environmental consultant. The participant may feel the benefit in reduced insurance costs could be enough to ensure it implements changes.

Gunningham and Sinclair (2002) looked at a number of factors within voluntary approaches in the Australian mining and forestry sectors. Both of these sectors have implemented unilateral commitments, the forestry sector also has public voluntary programmes in operation too. This study first discussed what internal characteristics are most likely to make a voluntary programme effective.

Gunningham and Sinclair (2002) believe that clearly defined targets are desirable for mature agreements; otherwise they run the risk of losing credibility and those voluntary programmes in the early stages of development should begin with good faith agreements. It is better to let participants feel their way rather than hold them to unrealistic targets that seem unachievable and potentially put them off the process.

Accountability and transparency are equally important; a participant ideally should publicly promote or announce the performance indicators and timetables they are aiming to achieve within the programme. Once this is done a robust independent system is needed that collects, reports, collates and analyses data to show these targets are being reached. To provide the independence or verification that results are actually being achieved Gunningham and Sinclair (2002) believe that a workable set of performance indicators should be established at the target setting stage. To maintain credibility an auditing process should be operated by either an in house team, selected from outside the programme team or have an external third party conduct the audit.

One of the key findings of Gunningham and Sinclairs (2002) study that is relevant to this research is the use of generic voluntary programmes implemented broadly over all industry types. They found that generic programmes could be less effective than an industry specific

programme. By implementing an industry specific programme the chances of success are maximised as appropriate initiatives and design features can be included.

Gunningham and Sinclair (2002) consider that voluntary programmes can obtain a place in the policy mix, of voluntary approaches, government regulation and third party interest groups. There needs to be some alignment within private and public interests, with effective regulatory monitoring and enforcement practices in place. Industry sectors see the benefit of voluntary programmes through either self-preservation for their future and/ or the extent that market forces and consumers demand increasing levels of sustainability from industry.

The first generation of voluntary approaches achieved modest success due to industry playing a central role in target setting, uncertainty over regulatory threats, non-enforceable commitments, poor monitoring and lack of transparency. Current programmes tend to have more specific targets set by government over and above business as usual achievements (Gunningham 2004). To date literature surrounding voluntary instruments in Australia has focused on perceived process improvements, not on environmental outcomes. The influence of voluntary approaches was not as strong in practice as literature suggest it should be, other factors such as pressure from parent companies or clients, public pressure and economics all had equal if not greater effect on environmental performance (Annandale et al. 2004).

2.6 United Kingdom

Environmental legislation in the United Kingdom dates back to the early 1860s with regulated air emissions from the caustic soda industry (West Sussex Sustainable Business Partnership 2007). In later years legislation progressed into a multiple media aspect with the introduction of the Control of Pollution Act in 1974, which pulled together all different pieces of legislation, relating to environmental pollution. However, this approach proved to be too detailed and regulation in recent times is implemented in alignment with European Union directives including additional obligations for pollution prevention and resource efficiency.

Both voluntary and mandatory initiatives have increased in use in the United Kingdom since the introduction of the Environmental Protection Act in 1990, along with Integrated Pollution Control and the Duty of Care legislation. Both types have developed simultaneously because formal EMS standards were created around the same time (Dahlstrom et al. 2003). The

British Standard 7750, a specification for EMS was introduced in 1992, followed by the European Union's Eco-Management and Audit Scheme (EMAS) in 1993 and the establishment of the International Organisation of Standardisation (ISO) 14001 in 1996.

The Pollution Prevention and Control Act (1999) supersedes the 1990 legislation and made the 1996 European Union directive on Integrated Pollution Prevention and Control (IPPC) into law. From 2001 to 2007 the IPPC system is being phased in, this new legislation maintains the previous principles but goes beyond the traditional focus on emissions by promoting energy efficiency and waste prevention (OECD, 2002).

Overall there are far fewer voluntary agreements in the United Kingdom than other European Union countries of a comparable size and level of environmental performance, voluntary agreements still remain limited, and most are not legally binding (OECD, 2002).

Some firms have opted for voluntary initiatives as a way to minimise or avoid regulatory costs. These cost reductions can occur through industry having greater flexibility in how it meets stated environmental targets and these targets can be negotiated down to a lower level. There have been cases however where voluntary measures were taken but regulatory costs were imposed anyway, this has resulted in some distrust of voluntary approaches by industry. Another reason for firms opting for voluntary initiatives based on environmental performance is for product differentiation; this is signaled to consumers through product labelling (OECD, 2002).

The Department of the Environment (as it was known then) launched the Environmental Technology Best Practice Programme (ETBPP) in 1994. It provided small and medium sized enterprises (SME) with a free environmental helpline, half-day site assessments, technical and management publications and regional seminars. In the late 1990s SMEs, organisations with fewer than 250 employees, were the fastest growing segment of the business population in the United Kingdom (ETBPP 1999).

The ETBPP provided one on one contact with specialist counselors who undertook half-day site assessments and by June 1997, 7000 organisations had used the helpline. It is reported the ETBPP was successful in achieving its objectives to improve environmental performance and reduce energy usage. It was found that a greater proportion of the visited sites took

action and implemented the advice given by a specialist counsellor, compared to those solely using the helpline facility (ETBPP 1999).

A local voluntary programme in waste minimisation and environmental performance targeting SMEs in East Anglia found that the outcomes of voluntary initiatives were influenced by size and type of industrial sector involved, the market structure and prevailing corporate and general policy culture. It was also established that SMEs were reluctant to embrace environmental policy and considered environmental issues to be nonessential (Peters & Turner 2004).

Valuable lessons were learnt from these successful waste minimisation programmes. The programme ran regular meetings among participants, with the close proximity of participants allowing this to occur. Meetings also allowed the transferring of ideas and practices among sites along with encouragement among participants. Senior level management support and in cases championing of the project, helped to foster a culture of change on industrial sites. Having a consultant with the appropriate level of knowledge of waste minimisation practices and industry practices helped to engage industry. The establishment of baseline data allowed an accurate assessment and measurement of the levels of improvement made.

Peters and Turner (2004) found two important factors in successfully establishing the waste minimisation voluntary programmes were creating relationships with key players in a region to enable and influence further contacts and ensuring adequate funding was available for the lifetime of the project.

Finally, research commissioned by the English Regions Network on selected sustainable development tools found that negotiated agreements combined with clear penalties were likely to be the most effective voluntary approach with industry (CAG Consultants, 2003). The desirable features listed in box 6 were developed from research in the United Kingdom and Europe and is for negotiated agreements.

While research in the United Kingdom on voluntary approaches is less than has occurred in other countries, the base findings demonstrate similarities with earlier reviewed countries. Legislative influence from the European Union on some United Kingdom policy has provided a positive shift from the cost-benefit analysis instrument to the establishment of explicit

media-specific objectives and strategic planning (OECD,2002). In future this has the potential to aid the development of further voluntary environmental agreements.

Box 6: <u>Desirable Features of Regional Negotiated Agreements</u>

1. Clearly defined targets, activities or standards to be met by signatories, with dates for achievement.
2. Stakeholder involvement in agreeing the targets, activities or standards.
3. Independent assessment of "business as usual" baselines, to inform the setting of more challenging targets.
4. Regular monitoring.
5. Publicly available information on the agreement and the performance of signatories.
6. Regular reviews and updating of action plans

And if the agreement is with industry

7. Minimise the risk to industry of damaging their competitive position

Source: CAG Consultants 2003.

2.7 Design Features of Voluntary Approaches

Throughout the five case countries there are varied reasons supplied or proposed for implementing voluntary programmes or agreements with industry. From this research of programmes and a review of related research on voluntary programmes I have compiled a table of 'best practice' design features of how to make an effective voluntary environmental programme.

I have overviewed the entire process and looked at it from the practical application of designing and implementing a voluntary programme. The relevance for this review is that to date at least four New Zealand regional councils and one city council have introduced voluntary environmental agreements to supplement the regulatory approach.

Table 1 compares findings from this research with the individual countries' voluntary programmes reviewed. I have recorded and categorised my findings into nine descriptive headings that best encapsulates the design feature with a following explanation for their

Table 1: Interpreted Voluntary Programmes Design Features

Feature	Japan	Canada	United States of America	Australia	United Kingdom
Adequate and consistent funding		Government funding is provided Subsidies provided for industry participant to join related programmes Inadequate levels of funding and staff provided	Full government funding, but stated levels not reached Inconsistent funding through political party changes Also participant funded	Continuous and consistent funding	Research found that adequate funding is required Authorities provide free environmental help
Collaborative relationship with industry	Industry and Regulator relationship developed Not always transparency between all parties Large industry focus only	Relationships and partnerships developed with motivated industry groups Collaborative design of programme	Collaborative relationship development between industry and regulator Industry support and collaboration	Accountability and Transparency by participants of their performance	Relationships with senior level management to champion programme internally Promises of reduced compliance costs reneged, resulting in distrust of VA's.
Single sector programme focus	Site specific programmes developed for local environmental issues	Industry specific programme established using existing programme principles Framework for industry and regulator to follow	Industry established voluntary programmes EPA provides industry specific guidance	Site specific independent audits Industry specific voluntary programmes to maximise results	Specialised counsellors conducting site assessments maximised results SME's developed programmes
Setting credible targets	Push for concrete measures and quantitative targets Low targets are set by industry internally SME Industry free riding possible	Programme piloted, guidelines established and auditing and training packages for industry participant Objectives set	Some programmes set targets against a baseline year with timeframes, others set soft targets No consistent method used across sites Beyond compliance goals set	Credibility by clearly defined targets for mature agreements Baseline measured from status quo Workable sets of performance indicators set at target setting stage	Independent assessment establishing baseline targets Clearly defined targets with dates for achievement Stakeholder support for targets

Info-regulation and resources available	Best available technology to used	Resource Centre established to support industry participants (site assessments, technology evaluation, industry expertise used)	A single point of contact for participant for all regulatory matters	Programme identifies the environmental risk of the participants site practices	Technical publications and regional seminars for participants
			Technical assistance provided for sites by agency	Apply practical & affordable actions	Regular local meetings for participants
Threat of credible enforcement	No regulatory requirement to monitor or enforce agreements with no penalties for non-performers	Supportive policy and regulatory framework with consequences (Regulatory backstop only for chemicals of greatest risk)	Enforcement leniency provided if a high level of environmental performance maintained & issues resolved	Participant is immune to enforcement or prosecution while in programme	Clear penalty and enforcement structure in place
				Need for effective enforcement	
Regular and credible monitoring	Lack of adequate and consistent monitoring of programmes participants	Sites reassessed, with MOU signed for 2 years	Cohesion between regulatory agencies, allowing frequent monitoring of sites	A robust and independent system to collect, report, collate and analyse data	Regular monitoring
		Reports of participant progress compiled, no rectification of site or programme shortcomings		Need for effective monitoring practices	Regular reviews and updates of action plans
Visible participant benefits	A wide range of industry included – level playing field	Access and subsidies to other industry related programmes	Regulatory agency publicly recognises participants achievements	Financial benefits for participants (reduced insurance costs)	Minimise damaging industries competitive advantage
	Industry shows good image to community	No more expensive than alternatives for environmental regulation	Regulatory process benefits for participants		Product differentiation by labelling
					Minimising regulatory compliance costs
Transparent provision of programme results	Lack of transparency in relation to results of agreements	All parties must be transparent and accountable for programme and commitments	Transparency with surrounding stakeholder community	Accountability and transparency of programme aims wand achievements made public	Transparency and accountability of participants performance compared to targets

existence and development. The order of the features listed represents the ranking of the key design features or requirements when planning an effective voluntary programme. More detailed rationale for each design feature follows.

Adequate and consistent funding – this is a necessary requirement as shown in the United States programmes, with funding cuts reducing programme terms and this can then affect the relationships developed. Fee funded programmes had mixed results and create a 'barrier' or excuse for industry to not participate. The United Kingdom and Australia show good results from adequate government funding attained from either national or local level. Even with adequate funding as in Canada there also needs to be staff committed to effectively promoting and running the programme.

Collaborative relationship with industry - most of the countries mentioned the development of sound relationships between industry and regulatory or programme agencies. In the United States Performance Track programme a collaborative relationship with the EPA was the highest motivating factor, reported in the 2003 Progress report (USEPA April 2005). This collaboration provides credibility and trust early in the programmes development for the promoting agency to those industry members who are not motivated to automatically join. Literature reviewed from the United Kingdom indicated the fastest growing segment of the market (SMEs) also viewed environmental issues as nonessential and developed a programme to focus on this group. Research from the United Kingdom also showed that reneging on promises of reduced compliance costs by participating in a voluntary agreement resulted in distrust from industry. Industry in the United States ranked the collaboration with regulatory agencies as the main reason for getting involved in voluntary programmes.

Single sector programme focus - the majority of the countries' programmes were specifically designed for a single site or industry sector. Gunningham and Sinclair (2002) state that the best way to maximise results from a programme is one that includes an industry issue so appropriate initiatives and design features can be included in the programme design. This approach was supported by Ontario's (Canada) Environmental Leader Program and adds value to the industry in seeing direct results from the programme. This combines with later features that talk about credible targets and transparent reporting; by being industry

specific direct comparisons among participants can be made. The credibility of programme personnel was achieved by having people involved that were familiar with the sectors' processes and practices involved. Programme staff were aware of the relevant local environmental issues and knowledgeable of legislative issues.

Setting credible targets – this was a factor in almost all the countries researched, first a baseline needed to be established, this was achieved by an independent assessment of a site. All programmes need to have credible targets that are supported by the participant and there needs to be milestones set through the life of the programme. This then allows participants at all levels of improvement to be measured including participants that go beyond compliance. There appears to be no consistent target setting process used for voluntary programmes. In initial or completely 'green fields' programmes Australia's 'good faith' initial agreements are a practical answer to get participants involved and collaborating on the programme's design, however there would need to be timeframes established for regular review and evolution of the targets set.

Info-regulation and resources available - in order to assist industry uptake all countries' programmes provided some form of resource for industry from technical publications to using best available technology to the evaluation of technology. The United Kingdom programmes set up local meetings of programme members to facilitate the sharing of ideas and encourage others, while in Australia industry Codes of Practice were established. Providing resources shows commitment to industry that the agencies involved were dedicated to ensuring the programme worked and can also disseminate information or practices within an industry sector, as long as technological or competitive advantage is not lost.

Threat of credible enforcement - the majority of countries' programmes supported or had some form of enforcement threat incorporated into their programme design. Most agencies implementing voluntary programmes also have an enforcement arm within their structure. Having a period of enforcement leniency is a good enticement for a business to come forward and participate and gives them the opportunity to rectify a process issue rather than have action taken and fines imposed and then still need to fix the issue. Voluntary programmes in most countries are seen to complement other command and control measures.

Regular and credible monitoring - to maintain the credibility of the programme and the sites involved most programmes researched showed the need for regular monitoring. Australia uses an independent system to collect and report on the programme results, this helps remove any form of bias. Both Canada and Japans' programmes showed a poor level of monitoring and that if issues were found then nothing was done. This was found to destroy the relationships between programme personnel and other programme participants.

Visible participant benefits - a range of visible benefits were provided from the regulatory agency publicly supporting the participants in the voluntary programmes, e.g., insurance companies reducing site costs, or the regulator providing quicker processing for future permits. While the monetary value in these programme benefits may not be large it provides some tangible benefits and some sites or groups need to see there is something in it for them to be worthwhile participating in a voluntary programme.

Transparent provision of programme results - all programmes had an element of transparency, with almost all stating it was already in the programme design and that is needs to be consistent and reliable. Transparency shows the community, who are stakeholders, the programmes are being implemented and what results are being attained. Most voluntary programmes involve public money of one form or another so the public can see what is being achieved from their funding and ultimately regulatory agencies provide a service to look after the environment on behalf of the public.

2.8 Comparison of Design Features of Voluntary Approaches

The above findings are drawn from literature reviewed on environmental policy and the use of voluntary approaches or programmes in the countries researched. Borkey et al. (1999) established a benchmark in the design of voluntary approaches, I have compared my findings to those of Borkey et al. (see table 2). Both sets of design features have a majority of comparable or complementary features. This review has broken the design features down in greater detail when compared to Borkey et al. original features benchmark list.

Table 2: Comparison of recommended design features for voluntary approaches

Borkey et al. (1999) (benchmark)	This Research
	Adequate and consistent funding
Clearly defined targets - *Targets should be clearly defined, transparent and quantitative, with interim objectives to highlight difficulties during implementation stages.*	Setting credible targets
Characterisation of a business as usual scenario – *Before setting targets, estimates of a business as usual trend should be established in order to provide a baseline scenario.*	Setting credible targets **AND** Single sector focus
Credible regulatory threats - *Made at negotiation stage, a threat of regulation by public authorities provides companies with incentives to go beyond the business as usual trend.*	Threat of credible enforcement **AND** Collaborative relationship with industry
Credible and reliable monitoring - *Provisions for monitoring and reporting are essential for keeping track of performance improvements; they are key to avoiding failing to meet targets. In certain contexts independent organisations for monitoring may be used.*	Regular and credible monitoring
Third party participation – *Environmental performance should be made public and transparent, third party involvement increase validity of VA's, also provides industry with additional incentives to respect their commitments.*	Transparent provision of programme results
Penalties for non compliance – *Sanctions for non-complying firms should be set; this can be achieved by either making binding commitments or linkages between VA's commitments and regulatory requirements.*	Collaborative relationship with industry **AND** Threat of credible enforcement
Information oriented provisions – *In order to maximise the informational soft effects of VA's, support for activities in technical assistance, technical workshops, edition of best practice guides should be promoted.*	Info-regulation and resources available
	Visible participant benefits
Provisions reducing the risk for competition distortions – *In the case of collective VA's, safeguards against adverse effects on competition could be provided by notification of new VA's to antitrust authorities.*	Transparent provision of programme results

Three of Borkey et al. recommendations; Characterisation of a business as usual scenario; Credible regulatory threats; and Penalties for non compliance require clarification by using two design features and their expanded meaning from this research to illustrate Borkey et al. meaning and intent from their original baseline research.

This review has added two further design features that should be included in the design matrix, these are supported from findings in the literature review. This research adds the provision for adequate and consistent funding from central or local government to protect the longevity of the programme. This is relevant to the credibility of the programme and the collaborative relationship developed with industry. The United States research demonstrates the effects of limited or erratic funding affecting programme credibility and industry respect, opposed to programme achievements in Australia, Canada and the United Kingdom with adequate and consistent levels of funding. The second was the inclusion of visible participant benefits, where a business participant has tangible (customised permit packages with extended terms and lower monitoring) and even monetary benefit (reduced insurance costs, government subsidies, 'green' marketing potential) by being involved in a voluntary programme. The Performance Track programme progress report 2003 stated advertising membership to the local community ranked highly among its members (USEPA April 2005).

2.9 Policy Review

The early policy set of all five countries reviewed was formed around a purely regulatory 'command and control' structure of a single media focus, with changes occurring in recent times (see Table 3 for a summary of findings). The early 1990s seemed to have been a pivotal time in the change of policy structure worldwide. This coincides with the 1992 world leaders Earth Summit in Rio de Janeiro where 152 leaders reaffirmed their declaration to encourage the development of national plans and policies to encourage sustainable social and environmental development and measures to prevent environmental degradation.

Zarker and Kerr (2007) claim that 'command and control' regulation is running into the law of diminishing returns in the United States, Gunningham (2004) states the same is the case for Australia. This is not to say that regulation is not still needed, but rather as

Table 3: A Historic Policy Review of reviewed countries

Timeline	Japan	Canada	USA	Australia	UK
1950 –1960s	Centralised national legislation with high government intervention				
1970 –1980s	Voluntary agreements precursors to stricter national legislation, VA's created outside established legislative channels and not supported by legislation Quick implementation of VA	Decentralised reactive policy mix initially inhibiting voluntary agreements CEPA legislation shifted focus from control to P2 1991 provincial government P2 strategy implemented	Single medium end-of-pipe policy focused A national approach to environmental management - EPA Regulation is the cornerstone of environmental policy	Command and control focus initially 1970 framework for integrated approach to the environment established	Too detailed a multi media policy developed early on
1990 - current	Voluntary programmes emerged from within industry most VA's stricter than policy today Regulatory instruments effective, media-specific nationwide environmental quality standards operational	Restricted capability in Federal Government to implement & enforce legislation & standards Canada-Wide Accord on Environmental Harmonisation signed in 1998. Intergovernmental policy forum created for federal, provincial & territorial councils 2000 CEPA re-enacted in stronger form, increased government requirements for P2 planning. Policy framework for Environmental Performance Agreements set 2000 (Environment Canada)	Support for P2 in federal Pollution Prevention Act 1990 Policy provides framework for government to develop VA's with industry EPA charged with implementing programmes including funding and reporting results Cohesion among federal and state agencies involved in environmental management	Transparent mix of regulation, economic and voluntary instruments used Level of Commitment by national and state government agencies to support VA's Realises the need to broaden policy mix to maintain environmental improvements of regulation Lacks national environmental standards	Direction taken from EU and ISO. British Standard 7750, specification for EMS introduced in 1992 Most VA's non-binding in nature Pollution Prevention and Control Act 1999 supports mandatory and voluntary policy measures. IPPC legislation goes beyond the traditional emissions focus, P2 principles included

Gunningham and Sinclairs' (2002) Australian research shows, voluntary agreements need to be in the policy mix and need effective regulatory and monitoring policy to ensure they are effective.

This research has found that commitment by government to actively support the role of voluntary agreements and hold them at the same level, as command and control legislation is required. This view is supported by Borkey et al. (1999) research on policy involving voluntary agreements. Their research proposed that an effective policy mix that supports traditional enforcement and compliance with equal importance placed on a voluntary policy approach is required.

From the review of the five countries, this research identified the following policy mechanism examples in support of voluntary approaches:

- Japan has nationwide environmental quality standards in place for air, soil, surface water, ground water and noise.
- Canada supports voluntary agreements with the development of a draft national policy framework for Environmental Performance Agreements, including; agreement description, core design criteria, governments support role and circumstances for entering agreements.
- Improved co-operation in environmental issue management with implementation of Canadian wide accord, and co-ordination of policy and standards through inter-council forum.
- The Pollution Prevention Act (1990) provides the United States environmental policy with a basic regulatory foundation built on P2 principles.
- The United States has a single agency (EPA) that is responsible for the majority of implementing, funding and reporting on strategies for reducing pollution.
- Australia uses an integrated approach to environmental management, (regulatory, economic and voluntary mix) but lacks fully developed environmental standards.
- Voluntary agreements generally are legally non-binding in the United Kingdom, their use increased following the Pollution Prevention and Control Act (1999) that formalised the Integrated Pollution Prevention and Control legislation, promoting Pollution Prevention principles.

Four of the countries reviewed have a common theme of increasing cohesion or co-operation in environmental policy developments, at local, state and federal levels and in the case of the United Kingdom includes the European Union. Japan has always had a high level of government intervention in its policy structure, with an almost dictatorial authority over environmental policy.

The next chapter looks at environmental policy in New Zealand including history, policy reform and whether mechanisms do exist for voluntary approaches. A search for voluntary approach mechanisms will be undertaken in the policy documents of the five council authorities that have instigated voluntary pollution prevention programmes. These policy documents were identified from question five in the questionnaires completed by the councils. The chapter will conclude with comparison of New Zealand policy mechanisms to the international findings and the local policy documents will be compared between each council and analysed.

3.0 New Zealand Environmental Policy Review

3.1 Introduction

This chapter will look at national environmental policy in New Zealand and the regional policy mechanisms of five council authorities that have voluntary environmental programmes in operation. The main focus of this research is on voluntary pollution prevention or pollution control programmes that are instigated and implemented by regional or local authorities in New Zealand.

In Chapter 2 research on environmental policies and voluntary approaches and pollution prevention programmes of five selected countries was reviewed. This review provided environmental policy mechanisms that support voluntary approaches /programmes. This chapter will consider the questions relating to how New Zealand's environmental policy compares. What mechanisms within New Zealand environmental policy support voluntary environmental approaches, if any? If national policy supports voluntary approaches or programmes, how do New Zealand's policy mechanisms compare to the countries reviewed? What policy mechanisms do the five council authorities have to support the use of voluntary approaches, if any?

The following review on voluntary programmes in New Zealand, has concentrated on programmes that focus on pollution prevention or pollution control in the industrial sector. The five councils involved have developed programmes that aim to prevent industrial discharges and provide information on relevant legislative requirements with an objective of establishing environmental compliance as the minimum standard for industry to function within. Why the focus on industry? Between October 1991 and April 2005 the commercial and industrial sectors combined had the largest number of environmental prosecutions, contributing to over 50% of all prosecutions during this entire 14 year period (MfE, 2002 & 2006).

3.2 Environmental Policy Evolution

According to a Ministry for the Environment (MfE) publication, 'from the 1940s on environmental awareness seeped slowly into the consciousness, laws were passed, advisory bodies were set up and managed by various government departments, local authorities or special purpose boards' (Smith, 1997). The Soil Conservation and Rivers

Control Act 1941 was an early attempt at coordinated environmental management, where local catchment boards were established to coordinate soil and water conservation. Environmental management at this time was piecemeal and incremental and as a result laws were reactive and failed to consider the full effect of an action.

International influences became stronger following New Zealand's attendance at the first Earth Summit in Stockholm in 1972. Attendees at the Earth Summit "adopted a declaration that set out principles for the preservation and enhancement of the human environment, including an action plan containing recommendations for international environmental action" (Jackson 2007). There were a number of studies undertaken in New Zealand in the 1970s, these focused on legislative and administrative structures for environmental and natural land use planning. The institutional regime of the time was fragmented and uncoordinated with over 100 statutes relevant to the environment, with various government organisations at national, regional and local levels holding mandates related to the environment. New Zealand lacked a national environmental policy, this resulted in many reactive environmental decisions that did not consider the full ramifications of a particular action (Furuseth & Cocklin 1995).

These studies indicated that New Zealand was ill prepared to deal with environmental quality issues related to soil and water pollution, expanding municipal and hazardous waste disposal, water resource allocation and effects of expanding industrialisation. This review led to the creation of a Minister for the Environment, a government portfolio in 1972. The Minister was supported by a small agency at central government level, called the Commission for the Environment, to work with government departments and promote and co-ordinate environmental issues (Furuseth & Cocklin, 1995).

An OECD review in 1981 concluded that New Zealand's policies needed to be better advised and coordinated with a more integrated approach to deal with environmental concerns. This influenced the new Government of the time to restructure central and local government and to overhaul and replace many environmental laws (Furuseth & Cocklin, 1995).

3.3 Environmental Policy Reform

Environmental management was extensively reformed in the late 1980s and early 1990s with a shift in focus to sustainability. This shift required a realignment of administrative agencies needed to implement these sustainable management policies. The Local Government Act of 1989 established a simpler, more efficient and effective system of local government. A two tiered 'decentralised' system of complementary bodies was established called regional councils and territorial authorities, these were to be supported by national legislation that would outline the broad objectives and methods to achieve sustainable management.

The cornerstone of the national legislation was titled the Resource Management Act 1991 (RMA). Figure 3.1 outlines the decision-making hierarchy and responsibilities of the RMA system design.

The Resource Management Act 1991(RMA) provides a system to encourage the sustainable management of natural and physical resources; it repealed and consolidated many former environmental and land use laws. The RMA has a single overarching purpose: "to promote the 'sustainable management' of natural and physical resources." Sustainable management under the RMA is defined as: "managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural well being" (Smith, 1997).

3.4 Environmental Policy Review

3.4.1 Resource Management Act 1991

A non-prescriptive national framework for sustainable management was created, under the RMA, focusing on the regulation of the 'effects' of human activities on the environment, rather than regulating the activities themselves. According to the recently retired Parliamentary Commissioner for the Environment Dr. Morgan Williams, the early years following the inception of the RMA focused on the 'mitigation of effects' model, where the focus was on the end of the pipe rather than what was poured into it.

Figure 3.1 Resource Management Act Structure

Resource Management Act Purpose and Principals
"Sustainable management of natural and physical resources"

Central Government
Resource issues of national importance

National Environmental Standards
(optional)

National Policy Statements
(optional)

New Zealand Coastal Policy Statement
(mandatory)

"Integrate land, air and water"
Regional Policy Statements
(mandatory)

Regional Councils
Soil, water, air, pollution and coast

Regional Plans
(optional)

Regional Coastal Plans
(mandatory)

District Councils
Land, subdivision and noise

District Plans
(mandatory)

Regional and District Councils

Resource Consents and Permits
water, coast, discharges, land, subdivision

Source: Smith (1997)

Policy initiatives by government have tended to be reactive to specific problems rather than to focus on broader sustainability needs and the RMA still focuses on the single medium approach (air, water, land and air) (Young, 2007). Furuseth and Cocklin (1995) support this view and describe the RMA as a performance-based approach to regulation and state that this type of regulation requires greater levels of information and analysis, potentially lengthening the time to formulate policies. Bührs states that a major flaw in the institutional framework was that its 'effects' orientation has only brought about incremental management with an inability to deal with cumulative effects, this resulted in a virtual lack of rational and integrated planning (Young, 2007).

3.4.2 National Environmental Policy Guidance

The latest OECD (2007) 'Environmental Performance Review' states there is still room for improvement in environmental management in New Zealand. There is little statutory guidance in the form of national standards and policy statements for local authorities regarding the implementation of the RMA. This is also supported by comments by Memon & Thomas that even today clearly articulated policy vision from central government is lacking (Young, 2007).

"In October 2004 the New Zealand government introduced the National Environmental Standards for Air Quality. The 14 standards include:
- Seven standards banning activities that discharge significant quantities of dioxins and other toxics into the air
- Five standards for ambient (outdoor) air quality
- A design standard for new wood burners installed in urban areas
- A requirement for landfills over 1 million tonnes of refuse to collect greenhouse gas emissions." Retrieved March 16, 2008, from URL
  http://www.mfe.govt.nz/laws/standards/air-quality-standards.html

The OECD (2007) review concluded there was a need for the New Zealand government to:
- Reinforce its commitment to outcome oriented environmental policies,
- Strengthen the monitoring of air and water quality and,

- Assure the effectiveness of voluntary agreements, by requiring clear environmental performance targets, regular reporting and third party auditing.

The OECD (2007) report also claims that the regulatory playing field within the country is not level with differences in technical capacity, knowledge, skills and issues among local authorities.

This lack of national policy statements and guidelines has meant a variable capacity by councils in their obligations under the RMA, especially when developing regional policy statements (RPS) and district plans. This lack of guidance has produced variances in policies and rules between neighbouring regional or unitary councils. A 2001 report into the quality of regional policy statements found that the majority were inferior with about half scoring below 50% of the maximum evaluation score. "The best, worst and median scores for regional policy statements were 61% , 26% and 47%, respectively" (Ericksen et al. 2001 pg vii).

Williams claims that the legislation has not failed but the implementation has (Young, 2007), a view supported by Neil Erickson who claims that a 'hands-off' philosophy from the government when the RMA legislation was passed and a refusal to provide policy guidance meant that each community (regional and district authority) had to find its own solutions (Young, 2007).

3.4.3 National Environmental Policy Consistency

Helen Hughes, the first Parliamentary Commissioner for the Environment (1987- 96), stated that our reactive, short-term style of government, reinforced by a triennial electoral cycle, is almost incapable of dealing with long-term issues (Young, 2007). The 2007 OECD review supports this view; "recent success in issuing national strategies concerning elements of environmental management is tempered by their non-binding nature, which makes their implementation vulnerable to changes in government" (OECD, 2007, pg 17).

There is a range of interpretation of legislation and compliance issues within local government agencies throughout the country. Local Government New Zealand and MfE

investigated this in 2001 in an attempt to identify ways that consistency between councils could be achieved. An idea provided by a Ministerial panel appointed at the time included identifying good practice models from councils and promoting these to other councils as the format and baseline to be followed and achieved (Ericksen et al. 2001).

3.4.4 Government Funding

The level of funding provided to the MfE was criticised by Ericksen et al. (2001) in a report that focused on evaluating the quality of regional policy statements and district plans. Inadequate funding in their view constrained the Ministry's work and subsequently this meant the MfE developed a reactive focus and role. Since its inception MfE has been "cash strapped" (Young 2007, pg65), stifling the educational work required with new regional and district authorities instigating the new environmental management structure of the RMA. This fact appears to beleaguer the Ministry still with it being shown to be one of the worst funded of central government agencies, affecting adequacy of staff, stressful work environments and high staff turnover (Ericksen et al, 2001, pg33).

3.5 National Policy Provision for Voluntary Mechanisms

3.5.1 Resource Management Act 1991

The RMA does not presume that regulation is necessarily the best or only way of dealing with environmental issues. There is a mechanism within the RMA that allows decision-makers to assess appropriate and alternative methods.

Under section 30 of the RMA, titled functions of regional councils, "every regional council shall have the following functions for the purpose of giving effect to this Act in its region:
  (a) The establishment, implementation, and review of objectives, policies, and methods to achieve integrated management of the natural and physical resources of the region:"

Section 31 of the RMA, titled functions of territorial authorities, "Every territorial authority shall have the following functions for the purpose of giving effect to this act in its district:

(a) The establishment, implementation, and review of objectives, policies, and methods to achieve integrated management of the effects of the use, development, or protection of land and associated natural and physical resources of the district:"

Section 32 of the RMA, titled consideration of alternatives, benefits and costs, outlines a process intended for councils and council staff to test the appropriateness of any proposed provisions for district and regional plans. It requires councils when preparing plans and changes to consider a broad range of policies, objectives and methods, and to use a rigorous analysis of the benefits and costs in deciding which provisions are the most efficient (Quality Planning, 2008).

In the context of the RMA a method is the way a policy is implemented and could be described as a specific form of policy, except their purpose is purely explanatory with no decision-making guidance. A method does state how relevant policy will be implemented and can be either regulatory or non-regulatory. Non-regulatory methods are either:

• Operational programmes; such as education, funding or grants schemes, or technical assistance, or

• Economic instruments; mainly rating policy, financial contribution policies, transferable rights or permits regimes (Willis, 2003).

The provisions in sections 30 and 31 are 'vaguely defined' according to Ericksen et al (2001). In their report Ericksen et al. recommended that these two sections of the RMA among others be redrafted, by doing this the New Zealand Government will provide regional and territorial planners with greater certainty of their mandate. Some changes have been made to section 30 with the addition of further functions, powers and duties of regional authorities, it is unknown if this is due to the recommendations from the Ericksen report. This greater certainty will allow redrafting of regional policy statements during their stipulated review periods, which in turn will reflect in subsequent plan and rule changes across the regions and authorities.

3.6 Local Policy Provision for Voluntary Mechanisms

This research shows that under Sections 30, 31 & 32 of the RMA, regional and local authorities can implement their own 'localised' voluntary environmental agreements. These voluntary programmes must still achieve the objectives of the RMA. "This can mean using measures other than rules in the plan, such as education and financial incentives" (Ericksen et al 2003, pg 24). At least five local councils have instigated or developed voluntary pollution prevention programmes.

A mixed methodology was used in gathering the information from the councils, as mentioned in Chapter 1. A questionnaire was sent to five councils with active and established pollution prevention programmes; there were also informal face-to-face interviews and discussions at meetings with senior personnel from these programmes. The policy documents were found and provided by each council as requested in question 5 of the questionnaire. North Shore City did not identify any policy that related to their pollution prevention programme and Wellington region was the only council not to return the questionnaire. To certify all policy documents were relevant to voluntary pollution prevention programmes and this research all five councils were asked to review chapters 3 and 4 before final submission to ensure the correct interpretation of policy was used, ensuring the accuracy of this research.

Four of the councils are regional authorities, their regional policy statements were reviewed:
- Northland Regional Council, the northern most regional authority, with the longest coastline of all regions,
- Auckland Regional Council, the most densely populated authority with the countries largest city within its boundary,
- Greater Wellington Regional Council, centrally located with a diverse mix of land use types,
- Canterbury Regional Council, the largest council by land area with New Zealand's second largest city within its boundary.

The fifth council is a territorial authority and its district plan was reviewed. North Shore City Council is the fourth largest city and is located inside the regional boundary of the Auckland Regional Council.

3.6.1 Northland Regional Council

3.6.1. (i) Regional Policy Statement

The RPS was publicly notified in October 1993 and was made fully operative on 15 July 2002. Water quality is an important issue in Northland, an objective of the RPS is to provide an effective management framework for maintaining and enhancing water quality for the benefit of the present and future (NRC RPS 1999).

Issues identified in the RPS relating to surface water quality from industrial sites storm water discharges include:

- Levels of heavy metals, sediments and other contaminants, which are potentially harmful to aquatic life, in storm water runoff;
- The contribution of runoff from industrial sites to contaminant loadings in urban storm water, including those from accidental spills; and
- Deliberate or careless disposal of oil and other household and commercial wastes to storm water systems (NRC RPS Part IV [Section 8.5.6] 1999).

Within the RPS there are policies and methods outlined relating to the diffuse source contamination and storm water drainage system contamination.

Policies promote the use of best management practices to avoid contamination of natural water bodies, coastal waters and groundwater from contaminated storm water. Discharges are to be avoided from industrial and household wastes or sewage into storm water drainage systems.

Methods of implementation include developing guidelines, codes of practice and educational approaches for best management practices covering storm water drainage system contamination and diffuse source contamination in conjunction with district councils, industry and resource user groups (NRC RPS 1999).

The programme also includes promoting cleaner production principles for waste minimisation to reduce solid waste generated from industrial sites; the aim is to extend the life of landfills. This work will be carried out in conjunction with and support of District Council work (NRC RPS 1999).

3.6.1 (ii) Regional Water and Soil Plan

The policies of the RPS, as amended by decisions and consent orders were used in the preparation of the Regional Water and Soil Plan (RWSP) (28 August 2004), this plan cannot be inconsistent with the objectives and policies of the RPS. The general approach of the RWSP is to assist the council in controlling point source discharges to land and water and manage their effects on the environment. The plan also controls land use and non-point source discharges for the purpose of soil conservation, the maintenance and enhancement of water quality and hazard mitigation.

Methods to implement the RWSP "include education, provision of information and advice, the use of industry based codes of practice or guidelines, rules and environmental standards"… (RWSP [Section 5.1] pg5-1 2004). Education is stated as a key method to implement the plan, because "without knowledge of the effects that their actions have on the environment, or the reasons why certain practices are being promoted, people may see no reason to change, especially if that change causes an inconvenience or has some financial costs associated with it. Provision of information complements education" (RWSP [Section 5.2] pg5-1 2004).

In the RWSP industry codes of practice (CoP) and guidelines where appropriate have been used as a means of achieving compliance with certain environmental standards. These CoP do not have any legal status, so no enforcement action can be taken if they are not adhered to unless the CoP's are to be included in the RWSP as a rule. The plan does state that conformance with industry CoP does not necessarily guarantee that environmental compliance requirements will be met (RWSP [Section 5.3] 2004).

3.6.2 Auckland Regional Council

3.6.2. (i) Regional Policy Statement

Auckland Regional Council (ARC) RPS was approved on 16 August 1999 and became operative on 31 August 1999. Chapter eight states that water resources in the Auckland region are under pressure in both quality and quantity from urban intensification. Water quality is a significant issue in the Auckland Region. A principal source of uncontrolled contamination of the region's water quality has been identified as coming from storm water.

The Auckland Regional Policy Statement (ARPS) includes the following best practicable approach to control water quality; cleaner production, waste minimisation and discharge minimisation along with monitoring activities. Education will play a major role in achieving environmental objectives (ARPS Chapter 8 pg 2 1999).

The ARPS includes a variety of methods; public education, source controls and retro-fitting, for improving and controlling water quality in the region (see Appendix I). The ARPS makes direct reference to how it will assist urban and rural industrial and trade activities, from the development of an 'Industrial and Trade Pollution Programme' that will consider methods including the development of codes of practice and guidelines, implementation of a regional plan and an education programme, the most efficient and cost effective course of action will be utilised (ARPS Chapter 8 pg 13 1999). The methods listed in ARPS are very prescriptive and specifically list practices or systems that must be used to meet policy.

3.6.2 (ii) Proposed Air, Land and Water Plan

The Proposed Air, Land and Water Plan (PALWP) applies to the management of air, land and water resources in the region including: air, soil, rivers and streams, lakes, groundwater, wetlands and geothermal water. The PALWP was notified in October 2001, subsequent variations and further submissions are currently underway, parts of the plan are still subject to appeal, and parts that are not under appeal are being used by ARC in processing resource consents. The PALWP is not intended to be made formally

operative until all appeals have been resolved (Retrieved November 17, 2007 from: http://www.arc.govt.nz/plans/regional-policy-and-plans/proposed-auckland-regional-plan-air-land-and-water/proposed-auckland-regional-plan-air-land-and-water_home.cfm).

Section five of the PALWP provides proposed regulation on 'Discharges to Land and Water and Land Management'; industrial or trade processes are included and covered by permitted activities, controlled activities and discretionary activities. The majority of this section is under appeal.

Templates within ARC's voluntary Environmental Operations Plan 2001(EOP) have been applied and 'considered' to satisfy conditions within regulation. Under permitted activities Rule 5.5.14 states that all sites that store "environmentally hazardous substances" (PALWP pg5-61 2001) that are not covered by the Hazardous Substances and New Organisms Act (1996) (HSNO) must have a 'Spill Response Plan' prepared as per ARC's voluntary EOP and store substances following the requirements of the EOP. A Permitted Activity is an activity for which resource consent is not required for the activity if it complies with the standards, terms, or conditions, if any, specified in the plan or proposed plan (CRC, PNRRP, 2004).

Permitted Activity Rule 5.5.15 explains that an Environmental Management Plan (EMP), formulated from the site implementing the EOP, shall be inspected on an annual basis by an environmental assessor certified by ARC. When a site successfully submits three consecutive EMP's that meet the conditions of the rule, the requirement for further assessments is relaxed too a biennial basis. Any event of non-compliance brings it back to an annual basis.

3.6.3 North Shore City Council

3.6.3. (i) District Plan

Policies and objectives established by the North Shore City Council (NSCC) must take effect of, and cannot be inconsistent with the objectives and policies of the ARPS. Section 10 of the District Plan produced in June 2002 (Pollution, Hazardous Substances and Waste Management) includes the following ARPS objectives:

- To protect water quality from the discharge of contaminants, industrial, trade and rural production and processing activities are required to utilise clean *(er)* production and site management measures
- Protect air quality, including need to avoid, remedy or mitigate industrial emissions
- Reduce the quantity of waste produced and avoid or mitigate the adverse effects from waste disposal
- Prevent or mitigate risks relating to the use, storage, disposal and transporting of hazardous substances.

A review of the NSCC District Plan found three policies that support the use of voluntary approaches in their regulatory framework; one for air emissions and the remaining two for hazardous facilities and contaminated sites. The methods include an education programme, specific guidelines and promoting management and operation excellence (see Appendix I).

The discharge to air is a function of ARC, but NSCC has been delegated responsibility for all but the more noxious, dangerous and offensive activities. Policy 10 is to be implemented by both education strategies and co-ordinating initiatives undertaken by council. These initiatives include the use of ambient air quality guidelines prepared by MfE and a set of indicators used by the State of Victoria, Australia for controlling point source emissions until a Regional Air Quality Plan is prepared.

Policy 2 will be implemented by both rules and education; Policy 8 will be implemented by education and council initiatives. The council includes education initiatives to ensure hazardous substance users are aware of the provisions in the plan and that they fully understand what the implications are, for their activities.

3.6.4 Greater Wellington Regional Council

3.6.4. (i) Regional Policy Statement

The RPS for the Greater Wellington Regional Council (GWRC) was published in May 1995. Prior to the RPS being operative, studies conducted by GWRC indicated that

farmers and business interests would like greater information on how to deal with waste and avoid pollution before it occurs. "Education and advice are powerful means of changing behaviour" (RPS, 1995, pg76).

The preparation of the Greater Wellington Regional Policy Statement (GWRPS) was based on 13 guiding principles and underlying assumptions, two of these principles are relevant.

- An 'anticipatory approach' is used in the RPS, where the environmental effects would be avoided in the first place, rather than dealt with after the event.

- A 'flexible approach' is used that appreciates that a regulatory regime for resource management may not be the best or only way of achieving the desired ends (GWRC RPS 1995).

A range of methods is identified including; encouragement, support, information provision, plans and regulation should only be recommended when specificity and absolute certainty are required.

The GWRPS incorporates a variety of methods for improving and controlling water quality, three are included in controlling point source discharges (see Appendix I) Method 26 is intended to utilise or prepare CoP in co-operation with industry where necessary. These CoPs will be used in a voluntary context to reduce the effects of an activity through better practice and complement regulation where resource consent is required. Method 28 provides education for industry and the pubic in handling and correctly disposing of discharges. Method 29 provides for the use of enforcement and penalties to ensure compliance with consents, plans, regulations and orders, when all other options are exhausted.

This set of methods allows for the complementary use of a voluntary approach as a stand-alone option for industry. These methods also support policy by providing industry with information to comply with regulation, underpinned with enforcement as a final consequence.

The concept of Cleaner Production is used as a tool in the GWRPS; the philosophy of preventing or minimising emissions at source is included in methods within air quality and management of hazardous substances.

3.6.4 (ii) Long Term Council Community Plan

The Greater Wellington Regional Council 2006-16 Long Term Council Community Plan was amended in June 2007 and the RPS scheduled to be reviewed and publicly notified in September 2007, as required every ten years under the RMA.

Desirable objectives of this recent review include; narrowing the focus of broad planning documents to focus on significant resource management issues and consequently rationalise plans through public consultation. The GRWC generally accepts that regulation alone is not the best way to achieve desired environmental outcomes, non-regulatory approaches are just as important and a sensible balance between the two approaches is required (Amended 2006-16 Ten- Year Plan 2007 pgs 26,27).

3.6.5 Canterbury Regional Council

3.6.5. (i) Regional Policy Statement

On 26 June 1998 the Canterbury Regional Policy Statement (CRPS) became operative. The document provides an overview of resource management issues in the region of natural and physical resources; it states they are to be managed in an integrated way to promote sustainable management. Integrated management involves regional and territorial authorities taking a co-ordinated and holistic approach, recognising that decisions on one particular resource may have effects on other resources (CRPS 1998).

The CRPS provides a broad policy framework for achieving integrated management of the regions physical and natural resources. The principal water quality issues are the adverse effects of land use and discharges of contaminants into water or onto land where they may enter water (CRC, PNNRP, 2004).
In Chapter 9, Methods state that 'Information Provision' should encourage the adoption of technologies and practices that reduce direct or indirect contaminant discharges that

can adversely affect water. Two ways stated to obtain this is through an environmental education strategy and the use of codes of practice where they are developed. (see Appendix I) Reasoning for these to be included was stated as "Public education and information is necessary to deal with or prevent accidental or incidental contamination and to help engender a caring attitude toward water" (CRC, RPS, 1998, pg143).

All policy in Chapter 17 relates to adverse effects of hazardous substances on the environment. All four policies have 'Advocacy, promotion and co-operation' and 'Information provision' included in the methods specified. Three of the policies relate to the role of rules by CRC and territorial authorities in the management of hazardous substances. Policy 2 looks at the management practices involved with hazardous substances.

Policy 2 includes promoting cleaner production for manufacturers and handlers of hazardous substance along with the promotion of better management practices to reduce the risk of environmental contamination. Advocacy, promotion and co-operation are methods stated in the CRPS to be used in preventing or mitigating adverse effects on the environment from the storage, use, disposal and transportation of hazardous substances. CRC see advocacy and liaison as a simple and effective method for dealing with issues associated with use of hazardous substances.

3.7 National Voluntary Environmental Agreements/ Programmes

3.7.1 Introduction

Nationally the New Zealand government through the MfE is working with industry, industry groups and associations in developing sustainable strategies and initiatives from packaging accords to reduce packaging waste to improving rural surface water quality in the dairy industry. These types of programmes are voluntary in their character and have a national industry group supporting them and are not legally binding on the parties involved.

Support for these national voluntary programmes historically has been set at national government levels with the Ministry of the Environment and the Ministry of Agriculture

and Forestry (MAF) and Local Government New Zealand (in the case of the Dairying and Clean Streams Accord, 2003). These government bodies represent the interests of the regional regulatory authorities when signing these agreements; they then facilitate any required regional reporting requirements to meet the voluntary accords design criteria.

3.7.2 New Zealand Packaging Accord 2004

The packaging industry and the framework of the New Zealand Waste Strategy 2002 support the New Zealand Packaging Accord 2004. The strategy promotes Product Stewardship and waste levies with the projected support of future policy from MfE that would allow regulation as a backstop measure for significant waste problems (Hon David Benson-Pope speech to the NZ Paperboard Packaging Association, Auckland July 2006- www.beehive.govt.nz/Print/PrintDocunment.aspx?DocumentID=25926).

3.7.3 Dairying and Clean Streams Accord 2003

Part of the Dairying and Clean Streams Accord 2003 required Regional Action Plans (RAPs) to be drawn up between regional authorities and Fonterra to assist in implementing the Accord. These RAPs do not negate the current regulatory requirements set in regional plans. Of the 13 regional authorities, with Fonterra supplier herds within their boundaries, 12 have completed RAPs; the remaining regional authority is preparing an RAP in line with their proposed Regional Water and Land Plan. The 12 RAPs outline how progress toward Accord targets are to be monitored, this focuses on the measurement of the five 'inputs' (see Table: 4) of the accord, there was no requirements in these first plans to monitor the environmental benefits of implementing the accord (Cowie, 2006).

3.7.4 Monitoring the Dairying and Clean Streams Accord

In May 2004 NRC and Fonterra co-signed the Dairying and Clean Streams Accord RAP for Northland. "The purpose of the RAP is to identify local commitments and to support the national Accord principles of developing actions that are adapted for local conditions, practical, cost effective (whilst recognising the practical and financial constraints of implementing timeframes) and that will make a real difference" (NRC, August 2007, pg4).

On the 6 July 2006 NRC commenced a 12 month baseline monitoring project of a stream catchment within the region. The catchment selected had at least 70% of the area's land use in dairy farming and only 10% of the waterway fenced to exclude stock.

"The purpose was to collect a comprehensive body of environmental information that would enable the benefits of implementing the Clean Streams Accord to be identified over time" (NRC, August 2007, pg2). The NRC report concluded it was too early to draw any conclusions about water quality and the implementation of the Dairying and Clean Streams Accord, but importantly a baseline has been established for further monitoring over the life of the agreement, a review will be carried out in 2010.

Table: 4   Elements of the Dairying and Clean Streams Accord

Accord objective	Accord national target
Dairy cattle are excluded from streams, rivers, lakes and their banks.	Dairy cattle are excluded from 50% of streams, [A stream is defined under the Accord as being a stride wide and a 'red band' deep or larger. In other words, about one meter wide and 15-20 cm deep.] rivers and lakes by 2007, 90% by 2012.
Regular (more than twice a week) crossing-points have bridges or culverts.	50% of regular crossing-points have bridges or culverts by 2007, 90% by 2012.
Farm dairy effluent is appropriately treated and discharged.	100% of dairy farm effluent discharge complies with resource consents and regional plans immediately.
Nutrients are managed effectively to minimise losses to ground and surface water.	100% of dairy farms have in place systems to manage nutrient inputs and outputs by 2007.
Existing regionally significant or important wetlands (as defined by regional councils) are fenced and their natural water regimes are protected. **(Source: Cowie et al. 2006)**	50% of regionally significant wetlands fenced by 2005, 90% by 2007.

Of the other regional councils researched all make mention of the Dairying and Clean Streams Accord, the reporting of the dairy sector continues for all regional councils and some have adopted various initiatives with the dairy sector. An example is in the Canterbury region where effluent management workshops occurred alongside work with

engineers on the design of effluent systems as well as establishing a catchment baseline study. GWRC was also establishing a baseline study similar to Northland, as mentioned in the 2004 Annual report.

3.8 Comparative Review

3.8.1 What mechanisms within New Zealand environmental policy support voluntary environmental approaches to pollution prevention, if any?

This research shows that New Zealand's non-prescriptive national environmental legislative document known as the RMA supports voluntary environmental approaches. Three sections 30, 31 and 32 within this legislation allow decision-makers to assess appropriate and alternative methods to regulation. Under the RMA methods are purely explanatory in terms of policy implementation, they do not state how policy is to be implemented. The RMA does not presume that regulation is necessarily the best or only way of dealing with environmental issues. While sections 30 and 31 are not specific, definitive or even vaguely defined (Ericksen et al. 2001) in how or what these methods should be, they can be non-regulatory focused. Non-regulatory methods can include education, funding or grants schemes, technical assistance, rating policy and financial contribution; voluntary approaches or programmes can be included within the heading of either education or technical assistance methods.

Section 32 allows council planners at regional and territorial authority levels to consider, test and select the appropriate provision for regional and district plans in a cost effective way. Provisions can be policies, objectives and methods with a projected cost effective outcome of efficient policy. Voluntary programmes or approaches must still achieve the outcomes of the RMA and still promote the sustainable and integrated management of natural and physical resources.

3.8.2 If national policy supports voluntary approaches or programmes, how do New Zealand policy mechanisms compare to the countries reviewed?

A comparison of New Zealand environmental policy to the international review is presented in Table 5. This analyses the policy features or mechanisms from the

countries reviewed in this research. In this review policy relating to the use of voluntary approaches or programmes was included. The early 1990s was a pivotal time in New Zealand's environmental policy changes, also shown by the international review.

The key environmental policy comparisons are:

- All countries researched have had early policy sets formed around 'command and control' regulatory structure, some with incremental policy changes starting to occur.

- The majority of the countries compared to New Zealand have or are progressing toward completing operational environmental standards or statements, New Zealand has recently implemented an Air quality standard.

- The majority of countries have a national framework or legislation in place that clearly supports the integration of voluntary approaches, and policy that provides clear guidance for state or local authorities, opposed to two 'vaguely defined' sections in New Zealand legislation.

- Nationally implemented voluntary programmes in New Zealand are by nature non-binding and lack effective measurement, allowing changes in government to alter or affect them. Australia has the ability to set 'milestones' and includes monitoring and review processes for programmes and the United States environmental Protection Agency (EPA) is charged with providing the results of voluntary programmes.

- In at least three of the countries researched national policy provided definitions, frameworks or models for voluntary approaches/ programmes. There are no definitions or design features established in New Zealand.

Table 5: Review of New Zealand Policy on Voluntary Agreements/ Approaches vs. International Review

New Zealand	Japan	Canada	USA	Australia	UK
	Voluntary agreements precursors to stricter national legislation, most VA's stricter than policy today			Command and control focus initially	
		Decentralised reactive policy mix initially inhibiting voluntary agreements	Single medium end-of-pipe policy focused	Transparent mix of regulation, economic and voluntary instruments used	
None or Prescriptive environmental and land use legislation	VA's created outside established legislative channels and not supported by legislation	(<1980->1990's) CEPA legislation shifted focus from control to P2	Regulation is the cornerstone of environmental policy	1970 framework for integrated approach to the environment established	Too detailed a multi media policy developed early on
Single - media approach with reactive policy focus.	Quick implementation of VA	1991 provincial government P2 strategy implemented	Support for P2 in federal Pollution Prevention Act 1990		Direction taken from EU and ISO.
Lack of clear policy statements and national environmental standards from central government.		Restricted capability in Federal Government to implement & enforce legislation & standards	Policy provides framework for government to develop VA's with industry	Level of Commitment by national and state government agencies to support VA's	British Standard 7750, specification for EMS introduced in 1992
Decentralised 'effects' based regulation with non-prescriptive national objectives and methods	Centralised national legislation with high government intervention	Canada-Wide Accord on Environmental Harmonisation signed in 1998.	A national approach to environmental management - EPA	Realises the need to broaden policy mix to maintain environmental improvements of regulation	Most VA's non-binding in nature
Variable capacity by councils to meet their RMA obligations.	Voluntary programmes emerged from within industry		EPA charged with implementing programmes including funding and reporting results		Pollution Prevention and Control Act 1999 supports mandatory and voluntary policy measures.
Non-binding national VA's established with industry, but lack effective measurement.	Regulatory instruments effective, media-specific nationwide environmental quality standards operational	Intergovernmental policy forum created for federal, provincial & territorial councils	Cohesion among federal and state agencies involved in environmental management	Lacks national environmental standards	IPPC legislation goes beyond the traditional emissions focus, P2 principles included
Vaguely defined policy in Section 30 & 31- greater certainty for planners required.		2000 CEPA re-enacted in stronger form, increased government requirements for P2 planning.			
Localised voluntary approaches developed, lack definitive central government mandate		Policy framework for Environmental Performance Agreements set 2000 (Environment Canada)			

Canada and New Zealand share a decentralised legislative system that can hamper the implementation of effective environmental policy, including voluntary approaches. Within the last decade Canada has moved to rectify this by creating the CCME for co-ordinating policy and environmental standards. This is supported by the nation-wide Environmental Harmonisation Accord for greater effectiveness and clarity in environmental management of national issues. In 2001 a New Zealand Ministerial panel suggested a similar concept, where good practice models from councils be identified and promoted to other councils as the baseline format to be followed and achieved (Ericksen et al. 2001), this research supports the implementation of this.

The lack of national standards and guidelines also makes it difficult for regional authorities to measure the affects of any national or local voluntary programmes. The Dairying and Clean Streams Accord, 2003 has shown that reporting from each region needs some harmonisation to show the true effects on surface water quality.

New Zealand's Ministry for the Environment has struggled for adequate funding since inception (Young 2007) and this has been an issue shared by the United States (Zarker & Kerr 2007) and similar to inadequate resources in the Canadian approach (OECD, 2003). However inadequate funding was not an issue that has affected Canada and the United States from still implementing policy and guidance for voluntary programmes.

Sections 30, 31 and 32 of the RMA currently allow for alternative methods to be used but are vaguely defined and there are no guidelines provided, it is up to interpretation of planners or regional authority staff as to what type or design of voluntary programme can be implemented. The majority of Regional Policy Statements have been found to be inferior; the same might equally apply for regional voluntary programmes set up by regional and local authorities?

3.8.3 What policy mechanisms do the five council authorities have to support the use of voluntary approaches, if any?

One similarity among all RPSs reviewed is that the majority of the sections that mention education or information provisions are based around the improvement of surface water or storm water quality and hazardous substance storage. Table 6 lists the features mentioned in the relevant sections of the RPSs.

Table 6: Voluntary Approach mechanisms in local environmental policy documents

Policy areas	Northland Regional Council Regional Policy Statement	Auckland Regional Council Regional Policy Statement	Wellington Regional Council Regional Policy Statement	Canterbury Regional Council Regional Policy Statement	North Shore City Council District Plan
Principles	Cleaner production	Cleaner production and education	Cleaner production	Cleaner production	
			Anticipatory and flexible approaches are 2 of 13 guiding principles of GWRPS		
Methods	Implementation includes: education, industry based CoP or guidelines, provision of information and environmental standards	Prescriptive and specific. CoP, guidelines and education programme Industrial & Trade Pollution Programme	Where necessary develop standards, guidelines & CoP in co-operation with industry. Education and information provision to change behaviour.	Use of CoP, environmental education, advocacy	Specifying guidelines & best operational practices & promoting excellence in managerial practices
Policies	Policies promote best management practices		The complimentary use of voluntary approaches is a stand-alone option for industry supporting industry.	Information provision to change people's perceptions, attitudes & behaviour. Better management practices	Education programme for business in conjunction with ARC
Regulation		EMP to meet permitted activity status Voluntary EOP is considered to satisfy regulation conditions	Complement to regulation when consent required. Balanced approach	Education and information provision alongside regulatory methods.	Education in conjunction with rules

Cleaner Production is a consistent element mentioned through all four regional council RPSs, alongside specific guidelines and CoPs in the development of environmental education strategies for industry. "Cleaner production means applying a strategy to your business to make the most efficient use of resources including raw materials, water, energy, time and money whilst preventing pollution and minimising your impact on the environment. To maintain their effectiveness, cleaner production strategies are regularly re-evaluated" (Retrieved November 11, 2007 from http://www.mfe.govt.nz/issues/sustainable-industry/tools-services/subjects.php?id=20).

All four regional councils have documented their commitment in their recent Long Term Council Community Plans to actively include and support voluntary approaches or programmes. All the relevant sections of the regional authorities' RPSs reviewed include the use of Cleaner Production principles.

The methods listed in ARPS are very prescriptive and specifically list practices or physical systems that must be used by industry and sites to meet policy requirements. Methods in Section 8.4.11 specifically mention the implementation of an "Industrial and Trade Pollution Programme to avoid, remedy, or mitigate the adverse effects of discharges from industrial and trade activities"(ARPS Chapter 8 pg 12). The other three regional councils' RPSs use a broader supporting methodology for describing their industry education provision. A broader approach in a council document potentially allows for interpretation by council personnel in the implementation and development of a voluntary industry approach. This is where the use of the words 'Industrial and Trade Pollution Programme' by ARC leave no doubt as to what should be developed.

The district plan of NSCC is lighter on information than the RPS documents, but the district plans must take affect of RPS requirements and support them. District Plan functions, amongst others, are to control the use of land and natural and physical resources, to a lesser degree than those of a regional authority RPS. The NSCC District Plan includes the specification of guidelines for the operation and management of hazardous substance facilities. No detail on how to implement or develop this is provided; this lack of detail is comparable to the majority of the RPSs' reviewed.

Chapter four will review the councils' voluntary pollution prevention programmes. The objective is to compare and analyse these programmes design to the 'best practice' criteria established in chapter two and comment on the results of this comparison.

4.0 New Zealand Councils' Voluntary Pollution Prevention Programmes

4.1 Introduction

Most environmental management in New Zealand is regulated nationally by the Resource Management Act 1991 (RMA). The RMA is a decentralised system that provides local councils with a framework of objectives for sustainable management of the environment. Regional Councils develop Regional Policy Statements (RPS) that consider and include local environmental issues and factors in maintaining and protecting the environment for the surrounding community. These RPSs provide the base for localised regulatory policies and methods to manage the environment within the requirements of the RMA framework. Part of this process has seen at least five local councils instigate or develop voluntary pollution prevention programmes as one method to achieve the objectives of the RMA and their regional rules.

The key questions to be posed in this chapter are: What design features do these local programmes contain? How do New Zealand council-run voluntary pollution prevention programmes compare to the established 'best practice' design features?

4.1.1 Methods

The analysis focuses on these programmes' designs; the information for this analysis was collected from the questionnaires (see Appendix II) sent out as part of this research and published reports. The questionnaire was put together following early research and literature review into voluntary approaches; this provided the objectives for this research and the strategic design of the questionnaire in conjunction with specialist environmental management system staff at Lincoln University. This passive methodology was supported with face to face discussions and email interviews to confirm programme designs and mechanisms. All information was provided by senior personnel that implement or manage the respective council's voluntary pollution prevention programmes.

The questionnaire was distributed personally at a national meeting of council programme managers, an email version was also sent to all personnel involved following the meeting. A follow-up email was sent one month after questionnaires

were distributed along with phone calls to check on progress and answer any questions related to the questionnaire. This occurred over a six month period, the majority of the councils returned the questionnaires within four weeks, one took six months to complete and return. It needs to be noted that the questionnaire was completed by four of the five councils; Greater Wellington Regional Council was the only council to not return the questionnaire. The relevant material and review of their findings relied on personal discussions with the programme leader and their website for research material. Senior programme personnel from Greater Wellington Regional Council reviewed this research to confirm its accuracy.

Returned questionnaires were analysed in comparison to the 'best practice' design features identified in chapter 2, and identified as shown by Table 7. The council's pollution prevention programme design features were identified as each questionnaire was reviewed. When a design feature was not able to be identified from the questionnaire alternative mechanisms were used, these included further review of council websites, reports, policy documents and publications before finally contacting programme personnel. This type of analysis process and rationale was applied to maintain research objectivity and adherence to stated programme facts and features.

4.2 Northland Regional Council - Pollution Prevention / Cleaner Production

The Northland Regional Council voluntary programme began in 2006 (NRC, Question 2) and is in its implementation phase. The programme developed from statements in the RPS and RWSP that mandate a degree of waste minimisation work with industry, this lead to the appointment of a Cleaner Production/ Pollution Prevention Officer (CP/PPO) in November 2006. The programme is classified as a public voluntary programme, with a relatively informal approach used in its implementation with industry (NRC, Question 3).

The NRC recognises education and information provision within its plans, the council also recognises that this requires considerable commitment from it and the community over the term of the RWSP. The voluntary education programme will be reviewed annually and modified if required, this is based on priorities that arise from the State of the Environment Monitoring Reports and priorities put forward by the community. The RWSP defines education as "includ(ing) school visits, seminars, field days and industry discussion group meetings, the production and circulation of pamphlets on specific topics, and the preparation of more comprehensive guidelines

on matters such as efficient water use, waste treatment and disposal systems and best land management practices" (RWSP 2004 pg5-1 [Section 5.2]).

Cleaner Production was the initial focus of the CP/PPO, however the first two sector groups worked with (Vehicle washing and auto dismantlers / scrap dealers) had a pure Pollution Prevention (PP) focus. The third group, boat-building, allowed the use of a broader Cleaner Production (CP) and PP inclusive approach. Due to the scale and nature of the boat-building industry with a full manufacturing process, greater scope for resource efficiencies through CP was possible. Efficiencies were created through optimising processes and developing a continuous improvement culture. A strong PP component was still used due to the proximity of this industry to water (NRC, Question 4). The PP/CP programme approaches all known sites within an industry group, the programme will continue to develop and is flexible in its approach allowing it to adjust to the industry sector worked with to achieve the desired environmental outcomes.

It has been reported by the NRC CP/PPO that greater success has been had with industrial participants when a pollution prevention perspective is used with more of a potential enforcement focus on environmental issues, opposed to a CP perspective with an "I can help you save money by reducing waste" focus.

The Pollution Prevention Programme has enforcement links, these can be utilised within the Regional Council structure for businesses reluctant to comply with recommended PP measures that relate to current regional rules and relevant legislation (NRC, Question 3).

The CP/PP programme is fully ratepayer funded, there is no direct cost to the site, funding is gathered from a tax that is applied to all land owning regional property owners, based on the value of the property (NRC, Question 9). Business participants welcome the 'free' funding concept, but can find it hard to believe; first that the council will not initially penalise them for environmental issues found on their sites and second for identifying possible areas they may be able to find efficiencies and reduce costs (NRC, Question 9).

The current objective of NRC's programme is the promotion of environmental awareness combined with the acceptance and adoption of pollution prevention techniques (NRC, Question 12). Measurement of the programme against these

objectives is currently empirical in nature with witnessed changes to site practices and behaviour gauging the success of the programme (NRC, Question 14). Sites that are slow to respond are followed up on; those that resolve their site issues are thanked with a letter and used as role models for others in the industry (NRC, Question 16). No measurement of the programme is currently undertaken, the programme is not reported on in council annual reports.

To date the only potential direct benefits to programme participants is the resource efficiencies through the CP component of the programme and this has not been applicable to all three industry groups covered to date (Automotive Dismantler, Scrap Metal Dealers & Boat-building). Indirect benefit for a participant is created through the reduced potential for enforcement action and monetary fines by working co operatively with the CP/PPO (NRC, Question 15).

The promotion of the programme is through direct contact with individual sites or industry groups and information available on NRC's website (www.nrc.govt.nz) and the networking of the CP/PPO. The programme also interacts with agencies, such as Enterprise Northland, who promote and encourage sustainable economic development in partnership with central government, local industry, business and local councils (NRC, Question 7). In the future case studies will be written and used to publicise the programme further to the business and industry groups, this may help to allay some business fears of working with a regulatory authority. Behavioural change is a large part of the process with initial points of contact being addressed to business or site management (NRC, Question 10). Their direct involvement depends on the size of the business approached and management's enthusiasm for the programme, in cases responsibility may be designated to operational management level personnel (NRC, Question 10).

4.3 Auckland Regional Council - Industrial Pollution Prevention Programme

ARC's urban pollution control programme began in the mid 1970s as part of Auckland Regional Authority's Auckland Regional Water Board (ARWB) (ARC, Question 2). At this time the programme was purely responsive to incidents of pollution reported by the public and other agencies. The first proactive pollution control programme of visiting and auditing industrial sites occurred in the mid 1980s in the Manukau Harbour catchment (ARC, Question 2).

The proactive auditing component was continued following the implementation of the RMA and undertaken by ARC's Pollution Control Team, an urban pollution control system called 'Industrial Pollution Prevention Programme (IP$_3$) was developed. The primary objectives of IP$_3$ are to protect and improve land and water quality from industrial and trade activities through targeted pollution audits or assessments to ensure compliance with sections 15(1)(a), (b) and (d) of the RMA by:

- Identifying and stopping any actual pollutant discharges to land and / or water
- Identifying and eliminating, or putting in place site management controls, to address potential discharges, and
- Ensuring industrial site operators are prepared to deal with accidental discharges through the preparation of emergency spill response plans (ARC, Question 2) .

Over the last decade a number of different types of interventions have been implemented from:

- Targeting industry sectors with high pollution risk
- Business communities located near sensitive catchments
- Those designed to enforce compliance
- Proactive and voluntary initiatives
    - From guidance in the form of an industry sector letter
    - On-site audits
    - Catchment or sector-based workshops.

Assessments of high-risk industry sectors were compliance based, other lower risk industry groups had proactive visits providing information and discussing pollution prevention opportunities. Catchment-based approaches promote storm water quality and the improvement of a particular local water body. Education material provided to industrial sites includes the Environmental Operations Plan (EOP) and industry specific fact sheets designed in conjunction with the industry groups (ARC, Question 2).

The IP$_3$ programme is designed to work proactively and co-operatively with businesses with a firm-but-fair policy underpinned by statutory enforcement tools. Evolution of the purely voluntary programme has changed with the introduction of the Proposed Auckland Regional Plan: Air, Land and Water (PARP:ALW) potentially requiring all moderate and high-risk industrial or trade process sites to have an

Environmental Management Plan (EMP). An EMP guide and template has been developed as a supporting document of the EOP. The EOP provides the base documentation for sites to create and implement their own EMP (ARC, Question 2).

ARC's voluntary programme has been in development and operation in various forms and structures for almost 20 years. Organisational restructures during this period have impacted on how the Pollution Control Team, or as it is now known, the Industrial and Trade Processes (ITP) implement the programme (ARC, Question 8). The voluntary approach is included in the Long-term Council Community Plan (LTCCP) 2006-2016. During this period the programme will implement a sector-focused programme called Industry Group Project (IGP). At the start of an IGP a briefing letter and short questionnaire along with fact sheets that outline the processes and requirements of the programme will be sent out to all identified sites in that sector (ARC, Question 11). This approach is designed to keep everyone in the targeted sector on a level-playing field. This approach aligns the IP_3 to the PALWP by prioritising industry's that are moderate to high risk.

Initially there is no cost to a business site for the voluntary programme, however if a site has been visited previously and/or significant pollution is found ARC may seek to recover costs if appropriate. Costs can include officer's time, mileage, sample analysis fees and any other material expenses (ARC, Question 9).

All initial contact with a site is directed to senior management so the appropriate contact person can be identified. Senior management is kept involved in all further communications between ARC and site personnel (ARC, Question 10). During a site assessment issues found are discussed and noted, a formal report is written and delivered to the site, the issues are highlighted with timeframes for resolution (K. McDonald personal communication, February 14, 2006).

Within the LTCCP (2006-2016) one publicised form of measuring the programmes success is the annual reduction of repeat pollution incidents from industrial or trade premises, 26 incidents in 2005 established the baseline for measuring this. Internal measurements for gauging programme success include; the number of sites assessed by the ITP team and the number of consents participating sites require and apply for (ARC, Question 14). A key objective of ARC's voluntary programme is to identify if resource consent is required (ARC, Question 17). No long-term

measurement of the EOP programmes effectiveness with regard to improving environmental performance is undertaken (ARC, Question 19) .

ARC sees reduced risk of pollution incidents, associated clean up costs and enforcement costs as indirect financial benefits to a programme participant. Sites with identified issues are followed up on to make sure the issues are resolved, sites that require consents are followed up by programmed compliance monitoring visits. It needs to be noted that the ITP team are also responsible for processing and monitoring consents for the discharge of contaminants onto or into land from industrial or trade processes (ARC, Question 8).

4.4 North Shore City Council

4.4.1 Pollution Prevention

Pollution prevention work has been undertaken by North Shore City Council (NSCC) since 2001, the main focus is on issues related to the identification and prevention of surface water pollution to the storm water system (NSCC, Question 2). This preventative work is ratepayer funded and generally carried out in the form of selected industrial and commercial area or catchment 'blitzes'. The selection of a blitz area is based on historical pollution incidents, location of high risk businesses and the sensitivity of the receiving environment (e.g, surface water) (NSCC, Question 17).

The objective of these 'blitzes' is to "identify sources of actual or potential pollution on-site and ensure that companies and individuals are complying with New Zealand's environmental legislation" (Retrieved February 10, 2008 from http://www.northshorecity.govt.nz/). The programme targets the manager of a site and encourages action to be taken (NSCC, Question 10). At present an initial site visit is made with a follow up site visit if necessary to ensure compliance. All sites visited receive a letter thanking them for their participation and covering any issues that were identified during the blitz (NSCC, Question 11) (R. Zaloum personal communication, April 28, 2008).The council uses the media to advise and warn businesses they are planning a 'blitz' and also provide feedback to the community once the blitz has been completed (NSCC, Question 16).

NSCC staff utilise the "private agreements" type of voluntary approach when working with a site, this is established by 'direct bargaining' with specific issues identified. The

benefit of NSCC's programme to the business is a reduction in risk of an illegal discharge and potential fines (NSCC, Question 15). Public reporting of the programme achievements is mentioned in two of the last four annual reports (Retrieved February 10, 2008 from http://www.northshorecity.govt.nz/). Like most councils annual reports, both regional and territorial, only high level project information is reported on, due mainly to the vast areas of issues covered by council authorities.

4.4.2 Pollution Prevention Programme Review

In August 2007 the NSCC undertook a review of its proactive pollution prevention programmes, including the 'blitz' approach to ascertain the effectiveness of different methods for encouraging behavioural change. The focus groups included industry sites the NSCC pollution prevention team had visited, sent information to and a control group with no solicited council contact. While not specifically undertaken for this research it was designed to analyse the NSCC pollution prevention programme approach from an industry perspective and to gather recommendations for future programme design and initiatives. The objectives of this review included determining business attitudes and knowledge of their environmental responsibilities and the assessment of current interactions between businesses and pollution prevention staff and identifying barriers for businesses in implementing pollution prevention measures. An independent specialist consultant Mobius Research and Strategy Limited undertook this work.

Focus groups were segmented:
>Group 1: Those who had been blitzed
>Group 2: Those who had either been blitzed or contacted (in response to a complaint)
>Group 3: Those who had no contact with Council (who had not been blitzed or received a letter)

Focus Group Topics:
>Recall of past communications
>Awareness of environmental responsibilities
>Awareness of pollution risks and risk strategies
>Attitudes to and barriers against compliance

Findings from the focus groups showed that NSCC was sending out to much general information, businesses are only interested in what is directly relevant to them and the implications for their business. The two groups who had contact with pollution prevention staff appeared to have higher levels of awareness about environmentally responsible business behaviour, specifically spill kits, not washing to drains and safe storage and disposal of hazardous wastes. The third group had reasonable awareness levels, particularly those members of a trade association, however most saw the issues as common sense.

All three groups acknowledged that their specific awareness of legal responsibilities was very low and that there probably are legal requirements with respect to pollution prevention, no groups could name any legislation with confidence.

Issues pointed out by the groups in relation to compliance barriers were:
- A lack of understanding or acknowledgement that compliance is a legal requirement
- A perceived lack of enforcement.

This position was reinforced by the belief that the 'big guys' are doing the damage and an overwhelming theme was that businesses felt they were doing the best they could and this was good enough. Businesses that had no previous council contact (e.g, no 'blitz' letters or visits or no enforcement action) did not see council playing a strong enough role in enforcing compliance and perceived that some businesses got away with things. This group also thought that NSCC is not taking a co-ordinated approach in dealings with business.

The research looked at attitudinal and compliance barriers and found that the NSCC has a key role in identifying potential risks and assisting business in taking steps to achieve full compliance. All groups saw site and follow up visits as ways to achieve this, especially as most small business that fit the potential risk profile said they are unlikely to be self-motivated to find their own environmental risks or act on them.

Overall the groups that had been contacted via a blitz stated the NSCC blitz approach appeared to work, however the use of the word 'blitz' in the approach was seen as negative and created a barrier to effectively communicate with sites and get accurate feedback. The focus groups concluded the current approach is:
- Making businesses aware of potential risks that they don't know they had.

- Reminding businesses that certain behaviours are unacceptable.
- A reasonably good public relations exercise – informative and non-threatening approach to compliance.
- The businesses that had to change their behaviours as a result of the blitz had appeared to do so.

The focus groups concluded the future direction of the NSCC programme should be to:

- Work further with industry groups and associations,
- Develop a green grading system for rating business compliance,
- Publicise offenders and good performers,
- Provide workshops for businesses in environmentally risky industry sectors.

Recommendations that came from the focus group research have been included in future planning considerations of NSCC:

- Blitz type programmes will continue but will target more high risk industry sectors, with industry specific information,
- Publicise compliant businesses and make examples of non-compliant and communicate financial benefits of being compliant (costs of spills, fines)
- Work with other council departments so that a variety of issues are covered when visiting a business, not just pollution prevention (e.g. waste minimisation, energy and water consumption and trade waste)
- Have greater follow up with sites visited to check action is actually done, provide further information or take enforcement action
  (North Shore City Council & Mobius Research and Strategy Limited 2007).

4.5 Greater Wellington Regional Council - Take Charge

This programme was established in 2001, the principal objective of 'Take Charge' at this time was to assist businesses to identify and address their environmental problems, and provide the foundations for them to go beyond compliance if they choose. This could be achieved via recycling, cleaner production, management systems and other environmental initiatives. Take Charge audits identify actual or potential environmental pollution of a significant nature; however formal steps may be taken to effect an improvement. 'Take Charge' uses a 'carrot and stick' approach. This is consistent with the objectives of the Environment Division's Strategic Plan

2002-2010, where divisional priorities for the Environmental Regulations Department include:

> • A hard line on compliance, using a fair and reasonable (but no-nonsense) approach and;
>
> • Increased emphasis on pollution prevention.
>   (GWRC, Annual Incident Report, 2001-2002, October 2002, pg 26)

Take Charge is classified as a public voluntary programme, initially the approach of the programme was to focus on one or two industry groups and approach all the businesses within these industries. The programme changed to include the catchment approach in conjunction with an industry approach, the catchment approach seems to be used to a greater extent today.

One of the first catchment approaches occurred in Seaview, an urban area of Lower Hutt, with a history of pollution incidents. In 2005 this approach was applied to 85 commercial and industrial sites in the middle Wharemuku Stream catchment in Paraparaumu, 32 of these sites had detailed assessments of activities and infrastructure. Issues identified included:

- Inappropriate storage of hazardous substances,
- Incorrect drain connections,
- Lack of awareness of pollution control devices (separators and interceptors),
- Un-consented contaminant discharges to air. (GWRC PCAR2004/2005 pg29).

Environmental Protection Officers (EPO's) implement the 'Take Charge' voluntary programme and work with sites to implement practical solutions to identified issues and to improve overall environmental performance (GWRC PCAR 2005). An EPO's role includes more than just implementing the voluntary programme, in 2003-4 their time was distributed between: - Incident response (60%),

  - 'Take Charge' (30%) and

  - Targeted investigations (10%) (GWRC, PCAR 2003/2004, pg1).

A continued pursuit to shift operational emphasis from incident response to pollution prevention was proposed, with a long term objective by 2006 to effectively re-distribute EPO workload to: - Incident response (60%),

- 'Take Charge' (20%) and

- Targeted investigations (20%)(GWRC, PCAR-2003/2004, pg19).

Since inception the level of funding for the Take Charge programme has varied, the programme is fully ratepayer-funded and run by the Environmental Protection Team. The budgets have never been fully utilised with three of the seven years reported spending less than 50% of their allocated budget. GWRC is the only council researched to publicly provide individual programme budgets in their annual reports.

The parameters for measuring the impact of the programme are set each year in the annual plan and reported on in the annual report. Predominantly this has been based on the introduction of the programme to industry groups, one or two a year for the last four years. In the last four years' Pollution Control Annual Reports, the industry groups targeted and the numbers of actual site audits conducted have been recorded. Information on catchment based approaches and why areas are selected are summarised along with other projects undertaken under pollution prevention initiatives. All Annual Environmental Incident Reports and Pollution Control Reports from 1998 onwards are available online (Retrieved November 3, 2007 from http://www.gw.govt.nz/section32.cfm).

In the 2005-2006 year changes were made to site resources for EPO's, this included the implementation of a new 'Take Charge' audit form; this was developed to remove the delay between the site audit and the formal report being delivered to the site. Audit reports can be issued on the spot, giving recipients an instant record of their performance and reminder of actions required. During 2005 revisits were conducted for service stations and motor vehicle workshops where significant issues were identified from previous years (GWRC, PCAR 2006). GWRC personnel have analysed their programme and found to get committed action by participants to change site practices a minimum of three visits is required. They are also considering introducing a certificate of support or acknowledgement, for businesses participating in the 'Take Charge' programme.

The environmental protection team contributed to an environmental management guideline prepared by Vector, a network utility operator, for contractors to use when installing power cables and undertaking maintenance. This included proposing pollution control measures and presenting them to Vector's contract managers (GWRC, PCAR 04-05 pg29). During this same period a guideline for developers and contractors to use when designing and developing subdivisions on steeper sites was published. This activity was causing increased siltation of many watercourses in areas under development pressure in the region. This programme included information workshops, a guideline, checklists and standard resource consent conditions for council staff, contractors, consultants and developers (GWRC, PCAR 04-05).

4.6 Canterbury Regional Council - Pollution Prevention Guide

In 2002 CRC implemented a voluntary programme called the Pollution Prevention Guide (PPG). The PPG is described as; "An Environmental Guide for Business describing appropriate site management of hazardous substances and solid and hazardous waste" (CRC, Annual Report 2002/2003, CRC pg38).

The PPG is a modular document designed to improve environmental practices and prevent pollution in the form of a basic environmental management system or plan. It is intended to show a business has documented evidence of its site activities and procedures and reduced the risk of causing harm to the environment (CRC, Question 1).

In February 2005 a diesel spill in a local river was the catalyst for further development of the programme. Following the spill community consultation supported the employment of Pollution Prevention Officers (PPO) to promote and implement the PPG to industrial and business sites in Canterbury; the first PPO was employed in January 2006 (CRC, Question 2).

The development of the programme from a purely written resource for industry to having staff to work with sites in its implementation has seen the PPG develop into a public voluntary programme (CRC, Question 3). The PPG programme is proposed to run until at least 2016 as stated in the long-term council community plan (CRC, LTCCP 2006-2016). The PPG programme is fully ratepayer funded with no costs to sites for staff time or resources provided (CRC, Question 9).

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The CRC voluntary programme approaches and works with individual sites, industry groups and associations to promote and gain access to potential programme participants, referrals from existing sites that already use the programme is another method used (CRC, Question 7). Implementing this strategy means that potentially all sites within a sector are contacted, maintaining a level playing field and programme credibility. Not all sites approached or worked with in the programme hold resource consents (CRC, Question 16). Future plans for the programme include industrial catchment based approaches around urban waterways with water quality issues (CRC, Question 7).

While the programme is designed to be voluntary by nature, the PPG programme is designed to raise awareness and improve the environmental practices of sites and in to a level of compliance. If a site implementing the PPG programme is found to contravene a CRC rule during a site assessment and the site chooses to not rectify the issue, then enforcement will be notified. Leniency is provided first, the site is made aware of why the activity is an issue and given the opportunity to voluntarily comply and rectify the issue.

In most cases management or in smaller businesses the owners are contacted to discuss participating in the PPG programme (CRC, Question 10). Approaching this level allows ownership to be taken by management and if implementation of the programme is passed to relevant staff, the PPO's know that any inaction can be redirected back to management for resolution.

Implementation of the programme involves at minimum two site visits, one to introduce and assess the site and at least one follow up visit to check on implementation progress and issue resolution. All issues found are ranked into categories of risk posed to the environment and risk of breaching rules or regulation. The PPO provides a written site assessment of the issues with an agreed resolution timeframe for site personnel to work to; this allows measurement of a participant's achievement (CRC, Question 1).

Future follow up visits are planned after a two-year period to see how the site is performing. Contact with sites is maintained by sending out holiday shutdown procedures to all participants twice a year, along with requests for six-month progress reports from all sites (CRC, Question 16).

Consented sites that return four consecutive six-month reports are entitled to have their compliance monitoring visits reduced; this reduces participating sites costs as these are paid for by the consent holder. Other benefits include the promotion of programme participants through case studies on the CRC website and in local newspapers and CRC publications. Participants required to obtain spill kits from site assessments are entitled to a discount from participating spill material providers (CRC, Question 15).

The stated objective of the PPG programme is; "Providing advice on preventing pollution from industrial and commercial sites, to protect the environment." The PPG programme is measured on; "the number of business sites that receive a site assessment and guidance on pollution prevention each year" (CRC, LTCCP 2006-16 pg 49). In the first two years neither target has been met due to staff recruitment taking longer than expected nor the higher than anticipated number of issues found on sites visited (CRC Annual Report 2006-07).

4.7 Comparative Review

How do New Zealand council run voluntary programmes compare to the established 'best practice' design features?

The information gathered from the formal research has been analysed and compiled into table 7. This allows for the comparison of the local voluntary programmes to the 'best practice' design features. The five reviewed councils' programmes all have a common element of protecting water quality. This is achieved through the provision of information and/or resources to industry to raise awareness of compliance requirements as stated in regional and district rules. Funding for all regional or district councils is derived from ratepayers, the provision for funding council led programmes can vary as budgets can be changed to accommodate other areas that have greater environmental or public impact.

Adequate and consistent funding – to date the five council funded programmes appear to have adequate levels and longevity of funding to remain operational, GWRC has had instances where budgets were under spent. ARC's IP3 programme is the only one to state it may recovers costs if warranted by the magnitude of issues found during a site assessment. Council funding for all programmes can be subject to

change, when issues of regional significance arise there can be some precedence placed on these and if funds are required then some budget 'trimming' can occur.

Collaborative relationship with industry - almost all the councils mentioned the development of sound relationships with industry or the business sector. NSCC 'blitz' approach means that relationships are more informal and one on one rather than with a sector association or group. NRC is developing its industry relationships informally also, but endeavours to work with all known sites within a sector. The remaining councils' programmes have been running longer allowing more time to approach and work with industry and supporting organisations, both GRWC and ARC have CoP and/or guidelines in place from various sectors.

Single sector programme focus - all the New Zealand council programmes are generic in their design, ARC is instigating a change to a sector specific approach as stated in their LTCCP 2006-2016. The sector specific work they have done previously will provide a good format and resource to use for this change in programme implementation. The NRC programme is semiformal and like NSCC is not supported by a documented generic guide, this approach allows the CP/PPO to tailor a programme to each sector targeted. GWRC and CRC have a generic management system guideline; staff implementing the programme can provide information relevant to that site during or following a site visit. The NSCC model is broad and based solely on a catchment bases and all sites within that area are visited.

Setting credible targets – the three programmes that have been running longer (ARC, GWRC & CRC) set targets or dates for completing or resolving issues on industrial or business sites according to risk posed in agreement with site personnel. Neither the NRC or NSCC programme mentions the setting of targets for a site to achieve objectives or resolve issues. The NRC programme revisit sites that require further assistance to resolve issues, NSCC randomly revisits sites to see if they have implemented changes to site practices.

Info-regulation and resources available – all the programmes researched have resources or information available for participants of their respective programmes. The depth of information and number of resources available does vary between councils. ARC and GWRC have developed CoPs and/or guidelines with industry, CRC, NRC and NSCC are developing their resources as their programmes evolve and develop with further industry sectors. As a territorial authority within the Auckland region NSCC utilises the resources and guidelines developed by ARC.

Table 7: Comparison of New Zealand Voluntary Programmes to 'best practice' design features

Design Features	Northland Regional Council	Auckland Regional Council	North Shore City Council	Greater Wellington Regional Council	Canterbury Regional Council
Adequate and consistent funding	Programme developing, funding adequate.	Adequately funded. Part funded by cost recovery from repeat participants or sites with significant pollution issues. Projected to remain for the next 8 years	Adequately funded.	Fluctuated early on and funding under utilised some years. Projected to remain constant for next 8 years.	Relatively consistent. Projected to remain for the next 8 years.
Collaborative relationship with industry	Yes, developing and approach also includes the community.	Yes, industry relationships developed, CoP's & guidelines developed collaboratively.	Developing, utilise ARC information	Yes, liaison with industry sectors producing specific industry guidelines	Yes, increasing liaison with industry sectors, fact sheet development.
Single sector programme focus	No, generic approach at present.	Under development, moving into sector focus from generic approach. EMP is an adaptable template for sites to use	No, pollution prevention focus, catchment blitz approach.	Initially an industry specific approach taken, with a generic guideline.	Generic programme used to work with all known sites within an industry sector.
Setting credible targets (for sites that are visited)	Empirical in nature currently, measured by CP/PPO during revisits.	Yes, site has issues recorded and timelines for them to be achieved in.	No, only one visit made with random rechecks occasionally.	Yes, site has issues recorded and timelines for them to be achieved in.	Yes, site has issues recorded and timelines for them to be achieved in.
Info-regulation and resources available	Industry discussion group meetings, case studies under development.	Yes, EOP and CoP's developed and industry guidelines and fact sheets.	Some industry information sheets available also utilise ARC information.	Industry information sheets available and guidelines.	Fact sheets for some industry groups. Generic workshops held with 2 sectors.

Threat of credible enforcement	Enforcement links, authority is an enforcement agency. PP approach with enforcement focus used.	A firm-but-fair policy, enforcement under pins the programme.	Not perceived as strong on compliance or enforcement. Enforcement linkages with ARC.	Linked to enforcement, PCO's have powers of enforcement.	Linked to enforcement, authority is an enforcement agency.
Regular and credible monitoring	Monitoring does occur the frequency is not mentioned. Progress is empirical through witnessed site changes.	Sites are followed up on to ensure issues are resolved. Revisits can occur from reported incidents.	No, only one visit made with random rechecks occasionally.	Yes, sites with significant issues revisited to monitor progress.	Yes, majority of sites revisited within two months and 2 site reports requested annually. Revisited after 2 years.
Visible participant benefits	Only indirect through CP initiatives and reduced risk of fines.	Indirect through reduced clean up and enforcement costs.	Indirect through reduced risk of discharge and potential enforcement costs.	Indirect through reduced liability, potential cost savings from CP initiatives. Certificate of participation being considered currently.	Yes, potential for reduced monitoring costs for consented sites. Discounts on spill materials. Waste minimisation incentives. Indirect through reduced risk of fines.
Transparent provision of programme results	Not recognised as a reported activity within council annual reports.	Programme not fully reported on in annual reports. Internal reports based on number of sites assessed and number of consents applied for.	Sporadically reported in Annual Reports, some detail provided of the main projects and achievements.	Annual plan sets the number of industry groups to be worked, including the reduction of pollution incidents compared to baseline target. Annual Pollution Control Reports summarise the actual work undertaken.	Yes, actual sites visited versus proposed. Resolution of issues not reported on, generally only major report targets are monitored in brief.

Threat of credible enforcement – all council authorities have some level of enforcement within their structures, the only variance is in the credibility and threat of council enforcement operations. GWRC staff have powers of enforcement, so when the voluntary approach does not work, enforcement can be carried out by the same staff member. A firm-but-fair approach is undertaken by ARC, giving the participants time to implement change and resolve issues, a similar approach was reported in both NRC and CRC programmes. The 'blitz' programme review carried out by NSCC, highlighted that enforcement was not perceived as strong or consistent among the business or industrial sectors, NSCC has its own enforcement as well as ARC's.

Regular and credible monitoring – the majority of programmes followed up on programme participants, however the regularity does vary between councils, with random revisits by NSCC, to programmed revisits and planned follow up mechanisms for ensuring issues are resolved by CRC. The significance of the environmental issues found by ARC and GWRC were the key motivators for monitoring a sites progress. Sites that require and hold consents within ARC's programme are monitored repeatedly under regulation to ensure conditions are maintained. NRC provided further staff assistance and monitoring to sites that were changing practices and reducing their environmental liability, measurement is empirical at this early stage of the programme.

Visible participant benefits – the majority had indirect benefits to visited sites, these related to the reduced potential for fines or enforcement action. Most programmes allow some leniency for a site to resolve an environmental issue. Production or process efficiencies through CP initiatives are available from the NRC, GWRC and CRC programmes. There is the potential for reduced compliance costs for consented sites in the CRC programme, along with subsidies for purchasing spill materials. Competitive advantage is planned in differing forms from GWRC with the certification of participants and the advertising of businesses completing the NSCC and CRC programmes.

Transparent provision of programme results – there is some way to go with reporting on the programmes, two do not publicly report on their programmes. In part this is due to the vast council programme structures and number of reportable objectives of council authorities. Generally only the main outcomes that the council perceives as a priority are reported on. The NSCC programme has some reporting

provided but not consistently or of any true indication of what is being undertaken or achieved. The CRC programme only focuses on the number of sites visited, with the first year providing some detail on the issues found and resolved. GWRC produce an annual report on incidents and prosecutions in the Wellington area, within this a detailed review is provided on what the 'Take Charge' programme has achieved. As the GWRC programme becomes further established the reports have developed to provide more detail and programme information.

To date New Zealand council programmes have developed ad-hoc. New Zealand's small size and frequent interaction between council authorities, has helped with the utilisation of existing programme designs in the development of recent voluntary pollution prevention programmes.. While this research was undertaken three further regional authorities have started developing voluntary pollution prevention programmes for industry and a fourth inquired about voluntary guidelines or CoP for a specific industry.

5.0 Conclusions

5.1 Introduction

Voluntary environmental approaches/programmes are collaborative arrangements between individual businesses, industry associations and regulatory agencies at local and/or national levels. There has been a worldwide increase in their use as 'command and control' style legislation runs into the law of diminishing returns. Environmental issues have moved beyond a local focus to a collective global one (Zarker and Kerr 2007).

A targeted review of global literature concerning voluntary approaches to pollution prevention programmes found there have been varying levels of development and implementation in their design. Four New Zealand regional councils and at least one city council have instigated voluntary pollution prevention approaches, alongside the standard regulatory system.

A wealth of global research literature on voluntary approaches to pollution prevention programmes shows they have merit, but they need certain design features and implementation structures to be successful. New Zealand's RMA does not presume that regulation is the only or best way to deal with environmental problems. Since the inception of the RMA the use of voluntary approaches/programmes to address environmental issues has increased. These range from national strategies and accords to regional and local run pollution prevention / cleaner production approaches.

The objective of this research was to establish the design features of voluntary pollution prevention programmes and develop a 'best practice' guideline from the reviewed literature. This allowed for the comparison of the five New Zealand regional and local authorities' pollution prevention programmes to this standard. Analysis shows they all have varying degrees of 'best practice' design features in place.

Interwoven within this research was the role that environmental policy has on voluntary approaches/programmes. This research highlighted active legislative mechanisms within five reviewed countries environmental policy that support voluntary approaches. An assessment of instruments within the RMA highlighted

shortcomings in its ability to fully support the development and implementation of voluntary approaches/programmes in New Zealand and allows for discussion and recommendations on potential policy changes.

5.2 'Best Practice' Design Features of voluntary pollution prevention programmes

Global literature on voluntary pollution prevention programmes shows that certain design features and implementation structures are needed for them to succeed or be effective. Programmes dating back over 50 years in Japan, to more recent national programmes in the United States, provided a wealth of research material. A review of these countries along with Canada, Australia and the United Kingdom provided the background and support for establishing a 'best practice' guideline (see Table 1). This research was not the first to establish this, in 1999 Borkey et al. developed a recommended design for voluntary approaches/programmes. A comparison of the two 'best practice' designs was provided in Table 2 and showed a number of similarities in the features and provided for the inclusion of two further criteria. Table 8 provides overall 'best practice' design features for voluntary programmes as derived from this research.

5.3 Environmental Policy mechanisms that support voluntary pollution prevention programmes

Design features alone are not enough. It was found that government support in the way of environmental policy tools and/or a national framework was needed. Like New Zealand, Canada has a decentralised environmental policy framework; however in 2000 Environment Canada published a discussion paper on environmental performance agreements. This paper provides information and a framework for all levels of the government sector and covers four key areas from the description, design, policy and circumstances for voluntary agreements and provides a consistent format when developing and implementing voluntary pollution prevention programmes.

New Zealand's environmental policy is based around the 'effects' based RMA that recognises 'methods' other than regulation can be used to achieve legislative compliance. Sections 30 and 31 of the RMA 'vaguely define' (Ericksen et al. 2001) the functions of regional and territorial authorities. These sections would benefit from

Table 8: 'Best Practice' design features for voluntary programmes

Adequate and consistent funding	*Funds need to be committed for the lifetime of a programme for credibility, maintaining industry relationships and removal of a perceived industry barrier.*
Collaborative relationship with industry	*Provides credibility and trust with key 'players' at the implementation phase and allows focus on 'at risk' industry sectors.*
Single sector programme focus	*Allows appropriate initiatives and inclusion of specific sector information and resources providing added value to the industry involved.*
Setting credible goals	*Credible targets need to be established from current practices and agreed upon, tot allow participants and authorities to evaluate progress.*
Info-regulation and resources available	*Shows commitment to industry, provides a conduit for information dissemination, (Codes of practice and guidelines) allowing technological or competitive advantage to be maintained.*
Threat of credible enforcement	*Provides a backstop for the programme, maintains credibility and motivates some participants to achieve, a leniency component for participants is required.*
Regular and credible monitoring	*Essential for tracking performance improvements, retaining credibility and level playing field for participants. Potential to invite a third party to maintain consistency.*
Visible participant benefits	*Provides an incentive to prospective sites and industry sectors to participate and a marketable feature for the instigating authority.*
Transparent provision of programme results	*Provides validity for the programme and all parties involved to interested or associated stakeholders.*

the development and support of a national framework for voluntary environmental agreements similar to Canada's. From my research a draft New Zealand framework should include:

- Description of environmental voluntary approaches,
- Core design features of programmes,
- Legislative support from national and local authorities,
- Circumstances for implementing national and localised voluntary agreements, and
- Implementation structures for personnel.

This research has highlighted there is a requirement for New Zealand to amend its environmental policy mechanisms to support the inclusion of voluntary programmes at either national or local levels. My recommendations are:

- The establishment of baseline environmental standards, with measurable objectives and targets to be achieved, as proposed by the 2007 OECD review and supported by Memon and Thomas (Young 2007),

- Clear government definition and direction on voluntary approaches/programmes documented within national environmental policy, rather than two vaguely defined sections in the RMA,

- A binding national policy framework for voluntary approaches/programmes, to be used by national, regional and local authorities and industry, as developed in Canada.

5.4 A review of the five local council voluntary pollution prevention programmes

How did the five analysed New Zealand council initiated voluntary approaches/programmes compare to the 'best practice' design features established in this research?

ARC's programme was the only one that may recover costs, information from the United States shows that this created a 'barrier' for industry and reduced the uptake of the programme. Funding is one area that all council led programmes can have difficulties with, having proposed funding for expansion or implementation of industry work declined can occur and is beyond the control of programme personnel.

All councils to varying degrees had or are developing collaborative relationships with various industry groups. This needs to be continued by all, especially the newer programmes to help them get established. Industry in the United States ranked the collaboration with regulatory agencies as the main reason for participating in voluntary programmes (USEPA, April 2005).

None of New Zealand's programmes are industry specific, a generic approach has been taken by all. There is flexibility and adaptation available in the local programmes through the use of CoP, guidelines and fact sheets. Over the next eight years ARC is planning to move into sector specific programmes (LTCCP2006-2016). Australian research found that the best way to maximise results for voluntary programmes is to include appropriate industry initiatives and design features (Gunningham & Sinclair, 2002). Canada used a template from the motor industry to develop a new programme for the metal finishing and print and graphics groups, the United States had industry established programmes that collaborated with the EPA (USEPA March 2007).

The majority of the programmes set credible targets, this is an area all councils need to control to equitably monitor the progress of participating sites. The newer programmes need to develop this area more to improve monitoring and reporting of sites, this will maintain the credibility of the pollution prevention programmes. All the countries did this to some degree with no consistent process established. The findings of Peters and Turner (2004) showed the establishment of baseline data allowed accurate assessment and measurement of any site improvements made.

All councils have some form of resource or information they can supply a site with, these still need to be developed by all councils, more so for the newer council programmes. The NSCC focus group highlighted this in the findings, industry gets bombarded with information from councils, and they are only interested in what is directly relevant to them and the implications for their business.

All councils have enforcement options available, the findings of the NSCC focus groups found that industry representatives perceive council regulation and enforcement practices as weak and inconsistent. This may not be an isolated opinion just for this council, it could potentially be relevant for the majority of other councils. This is not to say a hard line should be taken with every case, a period of leniency was offered by most councils and is a good enticement for businesses to come forward to join programmes. Research from Oregon supported this where enforcement dispensation was provided as long as programme participants corrected problems that arose and subsequently maintained an overall high level of environmental performance (Funk 2002).

The credibility of all programmes' monitoring is an area that all councils need to address. This not only distorts reports on the programmes achievements, but also has the potential to damage the industry relationships that have been established. Research from both Japan and Canada mentioned this in the reviewed literature.

All five New Zealand pollution prevention programmes had some participant benefit, the majority occurred by indirect measures, such as lower potential for a fineable offence to occur, or cleans up cost. However, Northland's CP component can provide a participant with process or operational savings, but this is not always possible with some industry groups (auto dismantlers & scrap dealers). GWRC is looking at a 'green' certificate system and Canterbury have discounts available for spill kit purchases and reduced monitoring costs for consented sites. The New South Wales VEA provides industry with reduced insurance costs, this is and area that all council programmes need to explore further to provide further enticement for industry to participate.

Greater Wellington provides the highest level of programme results of all councils, they produce a separate 'Pollution Control Annual Report' where the 'Take Charge' initiatives created, or catchments and sites worked with, are publicly recorded. By openly reporting the programmes work either above expectation or not it provides transparency. Research from Japan found that reports of industry agreements are sometimes kept confidential, as some agreements effectiveness were questioned due to inadequate monitoring by authorities and infrequent submissions of emission reports by industry as agreed upon (Welch & Hibriki 2002). The credibility of New Zealand's pollution prevention programmes need to be maintained as all are publicly funded and reporting transparency must be emphasised.

All five councils' pollution prevention programmes have some design features or elements in their programmes design. The older programmes form ARC and GWRC rank highest out of the five. ARC is the only council to specifically include the use of an Industrial and Trade Pollution Programme to meet policy requirements as well as looking to implement a specific industry focused programme. All the current programmes have the potential to develop towards the 'best practice' design features provided in this research.

This research has highlighted that to date the small size of New Zealand and the high level of interaction between council personnel has seen programmes develop in unison. This may not always be the case with future pollution prevention programmes implemented by other councils. Following the implementation of the national policy recommendations, local recommendations should focus on:

- A national framework for local council authorities to design voluntary environmental programmes, including pollution prevention programmes should be implemented. This ideally should be guided by input from the five councils currently implementing these programmes.

- Inclusion of the 'best practice' design framework (table 8) within regional and district policy documents.

New Zealand environmental policy has not reached the original intent of its design. This study has supported current research recommendations and provided further mechanisms to enhance the integration of voluntary approaches and pollution prevention programmes into national policy. A strengthened environmental policy can be supported by the 'best practice' design criteria for establishing further voluntary environmental programmes and pollution prevention programmes by New Zealand regulatory authorities identified in this research.

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7.0 Appendix I

Policy Documents

> **1 Auckland Regional Council**
>
> **2 North Shore City Council**
>
> **3 Greater Wellington Regional Council**
>
> **4 Canterbury Regional Council**

Policy Documents Auckland Regional Council

"Nearly all water pollution caused by industrial activities occurs through contaminants entering storm water systems. The main causes are untidy yard practices, accidental spills, and lack of awareness in the workforce of the pollution consequences that can stem from actions on industrial sites. Other major contributing factors include inappropriate storage of products, new industries moving into premises which are unsuitable for their operation, illegal storm water connections and inappropriate methods for disposal of industrial wastewaters" (ARPS Chapter 8 pg 4 1999).

8.4.8 Methods - Storm water and sediment discharges

"The ARC will implement a Storm water Quality Control Programme including public education, source controls and retro-fitting and could include rules in a regional plan to control storm water" (ARPS Chapter 8 pg 8 1999).

8.4.11 Methods - Industrial, trade and rural production and processing activities

"The ARC will prepare and implement an Industrial and Trade Pollution Programme to avoid, remedy, or mitigate the adverse effects of discharges from industrial and trade activities" (ARPS Chapter 8 pg 12 1999).

Policy Documents North Shore City Council

10.3.1 Air Emissions

Policy 10. "By implementing, in conjunction with the Auckland Regional Council, an education programme for the general public and businesses on how to reduce air emissions" (NSCC District Plan, 2002 pg10-3).

10.3.5 Hazardous Facilities and Contaminated Sites

Policy 2. "By specifying rules and guidelines to ensure the best operational and managerial practices for handling hazardous substances are adopted."

Policy 8. "By promoting excellence in the management and operation of hazardous facilities in handling substances so as to enhance the protection of the environment within the city" (NSCC District Plan, 2002 pg10-8).

Policy Documents Greater Wellington Regional Council

Methods for Controlling Point Source Discharges

Method 26 - "Where necessary, develop standards, guidelines and codes of practice (based on nationally recognised codes of practice and in association with territorial authorities, industry and professional groups) for the following activities or effects:

(1) Dairy shed effluent disposal;

(2) Storm water run-off;

(3) Land clearance;

(4) Subdivision and mass earthworks effects;

(5) Mining

(6) On-site sewage treatment and disposal (e.g., septic tanks);

(7) Installation of underground storage tanks; and

(8) Spills of contaminants."

(GWRPS, 1995, pg76)

Method 28 - "Undertake education programmes and provide information and advice to the public and industry on the requirements for, and proper handling of, discharges." (GWRPS, 1995, pg77)

Method 29 - "Investigate complaints regarding water resource misuse, including unauthorised pollution, and will invoke the enforcement procedures of the Act when less formal methods of enforcement are not successful."

(GWRPS, 1995, pg77)

Policy Documents Canterbury Regional Council

Chapter 9. Water

Policy 11

Promote land use practices which maintain and where appropriate enhance water quality.

Explanation

Promotion involves changing people's perceptions, behaviour and attitudes as well as providing information about effects of activities on water quality and ways to avoid, remedy or mitigate adverse effects.

Principal Reasons

Management of direct discharges and control of land use is not sufficient to deal with actual and potential contamination problems

Methods

1.   The methods to be used by the Regional Council are:
    (a) Regional plans
    (b) Resources consents
    (c) Information provision (CRPS 1998 pg 137).

Policy 12

Activities, which could result in a release of hazardous substances, should not be located in areas where water resources are vulnerable to contamination unless adequate precautionary measures are implemented to avoid that contamination.

Explanation

Activities such as the storage or use of hazardous substances without adequate precautionary measures should not be carried out close to surface water bodies, coastal water or above unconfined aquifers.

Principal Reasons

Illegal or accidental discharges or discharges which occur as a result of normal use of hazardous substances may have long lasting effects. They cannot be prevented through enforcement of discharge controls alone.

Methods

1.   The methods used or to be used by the Regional Council are:

   (a) Regional plans

   (b) Information provision

   (e) Surveillance and enforcement (CRPS, 1998, pg 137&138).

Chapter 17. Hazardous Substances

The Canterbury Regional Council (CRC) has "…functions of controlling contaminant discharges and of controlling the use of land for the purposes of the prevention or mitigation of any adverse effects of the storage, use, disposal or transportation of hazardous substances" (CRPS, 1998, pg 260).

In Chapter 17, Methods defined:

'Advocacy, promotion and co-operation' as "The Regional Council will liase with and advocate to industry, farmers and other organisations (including the Fire Service) having responsibilities relating to hazardous substances to ensure that the management of hazardous substances occurs in a co-ordinated manner. This may include the promotion of the development and application of industry Codes of Practice" (CRPS, 1998, pg268).

'Information provision' as; "The preparation of guidelines may be a useful addition to rules since they can be altered as new technologies occur. Education and information provision is an effective tool alongside regulatory methods" (CRPS, 1998, Pg 268).

7.0 Appendix II

Research Questionnaires

1 Northland Regional Council

2 Auckland Regional Council

3 North Shore City Council Council

4 Canterbury Regional Council

Council: Northland Regional Council   (NRC)   Date: November 2007

**Lincoln University Master of Professional Studies (Environmental Management)
Dissertation Questionnaire:**

Best practice in voluntary environmental approaches: a preliminary evaluation of five New Zealand council pollution prevention programmes.

Programme Evolution

The basis for most Environmental Management System (EMS) is derived from the 'plan, do, check and act' cycle of Total Quality Management. This involves identification of the issues, develop and employ solutions, measure the results and then evaluate the process within a continuously evolving measurement method, that can be included into future processes or procedures.

1. Would you describe the environmental programme that you implement with business as an EMS? *NO*

The main focus of my interactions with business to date has been pollution prevention rather than implementation of an EMS. Given the small size of the businesses and very basic level of knowledge regarding environmental issues, introduction of an EMS concept to these businesses is some way down the track. However, I am currently starting a programme with boat builders, and several of these companies if willing would have the resources and knowledge to be able to implement and maintain an EMS.

2. What year did your programme start? *2006*

   Was there a 'trigger' that pre-empted the development of your programme? *YES* (explain)

Statements in the Regional Plan and Regional Policy Statement mandated a degree of waste minimisation work with industry, yet no specific resources within NRC were allocated to this. My role was created in response to this policy.

Within the term 'voluntary approaches' there are four main types of programmes that are used and have some depth of research into their effectiveness. They are:

♦ **Public Voluntary Programmes** that involve commitments set by an environmental authority that invites individual firms to participate: this gives industry choice to be involved.
♦ Both public authorities and industry through a bargaining process develop **Negotiated Agreements** or **Bilateral Agreements**, these agreements generally occur at a national level, but individual agreements are also possible.
♦ **Unilateral Commitments** are set by industry, individually or collectively, without input from an overseeing authority, trying to establish standards or self regulate.
♦ The fourth category of voluntary approaches is **Private Agreements**, these are reached through direct bargaining between polluters and pollutes.

3. Does one of the four definition types above describe it? *YES*

How would you describe the approach of your programme?

Best fit would be Public Voluntary Programmes the approach is relatively informal. However, more success has been achieved when going in from a PP perspective with more of a potential enforcement focus compared to a Cleaner Production perspective with more of a "I can help you save money by reducing waste" focus.

4. Do you think your programme type has changed since inception? *YES*
   If yes why do you think this has happened?
   Are further changes planned? *YES* (please explain your answer)]

As above, changed from a purely PP role for the first 2 industry sectors (vehicle washing and Auto dismantlers/scrap dealers) to a broader cleaner production focus for the 3rd sector (boat builders). This is due to both the scale and nature of the boatbuilding industry; it is a full manufacturing process with greater scope for resource efficiency gains by optimising processes and engendering a continuous improvement type culture within the business. (Although there is still a strong PP component given the geographical location of these industries on the land-water boundary) The first 2 sectors were primarily identified because of concerns about their discharges to land and water

Any further changes will occur after assessing how effective current approaches have been and also depending on the desired outcomes of the sector in question.

Policy and Regulation

Voluntary approaches are named differently worldwide. As mentioned above, for example, Japan has 'Pollution Control Agreements', the United States has its 33/50 programme and Europe has the Eco-Management and Auditing Scheme (EMAS). The authority level where these agreements are established also varies, - from pioneering local authorities in Japan as early as 1964 that set agreements that applied to their local conditions, to the United States congress declaring a national policy be established and implemented known as the 'Pollution Prevention Act of 1990'.

5. Does your regional plan or policy statement include providing advocacy work or education and information provision to industry? [YES / NO](Please note relevant sections of your plans or include copies if possible)

Yes see attached excerpts,

6. How long will your programme run for?
   Does it have a set timeframe or is it continuous and evolving? (For example is it included in LTCCP)

Continuous and evolving
No direct ref in LTCCP although RPS and RW&SP are referred to. Not listed as a RC activity or outcome specifically.

7. What 'tools' or strategies does your Regional Council use to expand your programme?

Website links and promotion, other than that mainly my interactions with industry and other groups (e.g. Enterprise Northland).

No coherent RC development strategy

A far-reaching three-year European study called REMAS compared the benefits of EMS's on industrial sites to sites with no EMS or systems in place. Findings showed there is a link to better environmental performance and regulatory compliance, with the latter being region dependent.

8. Are there linkages with your programme to Enforcement or Compliance Monitoring or other *YES* (please explain your answer)
   Where does your programme team sit within the council sectional structure?

Enforcement links in that NRC has mentioned enforcement options for businesses reluctant to comply with recommended PP measures. Compliance links- not formally as most sites do not have consents, but all auto dismantlers and scrap dealers had soil samples taken to assess degree of contamination. No specific function within this role to undertake compliance monitoring.

My position is within the Waste Management Team, which is within the Monitoring department.

9. Are there any direct costs to your programme participants? *NO*
   What feedback do you receive about this? [e.g., if there are costs do you think it impacts on your programmes development?]

People find it hard to believe that a council could be offering something for free without wanting to penalise/enforce and which has potential to save them money.

10. What staff level of a company is contacted or targeted (management, executive, operations, or services?) and are they directly involved in the implementation of the programme?

Management initially, often they will refer it on to Ops manger or similar. Their direct involvement often depends on the size of the company and whether they are enthusiastic about the programme personally.

11. How much time is spent introducing/implementing the programme to a business, what support is offered during this process? [Is this affected by having a cost attached (if applicable)?

As much as necessary- sometimes there will be an immediate negative and not interested reaction, in which case little further time is justified when there are interested parties.

Performance Measures

A detailed study of 40 Western Australian companies shows that EMS's are perceived to have an impact on environmental performance, in comparison with another voluntary environmental protection tool known as corporate environmental reporting. These reports and subsequent findings highlight that the outcomes are dependent on the overseeing regulators approach to a voluntary programme and that

an EMS is viewed as a system to coordinate cultural change through internal process reform.

12. Please state the objectives of your programme?

To promote awareness, acceptance and adoption of pollution prevention initiatives
More specific objectives would apply if a formal EMS is adopted by the business.

13. Is it participant numbers based, results based or other? (explain)

Participant number- all businesses within a sector are identified and contacted.

14. How do you measure the implementation of your programme?

By assessing changes in behaviour over time, this is largely empirical in nature rather than by monitoring of data, e.g., has the business changed its wash down practices to ensure pollution is prevented?

15. Are there any direct or indirect benefits for a company participating in your programme? What is available and how is this achieved?

No direct financial benefits, indirect benefits through reducing potential for environmental incidents and subsequent enforcement (and also providing some defence if they have an incident but can show they have been adhering to PP practices). Also potential benefits through reduced operating costs e.g. by implementing a routine maintenance plan for compressed air supply line in a factory significant bottom lime benefits are achievable.

16. Do you maintain regular contact with your programmes participants? **YES**

How do you ensure they continue to implement the programme long-term?

Yes, largely with those who are slow to change their practices. Those who see the sense in doing it and willingly change require less follow-up, although they will receive a letter thanking them for their prompt co-operation, and often will be used as a role model for other businesses who are a bit slower on the uptake.

17. Are un-consented sites addressed in your programme? **YES**

If yes then explain how they are contacted?

Yes as mentioned above in reference to scrap and auto dismantlers.

18. Do you consider behavioural change plays a part in the implementation of your environmental programme? **YES** – (Please explain?)

A huge part and most of the battle seems to be getting people to change ingrained behaviours.

19. Does your introduced environmental management system or programme improve the long-term environmental performance of a business? Do you measure this? How?

Intuitively, yes, measurement undertaken as per question 14.

Further comments you have

I am not sure how well the implementation of Cleaner Production (as opposed to PP) fits with a regional council role as many businesses are reluctant to deal with a council on a fully co-operative basis , perhaps fearing ulterior motives. This may change once a few successful case studies can be promoted to the wider industry locally.

Council: Auckland Regional Council (ARC)   **Date: November 2007**

Lincoln University Master of Professional Studies (Environmental Management)
Dissertation Questionnaire:

Best practice in voluntary environmental approaches: a preliminary evaluation of five New Zealand council pollution prevention programmes.

Programme Evolution

The basis for most Environmental Management System (EMS) is derived from the 'plan, do, check and act' cycle of Total Quality Management. This involves identification of the issues, develop and employ solutions, measure the results and then evaluate the process within a continuously evolving measurement method, that can be included into future processes or procedures.

1. Would you describe the environmental programme that you implement with business as an EMS? **NO**

Our programme is a pollution prevention programme focusing on land and water quality.

2. What year did your programme start? **Not sure, think the EOP was first printed in 1999.**

    Was there a 'trigger' that pre-empted the development of your programme? [NO / YES (explain)]

There is know-one left in the council that knows the complete history of why the EOP was first produced. The following is from a piece of work that Campbell Sturrock undertook for the team to help prioritise our work and provides some useful background information.

2.1 Evolution of the Industrial Pollution Prevention Programme

The ARC's urban pollution control programme began in the mid 1970's as part of the Auckland Regional Authority's Auckland Regional Water Board (ARWB) and was initially an entirely responsive program that was driven mainly by reports of pollution from the public and other agencies to the 24-hr Pollution Hotline (the Hotline). In the mid 1980's as part of the initiation of the Manukau Harbour Action Plan the ARWB undertook its first proactive pollution control programme in visiting and auditing all of the approximately 3000 industrial sites in the Manukau Harbour catchment.

Through the 1990s efforts were made to continue the proactive auditing component of the
ARC's Pollution Control Team (PCT) Urban Pollution Control programme – the IP3. The IP3 has the primary objective of protecting and improving land and water quality from industrial and trade activities through targeted pollution audits or assessments. This assessment programme originally sought to ensure compliance with sections 15(1)(a), (b) and (d) of the Resource Management Act by:

- *identifying and stopping any actual pollutant discharges to land and / or water*
- *identifying and eliminating, or putting in place site management controls, to address potential discharges, and*
- *ensuring industrial site operators are prepared to deal with accidental discharges through the preparation of emergency spill response plans.*

Over the past decade, a number of different types of intervention have been implemented by targeting industrial sectors with high pollution risk and business communities located in sensitive catchments. The interventions have ranged from those designed to enforce compliance to proactive and voluntary initiatives. Some interventions took the form of guidance sent out to the sector in the form a letter, other interventions involved on-site audits and catchment or sector-based workshops. For high-risk industry sectors, the assessments were compliance based, for other industry groups; visits were of a proactive nature resulting in feedback to the individual company on pollution prevention opportunities. The catchment-based interventions promoted storm water quality improvement where the common goal was preventing pollution of a particular water body.

To support this mix of interventions industry specific pollution prevention educational material such as the Environmental Operations Plan and activity specific Pollution fact Sheets were produced to enable businesses to help themselves to improve environmental performance.

A number of project reports have been published over the years including reports on target catchment projects such as the Otara Creek, industrial area blitzes such as Span Farm and Silverdale, and state of the industry such as Electroplaters.

While the focus of the IP3 has always been to work pro-actively and cooperatively with businesses to improve land and water quality a firm-but-fair enforcement policy and the ability to use the full range of statutory enforcement tools available under the RMA has always underpinned the programme.

Within the term 'voluntary approaches' there are four main types of programmes that are used and have some depth of research into their effectiveness. They are:

- ♦ **Public Voluntary Programmes** that involve commitments set by an environmental authority that invites individual firms to participate: this gives industry choice to be involved.
- ♦ Both public authorities and industry through a bargaining process develop **Negotiated Agreements** or **Bilateral Agreements**, these agreements generally occur at a national level, but individual agreements are also possible.
- ♦ **Unilateral Commitments** are set by industry, individually or collectively, without input from an overseeing authority, trying to establish standards or self regulate.
- ♦ The fourth category of voluntary approaches is **Private Agreements**, these are reached through direct bargaining between polluters and pollutes.

3. Does one of the four definition types above describe it? [NO / YES]
   How would you describe the approach of your programme?

The programme has evolved over the years. Originally the EOP (a series of do-it-yourself environmental checklists for a clean, safe and profitable business) was purely voluntary. However under the current Proposed Auckland Regional Plan: Air, Land and Water (ALW Plan) all moderate and high risk industrial or trade process sites are required to have an Environmental Management Plan. Sites can use the checklists in the EOP to help them develop their EMP. We are also in the process of finalising an EMP Guide for industry that outlines the scope of an EMP and also provides tools/assistance for a site to compile their EMP.

4. Do you think your programme type has changed since inception? *Yes*

If yes why do you think this has happened?

Programme has changed/developed as the requirements of the Proposed ALW Plan have developed. Organisational structure has also changed over that time which has resulted in some changes to how we work.

Are further changes planned? [NO / YES (please explain your answer)]

Policy and Regulation

Voluntary approaches are named differently worldwide. As mentioned above, for example, Japan has 'Pollution Control Agreements', the United States has its 33/50 programme and Europe has the Eco-Management and Auditing Scheme (EMAS). The authority level where these agreements are established also varies, - from pioneering local authorities in Japan as early as 1964 that set agreements that applied to their local conditions, to the United States congress declaring a national policy be established and implemented known as the 'Pollution Prevention Act of 1990'.

5. Does your regional plan or policy statement include providing advocacy work or education and information provision to industry? [YES / NO](Please note relevant sections of your plans or include copies if possible)

The Proposed ALW Plan is quite descriptive in terms of the requirements for Permitted Activities and also what is required for Controlled and Discretionary Activities. The Industrial or Trade Process provisions are set out in Chapter 5 and more specifically Rules 5.5.14 – 5.5.19. The Proposed ALW Plan can be found on our website.

6. How long will your programme run for?
   Does it have a set timeframe or is it continuous and evolving? (For example is it included in LTCCP)

The Industrial Pollution Prevention Programme (IP3) is included in ARC's LTCCP. The requirement for moderate and high-risk sites to have EMP's and for high-risk sites to be consented will continue for as long as the Regional Plan is operational.

7. What 'tools' or strategies does your Regional Council use to expand your programme?

There are no specific tools or strategies to expand our programme. Schedule 3 of the Proposed ALW Plan identifies industrial or trade processes and classifies them as moderate or high risk depending on their actual and potential risk to the environment. We have prioritised this schedule to identify those industries that require immediate attention. Our approach to industry used to be ad hoc in that we would target whichever company came onto our radar next. With the prioritisation of Schedule 3 we have now established a sector-based approach and have developed Industry Group Projects (IGP) where we tackle one industry group at a time.

A far-reaching three-year European study called REMAS compared the benefits of EMS's on industrial sites to sites with n o EMS or systems in place. Findings showed there is a link to better environmental performance and regulatory compliance, with the latter being region dependent.

8. Are there linkages with your programme to Enforcement or Compliance Monitoring or other sections? (Please explain your answer)

Yes there are linkages. We use our IP3 programme to enable us to determine compliance with RMA and ALW Plan, assess consent requirements and if necessary undertake enforcement action.

Where does your programme team sit within the council sectional structure?

The programme is the responsibility of the Urban Compliance Team (UCT) along with processing and compliance monitoring of Industrial or Trade Process consents. The team currently sits in the General Compliance and Enforcement Group of the Regulatory Services Department. However the department has recently undertaken a structure review and as of the new year the team will be part of the Consents and Consents Compliance Group – Land (along with the Storm water and Sediment, Air Quality and Contaminated Sites teams). The other groups in the department will be Consents and Consents Compliance Group – Water, Major Projects, Customer Services and Support, Policy Implementation and Harbour Masters Office.

9. Are there any direct costs to your programme participants? [NO /YES]
   What feedback do you receive about this? [e.g., If there are costs do you think it impacts on your programmes development?]

Initial site assessment and correspondence is free. If site needs consent then charges start at 'pre-lodgement' phase i.e. when company submits a draft application and EMP for review. If a site is found to have actual discharges on site, then depending on the significance enforcement procedures may be initiated and cost recovery undertaken as appropriate.

10. What staff level of a company is contacted or targeted (management, executive, operations, or services?) and are they directly involved in the implementation of the programme?

If no previous contact has been established with the company then the Managing Director (MD) or similar contacted to determine who the most appropriate person is. All letters and the site assessment reports are sent to the MD and copied to the individual staff member we have been liasing with.

11. How much time is spent introducing/implementing the programme to a business, what support is offered during this process? [Is this affected by having a cost attached (if applicable)?

At the start of an IGP we send out a briefing letter and a short questionnaire to all the sites we have identified as being part of that specific industry group. We also have fact sheets that outline our processes and requirements.

Performance Measures

A detailed study of 40 Western Australian companies shows that EMS's are perceived to have an impact on environmental performance, in comparison with another voluntary environmental protection tool known as corporate environmental reporting. These reports and subsequent findings highlight that the outcomes are dependent on the overseeing regulators approach to a voluntary programme and that an EMS is viewed as a system to coordinate cultural change through internal process reform.

12. Please state the objectives of your programme?

The objectives of the IP3 is to improve storm water and land quality at industrial or trade process sites in the Auckland Region.

13. Is it participant numbers based, results based or other? (explain)

Not applicable.

14. How do you measure the implementation of your programme?

Number of sites assessed and number of consents applied for.

15. Are there any direct or indirect benefits for a company participating in your programme? [What is available and how is this achieved?]

As with any environmental management programme the company may identify process improvements and associated cost savings. Other indirect benefits include reduced risk of pollution incidents, clean up costs and enforcement costs.

16. Do you maintain regular contact with your programmes participants?
    How do you ensure they continue to implement the programme long-term?

There is no system in place for maintaining contact with sites other than via consent processing and compliance monitoring. Most sites have at least one improvement action and the sites are followed up to ensure that the actions required have been undertaken.

The Proposed ALW Plan requires that all EMP's be audited on an annual basis to ensure on-going compliance.

17. Are unconsented sites addressed in your programme? *Yes*

    If yes then explain how they are contacted

One of the main objectives of our programme is to identify if consents are required. All of the sites we visit as part of the programme are unconsented in terms of ITP consents,

18. Do you consider behavioural change plays a part in the implementation of your environmental programme?

Behavioural change will always play a part, without changing behaviours you are unlikely to achieve on-going improvements.

19. Does your introduced environmental management system or programme improve the long-term environmental performance of a business? Do you measure this? How?

I would like to think that it does improve the long-term environmental performance of a business however we do not specifically measure this.

<u>**Lincoln University Master of Professional Studies (Environmental Management)
Dissertation Questionnaire:**</u>

*Best practice in voluntary environmental approaches: a preliminary evaluation
of five New Zealand council pollution prevention programmes.*

<u>Programme Evolution</u>

The basis for most Environmental Management System (EMS) is derived from the
'plan, do, check and act' cycle of Total Quality Management. This involves
identification of the issues, develop and employ solutions, measure the results and
then evaluate the process within a continuously evolving measurement method, that
can be included into future processes or procedures.

1. Would you describe the environmental programme that you implement with
business as an EMS? *NO*

*Our environmental programme (area blitzes) only focus on the water pollution
aspect, it does not encompass all aspects of environmental management. The
company will be visited but only issues related to prevention of water pollution
are discussed and identified.*

2. What year did your programme start? *2001*
Was there a 'trigger' that pre-empted the development of your programme?

Blitzes have been taking place off and on since then.

Within the term 'voluntary approaches' there are four main types of programmes that
are used and have some depth of research into their effectiveness. They are:

♦ **Public Voluntary Programmes** that involve commitments set by an
environmental authority that invites individual firms to participate: this gives
industry choice to be involved.
♦ Both public authorities and industry through a bargaining process develop
Negotiated Agreements or **Bilateral Agreements**, these agreements generally
occur at a national level, but individual agreements are also possible.
♦ **Unilateral Commitments** are set by industry, individually or collectively, without
input from an overseeing authority, trying to establish standards or self regulate.
♦ The fourth category of voluntary approaches is **Private Agreements**, these are
reached through direct bargaining between polluters and pollutes.

3. Does one of the four definition types above describe it? *YES*

How would you describe the approach of your programme?

*Our blitz programme is based on the fourth category, direct 'bargaining' is
undertaken with each company visited, specific to the site being audited*

4. Do you think your programme type has changed since inception? *NO*
If yes why do you think this has happened?

Are further changes planned? *YES*

Review of the blitz programme is taking place to determine if it is the most effective means of encouraging behaviour change and compliance.

<u>Policy and Regulation</u>

Voluntary approaches are named differently worldwide. As mentioned above, for example, Japan has 'Pollution Control Agreements', the United States has its 33/50 programme and Europe has the Eco-Management and Auditing Scheme (EMAS). The authority level where these agreements are established also varies, - from pioneering local authorities in Japan as early as 1964 that set agreements that applied to their local conditions, to the United States congress declaring a national policy be established and implemented known as the 'Pollution Prevention Act of 1990'.

5. Does your regional plan or policy statement include providing advocacy work or education and information provision to industry? *NO*

6. How long will your programme run for?
   Does it have a set timeframe or is it continuous and evolving? (For example is it included in LTCCP)
N/A

7. What 'tools' or strategies does your Regional Council use to expand your programme?

N/A

A far-reaching three-year European study called REMAS compared the benefits of EMS's on industrial sites to sites with n o EMS or systems in place. Findings showed there is a link to better environmental performance and regulatory compliance, with the latter being region dependent.

8. Are there linkages with your programme to Enforcement or Compliance Monitoring or other sections *NO*

Where does your programme team sit within the council sectional structure?

N/A Pollution Blitz not EMS as such.

9. Are there any direct costs to your programme participants? *NO*
   What feedback do you receive about this? [e.g.,If there are costs do you think it impacts on your programmes development?]

Obviously they are happy there are no costs associated.

10. What staff level of a company is contacted or targeted (management, executive, operations, or services?) and are they directly involved in the implementation of the programme?

Manager of the site at the time of our visit is spoken with and we encourage them to implement any recommendations we make.

11. How much time is spent introducing/implementing the programme to a business, what support is offered during this process? [Is this affected by having a cost attached (if applicable)?]

Just a one off visit at this stage but review of approach may change method to involve more intensive follow-up.

Performance Measures

A detailed study of 40 Western Australian companies shows that EMS's are perceived to have an impact on environmental performance, in comparison with another voluntary environmental protection tool known as corporate environmental reporting. These reports and subsequent findings highlight that the outcomes are dependent on the overseeing regulators approach to a voluntary programme and that an EMS is viewed as a system to coordinate cultural change through internal process reform.

12. Please state the objectives of your programme?

Reduction in likelihood of discharges to storm water.

13. Is it participant numbers based, results based or other?

Participation based (currently), the programme runs in one catchment area and is based on business in that catchment participating.

14. How do you measure the implementation of your programme?

We don't.

15. Are there any direct or indirect benefits for a company participating in your programme? [What is available and how is this achieved?]

Yes, less risk of non-compliance through illegal discharges.

16. Do you maintain regular contact with your programmes participants? **NO**
    How do you ensure they continue to implement the programme long-term?

*- **Random rechecks occasionally***
*- **Through the media – warning of additional blitzes planned.***

17. Are unconsented sites addressed in your programme? **YES**
    If yes then explain how they are contacted

- Choice of location based on pollution incidents occurred and sensitivity of receiving environment.
- Nothing to do with consents.

18. Do you consider behavioural change plays a part in the implementation of your environmental programme? [NO / YES] – please explain?

We hope we do but we don't really know, generally through behavioural change is the key to ensuring long term positive change.

19. Does your introduced environmental management system or programme improve the long-term environmental performance of a business? Do you measure this? How?

We don't know, we would like to think so, however hopefully we will get great insight about this once our current review is completed.

Council: Canterbury Regional Council (CRC)   **Date: December 2007**

Lincoln University Master of Professional Studies (Environmental Management)
Dissertation Questionnaire:

Best practice in voluntary environmental approaches: a preliminary evaluation of five New Zealand council pollution prevention programmes.

Programme Evolution

The basis for most Environmental Management System (EMS) is derived from the 'plan, do, check and act' cycle of Total Quality Management. This involves identification of the issues, develop and employ solutions, measure the results and then evaluate the process within a continuously evolving measurement method, that can be included into future processes or procedures.

1. Would you describe the environmental programme that you implement with business as an EMS? *YES* (explain)

The PPG is divided into easy to use modules and checklists. This allows the user to plan a segment of their business to tackle first. They can base this on the risks their activities pose to the environment and are assisted by a Pollution Prevention Officer. The PPG works by providing a series of checklists that identifies areas of concern and risk – issues that require resolving. Once identified these issues are added to a report with timeframes – a 'to-do-list'. A PPO will then revisit the site (around two months after the original visit) to observe the progress a site has made on the identified issues or help the site overcome any hurdles to progress – check up to ensure actions are undertaken. The PPG also promotes ongoing monitoring of a site's performance - encouraging continual improvement and risk reduction practices. In this way the PPG provides a total quality management framework.

2. What year did your programme start? *2002*
   Was there a 'trigger' that pre-empted the development of your programme? [NO (explain)]

Development on the PPG began independent of any 'trigger' instance but was based on the need to provide useable education information to industry. The release of the PPG, however, was hastened in 2005 by a significant spill of diesel into a major urban waterway. A community enquiry into the incident called for Environment Canterbury to be more proactive in helping industry prevent this type of accidents. This speed the development and release of the PPG programme.

Within the term 'voluntary approaches' there are four main types of programmes that are used and have some depth of research into their effectiveness. They are:

♦ **Public Voluntary Programmes** that involve commitments set by an environmental authority that invites individual firms to participate: this gives industry choice to be involved.
♦ Both public authorities and industry through a bargaining process develop **Negotiated Agreements** or **Bilateral Agreements**, these agreements generally occur at a national level, but individual agreements are also possible.

- **Unilateral Commitments** are set by industry, individually or collectively, without input from an overseeing authority, trying to establish standards or self regulate.
- The fourth category of voluntary approaches is **Private Agreements**, these are reached through direct bargaining between polluters and pollutes.

3. Does one of the four definition types above describe it? **YES**
How would you describe the approach of your programme?

The PPG would be a public voluntary programme. At this stage of the programme's life it is not compulsory for industry to do and they can chose to opt-out at any point. It is a proactive educational tool as well as an EMS. While it is a voluntary approach some participants have commented that nothing from a regulator authority is ever voluntary. This however is more a reflection of people's attitudes towards regulatory authorities than anything to do with the PPG programme. Generally participant will positively comment on how the proactive approach of assisting business is better than been ordered to comply – the carrot is better than the stick.

4. Do you think your programme type has changed since inception? *NO*

Are further changes planned? *YES* (please explain your answer)

Generally speaking the voluntary nature of the programme remains the same from its inception. PPOs have worked with associations to gain their support in ensuring the majority or all of the association's members will participate in the programme. This is a step towards a bilateral agreement and has worked very well in getting a complete industry group to participate in the programme. This is an individual example of our team working with industry to achieve mutually beneficial outcomes. For now the programme will remain voluntary from Environment Canterbury's perspective but this may evolve subject to the changing goals and objectives of the Council. The Pollution Prevention Team continues to look to build bilateral arrangements as this yields more site visits and ensures the majority of an industry group can all be visited.

Policy and Regulation

Voluntary approaches are named differently worldwide. As mentioned above, for example, Japan has 'Pollution Control Agreements', the United States has its 33/50 programme and Europe has the Eco-Management and Auditing Scheme (EMAS). The authority level where these agreements are established also varies, - from pioneering local authorities in Japan as early as 1964 that set agreements that applied to their local conditions, to the United States congress declaring a national policy be established and implemented known as the 'Pollution Prevention Act of 1990'.

5. Does your regional plan or policy statement include providing advocacy work or education and information provision to industry? **YES** (Please note relevant sections of your plans or include copies if possible)

Chapter 9 (Water) of the RPS, Policies 11 and 12, Chapter 17 (Hazardous Substances) all four policies relate to the storage of hazardous substances.

6. How long will your programme run for?

Does it have a set timeframe or is it continuous and evolving? (For example is it included in LTCCP)

Yes the PPG programme is in the LTCCP (2006-2016) and will remain so for the foreseeable future. The programme itself is being continuously monitored and upgraded to ensure the information provide is accurate and useable to industry.

7. What 'tools' or strategies does your Regional Council use to expand your programme?

Our team looks to build internal and external relationships to expand the programme. Our main strategy is to build relationships with industry associations (such as the MTA, CRA) and use the influence of the association to encourage their members to participate in the programme. While this is more of a collaborative or bilateral approach, the programme itself remains voluntary. Other avenues are referrals from other Ecan departments and general enquires regarding the pollution prevention programme. We are looking at developing a catchment approach where by polluted waterways will be targeted. Neighbouring businesses will be approached in an effort to gain their buy-in to clean up a particular drain/stream. This will involve a collaborative approach among different councils and businesses. We have also contacted existing consent holders and businesses on ECan land as other avenues of expanding the programme.

A far-reaching three-year European study called REMAS compared the benefits of EMS's on industrial sites to sites with no EMS or systems in place. Findings showed there is a link to better environmental performance and regulatory compliance, with the latter being region dependent.

8. Are there linkages with your programme to Enforcement or Compliance Monitoring or other sections **YES** (please explain your answer)
Where does your programme team sit within the council sectional structure?

The Pollution Prevention Team has strong links and relationships with the Enforcement Team and Compliance Monitoring Team. In the beginning of the programme we had regular meetings with the Compliance Monitoring Team so we could offer a collaborative approach to businesses. That relationship has now evolved to regular contact on specific issues and problems. We also gain sites to visit through the Enforcement Team and Compliance Monitoring Team. These sites tend to be ones that are experiencing difficulties meeting full compliance but are not worth prosecution; we will work with these sites to help them reach compliance or just help them improve their environmental performance.

The Pollution Prevention Team is part of the Environmental Quality and Hazards Section at Environment Canterbury. This is a separate section to the Enforcement Team and Compliance Monitoring Teams. This helps to distinguish between the carrot and stick. The most significant difference between a Compliance Monitoring Officer and Pollution Prevention Officer is that a PPO will look at all issues on site and not just monitor consent conditions.

9. Are there any direct costs to your programme participants? *NO*

What feedback do you receive about this? [e.g.,If there are costs do you think it impacts on your programmes development?]

The PPG programme is a fully rate payer funded programme and there is no direct cost from Environment Canterbury. All participants greatly appreciate this approach as it is more indicative of a collaborative effort. I believe if the programme had a financial cost associated with it we would get less businesses willing to participate. The costs associated with a visit from a Compliance Monitoring Officer often cause ill-feelings with businesses that they will freely raise with a PPO. As there is no bill associated with our time most businesses are willing to spend more time discussing issues and problems so a mutually beneficial arrangement can be reached.

10. What staff level of a company is contacted or targeted (management, executive, operations, or services?) and are they directly involved in the implementation of the programme?

Generally speaking the first point of contact is the business owner or site manager. Once they have agreed to participate in the programme that person will then decide who on their site is appropriate to oversee the PPG programme. For sites with large staff numbers an operations manager or health and safety manager will take charge. For smaller sites generally the owner will take responsibility. Regardless of who implements the PPG on site its critical to gain the support of the owner/site manager as this person will more than likely have to approve any site developments or changes that may be required.

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11. How much time is spent introducing/implementing the programme to a business, what support is offered during this process? [Is this affected by having a cost attached (if applicable)?]

Securing a PPG site visit generally takes the largest segment of PPO time. This includes meeting with associations and interested groups and individuals to introduce the concept and approach of the programme. Securing a site visit may take several conversations and meetings before a framework can be agreed upon. Small businesses will be a lot faster to secure a visit, however working with large groups or association can take around a year to gain their buy-in.

Once a site visit is obtained the length of time to implement the PPG programme will vary greatly between operations. More complex sites can take several hours on site with multiple issues identified. All sites are visited two months after the initial visit to observe the progress that is being made. Further visits are provided if required with another follow up visit conducted two years after they join the programme.

Performance Measures

A detailed study of 40 Western Australian companies shows that EMS's are perceived to have an impact on environmental performance, in comparison with another voluntary environmental protection tool known as corporate environmental reporting. These reports and subsequent findings highlight that the outcomes are dependent on the overseeing regulators approach to a voluntary programme and that

an EMS is viewed as a system to coordinate cultural change through internal process reform.

12. Please state the objectives of your programme?

To provide advice on preventing pollution from industrial and commercial sites to protect the environment. The primary objective, as set out in the annual plan and LTCCP is to visit 300 businesses a year.

13. Is it participant numbers based, results based or other? (explain)

The primary target for the PPG programme is based on participant numbers per year. This number can vary according to staff numbers but is identified in the LTCCP. The programme also reports on a wide variety of other factors to determine the success of the programme. These include (but is not limited to) number of issues identified, priority of issue (Major Issue through to Minor Issues), number of issues resolved (within and outside timeframes), up take of spill kits, number of six month progress reports returned, and number of participants that needed to be past onto enforcement team.

14. How do you measure the implementation of your programme?

The PPG programme is closely monitored with weekly and monthly analysis of information from the PPG database. Other than total site numbers, the main way to measure the implementation is through the amount of identified issues, the number of resolved issues and the number of outstanding issues. These will be measured and monitored by a PPO and the database updated accordingly. On-going monitoring of the programme (beyond the first two months of participation in programme) is done through the return of Six Month Progress Reports. These reports provide feedback on the PPG programme and the sites progress through it.

15. Are there any direct or indirect benefits for a company participating in your programme? [What is available and how is this achieved?]

The primary benefit for participants, with the help of a PPO, is the identification and (hopeful) reduction of environmental risks for their site and its operations. It also creates a record of cooperation with Environment Canterbury and has no direct financial costs.

As well as this participants in the PPG are eligible for a PPG Spill Kit Discount Card that entitles them to a 10% discount on spill kits and associated materials from participating suppliers. For programme participants that demonstrate on-going implementation of the PPG, Environment Canterbury will look to promote these businesses on our Website, in The Press and in Living Here, ECan's environmental newsletter. Other benefits are being developed, such as a spill training course and other discount promotions. Another benefit is reduced compliance costs through reduced monitoring visits for consent holders. Participants are only eligible for PPG benefits if they complete an initial PPG visit and then demonstrate on going participation through the return of Six Month Progress Reports (these are sent to participants at the appropriate time).

16. Do you maintain regular contact with your programmes participants? *YES*

How do you ensure they continue to implement the programme long-term?

Long term implementation of the PPG is currently monitored through the return of Six Month Progress Reports. After two years (four returned Six Month Progress Reports) a PPO will conduct a follow up visit to observe their progress. Participants are invited to contact their PPO at any time during this period if they require additional assistance.

17. Are unconsented sites addressed in your programme? *YES* – (Please explain?)

The PPG covers a wide range of potential issues for trade and industrial sites, whether consented or not. Unconsented sites are contacted through associations or through a blanket industry or area approach by the PPG team.

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18. Do you consider behavioural change plays a part in the implementation of your environmental programme? *YES* – (Please explain?)

Behavioural change is a critical part of the PPG programme. A key component of the programme is to ensure people's attitudes towards Environment Canterbury and in particular towards the environment are in accordance with accepted standards and practices. Failure to gain complete behavioural buy-in by staff and management will result in a partial or complete failure of the programme for that site. Businesses that have successfully implemented the PPG continue to use its approach in managing their environmental risks. Sites without the behavioural buy-in generally do the minimum required or generally only pay 'lip-service' to identified problems.

19. Does your introduced environmental management system or programme improve the long-term environmental performance of a business? Do you measure this? How?

If correctly implemented the PPG will improve the long-term environmental performance of a participant, this may be achieved through regular contact with ECan and monitoring of a site's performance. This is measured through the Six Month Progress Reports and two year follow up site visit. This is of course subject to commitment (behavioural buy-in) of the participant.