DRAFT

Antarctica New Zealand and
Environmental Education

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1.0 Introduction

This study investigates Antarctica New Zealand’s (ANZ) current recognition, understandings and use of environmental education as a management tool to optimise the achievement of objectives of its policies and plans. It is written in the hope that, through this study of its literature, Antarctica New Zealand may identify strengths and weaknesses in its current use of education, information and training, become aware of alternative approaches, and ensure optimal use and outcomes of educational opportunities in, about, for and with Antarctica and the Southern Ocean (M.f.E., Learning to Care for Our Environment: A National Strategy for Environmental Education, 1998).

1.1 Rationale

During the 1990s, increasing public concern for environmental sustainability has contributed to the development of governmental initiatives such as the Resource Management Act, 1991, the Environment 2010 Strategy (M.f.E, 1995), the State of the Environment Report, 1997 (M.f.E, 1997), and Learning to Care for Our Environment: a National Strategy for Environmental Education (M.f.E, 1998). These documents all call for environmental education.

Environmental education is a multi-disciplinary approach to learning, for the purpose of developing the knowledge, awareness, attitudes, values and skills that will enable individuals and the community to contribute towards maintaining and improving the quality of the environment (M.f.E, 1998). Environmental education has huge potential to help realise objectives and goals of policies in environmental and resource management (Burkhart, 1997; M.f.E, 1998; UNCED, 1992), yet it is generally poorly understood or utilised as an effective management tool (Burkhart, 1997; McKay, 1998).

Antarctica New Zealand is the trading name of the New Zealand Antarctic Institute (NZAI), which is a government entity, responsible for New Zealand’s interests in Antarctica (ANZ, 1997 / 98, p. 28). Antarctica New Zealand uses education, training and information within its management strategy for New Zealand’s interactions with Antarctica and its environment. While it may be that Antarctica New Zealand has developed a highly effective educational approach, it is not clear how or whether it understands or uses environmental education. Should Antarctica New Zealand not be using environmental education, or be using environmental education ineffectively, it may be that its objectives and goals have become, or are becoming, more distant, difficult and costly to achieve, if achievable at all. Whether Antarctica New Zealand is practicing effective environmental education or not, it may be that its current approaches may be enhanced, optimising its effectiveness towards realising Antarctica New Zealand’s objectives and goals, and providing a model for other nations to follow.

In order for Antarctica New Zealand to ensure its best use of environmental education as a management tool, it is necessary to identify what it is aiming to achieve through educational initiatives in relation to their intended and actual outcomes. Prerequisite to the objective
assessment of Antarctica New Zealand's efforts in environmental education is the identification of its current recognition, understandings, use of, approach to, and assumptions behind, environmental education within its education, training, information and management literature, in the light of contemporary literature and practices.

1.2 Scope and Limitations

As with all research projects, this study was restricted by time and limited resources.

A review of literature, addressing education and environmental education research, theories and practices, ecology, philosophy, resource management, conservation management and environmental management, provides a background to a thematic, qualitative analysis of Antarctica New Zealand's recognition, understandings, use of, approach to, and assumptions behind environmental education in its policies, goals, objectives and literature for education, training and information.

Despite the researcher being aware of and vigilant to the potential for subjectivity during analysis, it is probable that the results of this study reflect, to some extent, the researcher's interpretation of the written material analysed.

This study was intended to establish a basis from which Antarctica New Zealand may further investigate and assess the effectiveness of its use of environmental education amongst its permanent staff, seasonal staff, visitors to Antarctica, the public, military and other organisations with which it interacts. The usefulness of this study's results are significantly limited without such further research.

The following chapter will describe terms and concepts key to this study.
2.0 Description of Terms and Concepts Key to the Study

2.1 Introduction

Some key terms and concepts investigated, analysed and discussed in this study stem from a range of specialist fields including education, environmental education, ecology, philosophy, resource management, conservation management, environmental management, and of course, Antarctica. This chapter will describe such key terms and concepts.

2.2 Contextualising: Philosophies, Frames of Reference and Assumptions

Individual understandings of key terms and concepts, such as 'education', 'environment', and 'management', as well as relationships with the environment, restrict expectations and practices in, as well as outcomes of, environmental education and management (Handel, 1982; McKay, 1998, p. 40).

Within any particular group of people, a huge scope of opinion is likely to exist on any one issue, each opinion being based upon philosophies, values and beliefs which reflect a particular individual's background (Dunlap & Van Liere, 1978; Handel, 1982). Such contextualisations may be referred to as 'world views' or 'frames of reference' (Dunlap & Van Liere, 1978; Handel, 1982).

The way in which we use language reflects the frames of reference from which we perceive, value and interact with the Earth (McKay, 1998). Gough (1990, p. 17) illustrates this point in stating “there is a vast difference between naming a bird . . . an ‘ocean-going petrel’ or ‘shearwater’ and naming it a ‘mutton-bird’”. The words used denote completely different views of the species, based on different frames of reference (McKay, 1998).

Societies in different parts of the world are influenced by the accumulated effect of individual frames of reference and associated dominant tendencies in understandings and behaviours within each society. These dominant tendencies are referred to as the Dominant Social Paradigm (DSP), and reflect the social filters through which the peoples of a particular society view the world around them (Dunlap & Van Liere, 1978). No two individuals and similarly, no two societies, are likely to share exactly the same frame of reference (Ditton, Fedler & Graefe, 1983).

Different frames of reference may create difficulties amongst parties seeking agreement on definitions and appropriate practices (Gough, 1993; Handel, 1982) for the management of any issue or resource. Clarifying frames of reference, or contextualising (McKay, 1998), will provide a basis of understanding upon which definitions, policy and accepted practices can be established (Cicourel, 1964; Handel, 1982). This does not mean that confrontations will be avoided in situations where opinions may differ; rather it may allow parties to, in effect, 'talk the same language' (Negra & Manning, 1997).
Amongst the people of the globe there is a huge range of philosophical positions, each of which is debatable in both academic and applied senses. Each of these philosophical positions, in turn, generates different perspectives, understandings and definitions. Contemporary resource management and environmental management philosophies and techniques may be condensed into three key philosophical positions: anthropocentrism, technocentrism, and ecocentrism.

**Anthropocentric** perspectives assume that human moral relationships with nature should be determined solely by human needs (Negra & Manning, 1997). Within such perspectives, humans are viewed as being superior to other creatures and to nature in general (Kant, 1963). A Judeo-Christian version of anthropocentrism is based on a Christian assumption that humans’ relationship with nature is one of stewardship, concerning only those non-human entities that have value to humans (Armstrong & Botzler, 1993; Fraser Darling, 1969). Some anthropocentric views argue that the way in which humans treat non-humans is merely a matter of taste (Guthrie, 1967); any human actions towards nature may be justified (Kant, 1963); any consequences of actions that do not bear directly upon humans in the present or future are considered acceptable (McGee, 1990). In an anthropocentric view, ‘real risks’ might be seen as those that pose an obvious hazard to human comforts, benefits, health or life (McGee, 1990).

The **technocentric** perspective is a subset of anthropocentrism, differing in that technocentrist assume that in all areas of human behaviour and interaction with nature, experts know best (Thompson, 1996). Science and technology play a large role in the technocentric perspective, in providing a knowledge base with which any problem might be overcome (Handel, 1982). Human survival and well-being are seen to depend on this expert knowledge, and on management of nature for economic growth and other human ends (Burkhart, 1997).

**Ecocentric** perspectives assume that human moral relationships should be determined by the intrinsic rights to life and comfort of both humans and non-humans (Leopold, 1949). Human and non-human life-forms are believed to have value in themselves (Gunn, 1986; Leopold, 1949; Rodman, 1983). In this world view, humans are considered to be part of nature (Gunn, 1986), and have no right to use any resource beyond satisfying vital needs; that is, those needs that are essential to all life (Foreman, 1991; Rodman, 1983). Extreme ecocentrists would argue that the good of the many outweighs the interests and rights of the individual (Marietta, 1988).

### 2.3 Environmental Management

The terms ‘management’ and ‘resource’ themselves reflect a technocentric perspective, in which people assume that humanity should be able to manage ‘things’ that are perceived to have value to humans (resources). For example, a recent Minister for the Environment has stated of the environment that "it is the responsibility of all of us to achieve sustainable management of our resources . . ." (Upton, 1997). In such a perspective, the environment is considered a resource to be managed as humanity’s representatives see fit.
The term *management* describes humanity's ability to learn from, cope with, adjust to, manipulate and contrive the physical, biological, and social environments in which they exist (Thompson, 1996). Management has been defined in many ways. A common distinction amongst definitions is that management involves a process of setting objectives and co-ordinating efforts in order to attain them (Hodgetts & Kuratko, 1986). An effective management effort requires the manager to be aware of and understand a situation, its components and their inter-relationships, from as many different perspectives as possible, so that appropriate skills, knowledge, attitudes and approaches may be used to achieve pre-determined desired outcomes (McKay, 1997; Rossman, 1991). The capacity to learn and education are integral to effective management (Rossman, 1991).

*The environment* is not a clearly defined term, as it is commonly used to describe a range of concepts (Disinger, 1983; Roszak, 1992). The term may be used in general sense, such as to describe the surrounding planet in which all living things known to humanity, or in a more specific sense to describe physical or biological or emotional or a combination of conditions in a specific area (Weilbacher, 1991), such as 'the Antarctic environment', and so on. Therefore, the term 'the environment' cannot be assumed to mean any one thing without clarification (Handel, 1982).

Unless otherwise stated, 'the environment' will be used in terms of Scott's (1984) description, which refers to 'the environment' more precisely as the *total environment* (Brennan, 1974), and suggests that the word environment in 'environmental education' or 'environmental management' is multi-dimensional, including the following dimensions:

- the **biological** environment - plants, animals, ecosystems;
- the **physical** environment - land, water, air, [the elements];
- the **social** environment - people and their cultures;
- **resources** - supplies, uses, limits;
- the **economic** environment - people, resources, and their interaction through the medium of money; and
- the **aesthetic** environment - both built and natural.

(Scott, 1984, p. 1)

For the purpose of this study the term *environmental management* refers to the process of management of the interactions of humans with the environment, as described above, towards the goal of sustainable interactions (Upton, 1997).

The term *environmental sustainability* has both ecological and economic applications (Burkhart, 1997; Gough, 1987; Harvey, 1977; Orr, 1992). In ecological terms, 'environmental sustainability' requires a philosophy of an ecocentric nature (Foreman, 1981; Naess, 1987), in which human beings are ecologically literate (Hardin, 1977; Orr, 1992); in which humans recognise themselves as part of nature. By comparison, in economic terms, 'sustainability'
involves an unavoidable anthropocentric emphasis upon productivity, progress, and profit (McKay, 1998). Within such a world view, 'environmental sustainability' may be considered in terms of making finite resources infinite, or at least maintaining a resource at a particular level of productivity for as long as possible. The nearest anthropocentric stance to an ecological sense of environmental sustainability requires recognition that human survival and well-being depend on the health and stability of our whole ecological support system (Murdy, 1975).

The term stakeholder refers to an independent party into whose possession money, titles of ownership or investment, or other items, are deposited until the outcome of a gamble is known (Thompson, 1996). This term is used in the New Zealand government's current literature associated with environmental management. The use of such a strong economic term in reference to the environment and its management may indicate that current motivations for human interactions with the environment equate to gambles, with an emphasis upon outcomes of productivity, progress and profit, rather than upon the health and stability of our whole ecological support system.

Two main distinctions are apparent in contemporary managerial approaches; reactive styles and proactive styles. Agents of reactive management styles react to problems, and assume that there are solutions to problems (Gough, 1987). A weakness of such an approach is that often symptoms are treated rather than the cause of any problem (Gough, 1987). Other terms for this style include 'problem based' management or 'band-aid action' (Gough, 1987). Reactive management styles appear to be more commonly used within Western society than proactive styles, with people being generally reliant upon experts to tell them if an environmental problem exists (McKay, 1998).

Proactive management may also be referred to as 'mission based' management, as it may involve the identification or establishment of a vision, mission, aims, purpose and goals of an operation (Gough, 1987). Strategies may be planned towards realising the determined objectives, and include anticipation of any problems that might predictably arise during the process, with alternative strategies to cope with such events (Gough, 1987; McKay, 1998). Proactive management styles are considered appropriate, and may be necessary, particularly in resource and environmental management, if human beings are to achieve a sustainable existence (McKay, 1998).

There is some confusion in the literature concerning the employment of the terms conservation and preservation. Both terms have similar meanings, which are often based upon the assumption that whatever is being 'conserved' or 'preserved' will be used in the future, yet both terms are commonly misinterpreted to mean no more than to keep something from harm or damage. The term conservation describes the practice of using only what is necessary of a resource as the need arises, so as to maximise the usefulness and useability of that resource. The term preservation describes the practice of saving something in its existing state so that it may be used at some stage in the future, should the appropriate need arise.
**Appropriateness** of use of any resource depends on how an individual or group perceives and values that resource and the potential outcomes (Giles, 1978). Morgan Williams (1993) has demonstrated that scientific evidence will not influence social perception of value or appropriate interaction with components of the environment. Rather, public perceptions appear to hinge on levels of awareness and levels of understanding of value in the context of an individual's life-experience.

To a large degree, the effectiveness of Antarctica New Zealand’s management practices depends on its ability to develop appropriate levels of awareness, knowledge, understanding, skills and environmentally responsible attitudes and practices amongst staff, visitors to Antarctica, public, commercial and other external organisations with whom the institute interacts, through its activities and literature. These may be achieved through education, training and information. The nature and quality of Antarctica New Zealand’s approach to providing education, training and information is therefore of critical importance to the realisation of its management objectives.

There is some confusion in the literature between the terms ‘effectiveness’ and ‘efficiency’, yet they are two quite distinct concepts. The term **effectiveness** refers to the outcomes of a particular strategy or action in relation to its objectives (outcome / objective), and tends to be a consideration of **quality**. The term **efficiency** describes the output of a particular strategy or action in relation to its inputs (output / input), and generally involves the consideration of **quantity** in a sense of economy.

### 2.4 Education

The term **education** may be understood in several ways. At an essential level, the process of education, or becoming educated, is really about becoming equipped for survival in a specific set of circumstances (Feinburg, 1983; Hartnett & Naish, 1990). Dewey (1938) has described a comprehensive education as a combination of the necessary awareness, knowledge, attitudes, values, skills and adaptability that equip an individual to survive in the context of stable or changing circumstances.

Education can be informal or formal (Walsh, 1993). Informal education includes all learning that occurs as necessary part of or as a incidental consequence of an individuals life-experiences. Formal education describes a deliberate process of learning, based upon societal and/or institutional perceptions and assumptions of appropriate knowledge, appropriate skills and abilities.

In Western society, education tends to be formalised, subject specific or ‘specialised’ into ‘disciplines’, based largely upon scientific knowledge, and enshrined in the written word (Hartnett & Naish, 1990). Literacy is more or less an indispensable condition of being ‘educated’ (Walsh, 1993). Rather than upon their ability to survive successfully within society, a person is considered to be ‘well educated’ once they have achieved an academic education, are able to read, write and
debate, analyse and calculate, or perhaps even compose and perform in various ways deemed by society to be 'clever' (Walsh, 1993; Thompson, 1995).

A 'well educated person' by Western standards, conditioned to living in the context of a privileged section of a large city, may not be equipped to survive outside of a similar context, such as in a low socio-economic section of the same city, in a farming area of the country, or in the outback. An Indigenous tribes-person, by comparison, living their life according to tradition, may be considered to be 'uneducated' in a Western sense, despite the likelihood that they are 'expert' and 'educated' in many ways that allow them to survive successfully in a familiar context.

2.5 Environmental Education

Ways in which people have tried to help individuals develop the awareness, knowledge, attitudes, values and skills to resolve environmental issues have been commonly referred to as environmental education (Fairman et al., c. 1995; McKay, 1998). Environmental education is conceptualised and practiced in a wide range of ways, frustrating efforts for its discrete definition (McKay, 1998). Different understandings of what is meant by the term environmental education lead to different practices, processes and outcomes. According to the Ministry for the Environment (1998, p. 9), common elements of various definitions of environmental education include:

- the influence of education on values, attitudes and behaviour

- the multi-disciplinary nature of environmental education and the emphasis on linkages between the biophysical environment, social, economic and political activities

- The contribution of environmental education to protecting and managing the environment

- the range of activities encompassed by environmental education which include formal and non-formal education.

Much of Antarctica New Zealand's management practices, including staff and visitor training, information services, and administrative interactions, involve components of environmental education. Environmental Education has the potential to be directly and actively used by Antarctica New Zealand as a management tool to optimise the achievement of objectives of policies and plans (M.I.E., 1998, p. 11), such as raising staff, visitors, public, commercial and other external organisations' awareness of Antarctica, its environment and issues associated with human interactions.
An important component of environmental education includes all learning activities intended to provide information about a specific environment or the general environment, its components, human interactions and their management (M.F.E., 1996, p. 9). Antarctica New Zealand addresses education about Antarctica particularly well.

New Zealand's Ministry for the Environment (1996) have developed a strategy for Environmental Education, which acknowledges the critical contribution environmental education represents for protecting and managing the environment. The Ministry for the Environment (1996; 1998) has drawn upon Lucas' (1979) description of environmental education as being comprised of education in the environment, education about the environment, and education for the environment:

*Education in the environment* describes any form of learning outside a traditional classroom teaching situation. It can be thought of as *learning via direct experience*, and has strong links with outdoor education. Most New Zealanders have enjoyed learning 'in' the environment through going on a bush walk, for example.

*Education about the environment* is concerned with *providing information on the environment* and environmental issues. Such learning gives people a basic understanding of the environment and some of the problems and solutions, which face us in making decisions every day. For example, a council 'drains to streams' campaign may be a means by which people learn about problems of water quality, and how their actions can contribute to or help resolve the situation.

*Education for the environment* develops *attitudes and values*. It aims to encourage us to make choices, which will maintain and improve the quality of the environment; it seeks to change our behaviour. Education 'for' the environment should encourage people to participate and to believe that their efforts can have an impact on the quality of the environment.

(Lucas, 1979; cited in M.F.E., 1996, p.6)

Environmental educators in New Zealand tend to describe environmental education in terms of education in the environment as operating outdoors, and education about the environment as being academic, information based learning (McKay, 1998). Very few agents of environmental education seem to understand or effectively practice environmental education comprehensively (McKay, 1998), failing to incorporate education for or with the environment (M.F.E, 1998, p. 11), which requires recognition of the ecologically inseparable inter-relationship of humanity with all other components of the environment (McKay, 1998; Orr, 1990).

It appears that comprehension and acceptance of humanity's inter-relatedness with the environment, as just one component of an ecological whole amongst millions others, is the major 'stumbling block' to effective environmental education (McKay, 1998). Current definitions and practices of environmental education tend to omit the rudimentary awareness and understandings of relationships between humans and physical, metaphysical and biological environments (McKay, 1998, p. 56). Without the essential recognition of humans' inter-relationship with the environment, and without a proactive approach to environmental education, education efforts will perpetuate the status quo (McKay, 1998).
Environmental education strategies and policies appear to be best based on ecologically-centred (ecocentric) models (Orr, 1990), such as McKay's (1998, p. 49) alternative, proactive model for environmental education, which recognises the rudimentary relationships between humans and the environment (Burkhart, 1997; Orr, 1992).

Contemporary environmental education strategies and practices tend to reflect a mixture of reactive and proactive approaches, which seek solutions to environmental problems symptomatic of less apparent issues (McKay, 1998). Language used in such strategies and practices tends to be 'softened' with ecocentric or transitional terms, based upon Western societal world-views (Van Matre, 1984), which stem from a human-centred (anthropocentric), Judeo-Christian ethic of stewardship of the Earth (McKay, 1998, pp. 42-44).

The National Strategy for Environmental Education (M.f.E, 1998) is significantly flawed through conflicting ideologies and philosophies (McKay, 1998, p. 58), as are other key government initiatives for environmental management, such as the Resource Management Act, 1991. Because it is a government agency, Antarctica New Zealand may have inadvertently inherited and/or adopted a similarly flawed framework. This matter will be discussed at a later stage (refer to section 4.3).

The following chapter will describe Antarctica's physical and biological environment, as well as the significance of human interactions, as a background to Antarctica New Zealand's involvement and role in its governance and environmental management.
3.0 Antarctica, New Zealand and Antarctica New Zealand

3.1 Introduction

This chapter will briefly describe Antarctica’s physical and biological environment, the scope and significance of human activities in relation to Antarctica, and the legal framework within which Antarctica New Zealand operates. Antarctica New Zealand’s mission, goals, priorities, principles and strategies for Antarctica’s management will be described in order to contextualise the role of information, training and education, along with methods used for its application and evaluation, in the management of New Zealand’s interactions with Antarctica.

3.2 Antarctica

Antarctica is a continent which is almost totally covered in ice averaging two thousand, five hundred metres in thickness (Beck & Dodds, 1998, p. 1). The continent’s climatic conditions tend to be very harsh, with the coldest temperatures on the planet, recorded as low as - 89.6° C, wind-speeds exceeding three hundred kilometres per hour, and an average precipitation comparable to the driest deserts (Rubin, 1996).

Despite such inhospitable conditions, numerous life-forms exist in Antarctica, although the only terrestrial (land-living) plants and animals are tiny and primitive (ANZ, Antarctica: adaptation to cold, c. 1996). The majority of Antarctica’s known life-forms are restricted to the coast, where the surrounding ocean is teeming with life (Beck & Dodds, 1998). Conditions in the waters surrounding Antarctica are considerably more constant and hospitable than those on the surface. Marine (ocean-living) life-forms range from single-celled plants through to large mammals, such as whales. Some animals, including seals and penguins, are able to take advantage of both the ocean and the land in order to survive (ANZ, Antarctica: adaptation to cold, c. 1996).

3.3 Human Interactions in Antarctica

Antarctica’s isolation, in combination with its extremely harsh environmental conditions, has significantly limited human access to it. The low level of human activity in Antarctica has meant that its environment and component ecosystems have remained relatively pristine (NZAI, 1999, p. 6).

Human activities, including exploration, science, tourism, and logistical operations (the activities that are necessary in order for the afore-mentioned to be able to occur, such as transport and storage of supplies) have been concentrated around Antarctica’s coastline, where the majority of life-forms exist. Scientific bases, runways and dumps have competed for space with penguin rookeries, seal colonies and moss fields (ANZ, Antarctica: environmental issues and management, c. 1996). Not only may human activities have significant and irreversible impacts
upon the Antarctic environment and its ecosystems, evidence suggests that changes in Antarctica may impact upon the rest of the world (Walton, 1998).

Threats to Antarctica include substantial and rapid increases in visitor numbers, environmental degradation through pollution, over exploitation of fisheries, damage to unique ecosystems through inadequate information and establishment of systems for their protection, altered ecological composition resulting from damage to ecosystems and/or from the introduction of foreign organisms, continued global climate change, and continued ozone depletion impacting upon plants and animals (NZAI, 1999, p. 8).

Antarctica may be of vital importance to humanity (Dingwall, 1998), perhaps as much in terms of survival as in terms of economics, aesthetic, or other similarly abstract considerations (Burkhart, 1997). Although the motivations are not necessarily shared, it has become generally accepted amongst the global political community that there is a need to take steps to safeguard Antarctica from environmental deterioration (Beck & Dodds, 1998). Access to Antarctica, such as is made possible through the likes of base stations in the Ross Sea region, provides an ideal opportunity for scientists to enhance knowledge and understanding of the Antarctic and the global environment (NZAI, 1999), upon which appropriate management strategies for human interactions may be developed.

3.4 The Antarctic Treaty

The Antarctic Treaty (1959) establishes a system of governance for Antarctica and promotes the continent as a demilitarised zone, free from territorial disputes, where peace and science represent the currency for involvement (NZAI, 1999, p. 3). The Protocol on Environmental Protection to the Antarctic Treaty calls for the comprehensive protection of the Antarctic environment and associated ecosystems (ANZ Code of Conduct, c. 1996). As a signatory to the protocol, New Zealand is committed to its implementation and to the protection of the Antarctic environment.

3.5 New Zealand

New Zealand’s overall goal, desired outcomes, priorities and actions for guiding its environmental stewardship of the Ross Sea region are set out in the draft Environmental Strategy for the Ross Sea Region (NZAI, 1999):

“To implement environmental stewardship that safeguards the Ross Sea region as a pristine environment helping to sustain world ecosystems” (p. 10).
3.6 **Antarctica New Zealand**

Antarctica New Zealand is an institute managing New Zealand's interests in Antarctica and enabling access to the Antarctica region (Wratt, 1998). Established on July 1, 1996, and based in Christchurch, New Zealand, Antarctica New Zealand has not only legal, but also moral responsibilities to minimise the impact of human presence in Antarctica (Wratt, 1998). Antarctica New Zealand's mission is to:

"... provide leadership in developing, promoting and realising opportunities for New Zealand from international involvement in Antarctica and the Southern Ocean."


The realisation of Antarctica New Zealand's objectives hinge on the nature and effectiveness of its management practices.

3.7 **Antarctica New Zealand and Environmental Management**

An Environmental Management Strategy (1998) has been developed by Antarctica New Zealand to ensure that New Zealand operates in Antarctica in accordance with the provisions of the Protocol on Environmental Protection to the Antarctic Treaty (1991) and the Antarctica (Environmental Protection) Act (1994). A number of international treaties and New Zealand legislation also apply to the management of Antarctica's environment and include the:

- *Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR)* 1982
- *Marine Mammals Protection Act (MMPA)* 1978
- *Maritime Transport Act (1994)*

(Antarctica New Zealand, 1998, p. 5)

Further details on each of these agreements and their requirements are included in Appendix 1.

Antarctica New Zealand's environmental goal is to:

"... provide leadership that ensures all New Zealand activities occur within a framework which safeguards the environment and other essential values of the Antarctic and Southern Ocean."

(Antarctica New Zealand, 1998, p. 1)

The Environmental Management Strategies objectives are first, internationally credible and cost effective environmental compliance; second, comprehensive standards and guidelines that will
limit adverse environmental impacts; and third, leadership and influence in the development of Antarctic environmental initiatives (Antarctica New Zealand, 1998, p. 9).

The New Zealand Antarctic Institute (NZAI), Antarctica New Zealand, has prepared a draft Environmental Strategy for the Ross Sea Region, on behalf of the Antarctic Officials Committee, the New Zealand government's Antarctic policy advisory group (NZAI, 1999, p. 1). It has been suggested in the strategy that, if New Zealand is to be effective in its environmental stewardship of the region (in cooperation with other operators) it must look to take advantage of the following opportunities:

- the need for examples of practical and innovative environmental management practices that set best practices for environmental protection in the region;
- the need for scientifically credible information on Ross Sea ecosystems to support environmental management;
- the potential to expand the constituency of interest in and sense of value of the Antarctic and Ross Sea region amongst New Zealanders;
- the potential for development of a culture of cooperative action on significant environmental initiatives, in particular between operators at commonly used sites;
- the chance to provide advocacy that leads to international compliance with the Environmental Protocol and sets a high standard in the Committee for Environmental Protection from a platform of high environmental performance by all New Zealand activities in the region

(NZAI, 1999, p. 9)

The Environmental Management Strategy (1998) has identified environmental principles and priorities to provide a framework for the management of human presence, balancing the benefits of human access with conservation of the region (Wratt, 1998). Twelve principles are intended to guide the implementation of Antarctica New Zealand's Environmental Management Strategy:

**Principle 1: Antarctic Values**
Protection of the unique and special values of Antarctica, in particular the intrinsic, wilderness, aesthetic, environmental an historic values, the value of Antarctica for scientific research, the essential role Antarctica plays in global ecosystem functioning and the interactions between these values

**Principle 2: Antarctic Advocacy**
Contribution to forums where Antarctica New Zealand can effectively advocate for the protection of Antarctic values from threats both within and outside of Antarctica where it is the best agency to do so.

**Principle 3: Antarctic Leadership**
Adoption of a leadership role in New Zealand on key Ross Sea region environmental issues.

**Principle 4: Antarctic Standards**
Provision and dissemination of clear and enforceable environmental standards in order to minimise uncertainty and to increase consistency in the implementation of the Environmental Protocol.
Principle 5: Antarctic Co-operation
Consultation and cooperation with New Zealand and international agencies, other national programmes and individuals with an interest and complementary role in Antarctic environmental management and reflection of these interests where appropriate.

Principle 6: Antarctic Best practice
Application of best available practice as a means of continually improving environmental compliance and performance and to take into account and apply where appropriate, current New Zealand and international standards and best practice where further guidance is required.

Principle 7: Antarctic Complexity
Recognition of the integrated nature of the Antarctic environment and dependent and associated ecosystems, in particular the potential for some activities to cause impacts beyond the immediate environment.

Principle 8: Antarctic Auditing
Recognition of the wider New Zealand public interest and “ownership” in Antarctic environmental matters reflected through regular independent auditing and reporting of the environmental performance of Antarctica New Zealand.

Principle 9: Antarctic Uncertainty
Recognition of the often limited scientific and technical information about the potentially adverse environmental impacts of the activities being managed.

Principle 10: Antarctic Environment
Recognition of the unique operational constraints inherent in the Antarctic environment and the importance of achieving an acceptable balance between desired environmental outcomes and the constraints of resources and technology in achieving these outcomes in Antarctica.

Principle 11: Antarctic Training
Provision of training and education for staff and all visitors to Antarctica aimed at emphasising individual responsibility for achieving effective environmental outcomes and limiting adverse impacts.

Principle 12: Antarctic Clean-Up
Commitment to the clean up and remediation of the impacts of past activities on the Antarctic environment, where there is a clear responsibility to do so.

(Antarctica New Zealand, 1998, pp. 7-8).

Antarctica New Zealand's priorities for environmental management for the next three to five years will be determined according to whether an initiative:

- provides a new opportunity to significantly advance the achievement of Antarctica New Zealand's strategic environmental objectives and overall environmental goals;
- enhances cooperation in the Ross Sea region, specifically on environmental management issues;
- addresses a significant existing environmental issue;
3.8 The Role of Information, Training and Education in Antarctica New Zealand’s Environmental Management

Antarctica New Zealand has set out to provide training, information and education for its staff, visitors to Antarctica, the public, military, commercial and other external organisations. Antarctica New Zealand’s objectives include education and public information on Antarctica and the Southern Ocean, including publications and events aimed at public awareness, encouragement of education in schools, and logistics support for associated visits to Antarctica (Antarctica New Zealand, 1997/98, p. 17). As stated in its strategic goal for education, Antarctica New Zealand intends to provide leadership and co-ordination within New Zealand of activities for promoting public and scientific awareness of the unique characteristics and importance of the Antarctica and Southern region (Antarctica New Zealand, New Zealand’s Future in Antarctica, c. 1996, p. 9), raising awareness of the opportunities and responsibilities.

Antarctica New Zealand’s Education Strategy seeks to achieve:

- **Effective interface with private sector education providers including:**
  - initiatives to enhance displays in major visitor attractions;
  - advice and operational support for the LEARNZ (Linking Education and Antarctic Research in New Zealand) initiative.

- **Production and maintenance of a national catalogue of currently available Antarctic education resources, and provision to schools.**

- **Maintenance of a network of contacts among educational agencies, particularly:**
  - course directors of Antarctic studies at universities
  - to encourage an Antarctic/Southern Oceans component to national educational programmes and initiatives.

- **Enhancement of post-graduate Antarctic educational opportunities through (sic) maintenance of a sponsored scholarship scheme.**

- **Continued enhancement of information services based on the Antarctica New Zealand library resource, through**
  - utilisation of information technologies such as the World Wide Web and development of a National Antarctic Data Centre.
  - efficiency gains through implementation in cataloguing, data handling and library networking, and ensuring complementary collection management policies with other libraries with Antarctic holdings.

- **An annual, competitive programme for leading media representatives and artists which encourages communication of the Antarctic values and science activities to a broad New Zealand audience.**

- **A targeted publications programme keeping stakeholders appropriately informed.**

(Antarctica New Zealand, 1996/97, p. 1)
Antarctica New Zealand manages information resources so that all parties are able to access and benefit from its accumulated knowledge (Antarctica New Zealand, *New Zealand's Future in Antarctica*, c. 1996, p. 9).

### 3.9 Ways in Which Outcomes are Measured

There is little evidence in the literature of systems being established to monitor and evaluate outcomes of Antarctica New Zealand's efforts. The 1996/97 and 1997/98 Antarctica New Zealand Annual Reports describe outputs for educational initiatives which have included:

- numbers of media releases;
- catalogue of "educational resources";
- specialist publications, brochures, and so on;
- reporting requirements "stakeholder needs";
- effective logistical support;
- safety and operational information;
- client satisfaction.

The following chapter will analyse and discuss Antarctica New Zealand's current recognition, understandings, use of, approach to, and assumptions behind, environmental education within its education, training, information and management documents, in the light of the literature.
4.0 Analysis and Discussion

4.1 Introduction

This chapter will analyse philosophies and assumptions identified within Antarctica New Zealand's literature. The affects of assumptions that are evidenced will be discussed in terms of Antarctica New Zealand's recognition, understandings and use of environmental education as a management tool to optimise the achievement of its policies and plans.

4.2 Philosophies and Assumptions within Antarctica New Zealand's Literature

The identification and analysis of assumptions within Antarctica New Zealand's documents, evidenced through the use of key terms, may indicate strengths and weaknesses in its understanding, approaches and practices, as well as possible and actual outcomes of environmental education as a management tool.

As previously stated, the way in which we use language reflects the frame of reference from which we perceive, value and interact with the Earth. The language used in Antarctica New Zealand's documents indicates a mixed perspective, in which proactive and reactive management approaches are described in mildly ecocentric or transitional terms, based upon technocentric assumptions. For example, Antarctica New Zealand's mission statement is couched in technocentric terms of "developing, promoting and realising opportunities", guided by the government's anthropocentric vision of "the conservation of the intrinsic values of the Ross Sea Dependency, Antarctica, and the Southern Ocean, for the benefit of . . . New Zealanders" through "active and responsible stewardship" (Antarctica New Zealand, New Zealand's Future in Antarctica, c. 1996, p. 1), and mediated by the transitional "raising awareness of the opportunities that Antarctica provides and the responsibility it brings" (Antarctica New Zealand, New Zealand's Future in Antarctica, c. 1996, p. 1).

Antarctica New Zealand has engaged a proactive management style, which is particularly notable in its Environmental Management Strategy (1998), identifying a vision and mission, with policies, objectives, goals, strategies, priorities and principles that align towards the vision's realisation. Despite an apparent transitional recognition of humanity's inseparable inter-relatedness with the environment, the proactive base is weakened because of a slightly anthropocentric, problem-based framework of assumptions.

The language used in Antarctica New Zealand's documents suggests an assumption that the DSP of Western, Judeo-Christian, anthropocentric philosophies, with its capitalist ethic, is the most appropriate option for the management of Antarctica and the Southern Ocean. This study has not observed perspectives, cultural or otherwise, other than those of the current DSP within Antarctica New Zealand management or education documents. As an example of the implications of such an
omission, the subjective term 'intrinsic value' is used in Antarctica New Zealand documents, as well as New Zealand legislation, upon the assumption that the concept of 'intrinsic value' has universal meaning. Such an abstract term may be interpreted according to individual, cultural or religious understandings of reality. There is considerable contemporary philosophical debate as to what is in fact meant by its use in reference to the environment and its components (Armstrong & Botzler, 1993).

A term that perhaps stems from a bias of Judeo-Christianity, 'stewardship', is used in Antarctica New Zealand documents to describe New Zealand's relationship with Antarctica and the Southern Ocean, assuming and inferring that these are New Zealand's responsibility, to do with as its representatives see fit. There is further evidenced an anthropocentric assumption that possible human benefits, whether of profit or otherwise, justify human interactions with Antarctica. Considerations of conservation appear to be a secondary consideration.

The term 'conservation' appears used by Antarctica New Zealand to describe the minimisation of impact of human presence (Wratt, 1998) in balance with the benefits of human access, yet, in Antarctica New Zealand's representation of priorities for Antarctica, human interests come first.

Antarctica New Zealand's use of specialists and specialist publications indicates the technocentric assumption that 'experts know best' (Thompson, 1996). It is assumed that technology will provide solutions to environmental management 'problems'. It is assumed that operational and environmental safety can be ensured through Antarctica New Zealand's highly trained staff (Antarctica New Zealand, New Zealand's Future in Antarctica, p. 12). Although it is acknowledged that very little is known about Antarctica and its environment, it is not only assumed that enough is known for humans to decide upon 'best practice' in Antarctica, but also that this will be universally acceptable. It is assumed that sustainability is possible and realistic. Antarctica New Zealand's decisions are based on the Antarctic Treaty and New Zealand legislation, which are also based on the current DSP and the assumption that this is appropriate to the goals of environmental sustainability.

New Zealand's commitment to protection of Antarctica is manifested in the draft Environmental Strategy for the Ross Sea Region (NZAI, 1999). While this is an excellent proposal for the guidance of protection for Ross Sea Region, the commercial flavour of Antarctica New Zealand, on behalf of the New Zealand government, is concerning. Antarctica New Zealand's stated mission (ANZ, 1996, p. 1) of "developing, promoting and realising opportunities for New Zealand from international involvement in Antarctica and the Southern Ocean" is particularly disconcerting when considering that Antarctica New Zealand is the trading name for an entity representative of a government which appears to believe in the myth of an expanding economy and is apparently hell-bent on selling its assets.

The draft Environmental Management Strategy for the Ross Sea region and Antarctica New Zealand's Environmental Management Strategy provide a framework for managing New Zealand's presence in a way that balances the benefits of human access with conservation of the
region. While this may be so, it is important to note that in many ways their provisions are
guidelines which may be very difficult to enforce.

The NZAI (1999, p. 9) identification of opportunities for environmental management in the Ross
Sea Region (refer to page 14) are excellent, and may, once implemented, provide an
internationally credible model for meeting treaty objectives.

Antarctica New Zealand's 12 principles for the guidance of its Environmental Management
Strategy are generally very suitable and well presented, yet require some refinements so that key-
concepts, such as ecological inter-relatedness (Principle 7), become clearly applicable in a
personal and global sense. Antarctica New Zealand's stated priorities for environmental
management appear sound and realistically achievable.

4.3  Antarctica New Zealand’s Environmental Education

Antarctica New Zealand’s understanding of, and approach to environmental education is critical to
the effective management of Antarctica and the Southern Ocean. The effectiveness of Antarctica
New Zealand’s management practices depends on Antarctica New Zealand’s ability to develop
appropriate levels of awareness, knowledge, understanding, skills and environmentally
responsible attitudes and practices amongst staff, visitors to Antarctica, public, commercial and
other external organisations.

Antarctica New Zealand’s understanding of what construes ‘education’ is not clear. Antarctica New
Zealand has set about informing public, visitors to Antarctica and ‘stakeholders’ through the use of
pamphlets, videos, annual reports, management documents, and media exposure.

Education is addressed by Antarctica New Zealand in isolation, as are training and information,
from management objectives and practices. This suggests a technocentric perspective of
specialisation, in which fields and disciplines are perceived to be in isolation from one another. In
such a world-view, a complex issue requires a carefully co-ordinate, multi-disciplinary effort in
order to be addressed. This may be expensive in terms of time and resources, in comparison with
inter-disciplinary or pan-disciplinary approaches, and has an unnecessary potential for mis-
communication and failed objectives.

Much of Antarctica New Zealand’s management practices, including staff and visitor training,
information services, and administrative interactions, involve components of environmental
education. Environmental Education has the potential to be directly and actively used by
Antarctica New Zealand as a management tool to optimise the achievement of objectives of
policies and plans (M.f.E., 1998, p. 11), such as raising staff, visitors, public, commercial and
other external organisations’ awareness of Antarctica, its environment and issues associated with
human interactions. No evidence was found in Antarctica New Zealand documents of recognition
of environmental education as such. It may be that Antarctica New Zealand are unaware of
environmental education or its potential as a management tool.
There is no acknowledgment of the Ministry for the Environment’s strategy for environmental education within Antarctica New Zealand’s literature. The Ministry for the Environment have adapted Lucas’ (1979) description of environmental education as being comprised of education in, about, and for the environment.

Although no clear indication of Antarctica New Zealand’s understanding of environmental education and its potential as a management tool has been identified, Antarctica New Zealand addresses education about Antarctica’s environment particularly well. Education about the environment is information based. Antarctica New Zealand’s Education Strategy is based upon an academic assumption that awareness and knowledge based upon information equate to education. Environmental education approaches that inform are nowhere near as effective as those that guide or facilitate learning (McKay, 1998).

Antarctica New Zealand’s training and field manual appear to address education in the environment and about the environment, but not for the environment. It is not clear to what extent education in the environment is done, nor its purpose and outcomes. There is considerable potential for environmental education to extend beyond survival in the Antarctic environment to education for life in any and all environments. Such environmental education would not only assist Antarctica New Zealand in realising its objectives in Antarctica, but also for Antarctica, within Antarctica, from ‘back home’ in New Zealand and further afield.

It appears that awareness, knowledge are adequately addressed through Antarctica New Zealand’s informational approach to education. Without the connection of understanding, skills, attitude to continue elsewhere, values, or practice for the environment, in both a local and global senses, outcomes of education efforts are likely to be short-term and context-specific. (Van Matre, 1984). Dewey’s (1938) and the Ministry for the Environment’s descriptions of education are not likely to actualise in these conditions. By ensuring the environmental sensitisation (McKay, 1998) of public, visitors and staff, through effective environmental education efforts, the benefit of ecological literacy may be realised, allowing the achievement of Antarctica New Zealand’s objectives.

Most of Antarctica New Zealand’s information is presented in written form. Different people have different learning preferences. Fleming (N.D.) has identified four learning preferences amongst people of Western Society. If an educational effort is to be optimally successful, its facilitators need to recognise, consider and cater for as many learning styles as possible. In order to do this, educators need to be aware of the four learning styles and their traits. An acronym that assists educators in remembering to consider and cater to the four learning preferences in educational efforts is VARK; visual, aural/oral, read/write, kinaesthetic (Fleming, N.D.).

A visual learner tends to be holistic rather than reductionist in their approach to learning, wanting the whole picture. Visual learners do not like pamphlets, words, being lectured, or communications that rely on word usage, syntax or grammar. Demonstrations, models and videos
are examples of media that a visual learner will respond to and learn from. Aural/oral learners prefer to hear and orally discuss information. An oral learner would prefer to have this page explained to them. Written words are not as valuable or understandable as those they hear. A read/write learner prefers written words and lists. They tend to believe that meaning is within words, so any talk or pictures are okay, but print and labels are better. Kinaesthetic learners tend to want to experience something in order to understand it. Written and/or aural information is only valuable if it sounds practical, real and relevant.

McKay (1998) has illustrated that the same words or ideas can be understood in different ways, depending on individual backgrounds or contexts, and will result in different approaches and potential outcomes. Both the Ministry for the Environment (1998) and Dewey (1938) have defined the term ‘education to mean the development of awareness, knowledge, understanding, skills, attitudes and practical experience suited to a given context or situation, through facilitation. It is important that Antarctica New Zealand clarifies its interpretations of key terms such as ‘education’.

The use of the terms ‘training’, ‘information’ and ‘education’ in Antarctica New Zealand’s current educational approach is confusing.

The term ‘train’ infers to teach in such a way that responses to certain stimuli become ingrained and automatic (Oxford Dictionary), in the same sense as the term ‘conditioning’ may be understood. The term ‘information’ refers to items of knowledge. The term ‘education’ can be interpreted as supplying systematic instruction.

In none of these definitions is there a requirement for a student’s understanding. The impact on behaviour of information, training and education can be minimal and may be dangerous without an individual level of understanding of context and practicality (Walsh, 1993).

The results of Antarctica New Zealand’s education efforts are reported in terms of efficiency (output / input) in annual reports. In the light of the proactive nature of its Environmental Management Strategy, and the objectives of its Education Strategy, it would be far more appropriate for education efforts to be reported in terms of effectiveness (outcome / objective).

The following chapter will draw conclusions from this study, upon which recommendations will be made towards the optimisation of environmental education as a management tool to help achieve Antarctica New Zealand’s goals and objectives.
5.0 Conclusion and Recommendations

Antarctica New Zealand has engaged a proactive style in its management documents, describing a vision and mission, with policies, objectives, goals, strategies, priorities and principles that align towards the visions realisation. Despite a transitional recognition of humanity's inseparable interrelatedness with the environment, the proactive base is weakened because of a confusing mixture of problem-based, anthropocentric and technocentric assumptions. The use of ecocentric terms upon an anthropocentric framework may be due to the political nature of Antarctica New Zealand, its operations and its documents (McKay, 1998).

It would be very appropriate for Antarctica New Zealand to strengthen its management approach by adopting philosophical frameworks of a more ecocentric nature. Such a development might be based on existing models, such as Harvey's (1977) description of environmental education as being: people-focused, addressing human interests; environment-focused, addressing the biophysical environment and its systems; and relationship-focused, addressing the relationship between human beings and the Earth, as well as the products and processes resulting from that relationship (McKay, 1998, p. 9).

Antarctica New Zealand's literature, as well as the international and New Zealand legislation influencing it, does not recognise, consider or acknowledge any cultural, religious or philosophical perspectives other than Western, anthropocentric, Judeo-Christian, problem-based perspectives. It is recommended that a broad scope of philosophies, values, as well as cultural and religious perspectives are researched, with adequate cross-cultural and inter-disciplinary consultation (Negra & Manning, 1997), and incorporated in Antarctica New Zealand's policies, as a model of appropriate representation in global environmental management. These considerations are very much a part of environmental education towards ecological literacy (Orr, 1990; 1992).

A capitalist, human-centred perspective dominates the Antarctica New Zealand literature, to the extent that results of education efforts are reported in terms of efficiency (output / input) rather than effectiveness (outcomes / objectives). Such economic assessment does not marry easily with the proactive statements of goals and objectives in Antarctica New Zealand's literature.

The fact that Antarctica New Zealand is a government entity has both positive and negative ramifications, considering New Zealand's recent history. New Zealand's government has, of recent times, displayed a propensity for corporatising and then selling New Zealand's assets. Antarctica New Zealand is the current trading name for New Zealand's Antarctic Institute. Trading names and trades are able to be sold. It may be that New Zealand's interactions with Antarctica depend as much, or more, upon governmental integrity and hidden agendas as upon Antarctica New Zealand's Environmental Management Strategy (1998).

Both the draft Environmental Management Strategy for the Ross Sea Region (NZAI, 1999) and Antarctica New Zealand's Environmental Management Strategy (1998) provide a framework for
managing New Zealand's interactions with Antarctica, balancing benefits of human access with conservation of the region, yet in many ways their provisions will be very difficult to enforce.

Antarctica New Zealand needs to clarify whether its priority is in its commitment to the protection or conservation of Antarctica and the Southern Oceans, or in its commitment to their development, and why; Antarctica New Zealand's mission statement appears to describe an oxymoronic objective.

While Antarctica New Zealand's principles and priorities appear sound and achievable, some refinements are needed, such as ecological inter-relatedness being clarified and employed in a global as well as local sense.

Antarctica New Zealand's understanding of, and approach to, environmental education is critical to the effective management of Antarctica and the Southern Ocean. The effectiveness of Antarctica New Zealand's management practices depends on Antarctica New Zealand's ability to develop appropriate levels of awareness, knowledge, understanding, skills and environmentally responsible attitudes and practices amongst staff, visitors to Antarctica, public, commercial and other external organisations.

Environmental Education has the potential to be directly and actively used by Antarctica New Zealand as a management tool to optimise the achievement of objectives of policies and plans (M.F.E., 1998, p. 11), such as raising staff, visitors, public, commercial and other external organisations' awareness of Antarctica, its environment and issues associated with human interactions. Although it may be that Antarctica New Zealand are unaware of environmental education or its potential as a management tool, much of Antarctica New Zealand's management practices, including staff and visitor training, information services, and administrative interactions, already involve components of environmental education.

It would not take much for Antarctica New Zealand to equip itself with an effective and comprehensive environmental education programme, based upon the systems that are already in place. Before this may be done, it is recommended that Antarctica New Zealand should assess understandings and practices in environmental education amongst its permanent and seasonal staff, with their perceptions of results, strengths and weaknesses. It is recommended that Antarctica New Zealand researches the range of approaches to environmental education being practiced in New Zealand and internationally, with what objectives and effectiveness, as well as investigates opportunities the development of an environmental education programme towards environmental sensitisation as an integrated facet of Antarctica New Zealand's activities.

It is suggested that through such developments, Antarctica New Zealand may realistically hope to achieve its goal of providing "leadership that ensures all New Zealand activities occur within a framework which safeguards the environment and other essential values of the Antarctic and Southern Ocean" (Antarctica New Zealand, 1998, p. 1) through a supportive, ecologically literate national and global community.
References:


Antarctic (Environmental Protection) Act, 1994.


Antarctic Marine Living Resources Act, 1981.


Appendix 1

New Zealand Antarctic Environmental Legislation and Other Relevant Agreements

Convention on the Conservation of Antarctic Seals (CCAS)

The Convention was adopted by Antarctic Treaty Parties in 1972 in response to concerns about the vulnerability of Antarctic seals should commercial sealing recommence.

The Convention covers all species of seals in Antarctic waters and sets conservative catch limits on Crabeater, Leopard and Weddell seals. The Convention prohibits the catching of Ross, Elephant and Fur seals. There are also provisions relating to closed seasons and closed areas for any proposed commercial sealing activity.

New Zealand is not a contracting Party to this Convention. Although New Zealand is a signatory, the Convention has not been ratified by New Zealand or implemented in domestic law. New Zealand’s view is that it cannot accept a Convention that provides for the commercial exploitation and harvesting of seals and would view any such development with serious concern.

Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR)

CCAMLR came into force in 1992 in response to the heavy exploitation and overfishing of fish stocks in the Southern Ocean.

CCAMLR is based on the “ecosystem approach” whereby commercial fishing takes account not only of the impact on the targeted species but also on the prey and predators of that species. This ensures that the likely implications for all links in the food chain are examined. CCAMLR is thus concerned with seals and seabirds as well as fish, squid and krill.

The Antarctic Marine Living Resources Act gives effect to CCAMLR provisions in New Zealand law. The Act requires that New Zealanders obtain a permit to take any marine species in Antarctica. The Act applies to commercial fisheries as well as to any New Zealander wanting to undertake recreational or scientific “fishing” in Antarctic waters.

For the first time, New Zealand has initiated a new fishery in the Ross Sea. The fishery is for the Patagonian toothfish (Dissostichus species) and is conducted under the strict fishing and reporting regulations set down by CCAMLR. These regulations include restrictions on where, when and how fishing takes place, reporting conditions, the use of a vessel position tracking system, and the acceptance of on-board observers.

Marine Mammals Protection Act (MMPA), 1978

The Marine Mammals Protection Act provides for the protection of marine mammals in New Zealand’s Exclusive Economic Zone and applies to New Zealanders in the Ross Dependency of Antarctica. The Act is administered by the Department of Conservation.

The Act requires that a permit be obtained for any activity which proposes to take or harass any marine mammal. This includes any activity carried out for the purposes of scientific research.
Antarctica (Environmental Protection) Act 1994

The Antarctica (Environmental Protection) Act 1994 is the New Zealand domestic enabling legislation to implement the Protocol on Environmental Protection to the Antarctic Treaty. The Protocol was adopted by Antarctic Treaty Parties in 1991 and calls for the comprehensive protection of the Antarctic environment and dependent and associated ecosystems.

The Protocol includes provisions for environmental impact assessment, the conservation of Antarctic fauna and flora, waste disposal and waste management, the prevention of marine pollution and area protection and management.

Maritime Transport Act 1994

The Maritime Transport Act is the New Zealand domestic enabling legislation that will (when in force) implement the International Convention on the Prevention of Pollution from Ships (MARPOL) in New Zealand law. Specific provisions of the Convention will apply to ships operating in Antarctic waters.

In particular, provisions regulate the discharge of oil or oily mixtures into the sea, the disposal of garbage and the discharge of sewage at sea. These provisions are referred to in Annex IV of the protocol with the intent that the Parties will comply with these and any other regulations that subsequent reviews of MARPOL might deem appropriate.