The Challenge of National Park Management

A comparison of Management Plans of the Blue Mountains and Banff National Parks in accordance with Ecological Sustainable Development

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Executive Summary

National Parks are essentially areas protected mainly for their natural and cultural heritage. They exhibit some of nature's most magnificent works and offer millions an escape from their hectic urban lifestyles. These protected areas are also home to a plethora of species that reside within their boundaries, many of which are considered endangered or threatened. Ecosystem services like clean water and air, and contributions to the regional economy are just some of the other values of a national park. In this era, untouched landscapes are becoming evermore scarce and it has been recommended by The World Commission (1987) that all nations create a complete network of stringently protected areas. The Commission also urged that the preservation of species and their ecosystems are a *prerequisite* for Sustainable Development or more recently, Ecological Sustainable Development. (McNamee, 1994)

This study focuses on two similar national parks, namely Banff National Park in Canada and the Blue Mountains National Park in Australia. Both parks are similar in terms of their high proportion of visitors per annum, contain residential development and major transport systems, World Heritage listed, extensive surface area, located in a developed country, managed by at least one institution, situated near highly developed areas, have adjoining protected areas and finally, they both have management plans. It is this management tool - the management plan that is the main focus of this study since they are meant to direct actions for a period of 10 to 15 years. The main task was to identify whether these plans were in fact in tune with the concept of Ecological Sustainable Development (ESD).

In order to determine if the plans were in line with the concept of ESD, a set of principles known as the Bellagio Principle which were devised in 1996 at Bellagio Italy, were the criteria used in the assessment and a point system between 0 and 4. These 10 principles offer a set of guidelines that enables us to assess our efforts towards sustainability on a variety of levels (Baker, 2000). They have been previously used for the assessment of indicators and State of the Environment reports, which are instruments used to assess whether the goals and objectives stated in a management plan have been successfully implemented. However, the aim of this study is essentially to take the assessment one step back and evaluate the actual management plans. In conjunction with these principles, interviews with park managers, mayors and residents were also conducted to obtain supplementary and up to date information.

The findings of this study conclude that the management plan of Banff National Park had a higher correlation with the Bellagio Principles than the Blue Mountains management plan, with an overall score of 21 and 14 out of 36, respectively. In this sense, the plan of Banff could be offering direction that is more in tune with the concept of Ecological Sustainable Development, and could therefore be accelerating the nations path towards ESD. From these findings, it can be fairly stated that management of the Blue Mountains can learn from the sequestered knowledge and mistakes made in a park 74 years its senior. After all, the reversal of damaging decisions is usually the most challenging task.

It is needless to say that both management plans still need work, since neither had a perfect score when correlated to the Bellagio Principles. But even with the creation of a 'perfect plan', it would be rendered useless if it were not fully implemented. This study identified a number of hindrances like a lack of resources, implicit decision-making, social forces and the philosophical split within the managing organisation. Without a solid understanding of these obstacles and solutions to overcome them, a plan could be just another item gathering dust on a shelf.

Definitions

Biodiversity - the variability among living organisms and includes diversity within and between species and the diversity of ecosystems

Bioregion - an area constituting a natural ecological community with characteristic flora, fauna, and environmental conditions and bounded by natural rather than artificial borders.

Ecological Integrity - the degree to which a place or ecosystem retains its native components (plants, animals and other organisms) and processes (such as growth and reproduction) intact

Ecosystem - a dynamic complex of organisms and their non-living environment, interacting as a functional unit

Inter-generational Equity - equity between generations

Intra-generational Equity - equity within a generation

Introduced species - a translocated or alien species occurring at a place outside its known natural range as a result of intentional or accidental dispersal

Precautionary principle - precautionary measures should be taken when some cause and effect relationships are not fully established scientifically

Abbreviations

CSIRO	Commonwealth Scientific and Industrial Research Organisation
ESD	Ecological Sustainable Development
IUCN	International Union for the Conservation of Nature and Natural Resources/The World Conservation Union
MP	Management Plan
NP	National Park
NPWS	New South Wales National Parks and Wildlife Service
PEICNP	Panel of the Ecological Integrity of Canada's National Parks
UNESCO	United Nations Educational, Scientific, and Cultural Organization

1. Introduction

1.1 Background

National Parks and other protected areas are today's main method in protecting and exempting areas from the pressures of development, and as an attempt to safeguarding its natural, cultural or historic heritage. The problem of effective park management is becoming increasingly evident due to external and internal pressures. Areas surrounding national parks for instance are becoming evermore urbanized or exploited for industrial purposes. Internal pressures include the need for tourism to raise revenues and its subsequent development requirements within the park boundary. These pressures combined make national park management a true challenge of today.

National Parks (NP) are areas protected to conserve an area that is considered nationally significant because it contains regions of rare and representative ecosystems (natural heritage), archaeological sites (cultural heritage) or historic sites (historic heritage). Whatever the reason, national parks are areas that provide millions of people a chance to rejuvenate their minds and spirits and separate themselves from the sometimes hectic life that occurs in urban settings. They are also areas that are fundamentally important for the fact that they are regions that are supposed to be exempt from development pressures like mining and urbanisation. This should allow for the continuation of ecosystem processes to occur and provide us with ecosystem services like water and air purification, on which we depend. The values of national parks are wide and varied, however they often go unnoticed by the casual passer-by and perhaps even by park managers themselves.

1.1.1 National Parks and Ecological Sustainable Development

The concept of Ecological Sustainable Development (ESD) is on the agenda of most developed countries. The economy, society and the environment are often depicted as three interconnected spheres, with the overlapping area often expressed as the zone where sustainable development occurs. The infamous definition of sustainable development, where we meet "the needs of the present without compromising the needs of future generations" (Brundtland Commission, 1987) is the rave of our generation, but it is also considered to be rather vague and hence a definition gladly adopted by many.

In *Our Common Future* report (1987) The World Commission of Environment and Development argues that species and ecosystem preservation is a *prerequisite* for sustainable development. It recommends that all nations preserve at least 12% of their terrestrial wilderness through the creation of a complete network of rigorously protected areas like nationals parks. Today however, it is not sufficient to designate an area a protected area and expect the ecological systems therein to be automatically preserved for all time. National parks of today face many pressures and as result require some form of management. They are not areas defined by an impermeable boundary, but rather a porous one that interacts with the areas surrounding it (Searle, 2000). In addition to this, national parks are areas consisting of not only ecological systems, but also economical, social and cultural subsystems. Hence it is the argument of this paper that if nations wish to progress towards Ecological Sustainable Development, then their management of national parks must also be consistent with the concept of ESD.

1.1.2 National Park Management

The main management tool of national parks is primarily the Management Plan. It is a fundamental document, as it should direct the management of the park for a designated period, usually between 10 to 15 years. Each management plan commonly expresses a 'core vision' that the park managers aim to aspire through broadly described actions. This thesis focuses on national park management plans and compares the plans of two similar national parks residing in both Australia and Canada. Specific focus will be on the Blue Mountains National Park of Australia and Banff National Park of Canada. Both of these parks occur near dense urban settings, are part of a greater national park system, have permanent residential occupancy and similar transportation systems within the park boundary. In addition to this, both national parks are experiencing similar pressures like reduced revenue, loss of biological diversity, large influx of tourists per annum, rising public-private partnerships etc. Although both national parks are quite similar in terms of their physical makeup, and external and internal

pressure factors, their management plans are fundamentally different. The differences between these management plans will be analysed in depth in this thesis.

1.3 Two Case Studies

The oldest national park in Canada, Banff National Park was established in 1885 and represents the first case study in this paper. Initially, an area of 26 km^2 was reserved to protect the hot mineral springs found on Sulphur Mountain from settlement and private development, has now been increased to span an area of around 6,641 km^2. Banff is located on the eastern side of the Rocky Mountain System, in the province of Alberta and in close proximity to the town of Canmore. The park was listed on the United Nations Educational, Scientific, and Cultural Organization (UNESCO) list of World Heritage sites in 1984 and also as a World Biosphere Reserve. It also forms part of four contiguous national parks, consisting of three provincial parks and several wilderness areas. These have formed what is now known as the Canadian Rocky Mountain Parks World Heritage Site. (McNamee, 1994)

The second case study is the Blue Mountains National Park of Australia. It was established in 1959, 74 years after Banff NP. It is located on the Blue Mountains plateau approximately 50 km west from Sydney, which is Australia's largest city. The plateau is part of a mountain range that runs along the east coast of Australia known as the Great Diving Range and forms a western boundary. The national park is small in comparison with Banff, but still covers quite an extensive area of 2,470 km^2 (Fox, 2000). It was also listed on UNESCO's World Heritage Sites in June 1988 for its outstanding universal significance. In 2000, The Blue Mountains National Park together with 6 other national parks and one reserve were inscribed on the World Heritage List that now covers an area of over 10,000 km^2 and is called the 'Greater Blue Mountains Area'. Such an extensive area will help to secure the long-term conservation of plant and animal communities (Blue Mountains NP Management Plan, 2001).

1.4 Study Aims and Objectives

The objective of this thesis is to examine the management plans of two similar national parks and compare them. The similarities and differences will be analysed and correlated to the Bellagio Principles which serve as guidelines for the practical assessment of progress towards ESD. The primary aim of this thesis is to determine which management plan is more consistent with the concept of Ecological Sustainable Development.

1.5 Limitations of the Study

This study appears to be the first, if not the first attempt to carry out a comprehensive assessment of national park management plans in relation to the concept of Ecological Sustainable Development. Much of the information surrounding park management does not concentrate on the management plan itself, rather the issues that management must overcome like recreational pressures and a loss of biological diversity for instance. As a consequence there is no basis for comparison with other such studies.

Another limitation of the study includes the analysis of the management plans using the Bellagio Principles as a framework for the assessment of progress towards Ecological Sustainable Development. The analysis is based on the author's subjective interpretation of the principles and the information presented in the management plans, although every effort was made to be as objective as possible.

Other limitations include access to information and budget constraints. Although every attempt was made to access information regarding Banff National Park from Sweden and Australia, some grey literature would obviously remain unattainable.

1.6 Methodology

1.6.1 Site Selection

The Blue Mountains National Park of Australia and Banff National Park of Canada were selected for this comparison as they have many important aspects in common. These include the following:

- Contain residential development
- High proportion of visitors per annum
- Contain major transport systems
- World Heritage Listed
- Extensive surface area
- Located in a developed country
- Managed by at least one institution
- Situated near highly developed areas
- Adjoining protected areas
- Management plans

1.6.2 Qualitative research

Since the aim of the study was to compare and assess the management plans of national parks in relation to the concept of Ecological Sustainable Development, a qualitative methodology was used. In order to provide insight, the parks were firstly compared on a structural level i.e. surface area, number or tourists etc. The comparison was then followed by the use of the Bellagio Principles to determine correlation of the management plans with the concept of Ecological Sustainable Development. A quantitative approach was however used in the comparison of the plans to the Bellagio Principles, to assist in the aggregation of the results in a comprehendible manner. Correlation with each of the 10 principles was based on a scale ranging from 0 - 4.

1.6.3 Literature study

The first topic investigated was the Blue Mountains National Park of Australia and then of another similar national park in a developed country – Banff National Park in Canada was the resulting candidate. Background information regarding national park evolution, values, management and their importance in terms of ESD were reviewed in order to understand the dynamics of protected areas in a developed country and the significance of these protected areas on a local, regional and international scale. Generally, the information gathered came from secondary sources such as newspapers, books, journal articles and official websites. Some primary information came from personal visits to the Blue Mountains National Park.

1.6.4 Interviews

A diverse range of stakeholders were chosen for the interviews such as park managers, municipal mayors, residents of the national park and surrounding areas and entrepreneurs. For simplicity, the interviewees will be categorised into informant and respondent groups. Park managers and other lower rank employees will be categorised as informant group 1, mayors and other councillors as informant group 2 and entrepreneurs as informant group 3. Residents will be categorised simply as a respondent. The selection of certain interviewees was based on their position held such as mayors and park managers. Park managers were regarded as being key interviewees as they were likely to know the most about the park and its corresponding management plan due to their responsibilities. In both case studies however, park managers referred the questions to other employees, possibly due to time restrictions. Other stakeholders such as residents were also considered valuable in offering perhaps, a more objective opinion. The selection of residents was done arbitrarily.

The interviews were undertaken with the initial aim of obtaining information regarding plan implementation. Throughout the process however, the responses were either too vague or in some cases the respondent was relatively unfamiliar with the subject matter. As a result, the information obtained was not suitable for any in depth analysis regarding plan implementation. Instead it provided supplementary and up to date information pertaining mainly to the management plans, which have been included in the assessment of the management plans against the Bellagio Principles. In some cases, the interviews were also useful in testing information obtained from the literature.

The interviews were semi-structured *(Appendix 1)* and in some cases, sent to the interviewee in advance which allowed them to properly structure their answers. This was the case in approximately one quarter of the cases with respect to the informant group only. In a number of instances, fewer people from the informant group were interviewed via telephone and substituted with e-mail responses, depending on the availability of the persons. All respondent interviews were done via telephone without prior correspondence. Moreover, additional questions were sometimes asked as conversations flowed or when extra clarification to e-mail responses was required (*Appendix 1*). A total of 24 people were interviewed.

2. General Information about National Parks

2.1 National Park Definition

Although there is no collectively agreed upon definition of what constitutes a national park (Benton and Short, 1999), the IUCN has however formally defined a National Park as a:

> "Natural area of land and/or sea, designated to (a) protect the ecological integrity of one or more ecosystems for present and future generations, (b) exclude exploitation or occupation inimical to the purposes of designation of the area and (c) provide a foundation for spiritual, scientific, educational, recreational and visitor opportunities, all of which must be environmentally and culturally compatible." (IUCN,1994)

The International Union for the Conservation of Nature and Natural Resources (IUCN) which was a Union founded in 1948, has produced global standards, environmental conventions and scientific knowledge. It consists of members from all over the globe and thousands of volunteering, internationally recognised experts from over a 180 different countries. The main vision of the Union is to support societies on a global scale to conserve ecological integrity and ensure that their use of natural resources is done in an equitable and ecological sustainable manner (IUCN homepage No1). IUCN together with the United Nations Educational Scientific and Cultural Organisation (UNESCO) are responsible for developing the criteria for national park selection and management (Hannenberg and Löfgren, 1998). Although there are ten different categories of protected areas developed by the IUCN, national parks however cover more surface area than any other category (Cornelis Van Kooten and Bulte, 2000).

2.2 National Park evolution

The evolution of the national park idea, according to a Canadian ecologist Stephen Woodley, is a societal reaction to ecosystem deterioration. We currently live in a world that is far from being perfect and wild areas are being compromised for development each day, hence the need for national parks. Society does not automatically protect untouched wild areas probably because we are purely unaware of, or just choose to ignore the need to conserve them (McNamee, 1994). In this case, they are areas that are socially constructed and essentially time capsules reflecting the values, attitudes and perceptions dominant at the time of their creation (Benton and Short, 1999).

The world's first National Park was the Yellowstone National Park located in the United States. In 1870, an expedition known as the Washburn Expedition systematically explored the territory of Yellowstone and discovered the uniqueness embedded in its high concentration of geysers, hot springs and fumaroles. Shortly after the discovery, government protection was acquired for the whole region and the idea of a national park was on the way to materialising, and Congress declared the region a national park on May 10, 1872. However, devoid of proper regulations, the park was ravished by hunting and vandalism, and even plagued by bandits in the early 1900's. (Peraboni, 2001)

Management and behaviour parameters evolved steadily, but it was only in 1916 when Stephen T Mather was appointed the position of first director of the National Park Service, that the management of national parks in the US was transformed. It is claimed that these changes were positive as they improved conditions in the park and also the management practices. Mather was convinced that the success of the park system relied on attracting people to the parks (Darland, 2000). He fervently believed that the national parks and all its inherent wildness was a tool that could evoke patriotism and civilise the people of America, and so should also allow for democratic access (Dilsaver and Wyckoff, 1999).

In light of this, Mather initiated the construction of comfortable lodges and roads into the heart of National Parks as to compel the ever-increasing number of automobile drivers after World War I, to come and visit the parks. The development mindset endorsed by Mather's contributed to the opening up of once isolated regions. In 1937, Yellowstone National Park visitor numbers amounted to just 500,000. Today, the park must accommodate an average of 3 million visitors per annum. By the beginning of this century, many countries had created or had blueprints for the creation of national parks which imitated the USA. Most of the early parks however, were located in areas that we today consider developed (Cornelis Van Kooten and Bulte, 2000). At

present, the commitment to the mandate of 'access for all' is common in many national parks, but it is also one of the reasons why there is a reduction of ecological integrity in many national parks.

In any case, the creation of national parks and other reserves has become a fundamental component of global environmental protection. Today, the national park system is the most extensive form of protection for some of our most exceptional natural areas. There are over 120 nations that have committed themselves to protecting over 1000 national parks (McNamee, 1994). There has been a worldwide export of the national park concept founded in the United States, although the ideals of this time are becoming less Romantic and more ecologically inclined (Benton and Short, 1999). Criticism surrounding this model of a national park is also prevalent, and sometimes depicted as nothing but a mere product of an affluent culture, creating dysfunction in poorer nations where people once reliant on these areas for their livelihoods, are shied away (Blaikie and Jean renaud, 1996). In any case, national parks have become an important part of our culture, whether it is in an industrialised nation or a developing one.

2.3 What are the values of National Parks?

National parks are areas protected for their unique biological or geological processes and also cultural significance, and they often represent some of the world's most awesome examples of wilderness or landscapes of outstanding grandeur. Amazingly enough, they are also areas that have continued to exist despite changes in economic status, political disorder and social injustices (Davis and Halvorson, 1996a). The values of national parks are wide and varied, and often come under the environmental, social and economic categories. Some of these values are illustrated in Table 1.

Table 1: Compilation of use and non-use values of protected areas

USE VALUES			NON-USE VALUES	
Direct use values	**Indirect use values**	**Option values**	**Bequest values**	**Existence values**
Recreation	Ecosystem services	Future information	Use and non-use values for legacy	Biodiversity
Agriculture	Habitats	Future uses		Culture, heritage
Fuel-wood	Flood control			Community values
Education	Nutrient retention			Landscape

(Source: IUCN, 1998:13 (adapted from Barbier *et al.*1997))

The use values are the aggregate of direct use and indirect use values, and also option values. *Direct use values* of areas like national parks are perhaps the most obvious such as the value of recreation. National parks are valuable as they present a general benefit for current and future generations (McNamee, 1994). These areas offer millions of people around the world an opportunity to undertake recreational activities as well as offer them opportunities for reflection, inspiration, mental and emotional renewal (Davies and Halvorson, 1996). We are only beginning to understand the importance of natural environments to the human spirit (Daily and Ellison, 2002). In addition to this, visitors to the park will often contribute to the economy of the national park and surrounding areas and therefore are considered important for regional economic development. In the case of Banff NP, expenditures by visitors in 1991 contributed $614 million Canadian dollars ($US449 million) to the provincial economy (Parks Canada Management Plan, 1997).

Besides the obvious benefits to humans, national parks as part of a greater bioregion, also help maintain ecosystem processes that sustain life on earth like water purification, carbon sequestration, pollination of native vegetation and crops – also termed 'ecosystem services' (Whitten et al. 2003). The *indirect use values* comprise mainly of these ecological functions and services. These areas are also important for the preservation of biodiversity (also considered an ecosystem service when considering the provision of options for the future)

which biologists stress to be one of the most important aspects of ecosystem resilience (Tacconi, 2000). This resilience allows for the proper functioning of ecosystems which generates those ecosystem services required by biological life. However, the extreme complexity of ecosystems has not allowed us to directly link biodiversity to ecosystem stability and therefore it may be more valuable for us to conserve and manage entire ecosystems within national parks to ensure their continued functioning and diversity of life within them (Van der Maarel. 1997). A step further would be to focus on the effective management of whole landscapes instead of just the region within the national park, also termed bioregional management (Tacconi, 2000).

The last category within the use values is the *option values* which is mainly concerned with the possible uses in the future that is perhaps not considered of any value at the present. Additionally if a national park is damaged from overuse with subsequent irreversible impacts in the present for example, then the option of using the park in the future is lost. Non-use values cannot be directly connected to the use of the national park. For instance, *bequest values* concerns the benefit of knowing that an area is protected for not only the present but also for future generations. Also the *existence values* are concerned with the benefit of knowing that a national park is protected even though it is of no direct use to humans. Many environmentalists dominated by the ecocentric worldview would argue that a national park for instance has value unto itself, regardless of its value to humans – basically the right to exist. National parks are also often spilt into cultural and natural heritage, which is rather artificial since the values associated with a park for instance are basically cultural. Therefore, a 'natural' landscape of a national park is as much 'natural' as it is 'cultural' (McArthur and Hall, 1993).

3. National Parks and Ecological Sustainable Development

The concept of '***Sustainable Development***' is a product of conflicting interests between the environmentalists who argue that there should be limits to growth or even cease growth to combat the threats of pollution, protect natural resources and value the civil rights of future generations. On the other hand, economists argue for a continued need for more development and growth, in particular for developing countries that are stricken by poverty. The World Commission of Environment and Development (also known as the Brundtland Commission) developed the renowned report *Our Common Future* (1987) in which the competing interests were bridged by proposing neither simply limits nor simply development but rather 'sustainable development' (Mitcham, 1995). In *Our Common Future* report (1987) The World Commission of Environment and Development states that:

"*Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs*" p43

and more specifically:

"*In the broadest sense, the strategy for sustainable development aims to promote harmony among human beings and between humanity and nature*" p65

There is much criticism surrounding certain aspects of the report such as the failed questioning of typically modern assumptions as highlighted by Tijmes and Luiff (1995) in *The Sustainability of Our Common Future: An Inquiry into the Foundation of an Ideology*, however it is beyond the scope of this paper to delve into such issues. Instead this paper will consider the concept of sustainable development as a step in the right direction as it fuses the issue of development together with the need to protect the natural world on which humans and other biological beings depend. An enhancement of the 'Sustainable Development' concept is Ecological Sustainable Development (ESD). The Australian Commonwealth Government in 1990 suggested the following definition for ESD (National Strategy for ESD, 1992):

"*Using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained and the total quality of life, now and in the future, can be increased*"

ESD has essentially placed the natural environment, as the foundation upon which all else is dependent. It identifies the fundamental importance of environmental conservation, whilst simultaneously incorporating social and economic factors into the equation (Towards Sustainability Report, 2001). When discussing sustainable development, this paper will primarily refer to the concept of ESD.

According to The World Commission, the main reason why we have development today is purely to satisfy the needs and aspirations of humans. An essential need is a basic requirement like food, clothing, shelter and jobs, and if these essential needs are not being met then there are legitimate aspirations for the acquisition of these. The living standards that go beyond the basic minimum requirements can only be considered 'sustainable' if the consumption standards are long-term in concept. The report recognises that each and every ecosystem cannot remain intact because economic growth and development do change the physical environment, and not usually in a favourable manner. This therefore resonates the importance of protected areas like national parks which are meant to be exempt from these type of changes.

The Commission urged in its report that all countries preserve species and their ecosystems as a *prerequisite* for sustainable development. The recommendation is that all nations create a complete network of stringently protected areas, included in these are national parks. The protected areas should represent each of the earth's foremost ecosystems as part of a global conservation strategy (McNamee, 1994). Another recommendation to all nations is a 12% preservation of their terrestrial wilderness. This is criticized by David Suzuki in *The National Parks of Canada* (1994) since the target assumes that the rest of the area (88%) is open for exploitation by humans alone. Yet Suzuki admits that it is at least a goal to aspire towards (McNamee, 1994).

The future seems bright in terms of applying the concepts of ESD to national parks and other protected areas, although criticism still surrounds this, such as the possible allowance of ecologically damaging growth in the long term. However, it can be argued that national parks and protected areas should not be thought of as a separate entity, but rather a vital part of the socio-economic and environmental context in which they find themselves. It remains a challenge of today, according to Nelson *et al* (1997) in the article of *Land Use and Decision – Making for National Parks and Protected Areas*, to determine what the concept of ESD actually means in terms of changes to land use, planning, decision making and management for national parks and their subsequent effects in reality. Assessments of proposed changes will be needed to help determine if they are compatible with the ideas on ESD (Nelson, *et al.*1997).

The important point however, not considered by Nelson *et al* (1997) is the application of ESD to *current* management practices of national parks, and not just when changes to the status quo occur. It has been suggested by Hitchcock (2000) in *National Parks Journal* that the way national parks and the areas surrounding them are managed today has meant that many of them are not ecologically sustainable. The argument of this paper is essentially that if countries like Australia and Canada want to progress towards Ecological Sustainable Development, then their current management of national parks must also relate to the concept of ESD. In order to determine this, the Bellagio Principles will be related to the main tool of national park management, namely the management plan of both the Blue Mountains National Park and Banff National Park in Canada.

3.1 The Bellagio Principles

The Bellagio Principles were devised in November 1996 at Bellgio, Italy by 24 international researchers and practitioners who were invited by the International Institute for Sustainable Development, Canada to attend the week-long conference in Italy. These principles were derived as a result of numerous international initiatives (e.g. the World Commission on Environment and Development and the 1992 Earth Summit) and the practical need to devise a set of guidelines that could assess our efforts on the road to sustainability at a variety of levels. The principles were officially approved by the Earth Council at the Rio +5 Summit in 1997 and appear in a number of UN Commission for Sustainable Development documents. (Baker, 2000)

All too often, documents and reports display their vague description of sustainable development and only sometimes state which actions will be taken to achieve this ultimate goal, even then one cannot be sure that those specific actions are a way towards Ecological Sustainable Development. The Bellagio Principles are an important development of recent times as they offer a framework for the practical assessment of progress towards ESD (Baker, 2000). In Australia, their practical application is occurring in the fields of Landcare, Coastal Zone Planning, and Fisheries Management. These principles have primarily been used in the development of indicators for the assessment of progress towards ESD, and in recent times for the preparation of State of Environment Reports (Hardi and Zdan, 1997; Baker, 2000).

Indicators and State of the Park reports are basically products of a management plan (figure 1) and instruments used to determine whether the aims and actions of a management plan are being implemented successfully (Commonwealth of Australia, 2003; BM State of the Park report, 2001). But the question of whether management plans that form the foundation of park management, are offering guidance that is in line with the concept of Ecological Sustainable Development still remains. This paper takes the evaluation one step back and assesses whether the actual management plans are consistent with the Bellagio Principles.

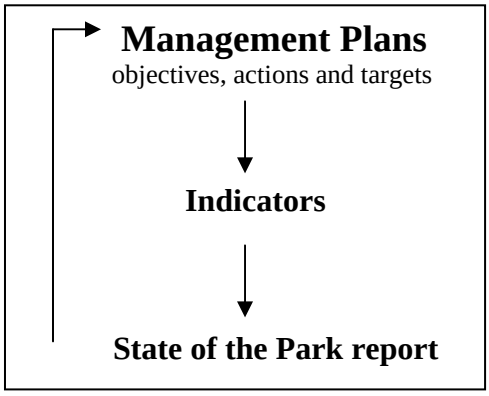

Figure 1: Assessment of MP implementation

The Bellagio Principles (*Appendix 2*) cover four different aspects of assessing progress toward ESD. The first principle is associated with a *vision* of Ecological Sustainable Development, which should be clearly defined and supported by goals. Principles 2 through to 5 are associated with the content, with a focus on the overall system and current priority issues. Principles 6 to 8 deal with key topics such as effective communication and broad participation.The final 2 principles build on the fundamental importance of continuous capacity for assessment (Hardi and Zdan, 1997). The principles have been modified for purposes specific to this study.

4. National Park Management

"***McDonald's signs in national parks, or parks closed to people. These are the two extreme views in the debate about how to manage our national parks***…" (Hundloe, 2000:13).

Management, in general terms, refers to the direction or controlling of actions and activities. It is an expression that usually implies responsibility and accountability (Nelson *et al*. 1997). There are many views regarding the management of protected areas. One of the most influential conservation biologists in North America Reed Noss, argues that although management of national parks is a form of control, ecological management is however necessary in many areas in order to preserve its biological diversity, especially when the area is inflicted by a variety of disturbance regimes. In opposition to this view is Neil Evernden, a professor of environmental studies at York University who contends that any type of management is a form of 'domestication'. Rick Searle, a former park naturalist with Parks Canada, however advocates any combination of approaches that ensures the most restoration and maintenance of wildness is viable (Searle, 2000). Alternatively, management of national parks can also be viewed as being essentially the management of people, such as the introduction of visitor quotas to manage the inflow of people (Machlis and Soukup, 1997).

The methodologies used in reserve management and the philosophies upon which they are based often differ from place to place. Even though such diversity does exist, a park is usually managed in a way that retains features that are thought to be natural or semi-natural, and considered to be desirable (Wood, 1983). Management practices eventually reflect emerging views, but these will not dismiss the accomplishments or benefit of old concepts but rather build on the existing foundation (Salwasser, 1999). There are generally three different types of management (Table 2). For an extensive period of time, management of national parks was based on corporate management. This approach came into fruition in North America during the 1960's and 1970's as pressure grew for recreational activities, environmental conservation, and for national parks and other protected areas. Canada for instance developed national, provincial and state systems plans where national park management would mainly be concentrated within its boundaries. Critics often refer to this type of management as a fortress or command and control mentality (Nelson *et al.*1997). The fortress model can be justified in the sense that without limits to use and access, national parks would be prone to the tragedy of the commons. Obviously the fundamental problem encountered with this type of management is deciding who should be denied access. Another problem with fortress management is that it provides little or no capacity for the sustainable use of park resources (Anderson and James, 2001).

There have been two significant challenges to the concept of corporate management, namely the evolution of scientific theory (e.g. landscape ecology, conservation biology) and the demands and ideas put forth by

indigenous people (e.g. challenging public ownership of national parks). The command and control mentality was modified very early with the realization that the opinions and ideas of users and citizens had to be taken into account. Public hearings, management plan reviews, and advisory committees were used to obtain information and ideas from those concerned with protected areas (Nelson *et al*. 1997). In the past 20 years or so, community based conservation has also been emphasised with growing interest in indigenous knowledge and local management institutions for instance (Blaikie and Jean renaud, 1996). Current thinking is still fairly confused, although there has been a shift towards ecosystem thinking which requires more co-ordination and co-operation over larger areas (Nelson *et al*. 1997).

Table 2: Different types of national park and protected areas management

Corporate Management	Controlling or directing an agency or group in accordance with a set of goals and objectives set by law, policy, and/or a Board.
Shared, Joint, or Co- management	Sharing of powers and responsibilities to varying degrees and in various ways, for example by legal agreement and memoranda of understanding.
Adaptive Management	Deciding on action through research and experiment, monitoring and assessment and adjusting to the results as deemed necessary.

(Source: Nelson *et al*. 1997, P56)

Apart from these three types of management, park managers of today, are still trying to successfully manage areas that are not fully understood. It is argued by Woodley (1997) that there needs to be a new management approach if national parks are going to play a part in abating environmental degradation. The management endpoint is to be based on 'ecological integrity', which needs to be based on a solid program of ecosystem science. It has been stated that there is a considerable lack of science-based knowledge that could somehow be traced back to the very beginnings of the national park – Yellowstone National Park of the USA, where legislation described the area as a mere 'pleasuring ground' (Zube, 1996). Searle in *Phantom Parks* (2000) stated that the "threat to [any] park is management at all levels, which lacks a vision in harmony with maintaining ecological integrity. The pressure to develop is ever present, resulting in scarce dollars being spent on things which run counter to protection, such as new bridges, boardwalks, campgrounds or bicycle paths. Meanwhile, ecosystem science remains underfunded" (Searle, 2000:37). In any case, we are in the midst of a paradigm shift from a mechanistic view to a more holistic one where nature is seen as a complex web of interactions. For resource managers, these changes signify a shift toward ecosystem-based management, and this means not just managing along political or administrative boundaries, but rather ecological ones (Nepstad and Nilsen, 1999; Propst *et al*. 1998).

In conclusion, park managers today have a difficult task of trying to find ways that ensure the protection and proper functioning of a park's natural heritage, whilst still allowing society to enjoy its landscapes and cultural heritage, and different types of development to occur within and beyond its boundaries etc. It is a balancing act that many types of management have not accomplished as of yet. In any case, management today seems to be shifting from corporate management to more co-operative, adaptive and scientifically based management types, which may prove to be more successful in the future. This paper will however concentrate on the main management tool used by managers in Canadian and Australian national parks today, which is the Management Plan. The next section considers this tool in detail.

4.1 National Park Management Plans: A Management Tool

Once a national park has been declared there is the common complication of deciding what to permit and what to prohibit. Preservationists will often seek to exclude people from the area, and recreationists alternatively demand access and facilities. A clash of demands leads to a constant struggle between stakeholders (McKay, 1977)**.** The main management tool of national parks, the Management Plan, is an important document that should decide the fate of a park for a certain period, usually 5 to 10 years. The plan usually states what the park

should be like in the future – a core 'vision'. The way in which this core vision is achieved is through broadly described goals and objectives stated in the management plan and undertaken by the managing authority (Point Pelee MP, 1995).

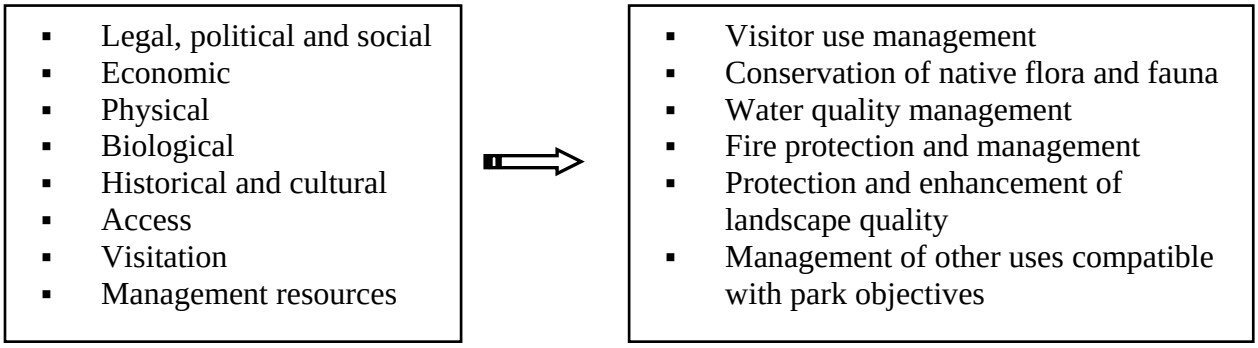

Figure 2: General issues included in a Management Plan
(Source: adapted from Worboys, *et al.*2001)

Once an area has been declared a National Park, the next step is the construction of a management plan. This process generally considers the topics illustrated in figure 2. The planning phase of a management plan is complicated and can be resource intensive. The collection of relevant and high quality data is fundamental, as it provides a foundation for effective management. Some of the earlier plans contained a lot of information regarding soil types and climate for instance, but failed to incorporate objectives or actions, thus offering limited direction in area management. The common terminologies in today's management plans are for example 'objectives', 'aims', 'actions' and 'strategy' which can often be confusing and interpreted in a number of ways. For this reason, IUCN has developed standards for the classification of ends and means. An 'end' can either be a goal or an objective, which is based on the degree of specificity. The 'means' refers to the guidelines and actions that are implemented to achieve the goal or objective, and again is based on the degree of specificity.

With respect to this classification, goals are considered to be quite general and by themselves insufficient for the direction of management. However, they are still important in management plans in stating the general direction of management. Guidelines are used in conjunction with goals and are usually developed without particular reference to specific circumstances or locations. On the other side of the spectrum is the objective, which is used for the effective evaluation and assessment of success or failure of a plans actions. An objective should ideally be specific, clearly stated, measurable, realistic and time limited where appropriate. An example of a goal/guideline and objective/action in a management plan for wildlife management might read:

1. **a) Goal**: "*To maintain viable populations of wary species such as grizzly bear, wolf, wolverine and cougar by reducing human-caused mortality"*
   (Banff MP,1997: 3:11.1)

   b) Guideline: *Construct wildlife overpasses as appropriate*

2. **a) Objective**: "*to reduce the number of grizzly bears killed as a result of human activity to less than 1% of the population annually"*
   (Banff MP,1997: 3:11.1)

   b) Action: "*Continue measures to reduce wildlife mortality on the Trans-Canada Highway to the west of the Town of Banff*"
   (Banff MP,1997: 3:11.1)

As indicated, objectives and goals set in a management plan are important to the future direction of management for a particular national park. Objectives need to be clearly defined; otherwise management may change with the preferences of the serving manager (Wood, 1983). The overall document serves as a guide for approx. 5 to 10 years, however management agencies often review their plans every 5 years which enables them to incorporate appropriate amendments. Also, a State of the Park report often compliments the review of the plan. This report is an auxiliary tool that can be used to measure progress of the objectives and goals set by the

management plan (Banff SoP, 2003). The following section gives a detailed account of the two national parks used in this study, namely Banff National Park of Canada and the Blue Mountains National Park of Australia.

5. The Case Studies: Banff NP and Blue Mountains NP

5.1 Site Description

5.1.1 Banff National Park, Canada

Banff national park is listed on the United Nations Educational, Scientific, and Cultural Organization (UNESCO) list of World Heritage sites and also as a World Biosphere Reserve. The NP is situated in the province of Alberta and forms the centre of the Central Rockies Ecosystem (CRE) in southwestern Canada. The boundary of this particular ecosystem, based on factors such as hydrology, fauna, flora and transportation for instance, is estimated to span an area close to 40,000 km^2. Protected areas of this ecosystem include Banff together with 6 other reserves and parks which protects around 30% of the ecosystem, the rest of the land is zoned for multiple use (Banff MP, 1997). The park is currently managed by Parks Canada, a national authority responsible for all national parks in Canada.

Banff National Park consists of picturesque sweeping valleys and deep canyons, glacial lakes, waterfalls and hot springs. It spans an area of around 6,641 km^2 and is dominated by three major life zones namely, the alpine, subalpine, and montane zones (McNamee, 1994). The montane zone is mainly located in areas of lower elevation (valley bottoms) and occupies only 3% or 199,2 km^2 of the total park area (Banff SoP, 2003). It is the smallest bioregion in Banff NP but is also the area that must support wildlife, tourism, transportation and accommodation (Banff MP, 1997). It has been reported that approximately 20% of this montane region has been adversely affected by the different types of development (Bernard *et al*). The subalpine bioregion occupies approx. 53% of the park area and resides between the montane and treeless alpine bioregions. The alpine region covers 44% of the park, most of which consists of rock, snow, ice, water and moraines (Banff SoP, 2003).
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The area's fauna is prolific and consists of grizzly and black bears, elk, mountain goats, mountain lions, wolves, moose and beavers, just to name a few. (National Geographic Society, 1995). Flora mainly consists of Douglas-fir, Trembling Aspen and Lodgepole Pine, White spruce, Eglemann Spruce and subalpine fir. Prescribed burning is used in the montane and subalpine regions for the restoration of vegetation and maintenance (Banff SoP, 2003).

There are also major transport systems transecting the national park, a major highway called the Trans-Canada Highway (TCH) and CP Rail, a railway line which accommodates around 25 to 30 trains each day. These transport systems provide for almost 5 million visitors to the park each year (Searle, 2000). They are primarily located in the Bow Valley (montane and lower subalpine bioregion), which at the time of construction provided the least amount of resistance through the eastern ranges of the Rocky Mountains. Ironically, this valley is also an ecologically sensitive area that provides free passage and rich habitat for the park's wildlife (Savage, 2000). Traffic on the TCH has been increasing by 5 to 8 percent per annum. To accommodate this increase, the highway has now been twinned for half its length (Banff SoP, 2003). It has been estimated however, that 54 percent of all vehicles that pass through the park do not stop (Banff MP, 1997). Annual visitation has also been slowly increasing by about 2.5% each year and it is expected that if these trends continue, Banff will have to accommodate 19 million by the year 2020 (Banff-Bow Valley Study, 1996).

The national park contains a local community in the Town of Banff located in the Bow Valley, which is now considered to be the largest community that exists within a North American national park (Searle, 2000). The town together with the local economy evolved with the tourism industry, with approx. 80% of all visitors to the park also paying a visit to the small community (Banff MP, 1997). An elected council administers the town, although the federal government still has the ultimate authority on issues regarding planning, land use, the environment and development. Another area of urbanisation is Lake Louise which predominantly serves as a Visitor Service Centre, and also as a minor residential community (Banff MP, 1997). In year 2001, there were 7135 permanent residing in the NP (Banff SoP, 2003). The town of Canmore borders the eastern boundary of the park and has a total population of almost 8,000. It is anticipated that it will reach 20,000 by the year 2010 (Banff MP, 1997).

Banff is Canada's most popular park and one of the few destinations of world renown. In terms of its tourism infrastructure, it is undoubtedly the most greatly developed nature oriented park of North America (Locke, 1997). The park offers a great variety of recreational activities including camping, skiing, canoeing, alpine and cross-country skiing, golfing, hot springs and spas, cycling, kayaking, horseback riding, hiking, fishing and wildlife spotting. There is also approx. 1,500 km of designated walking tracks dissecting the park. Banff is also very conveniently stocked with first class accommodation, entertainment, restaurants, ski resorts and museums. All in all, there are approximately 84 different types of accommodation ranging from hotels to backcountry lodges, to suite any taste (Banff MP, 1997).

5.1.2 Blue Mountains National Park, Australia

The Blue Mountains National Park of Australia was established in 1959, 74 years after Banff NP. It was also listed on UNESCO's World Heritage Sites in June 1988 for its outstanding universal significance. In 2000, The Blue Mountains National Park together with 6 other national parks and one reserve were inscribed on the World Heritage List that now covers an area of over 10,000 square kilometres and is called the 'Greater Blue Mountains Area' (BM MP, 2001). It is located on the Blue Mountains plateau approx. 50 km from Sydney in the eastern state of New South Wales, and is part of what is known as the Great Dividing Range - a mountain range that runs along the east coast of Australia. The national park is small in comparison with Banff, but it still covers quite an extensive area of 2,470 square kilometres (Fox, 2000).

The southern region of the park is also an important catchment zone, with its waters replenishing the reservoir known as Warragamba Dam, constructed in 1960 (Mosley, 1989). This is one of the most important sources of potable water for the residents of Sydney (Australia's largest city), and therefore the park is currently under joint-management by two government agencies, namely the New South Wales National Parks and Wildlife Service (NPWS), and the Sydney Catchment Authority. This catchment area requires additional management strategies provided by the Sydney Catchment Authority to control water quality, recreational activities, development and licensing (BM MP, 2001). The NPWS is responsible only for the parks residing within the state of New South Wales, and currently manages approximately 60,000 km^2 of parks and reserves or 7% of all land in New South Wales (NPWS homepage No 3).

Deep valleys, gorges and waterfalls dominate the national park. Many visitors (approx. 3 million per annum) come to the park for the easily accessible vistas, and for the array of recreational activities on offer such as bush walking (140km of designated tracks), abseiling, canyoning, vehicle based camping and guided tours. However, the high erosion potential of the park's soils and its associated impacts (sedimentation in creek beds etc) entail major constraints on both recreation and management of the park (BM MP, 2001).

The main ecosystem types of the park include hanging swamps, dry schlerophyll forest, healthland and woodland with shrubland. There are also sheltered gullies that may contain remnants of warm temperate rainforest (BM State of the Park Report, 2001). Dry forests and woodlands, dominated by eucalypts are the prevailing vegetation type (BM MP, 2001). The park is also home to a plethora of fauna such as cockatoos, skinks, geckos, kangaroos, wallabies, platypus, echidna, possums and gliders (Fox, 2000). Surveys have identified over 200 different bird species, 27 marsupials, 58 reptiles, 32 amphibians and 2 monotremes (BM MP, 2001).

Within the national park's boundaries are also twenty-six towns and villages, which actually divides the national park into two parts. In 2001 there was a permanent population of 73,675, which was actually 66,540 more residents than Banff for the same year. This developed area is referred to as '*the City within a World Heritage National Park'* and is managed by a local government agency, The Blue Mountains City Council. The city covers an area of approx. 1,430 square kilometres, 70% of which is incorporated in the national park (Blue Mountains City Council, 2003).

The two major transport systems, namely the Great Western Highway and the Main Western Railway, principally run parallel to each other and are situated in the chief corridor of development, all of which is located along the Blue Mountains Causeway or escarpment unlike Banff's string of development situated in the valley bottom (Mosley, 1989). Nevertheless, both entail their share of adversities. Another secondary transport corridor is created by the Bells Line Road, which also has its associated village and rural developments (BM MP, 2001). The transport systems in both National Parks are important economically as they are the main

systems for crossing or bypassing major mountain ranges in the region, and allow free passage from east to west in Australia, and south to north in Canada. From this general introduction to both parks, it already becomes apparent that they have a great deal in common. A more structured comparison can be found in *Appendix 3*. The following section further solidifies the common aspects by detailing the pressures affecting both parks.

5.2 Pressures affecting parks

Today, many national parks are experiencing similar kinds of pressures that management must effectively deal with if ecological integrity is to be sustained. Literature relating to Banff and Blue Mountains National Parks indicated that there are many established pressures exerted on the parks (Table 3). Pressures such as tourism and development within park boundaries have been problems already experienced by both parks for many years now. In recent years however, new pressures on national park management and conservation operations have begun to emerge such as reduced fund availability, and the subsequent reliance on public-private partnerships. These rather new, but significant pressures are all too common already in Banff and the Blue Mountains. Examples of these pressures will be elaborated upon using specific examples from the two case studies.

Table 3: Pressures affecting Banff and Blue Mountains NP

Established Pressures	New Pressures
Tourism Development within NP boundaries Conflicting Land uses Loss of biological diversity	Reduced government expenditure Tourism: contributor to regional development Emergence of public-private partnerships

(Source: Hall, 2000)

5.2.1 Tourism

National park management is experiencing increasing pressure from the mounting number of park visitors. Banff NP has as many as 60,000 people visiting the park each day during peak season of summer and around half as much during winter. It is predicted that by the year 2020, a visit to Banff will be like going to watch a football match (Searle, 2000). Many areas within the Blue Mountains NP are "showing signs of unacceptable environmental impacts" due to the 3 million or so visitors to the national park each year. These areas are seeing an increase in informal foot tracks, erosion, denudation of vegetation and reduced public safety (BM MP, 2001). Overuse seems to be a function of the number of visitors and the types of activities they engage in. In too many instances visitors expect the amenities of the urban zone like stores, cinemas, restaurants, golf courses, high class accommodation, and the opportunity to drive, boat or hike without restriction (Searle, 2000). There is however, a paradox when it comes to managing national parks and visitor use. It is argued that if we want to protect the heritage of national parks, then public support is vital which can only be satisfied through visitation (McArthur and Hall, 1993). Tourism in the Blue Mountains on the other hand is slowly decreasing with a loss of the market share to other regions like the Hunter region for instance (informant 3, 6/5/04). Tourism is also said to be insignificant in comparison to the impacts created by the urban development within the park – namely the Blue Mountains City (Brown, 2002).

5.2.2 Development within NP boundaries

The Blue Mountains City is regarded as being the single greatest threat to the areas natural integrity (Brown, 2002). The city is responsible for leaking around 70% of its treated sewage into the park, which has resulted in a build up of nutrients in the nearby Hawkesbury River. Mechanical harvesters will now be administered to remove aquatic weeds that are chocking the ecosystem (Macey, 2004). Also there are increasing pressures to increase property protection burning along the urban/bushland interface because of the threat of fire in the dry seasons, which may be a threat to biodiversity (Brown, 2002). Development within Banff Park boundaries throughout the 20th century has also introduced a number of pressures on its ecosystems. Development like towns, highways, railways and visitor facilities for instance. Shopping within the park's boundaries is diverse, with over 200 stores and a multitude of hotels and resorts (*Appendix 4*) aim to satisfy a variety of tastes and provide overnight accommodation (Eisler, 1997). In a ten-year period between 1986 and 1996, office space has

grown by 125 percent and retail space by 104%. Motels, hotels, bed and breakfasts however dominated the commercial space category (Searle, 2000). Most of the development has taken place in the ecologically sensitive area known as the Bow Valley, and has altered the natural environment in some way by fragmenting habitat and directly affecting fauna and flora. These adverse effects are compounded with the number of permanent residents and 4 million or so park visitors per annum, which ultimately lead to an increase in air and water pollution and solid waste etc. In contrast to the Blue Mountains however, Banff has an effluent system that currently exceeds federal and provincial requirements (Informant 1, 17/4/04). Other types of development such as the construction of dams and stream channelization has led to a loss of aquatic/riparian habitat and obstructed fish movement in Banff (Banff MP, 1997).

5.3.3 Conflicting Land Uses

At the latest World Parks Congress meeting in Durban 2003, it was recognised that protected areas are often managed exclusively as 'islands' as stated by the draft Durban Accord (IUCN, 2003) What is occurring today is the conversion of unprotected landscapes beyond park boundaries into subdivisions for housing development, tree farms, mines, ranches etc. These are considered incompatible land uses adjacent to and between national parks (Searle, 2000). The Blue Mountains area contains the largest sand deposits in the Sydney region. The city of Sydney requires approx. 7 million tonnes of construction sand per annum, and with existing deposits rapidly diminishing, there are mounting pressures to mine next door to the World Heritage site. Previous quarries in the area had unforeseen environmental consequences and the same could occur if this proposal is approved (Sydney Morning Herald, 2003). Another pressure is the close proximity of the park to Australia's largest city Sydney, which is continuing to expand westward towards the park's boundaries. Banff is also experiencing similar pressures whereby the wildlands that surround the national park are slowly disappearing with an increase in development and population. As a response to these pressures, ecosystems are changing and wide-ranging species must go elsewhere for suitable habitat. (Banff MP, 1997).

5.3.4 Loss of Biodiversity

Under the Threatened Species Conservation Act, three key threatening processes have been identified as adversely affecting the biodiversity of the Blue Mountains NP. They are the illegal removal of bush rock (for use in gardens), high frequency fire and fox predation. Introduced species like the fox wreck havoc on the natural values of the park by directly preying on or competing with native species, or indirectly by affecting the soil and water systems of the park. In addition to this, they can also reduce the recreational, aesthetic, scientific and cultural values of the park. The plan listed a total of 50 threatened plant species and 41 animal species (BM MP, 2001). Equally, the Banff-Bow Valley study, which was a two-year analysis of the montane habitat along the Bow Valley and is the most heavily utilised area of the park, highlighted their concerns about a loss of biodiversity and ecological integrity (Banff National Park homepage No6).

5.3.5 Reduced government expenditure

In the case of Banff NP, there have been budget cut backs to Parks Canada over the past fifteen years, thus increasing the need to generate revenue from other sources. The result can be devastating in some instances as this can lead to improper and excessive development which is inconsistent with Parks Canada's mandate of "maintaining ecological integrity". With reduced government expenditure, there is an undisputed pressure for Parks Canada to treat Banff NP not more like a public trust but more as a business. This business approach is termed by Searle in *Phantom Parks: The struggle to save Canada's National Parks* as the 'disneyfication' of national parks. (Searle, 2000)

5.3.6 Tourism: contributor to regional development

The tourism sector is an important contributor to local and regional economic development for both Australia and Canada, as national parks are a major tourist enticer. As mentioned previously approximately 3 million people visit the Blue Mountains NP, contributing approx. $645.8 million Australian dollars ($US454 million) (year end June 2000) to the regional economy and generating 5,683 jobs (BM Management Plan, 2001; Tourism New South Wales homepage) In the case of Banff NP, expenditures by visitors in 1991 contributed $614 million Canadian dollars ($US449 million) to the provincial economy (Banff MP, 1997).

5.3.7 Emergence of public-private partnerships

The pressure for national parks to raise revenue due to budget cuts has also led to the reliance of managers on the tourism industry, and this has also meant that management authorities like NPWS and Parks Canada have had to develop close collaborative partnerships with the private sector. The tourism industry is often seen as a tool for the conservation and protection of natural and cultural heritage, but if left unchecked can quickly have the opposite effect.

Presented in this section are examples of some of the most prevalent pressures facing both the Blue Mountains and Banff National Parks. These pressures offer managers of the national parks a challenge in today's modern society to balance the needs of society, and at the same time conserve the things that prompted the area into national park status to begin with.

6. Assessment of Management Plans using The Bellagio Principles

In this assessment, the management plans will be analysed and The Bellagio Principles (*Appendix 2*) provides the framework for Ecological Sustainable Development. Each principle assessed against the plans will be rated from 0 to 4, with 0 having no correlation, 1 having a low correlation, 2 an average correlation, 3 an above average correlation, and 4 an absolute correlation. It should be noted that not all principles and parts thereof will directly relate to the management plan in question because these principles were devised in such a way that it could be used globally, and at all different levels (Baker, 2000). In this study, principle 10 was not discussed due to criteria relating to issues beyond the scope of this study

6.1 Banff versus Blue Mountains NP Management Plan

*6.1.1 1st Principle: **Guiding Visions and Goals***

This principal requires clear and concise visions of ESD and related goals that define that vision (Hardi and Zdan, 1997).

Banff Management Plan

The management plan for Banff NP is based on a Core Vision and a Vision for Ecological Integrity. The core vision states "*Banff National Park reveals the majesty and wildness of the Rocky Mountains. It is a symbol of Canada, a place of great beauty, where nature is able to flourish and evolve. People from around the world participate in the life of the park, finding inspiration, enjoyment, livelihoods and understanding. Through their wisdom and foresight in -protecting this small part of the planet, Canadians demonstrate leadership in forging healthy relationships between people and nature. Banff National Park is, above all else, a place of wonder, where the richness of life is respected and celebrated."* (Banff MP, 1997:2.5.2).

Furthermore, the Vision for Ecological Integrity in the MP states that "*Banff National Park is a living example of the way in which ecological values are protected in a place where appropriate kinds and levels of human activity are welcome. The park's natural systems and all their component native species are free to function and evolve. The park supports and is supported by the natural systems of the region around it."* (Banff MP, 1997:3.2).

The MP does not provide a clear vision for Ecological Sustainable Development, although there are certain sustainability undertones in its Core Vision and Vision for Ecological Integrity. **Correlation with the first principle rates 1.**

Blue Mountains Management Plan

The Blue Mountains MP is based on a long term vision that provides "*a world quality national park in which human-caused environmental changes are excluded or effectively controlled, natural biodiversity is stable or increasing, significant cultural heritage is effectively protected, a range of high quality nature based*

recreational experiences are available on an environmentally sustainable basis, and the maintenance of these conditions is strongly supported by the community" (BM MP, 2001:3.2). This vision does mention one particular facet of Ecological Sustainable Development, namely environmental sustainability in which recreational activities will be conducted in an environmentally sustainable manner. This however only refers to one very narrow facet of Ecological Sustainable Development.

The MP does not provide a clear vision for Ecological Sustainable Development, although there is some reference to environmental sustainability. **Correlation with the first principle rates 1.**

6.1.2 2nd Principle: ***Holistic Perspective***

The principle of Holistic Perspective demands the consideration of people and the adjoining ecosystems - an approach closely linked to systems theory. This principle includes three criteria, with the first **i)** necessitating a review of the system as well as of its parts. The second **ii)** criterion requires the consideration of the social, cultural, ecological and economic sub-system well being and state. Also, the rate of change within the subsystems, interaction between the parts and direction of the sub-systems also need to be acknowledged. The third **iii)** criterion requires reference to costs and benefits for human and ecological systems in non/monetary terms as a consequence of human activity (Hardi and Zdan, 1997).

Banff Management Plan

i) For simplicity, the system of a national park will be divided into two parts. The first part is composed of a foundational ecological system, displayed by the outer oval in Figure 3. The human division (inner oval) is a subordinate system that is reliant on this foundational ecological system. Both systems consist of subsystems such as biotic and abiotic for the ecological system, and economic and cultural for the human system. There is some irregular reference to certain components of the system in the MP, like a brief review of wildlife, vegetation, societal and cultural aspects, but no general overview of the entire system.

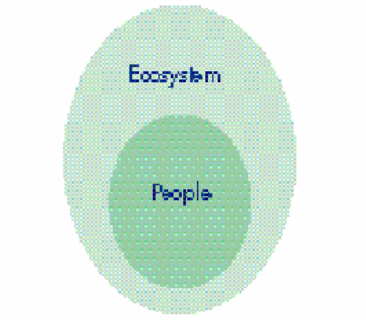

Figure 3:System Dimensions
Source: Hardi and Zdan, 1997

ii) The MP gives a good overview of the state of the ecological (section 3.0), cultural (section 4.0) and social subsystems (section 5.0), however no specific section is attributed to the economic subsystem. The plan is based on the principles of ecosystem management (*Appendix 5*), which "*requires the integration of ecological considerations with economic and social factors*" (Banff MP, 1997:3.0). It is also documented that this information be related to the regional or entire ecosystem context (Central Rockies Ecosystem). However, not all aspects of an ecosystem can be studied, and not all cause and effect relationships can be identified since the interrelationships between the subsystems are complex (Banff Management Plan Amendment 8.6, 2003). Hence "*studies need to focus on significant issues and assess the area's environmental, economic and social well-being over time. A common way to do this is to select a species or value, called an indicator, and track its health or changes in its status*" (Banff MP, 1997:3.4). Indicators used in Banff are illustrated in Figure 4. These indicators consider the social, cultural, environmental and economic systems and will allow for changes to be monitored and measured in the ecological and human systems over time (Banff Management Plan Amendment 8.6, 2003).

iii) The MP implicitly mentions the costs of human activities such as the construction of dams, introduction of non-native fish species, release of nutrients etcetera on aquatic ecosystems for instance (section 3.9). The plan, on the other hand explicitly refers to the benefits of the tourism industry in terms of the social and economic benefits as a force that strengthens conservation and protection of valuable ecological assets (section 5.2.1). Still, the cost of having more than 4 million tourists a year for over a decade has stressed the park's ecosystems (Banff MP, 1997:11.2). It is however acknowledged, "*while visitors are fundamental to the long-term success and sustainability of the region, the ecological integrity of the park is the basis of the tourism industry and offers that industry a competitive advantage*" (Banff MP, 1997:5.2.2). As a result, a Heritage Tourism Strategy is to be prepared to counteract the costs of the tourism industry (Banff MP, 1997).

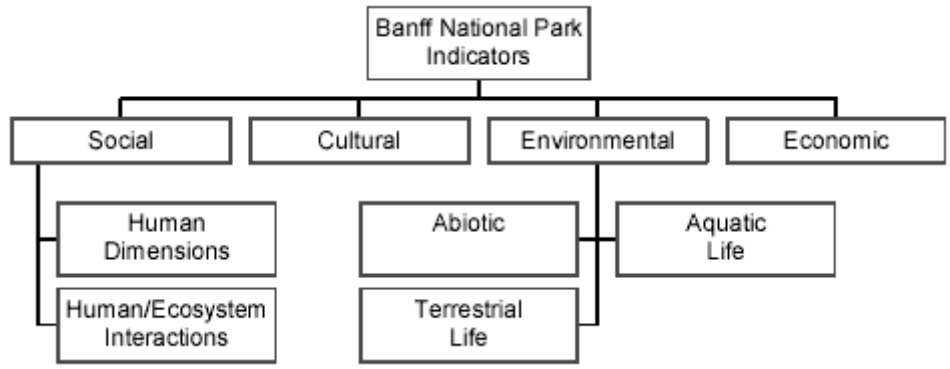

Figure 4: Suite of Indicators for Banff National Park
Source: Banff Management Plan Amendment 8.6, July 5 2003

To conclude this principle, the MP provided good coverage of the second criterion and fair coverage of the third criterion. **Correlation with the second principle rates 2.**

Blue Mountains Management Plan

i) The MP does not provide a review of the whole system by including a model or diagram that would have been functional in concentrating today's current understanding of the system. Instead the MP like that of Banff NP only provides a brief description of some of its parts such as vegetation, topographic features and tourism (BM MP, 2001:4.1.3).

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ii) In terms of the second criterion, the MP does not provide a comprehensive overview of the state of its subsystems, it does however acknowledge the state of some economic, cultural, social and ecological components such as the problems associated with exotic species as they "*represent one of the most significant potential threats to the natural values of the park*" which effect not only the state of the ecological system but also society in terms of recreational, cultural and aesthetic values, and may evoke economic impacts on surrounding lands (BM MP, 2001:4.1.4). Also, in comparison to the MP of Banff, there is no extensive use of indicators in all subsystems to assess the direction and rate of change, and to determine their interactions. Instead, only a set of biological indicators will be developed and used in the urban/bushland interface to address threats to native species, communities and ecosystems (BM MP, 2001:4.1.3).

iii) In consideration of the third criterion, the MP implicitly mentions the costs of recreation, urban development and mining on the catchment areas of the park (section 4.1.2), and the costs of urban/industrial runoff, fire suppression, urban development and recreation pressures on biodiversity (BM MP, 2001:4.1.3). The costs mentioned throughout the MP mainly pertain to the ecological systems, and in non-monetary terms. The benefits of such activities on the other hand are not even implicitly mentioned.

The MP did not relate to most of the criteria within the principle of Essential Elements. **Correlation with the second principle rates 1.**

*6.1.3 3rd Principle: **Essential Elements***

The principle of Essential Elements considers some of the most important aspects of ESD such as equity issues within current and future generations, the foundational system on which all biological life depends and the benefits of economic development to society. This principle contains three criteria, with the first **i)** pertaining to issues concerning intra/intergenerational equity and disparity. The second **ii)** criterion requires the acknowledgment of ecological conditions on which life depends. The final **iii)** criterion necessitates the consideration of economic development and other, non-market activities that contribute to social/human well-being (Hardi and Zdan, 1997).

Banff Management Plan

i) The MP focuses on both types of equity in terms of allowing current citizens to have "*equitable opportunity to participate in, and benefit from, the range of appropriate activities and experiences available in Banff National Park*" (Banff MP, 1997:8.4.1), but without forgetting to pass "*the legacy of Banff National Park on to future generations*" (Banff MP, 1997:2.5). A national park can be considered a 'resource' that can be consumed in an unsustainable manner at any time. It is openly accepted by Parks Canada that if the legacy of Banff National Park is to be passed on to future generations, then there must be limits to development and growth in the present (Banff MP, 1997:2.5). For instance, the MP states that the population of the Town of Banff is to be capped to an upper limit of less than 10,000 permanent residents. The maximum number of overnight guests to stay at the Hamlet Lake Louise will be limited to 3,500 guests, and the existing boundaries of the current communities will not be extended for instance. Also specific use limits will be implemented on trails and campsites where clashes with environmental protection may arise (Banff MP, 1997:113)

ii) The MP acknowledges the ecological conditions of the park by adopting the maintenance of 'ecological integrity' as a mandate for park management, which as explained previously is aimed at retaining an ecosystems native components such as processes, and biotic and abiotic components. (Banff MP, 1997:3.1).

iii) The MP identifies that "*a healthy economic climate, based on the heritage values of the park, contributes to national, provincial and local economies*" (section 2.5.2), and that national park values provides Canadians and international guests the opportunity to encounter high quality authentic leisure and travel experiences (Banff MP, 1997:5.2.5). A healthy economy and national park values (see section 2.3) contributes to social well-being in most cases, the connection however is not emphasised in the MP.

The plan related well to most of the criteria within the principle. **Correlation with the third principle rates 3.**

Blue Mountains Management Plan

i) In terms of the first criterion, the MP has a specific objective that aims at the "*identification, protection, conservation, presentation and transmission to future generations of the values of the Greater Blue Mountains World Heritage Area"* (BM MP, 2001:3.2). The NSW National Parks and Wildlife Service has also adopted the IUCN guidelines for protected area management which requires the protection of "*ecological integrity of one or more ecosystems for present and future generations*" (BM MP, 2001:2.1).

As mentioned previously, a national park can be considered a 'resource' that can be consumed in an unsustainable manner at any time, and a prevalent problem of today is unsustainable recreation in national parks. Commercial recreation for example is today a small but significant and growing sector of public use in the Blue Mountains, that without appropriate management, can quickly erode park values (section 4.3.9). The MP states that "*commercial recreation needs to be managed as a component of all recreation in the park to ensure that it is carried out in a sustainable manner and that all impacts are within acceptable limits*" (BM MP, 2001:4.3.9). A way in which this is done is by establishing limits to group size and number of participants for various activities (section 4.3.8). Also recreation in remote regions like wilderness areas will be kept to those activities which are basically self-reliant and pose minimal impacts on the environment (BM MP, 2001:4.1.6). Limits such as these on the present generation are aimed at ensuring that the values of the park are preserved for not only the people of today but also for future generations. However, there is no mention of tangible limits to development such as urban expansion as in Banff NP. The MP plan only mentions that "*the service will work closely with local councils to limit the impacts of new and existing activities and developments on the park*" (section 4.1.2) and that "*the service will liaise with local councils and other relevant management agencies to minimise the impacts of adjacent urban and rural developments on the scenic values of the park, with particular emphasis on the tourist precincts of the upper Blue Mountains*" (BM MP, 2001:4.1.1).

ii) The NPWS service has adopted the guidelines from IUCN which requires the protection of ecological integrity of at least one ecosystem, which is a consideration of ecological conditions on which life depends.

iii) With reference to the third criterion, the MP only mentions that the "*Blue Mountains National park plays a key role in the provision of nature-based tourism and recreation opportunities at local, regional and international levels*" (BM MP, 2001:4.3.1). There is however no link between the importance of the tourism industry to local economic development and social well-being for instance. The State of the Park report (2001),

on the other hand has a broad outcome that aims to "*ensure the parks system and park operations make a positive contribution to the social, cultural and economic well being of local communities and the broader community*", with specific outcomes aimed at ensuring that park management continues to provide social (e.g. recreation opportunities, improved air and water quality), cultural (e.g. maintenance of historic and cultural links) and economic benefits. This information however, would have been more useful in the actual management plan.

The plan had fair coverage of the criteria within the principle of Essential Elements. **Correlation with the third principle rates 2.**

*6.1.4 4th Principle: **Adequate Scope***

The objective of this principle is to broaden the perspective by adopting a time horizon that spans both human and ecosystem timescales and to consider impacts beyond park boundaries, in a way that is realistic and manageable. This principle has three criteria, with the first **i)** criterion considering the time horizon and whether it is long enough to encompass both human and ecosystem timescales so as to meet the needs of future generations, as well as allowing for short-term decisions. The second **ii)** criterion requires the adoption of a study space that is large enough to include localised and long distance impacts on both people and ecosystems. The third **iii)** requires historic and current conditions to be used in anticipating future conditions (Hardi and Zdan, 1997).

Banff Management Plan

i) The MP has adopted the mandate of maintaining the ecological integrity of the park which requires adoption of a time scale appropriate to ecosystems. The MP states that "[e]*cological integrity is not a static end-point, but rather a continuum of characteristics that a landscape or area should possess*" and that ecosystem health can only be sustained if there is "*maintenance of structural and functional components of the system in perpetuity"* (Banff MP, 1997:3.1). In addition to this, it is also acknowledged that humans are a part of the Banff ecosystem (Banff MP, 1997:5.1). Human time scales however are shorter when compared to ecological ones. But if the current generation would like to offer future generations what they currently possess, the time scales start to approach that of ecological systems. The current generation nevertheless requires short-term decision-making, which deals with things like access to services. It is these short-term issues of the present that are more easy to comply with than say, the preservation of the environment for the needs of future generations for instance – whatever these needs may be. If however, Banff management successfully fulfils the statutory mandate of maintaining ecological integrity, then the time horizon would be long enough to capture the needs of both future generations and ecological systems.

ii) The MP details that Banff NP belongs to the Central Rockies Ecosystem which stretches to an area of approximately 40,000 km^2. About 60% of the land in this region is zoned for multiple use and is under the jurisdiction of numerous federal, provincial and municipal agencies. Around 30% of the ecosystem is reserved for protection, with Banff and several other national parks and reserves forming the central portion. The MP states that "*The park supports and is supported by the natural systems of the region around"*. Therefore, Banff park managers will collaborate "*with other land managers in the Central Rockies Ecosystem*" (section 3.2), and "*coordinate research with others in the bioregion"* (Banff MP, 1997:3.4.2). An example of this is the co-management of far ranging species that transcend park boundaries such as bears and wolves.

The MP details in a later section however, that cooperative activities have "*usually involved staff at the operational level, not managers*". In addition to this, they have mainly "*focussed on the land immediately surrounding the park, not on the entire ecosystem*". All of which seems to be an entire contradiction to the idea of ecosystem-based management. In order to rectify this discrepancy, a number of independent groups have been initiated over the past few years such as The Central Rockies Ecosystem Interagency Liaison Group and The Bow Corridor Ecosystem Advisory Group, in which Parks Canada participates in on an 'executive level'. The agency believes "*that it can participate most effectively in joint planning and coordinated land use through committees established by others*" (Banff MP, 1997:8.5). It should be noted that a mass amount of resources is required to successfully manage a national park let alone an entire ecosystem, which in this case spans an area of approx. 40,000 km^2. In any case, Banff is recognised by the MP as an integral part of the Central Rockies

Ecosystem and attempts have been made to manage it as such. The effectiveness of these initiatives however is not within the scope of this paper.

iii) Banff has a fairly solid scientific foundation from which to envision and anticipate various future conditions. It has a scientific inventory compiled from 6 decades worth of research, which makes Banff a leader in many areas of research such as fire ecology, long-term ecosystem states and processes and predator-prey interactions, as stated by their most recent State of the Park report (Banff State of the Park, 2003). The MP states that one of the objectives will be to "*designate selected aquatic ecosystems as ecological benchmarks*" (Banff MP, 1997:3.9.2). The MP also recognises that large and undisturbed areas (e.g. Wilderness Zones) are important ecological benchmarks for natural structure and processes (Banff MP, 1997:11.3). According to Parks Canada, these reference points will build on current conditions in order to anticipate possible future conditions, and help direct future management. Also, through the use of models, managers are better equipped to predict how certain changes inflicted by human and natural causes will affect future conditions, and identify critical information gaps (Banff National Park homepage No1).

The MP in general, displays good scope and has related well to all of the criteria within this principle. **Correlation with the fourth principle rates 4.**

Blue Mountains Management Plan

i) In terms of the first criterion, the MP aims to maintain and even enhance the ecological integrity of the park and adjacent conservation reserves (section 3.3), which if executed successfully should ensure the adoption of a time scale appropriate to that of ecosystems. Moreover, as mentioned previously short-term decision making for the present generation is more easily dealt with than meeting the needs of future generations. But if management of the NP successfully maintain ecological integrity, future generations will at least be presented with roughly the same opportunities as today's generation.

ii) The MP has a Specific Objective that aims at the "*protection of the park as part of the system of protected lands of the Sydney Basin bioregion and the Great Escarpment, with emphasis on maintenance of the ecological relationships between the park and adjoining protected areas*" (BM MP, 2001:3.2). Australia has been divided into 80 bioregions through a special mapping exercise (Interim Biogeographic Regionalisation of Australia) that is based on dominant landscape attributes like climate, landforms, geology and vegetation. Two of these bioregions are in NSW, one of which is the Sydney Basin (BM SoP, 2001). The study area of these protected lands in the bioregion includes a vast area, but with a coordinated approach the service aims to manage an area that is in excess of 10,000 km^2. Management coordination will usually be in terms of water quality (section 4.1.2), introduced species and bush regeneration (section 4.1.4).

iii) The information bank for the Blue Mountains is not as extensive as that of Banff, with most of the information coming from surveys and research conducted mainly in the last decade by the service, universities and individuals. Furthermore, only a set of biological indicators will be used in the urban/bushland interface as a preventative measure (section 4.1.3), with no mention of other indicators, benchmarks or models to be used in current management to anticipate future conditions. It is however recognised in the MP that "*more research is required to provide an adequate basis for improved park management"* and that "*research also needs to be managed to avoid potential adverse impacts of the park's resources*" (BM MP, 2001:4.3.10.

This MP correlated well with most of the criteria within this principle but lacked somewhat in the last criterion. **Correlation with the fourth principle rates 2.**

6.1.5 5th Principle: ***Practical Focus***

Focus is inevitable and required since there are real limits to human, financial and time resources. There are five criteria in this principle, with the first **i)** criterion necessitating an explicit set of categories or an organizing framework that links the visions and goals to indicators and assessment criteria. The second **ii)** criterion requires the analysis of a limited number of key issues. The third **iii)** criterion considers the provision of a limited number of indicators to provide a clearer signal of progress. The fourth **iv)** criterion requires a standardisation of

measurements and the last **v)** criterion necessitates a comparison of indicator values to targets, ranges, thresholds or direction of trends as appropriate (Hardi and Zdan, 1997).

Banff Management Plan

i) The MP has a list of explicit categories such as Air Quality (section 3.6), Species and Genetic Diversity (section 3.8) and their connecting Strategic Goals. The Objectives and Key Actions are then listed thereafter. One of the strategic goals of the MP was to actually identify and research key indicators (Banff MP, 1997:3.4.1). The MP however, does not systematically link its goals and objectives to indictors and assessment criteria. Although the MP does contain 4 quantified indicators and targets, such as "*to reduce the human-caused grizzly bear mortality to less than 1% per year"* for instance (Banff MP, 1997:11.3). The comprehensive State of the Park report (2003) for Banff NP conversely has such a framework that links goals to numerous primary and secondary indicators.

ii) Obviously management of Banff would direct their limited amount of resources towards areas of key interest for management due to the common trend of budgetary cuts. The following three criteria, which deal with the provision of a limited number of indicators to provide a clearer signal of progress, standardisation of measurements and comparison of indicator values to targets etc., cannot be thoroughly investigated in this study since most of the indicators were not included in the MP.

The plan's relation to the criteria within the principle was limited. **Correlation with the fifth principle rates 1.**

Blue Mountains Management Plan

i) The MP has a list of explicit categories such as native plants and animals (section 4.1.3) and Aboriginal heritage (section 4.2.1) and their connecting policies and actions. The policies and actions are not linked to indicators as they are still in the development stage.

ii) A policy in the MP states that "*research into the history of the park and surveys to locate and record historic places will be undertaken as resources permit, with priority to areas threatened with human impact development or natural deterioration*" (BM MP, 2001:4.2.2). Limited resource availability automatically limits the issues to be researched and analysed. The following three criteria, which deal with the provision of a limited number of indicators to provide a clearer signal of progress, standardisation of measurements and comparison of indicator values to targets etc., cannot be investigated in this study since no indicators were included in the MP.

The plan's relation to the criteria within the principle was limited. **Correlation with the fifth principle rates 1.**

*6.1.6 6th Principle: **Openness***

This principle requires processes that are open and broadly accessible to all in order to generate credibility and to maximise learning opportunities of not only today but also the future. The first **i)** criterion relates to the methods and data used to be accessible to all. The second **ii)** criterion requires the explicitness of all judgements, assumptions, and uncertainties in data and interpretations (Hardi and Zdan, 1997).

Banff Management Plan

i) The MP of Banff is the product of an "*eight-year planning exercise involving nation-wide public consultation and in-depth analysis of the social, economic, and environmental conditions facing (the) park*" (Banff MP, 1997:1.1). The MP is complete with visions, strategic goals, objectives and actions that direct management of the national park. Certain initiatives, legislation and studies were the methods used to help formulate these.

The visions, strategic goals, objectives and actions are based on legislation such as the Canada National Parks Act and the amendments made to the Act in 1988. Another important contributor was the Banff-Bow Valley Task Force, which was founded in 1994 as an outcome to concerns surrounding commercial development in the park (Locke, 1999). The Task Force was able to integrate social, environmental and economic concerns so as to

develop management strategies that were sustainable (Eyre and Jamal, 1998). They provided Parks Canada with 500 recommendations in 1996, which were addressed by An Advisory Group, whose primary job was to incorporate them into the MP's goals and actions. Also, A Round Table consisting of representatives from 14 different sectors helped to construct visions and principles to guide the management of the Bow Valley, many of which have been incorporated in the MP. According to the second requirement of the first criterion, which is the accessibility of data that is used to all, is not completely fulfilled by the MP. This could be due to the amount of data used in the planning phase of any management plan, which is usually quite extensive, and mostly excluded for want of simplicity. Moreover, the document may loose its effectiveness as a guiding tool in the midst of all the superfluous information. The MP does state that "[*w*]*hen making decisions, it is important to use all available information… and to ensure the public understands the information on which decisions are based*" (Banff MP, 1997:3.4). Some of the information like the Banff-Bow Valley Study is directly available from the on-line library.

ii) Judgements, assumptions and interpretations are not explicit in the MP although there is mention of uncertainties occurring in specific sectors of data. There are certain 'information gaps' in the scientific, social and economic sectors. One of the goals stated in the MP was to "*identify key information gaps, particularly scientific, social and economic information*" (Banff MP, 1997:3.4.3).

The MP's correlation with the sixth principle is quite low; with only fair coverage of the first criterion that dealt with the methods used and some mention of uncertainties. **Correlation with the sixth principle rates 2.**

Blue Mountains Management Plan

i) In consideration with the first criterion, the MP for the Blue Mountains like Banff is complete with visions, objectives and actions that direct management of the national park. Certain guidelines and legislation were the methods used to help formulate these. These include the National Parks and Wildlife Act 1974, the Wilderness Act 1987 and Guidelines for Protected Area Management developed by the IUCN (BM MP, 2001:2.1). The data used throughout the MP is made apparent by an extensive reference list towards the end of the document.

ii) In relation to the last criterion, all judgements, assumptions, interpretations and uncertainties are implicit in the MP.

The MP's correlation with the sixth principle is quite low; with coverage of only the first criterion that dealt with the methods and data used. **Correlation with the sixth principle rates 2.**

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6.1.7 7th Principle: ***Effective Communication***

This principle recognises the importance of identifying common needs, and communicating them in an effective manner. This principle has three criteria, with the first **i)** criterion requiring the MP to be designed in a way that addresses the needs of the audience and set of users. The second **ii)** criterion necessitates the use of stimulating indicators and other tools and serve to engage decision-makers. The third **iii)** criterion concerns simplicity in structure and the use of clear and plain language (Hardi and Zdan, 1997).

Banff Management Plan

i) The audience in this case could be considered to be local businesses, local government, private operators, or financial supporters for instance. The set of users would include rangers, park managers, tour operators, members of the community etc. The way in which the needs of the audience is addressed in the MP is through the consideration of not only the conservation of the national park from an ecological perspective, but also the recognition that economic, social and even cultural aspects are also important. The MP has a strategic goal that aims "*to encourage an integrated approach to managing ecological, social and economic-systems in the park and the greater ecosystem*" (Banff MP, 1997:8.5.1). A local business for instance relies on the natural heritage of the national park to attract visitors, which in turn generates revenue for the business. The MP acknowledges the importance of Banff to local and even national economies (section 2.5.2), and therefore tries to balance the needs of this particular audience with the conservation of national park values. As mentioned previously however, the balance is not easily achieved. Another way to ensure that the needs of the audience are being

addressed is to involve them in the decision-making process, which is an important element of the following principal and subsequently further elaborated upon in that section.

The set of users, on the other hand are those that are directly associated with the MP and are responsible for its overall implementation which would include park rangers, managers, the community etc. The needs of this group are a well-structured MP with a clear mandate, goals, visions and tools which guide their actions. The overall structure of the plan is effective at communicating its visions, strategic goals, objectives and key actions. The mandate of the MP is clear and that is to maintain the ecological integrity of the national park. The MP states that ecological integrity "*shall be the first priority*" when decisions are to be made concerning the NP (Banff MP, 1997:11.4). Another important element for the set of users is to have a document that effectively communicates its aims in a well-structured MP with easily comprehendible text. This aspect is dealt with in the third criterion of this principle and will be further elaborated upon.

ii) As already mentioned previously the MP contains four quantified indicators and targets, although most are displayed in the State of the Park report. Also, the MP is based on one particularly stimulating management tool - ecosystem-based management, and models of the system that are not included in the MP. These could serve as stimulating and effective communication tools that should engage decision-makers.

iii) The MP guides its users and readers by keeping the structure simple. The first section presents the standard introduction; the context and visions are then set, followed by 7 topics of concern such as open management and transportation. The concluding section deals with a summary of the environmental assessment. The language used is largely plain and easy for all readers to understand. However, more complicated language like 'cumulative impacts' and 'bioregion' are not fully explained.

The MP related well to most of the criteria of Effective Communication. **Correlation with the seventh principle rates 3.**

Blue Mountains Management Plan

i) As mentioned previously, the audience in this case could be considered to be local businesses, local government, private operators, or financial supporters. The set of users would include rangers, park managers, tour operators, members of the community etc. The MP officially recognises the importance of the ecological system by adopting specific objectives and actions that aim to maintain and even enhance it, but there is little emphasis on the cultural, social and economic subsystems. Although in some cases, certain policies or actions may fall under the jurisdiction of other subsystems other than the ecological one. The provision of recreational activities for instance can be part of the economic and social subsystems and address the needs of local businesses and the community. The maintenance of certain sites for continuous cultural associations for the community is part of the cultural subsystem (section 2.3.2). But without formal recognition that all subsystems in the park form an integral part of park management, then only the needs of some of the audience and users will be fully addressed.

The users, on the other hand also require a well-structured MP with a clear mandate, goals, visions and tools which guide their actions. The MP is not as comprehensive as that of Banff but it still manages to set the scene for management through its vision, objectives and actions. The MP conversely does not provide a clear mandate such as the maintenance of ecological integrity as a first priority or provide clearly defined management tools such as ecosystem-based management. Although the plan states that efforts to maintain ecological relationships will occur at a bioregional level (section 3.2), which is a holistic ecosystem approach and a facet of ecosystem-based management, the plan itself however is not officially based on the *principles* of ecosystem management. This may be fundamental in the case of park management, if other sectors of the system like the economy and society should be taken into strict consideration.

ii) In relation to the second criterion, there are no indicators incorporated into the MP, mainly because the service is still in the process of developing them. Perhaps the most stimulating tools that are currently being used in the park are the ones developed for fire management, in which the service has played a leading a role in their development. The MP does not however elaborate on these tools (BM MP, 2001:4.1.5).

iii) The structure of this MP is very simple; the first section concerns the introduction, followed by the management context, objectives of management, policies and framework for management and then plan

implementation. The language used is largely plain and easy for all readers to understand. However, more complicated language like 'ecological integrity' and 'bioregion' are not fully explained.

In conclusion, the MP had fair coverage of the first criterion and related well to the last criterion. **Correlation with the seventh principle rates 2.**

6.1.8 8th Principle: ***Broad Participation***

This principle identifies the importance of broad participation since without it, it is impossible to mirror the diverse and shifting nature of values held across society. Also, the participation of decision makers themselves is important for the future identification of problems and implementation of goals. The first **i)** criterion deals with the broad representation of key groups like grassroots organisations, professionals and indigenous peoples for instance. The second **ii)** criterion necessitates the participation of decision makers so that there is a firm link between the adopted policies and the resulting action (Hardi and Zdan, 1997).

Banff Management Plan

i) Previously mentioned was the 8-year process it took to produce the MP which involved nation wide public involvement. Task forces, Advisory Groups, Round Tables and Panels represented relevant stakeholders from an assortment of backgrounds. The MP emphasized the importance of open or participatory management by dedicating an entire chapter to this alone. In this section it was stated that "*Parks Canada is committed to ongoing public involvement. This involvement can take many forms. Various groups and individuals will be asked for their input concerning the implementation of recommendations in this management plan. This participation may consist of advisory groups, open houses, or working groups. Parks Canada will also host an annual public forum to review and discuss the implementation of the management plan. The public will play an important role in designing the kind of forum that will best meet their needs*" (Banff MP, 1997:8.2).

In 2003, the review of the MP consisted of a series of 14 meetings with key stakeholder groups to critically analyse amendments and to acquire feedback. There were also four open houses in townships within the park and in surrounding areas (e.g. Canmore and Calgary), with a total of 205 participating individuals as stated by Parks Canada (Banff National Park homepage, No3). Additionally, the MP is not only based on ecological information gained from modern science but also on traditional knowledge since the ecosystems of Banff were occupied by indigenous peoples 10,000 years before European arrival (Banff State of the Park, 2003). According to Parks Canada, aboriginal people are consulted with regards to the planning and management of Banff which ensures that their knowledge and expertise is acknowledged (Banff National Park homepage No3).

ii) The MP values "*open, participatory decision making"* and wants decision-making that is "*responsive, open, participatory, consistent and equitable"* (Banff MP, 1997:8.1). A diverse range of people were involved in the decision making process which should strongly link them to the policies and goals presented in the MP, and hopefully result in its overall implementation. The question here however is if the decision makers were active in the process. A fundamental decision maker in this case would be the park manager, which did participate in the development process of this MP (Informant 1, 8/4/04). Another important decision maker is the Minister who eventually dis/approves the plan. At the time, Parks Canada fell under the Ministry of Canadian Heritage, which now falls under the Ministry of Environment. The serving Minister of Heritage reviewed and enacted the plan of 1997, but had no involvement in the developmental stages. Another key decision maker that was not directly involved in the development of the management plan was the Mayor of Banff, instead a set of other council employees were involved (Informant 2, 17/5/04).

The MP had a medium correlation with the criteria of Broad Participation. **Correlation with the eighth principle rates 2.**

Blue Mountains Management Plan

i) In terms of the first criterion, the MP is guided by the National Parks and Wildlife Act 1974 which has a procedure for plan preparation and requires it to be on public display for at least 90 days for comment by anyone before it is officially adopted (Informant 1, 27/5/04). Also, there is broad representation of various

stakeholders through an Advisory Committee where individuals can participate in the development of draft plans for park and reserve management (NPWS homepage No1). The Committee will usually comprise of 12 to 17 members from an array of backgrounds such as local council, recreational interest groups, rural community, landowners, the Aboriginal community and conservation groups etc (NPWS homepage No2).

ii) As mentioned previously, fundamental decision makers include park managers, ministers, mayors and tourism managers for instance. In the case of the Blue Mountains, the Mayor of the Blue Mountains City Council was involved in the development of the MP and is also the Chairman of the World Heritage Advisory Council where the council has the opportunity to influence decisions concerning the park (Informant 2, 18/5/04). The regional managers of the local Blue Mountains Tourism Limited, which is owned and operated by the local industry, were also part of the plan development (Blue Mountains Tourism Limited homepage). The Blue Mountains NP unlike Banff does not have one particular park manager. The Blue Mountains area is allocated into 4 different regions namely the Hawkesbury, Upper Mountains, Oberon and Mudgee regions. An area manager is responsible for each of these regions, and it remains unknown as to the number of area managers involved in the development of the plan, in some cases field staff and rangers could have been representatives of their region. The Minister for the Environment was not involved in the actual development of the MP, but was responsible for its eventual approval (Informant 1, 20/5/04).

The MP had a medium correlation with the criteria of Broad Participation. **Correlation with the eighth principle rates 2.**

*6.1.9 9th Principle: **Ongoing Assessment***

This principle recognises the importance of continuous assessment for monitoring the success of actions and the identification of trends. Moreover, it is only through continued assessment that the success of corrective measures can be effectively evaluated and amended as appropriate. This principle has four criteria, with the first **i)** criterion relating to capacity development for repeated measurement as to determine trends. The second **ii)** criterion requires the MP to be responsive and adaptive to change and uncertainty because systems are complex and frequently changing. The third **iii)** criterion requires the adjustment of goals, indicators and frameworks as new insights are gained. Lastly, the fourth **iv)** criterion necessitates the promotion of collective learning and feedback to decision-making (Hardi and Zdan, 1997).

Banff Management Plan

i) Indicators are tools capable of showing trends over time and can provide early warning of potential threats (Commonwealth of Australia, 2003). Parks Canada currently uses regional and landscape level indicators to provide broad measures of conditions (Banff SoP, 2003) The MP states that "*indicators can be selected and monitored to provide a broad, long-term understanding of changes that occur*" (Banff MP, 1997:3.4). The MP also has a strategic goal that aims "*to identify and research key indicators*" (section 3.4.1). Parks Canada is at present leading the field in indicator research for ecosystem productivity, development fragmentation, ecosystem diversity and human use. Although indicators are routinely monitored, in some cases trends are not yet apparent because of a lack of information or the need for longer time frames (Banff SoP, 2003).

ii) One of the objectives of the MP is to have management that is "*Proactive, adaptive, and precautionary*", and an example of this is the use of fencing in Banff. There are currently conflicts occurring between humans and wildlife (e.g. bears) in camping grounds for example, and the MP has adopted the following objective to counteract this: "*apply an adaptive management approach to human/wildlife conflicts through the experimental use of fencing*" (Banff MP, 1997:5.10.2). Certain areas will prove to be unfavourable to fencing such as the Banff Springs Golf Course as it would block movement of elk and carnivores from significant montane habitat (Banff SoP, 2003). Fencing is not the only technique that will be used to address the problem of human/wildlife conflicts; some others include seasonal closures of campgrounds, public education and alteration of bear management strategies. An adaptive management approach has also been implemented in management of elk in the park. Through the coordination of Parks Canada with a community based Elk Advisory Committee formed in 1992, they aim to reduce human-elk conflicts and restore ecological processes of areas adjacent to the town of Banff by using adaptive approaches (Banff National Park homepage No4).

The way in which management of Banff is responsive to change is through the adoption of ten Appropriate Use Criteria. The criteria within the Appropriate Use framework " *are to be applied when evaluating the merits of a new use, a change in an existing use or a change in the level or intensity of use or activity*" (Banff MP, 1997:8.4.1). The MP also stresses that while all criteria are relevant they are neither exhaustive nor absolute which could allow for appropriate adjustments as required. The criteria are as follows:

- Education and Awareness
- Physical Setting Related
- Social Effects/Quality of Life
- Equity and Access
- Level of Use: Frequency, Timing and Quantity
- Impact on Environment
- Effects on Culture and Heritage
- Quality of Experience
- Economic Effects
- Public Safety

iii) The MP has a section dedicated to 'Research and Information Management' and there it states a key action that will "*refine goals once significant information gaps are filled*", with respect to socio-economic goals (Banff MP, 1997:3.4.3). In general, the entire MP can be seen as a framework for all planning and management within the park for the next 10 to 15 years. A review of the plan is required by the Canada National Parks Act every 5 years, which gives authorities a chance to assess progress in plan implementation and to determine the need for any adjustments (Banff National Park homepage No5). The document is not rigid and usually alterations or amendments are made to it upon approval. However, any other adjustments to goals, frameworks and indicators were not explicitly mentioned in the MP.

iv) The MP states that Parks Canada believes that in order for the Central Rockies Ecosystem, and Banff NP which is a part thereof, to be sustainable "*everyone concerned must be involved in coordinating research, finding solutions to issues, and working towards common goals*" (Banff MP, 1997:3.4). It is recognised that successful management is not only concerned with actions at a park level but also at an ecosystem level, and therefore research coordination is an issue strongly promoted in the MP. Another initiative, as stated in the MP is to develop more opportunities for the public to participate in certain research programs, which no doubt would be useful in creating community awareness and collective learning (section 8.2). The collection and analysis of information gained from such research is required by many of the key actions found within the MP. But most importantly the MP states that " *this information must also be clearly integrated into the decision-making process*" which can occur at a bioregion level to a local level. However it is also recognised that not all the information required by a decision-maker is easily accessible or in a useful form (Banff MP, 1997:3.4).

The MP's correlation with the ninth principle is quite high with good coverage of most of the criteria. **Correlation with the ninth principle rates 3.**

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i) As mentioned previously, the service is only beginning to conduct bioindicator research for instance. Therefore the capacity for repeated measurement to determine trends is still in the development stage.

ii) In relation to the second criterion, there are no objectives, actions, or visions in the MP, that highlight the importance of management to be iterative, responsive and adaptive to change and uncertainty. Also, there is no evidence in the MP or on the NPWS homepage of management actions that have attempted to adapt or be responsive to certain conditions.

iii) As mentioned earlier, a management plan is not a rigid document, and is subject to review every few years. This allows for appropriate amendments to be made and integrated into the plan after approval. However, the MP for the Blue Mountains does not have a specific action or objective like Banff, whereby adjustments will be made to goals as certain information gaps are filled.

iv) The MP does not have a specific aim of coordinating research with others in the bioregion, which would be a form of collective learning. Also, there is no mention of any type of information being fed back into the decision-making process in the MP

The MP's correlation with the ninth principle is very low, with almost no coverage of any criteria. **Correlation with the ninth principle rates 1.**

6.1.10 10th Principle: Institutional Capacity

The criteria within this principle of Institutional Capacity are not within the scope of this study, and therefore will not be rated.

In conclusion, the plan of Banff scored 21 out of 36 points for its correlation with the Bellagio Principles and the Blue Mountains MP scored a total of 14 out of 36. The next section will briefly discuss the results of the analysis and illustrate the fundamental differences.

6.2 Discussion of results

The management plan of Banff received a total score of 21 out of 36 for its correlation with the Bellagio Principles, a score that could be considered above average. In contrast, the Blue Mountains plan of management scored a total of 14 out of 36, a score that could be considered below average. This section provides a discussion of the results and outlines some of the essential differences between the two plans.

Both management plans rated one with regards to the first principle for **Guiding Visions and goals** of ESD, and although the visions may have had sustainability undertones, they were not clear visions of Ecological Sustainable Development. These visions are important in setting the scene for sustainable development whether it is at a local, regional or national level.

The second principle considers **Holistic Perspective**, and here the plan of Banff out rated the Blue Mountains by 1 point. The first criterion required a review of the whole system as well as its parts. The links between different elements in an ecosystem are not entirely understood today, however the best a manager can do at present is to include this information in a comprehendible manner which could include a tabular format (Wood, 1983), models and causal loop diagrams etc. Conceptual models of the earliest national parks were based on the use of these areas as pleasuring grounds. Today managers are revising their conceptual models to include a more holistic and scientifically based approach whereby the structure, complexity and function of biological systems are included (Davis and Halvorson, 1996b). Both plans contain irregular reference to certain parts of the system belonging to either the ecological, societal, economical or cultural subsystems, there is however no overview of the entire system. Models of the larger ecosystem have been devised for Banff NP and a condensed version is currently being used to guide management decisions, these however are not included in the plan (Banff National Park homepage No1). The inclusion of such a model in the plans would have provided some type of review of at least the ecological system and of its parts, and provided additional information to enhance the understanding of the reader.

The second criterion of the Holistic Perspective principal involves the consideration of social, cultural, ecological and economic subsystems. Also the interaction between the systems, as well as their state and rate of change. There was very limited consideration of social, cultural and economic subsystems, and no comprehensive overview of their state in the Blue Mountains MP. The MP of Banff on the other hand provided a comprehensive overview of all sectors except for the economic subsystem, where there was no specific section dedicated to this alone. Overall, there was a greater degree of consideration of most subsystems when compared to the Blue Mountains MP, which can perhaps be related to its use of the Ecosystem Management Principles.

Banff management is based on the primary management tool of Ecosystem-based Management which is supported by 8 particular principles illustrated in figure 5. In many respects, Parks Canada is actually a world leader in Ecosystem Management and has implemented modern ecosystem science over the last three decades (Searle, 2000). Ecosystem Management provides a framework for merging together a variety of approaches to land and resource management, and provides an opportunity for both wilderness preservation and resource production (Salwasser, 1999). It is a tool used in the planning and managing of protected areas by providing valuable information by 1) predicting future events; 2) explaining cause and effect relationships, and 3) providing models of how systems function (Nelson and Sarafin, 1997). Ecosystem management is heavily reliant on science and requires experimentation, long-term data gathering, monitoring and adaptation supported by highly skilled

staff, all of which is rather costly (Searle, 2000). The plan of Banff considers almost all of the ecosystem management principles. On the other hand, the MP for the Blue Mountains is not officially based on a particular management tool with guiding principles, although it may satisfy some facets of Ecosystem-based Management like attempting to maintain and even enhance the ecological integrity of the park, and attempting to coordinate management in order to manage not only the park, but also other protected areas in the bioregion (BM MP, 2001).

1. Maintaining Ecosystem Functions and Integrity
2. Recognizing Ecosystem Boundaries and Transboundary Issues
3. Maintaining Biodiversity
4. Recognizing the inevitability of Change
5. Recognizing People as part of the Ecosystem
6. Recognizing the need for Knowledge-based Adaptive Management
7. Recognizing the need for Multi-Sector Collaboration
8. Making Ecosystem-Based Management a mainstream Development Approach

Figure 5: Ecosystem-based Management Principles
Source: adapted from Pirot *et al.*2000

Indicators are also an important aspect of Banff park management where they can be used to monitor and determine long-term trends in the subsystems. The use of indicators in the Blue Mountains does not seem to be a priority and only recently have there been efforts to develop indicators, and even these will be limited to the urban/bushland interface. The third and final criterion is related to the costs and benefits for human and ecological system in non/monetary terms, as a result of human activity. Both plans failed to satisfy this criterion, although the plan of Banff did explicitly mention the costs and benefits of tourism, and the Blue Mountains plan implicitly mentions the costs of certain human activities on the ecological systems. This however did not provide thorough coverage of the criterion.

The third principle is concerned with **Essential Elements**, and here the plan of Banff scored 3 and the Blue Mountains scored 2. The first criterion is linked to the issues concerning intra and intergenerational equity. Both plans considered intergenerational issues, although Banff went one step further and mentioned that it will strive for equity not only for future generations, but also among its current citizens. Both plans recognise the importance of limits and restrictions in the current generations so that the legacy of today will be available to future generations such as use limits for recreation. Parks Canada for instance limits the amount of guided tours in Banff's back country and NPWS has set limits to group size and number of participants for various activities (Sillars, 1995; BM MP, 2001: 4.3.8) In comparison with Banff however, there is no mention of clear concrete limits in the management plan to actively control the amount of urban development and population levels within the park boundary, and this is perhaps one of the fundamental differences between the two plans. For instance the population for the town of Banff has been capped and will not exceed more than 10,000 permanent residents. Additionally these limited number of places have been reserved to people and relatives of those that work in the park itself (Respondent, 30/3/04). Also the existing boundaries of the current communities will not be extended. One of the reasons why limits to city growth etc. have not been mentioned in the Blue Mountains MP may be due to the Blue Mountains City Council being responsible for town boundaries, planning and commercial growth (Informant 2, 18/05/04). In the case of Banff, it is Parks Canada that has ultimate authority (Informant 1, 30/3/04).

There have been clashes in the past however, between commercial and environmental values in Banff. In 1994, the IUCN warned the Canadian federal government that Banff may at risk of losing its world heritage status if commercial development continued. Only three years later in 1997, the town of Banff submitted a community plan which allowed for a 24% increase in commercial development - the town already has around 315,900 m^2 (0,3159 km^2) of commercial space. This community plan was however rejected by the then Canadian Heritage Minister (now Minister of Environment) and deputy Prime Minister, Sheila Copps (Mulawka, 1998; Eisler, 1997; Locke, 1999). But who is to say that such a plan will not be approved in future by a replacement in favour of growth? The town of Banff now occupies around 5 km^2 of the very sensitive and limited montane region (199,2 km^2 out of 6640 km^2) (Informant 2, 22/4/04). But even if the town boundaries remain indefinitely, as they are now fixed by an act of parliament, it has already been conceded by a Park superintendent, Charlie Zinkan that "the

town has become the 'cork in the bottle' that is blocking the migration of wildlife through a critical wildlife corridor in the heart of the park" (Eisler, 1997).

It is in the opinion of some like John de Horne, President of the National Parks Association of Queensland, that "national parks should be free of development". A statement in the annual report of the National Parks Advisory Council in 1992 also mentioned that "commercial developments should be sited outside park boundaries wherever possible" (Ryan, 2000a; Winkler, 1997). In 2001, Cox stated that the Blue Mountains NP is still facing pressures from development, as urban areas continue to expand not only outside, but also inside its boundary – there is already approximately 1403.77 km^2 of urban area in the Blue Mountains NP (Cox, 2001a; BM Council homepage). Some of the development is not supported by the general public and may even contradict the City Council's policy of escarpment preservation, like the development of the Fairmont Hotel built in 1988 (*Appendix 4)* (Mosley, 1989). The Blue Mountains City Council's Environmental Management Plan (draft LEP 2002) has recently rezoned the entire urban zone, thereby imposing legislated limits on development. Although the area has reached 'saturation point' as stated by Jim Angel, Mayor of the Blue Mountains City, the plan does not impose any explicit population cap. Extensions to existing buildings (e.g. single storey converted to double storey) could be made in the future thereby instigating further population increases within the park (Informant 2, 18/5/04).

The second criterion of Essential Elements requires the plans to consider the ecological conditions on which life depends. Both plans successfully fulfil this criterion by either adopting a mandate that aims to maintain the ecological integrity of the park as in the case of Banff, or by implementing IUCN guidelines which necessitates the protection of ecological integrity of at least one ecosystem, as stated by the Blue Mountains MP. The third and last criterion requires the consideration of economic and other non-market activities that contribute to social/human well being. The plan of Banff mentions the importance of Banff to national and local economies, but does not take the analysis further to include the benefits to human well-being. In the same context, the plan of the Blue Mountains mentions the importance of the park in terms of providing recreation opportunities at local and international levels, which is a non-market activity but provides no link to social benefits.

The fourth principle relates to **Adequate Scope**, and once more Banff had a higher rating than the Blue Mountains MP, 4 and 2 respectively. Both plans related well to the first criterion which was linked to the adoption of a time horizon that was suitable not only for the present generation, but also for future populations and ecological systems. If both parks successfully maintain the ecological integrity of the area then this should capture the needs of all, since ecological integrity means that the native components of ecosystems and their processes remain intact (PEICNP, 2003). Both plans also mention the aim of management to protect the park as part of a bioregion, which requires coordination between different authorities. Banff's plan mentions that Parks Canada will also coordinate research within the bioregion, which is one facet that the Blue Mountains MP does not acknowledge. The last criterion of the Adequate Scope requires the use of historic and current information to anticipate future conditions. The information resources of the Blue Mountains are not as extensive as Banff and this could clearly be due to the 74-year establishment gap. However, it is quite evident from the MP that there is much less emphasis on indicators and scientific research to fill information gaps, which may result in a lesser ability to forecast future conditions when compared to Banff.

The fifth principle relates to **Practical Focus**. Both management plans had a low correlation with this principal and only scored 1. The first criterion dealt with a framework that linked its visions and goals to its indicators and assessment criteria. Indicators for instance can operate at two different levels, either for State of Environment type reporting or for guiding management (Hale, *et al.* 2000). In the case of Banff, the indicators related primarily to the State of the Park report (2003), although the plan itself did include four quantified indicators that were related to some vision. As for the MP of the Blue Mountains, the service is still in the process of developing a set of 'biological' indicators. These however, will mainly be concerned with the urban/bushland interface. The State of the Park report (2001) for the BM also mentioned that it would develop performance indicators that will be integrated into the next report. In any case, it may prove worthwhile for both plans to include indicators in the actual management plan itself, in direct connection with relevant objectives and actions so as to guide management.

The second criterion related to a key number of issues for analysis. In the case of both plans, this is automatically achieved via budget cuts leading to a focus of efforts to priority issues. Perhaps, these fiscal limitations have also meant that an analysis of some issues that would be beneficial to park management are instead pushed aside. The

following three criteria were not discussed in this study due to the exclusion of indicators and other types of assessment. Both plans only rated half a point in the principal of Practical Focus.

The sixth principle relates to **Openness**. Both management plans had an average correlation with this principal and scored a modest 2. Both plans satisfactorily fulfilled the first criterion of making methods available to all, although the Blue Mountains MP was better at providing all data in a detailed reference list. It is understandable that all data is not contained within the plan itself as it may become overloaded with unnecessary information and distract the reader from the actual plan (Worboys, *et al.*2001). The second criterion of the principle required that all assumption, judgments and uncertainties be explicit. These factors were mainly implicit in both plans even though the plan for Banff did mention that uncertainties and information gaps occurred in the scientific, social and economic sectors - although this lacks a degree of specificity.

Where knowledge gaps do exist, the precautionary principle would be a useful tool to counteract these. The MP of Banff acknowledges that the 'principles of precaution' are an important aspect of ecosystem-based management (Banff MP,1997:3.1) and "*are exercised when the effects on the ecosystem are uncertain*" (2.5.2). However it is not explicitly incorporated into the actions of the plan, and only mentioned once with respect to carnivore habitat and human use of these areas (5.6.3). The Blue Mountains MP conversely only mentions the precautionary principle once with regards to recreational use related to particular activities and locations in the park (BM MP, 2001:4.3.9).

The seventh principle concerns **Effective Communication**. The MP for Banff out rated the Blue Mountains by one point. The first criterion requires the needs of the audience to be captured in the MP and this is done effectively by Banff as there is significant emphasis on the cultural, social and economic subsystems. This is not to say that all of their needs will be met, but there is at least some form of acknowledgment that they too are important aspects of park management. Comparatively, there is no formal recognition by the Blue Mountains MP that all subsystems form an integral part of park management, and as a result only the needs of some of the audience may be fully addressed.

The users of the MP on the other hand require a well-structured plan with a clear mandate, goals, visions and tools which guide their actions. Both plans supply goals, visions, objectives and so on. However, the plan of Banff is more comprehensive in the respect that it supplies a *clear mandate* which is to maintain 'ecological integrity' as a first priority. Moreover, the way in which Parks Canada aims to fulfil its mandate is by using ecosystem-based management, as mentioned previously. The plan for the Blue Mountains conversely has neither a clear mandate nor a definite management tool like ecosystem-management. The incorporation of at least a clear mandate probably would have better addressed the needs of the users. It is important to note that Parks Canada is legally required to protect the ecological integrity of the park by the Canada National Parks Act. The question of course is who can be sure when certain actions are compromising the ecological integrity of the park as certain knowledge gaps still need to be filled, and what are the judicial penalties for doing so?

The second criteria of Effective Communication required the plans to include stimulating indicators and other tools to engage decision makers. As mentioned previously the Blue Mountains plan does not contain any indicators and no particular management tool was elaborated on. This is in stark contrast to the plan for Banff, which does include four indicators and uses the principles of ecosystem management as a management tool. The MP states that ecosystem-based management principles be applied to decision making (Banff MP, 1997:3.2), and a list of important aspects regarding ecosystem management is supplied in the plan (3.1). However, no comprehensive list is available and the principles have only been indirectly referred to throughout the body of the MP. Perhaps it would be more useful to the users of the MP if these principles were itemised within the plan.

The third criterion of Effective Communication necessitated the use of clear and plain language and both plans correlated well with this. However, more complicated language like 'cumulative impacts' and 'bioregion' are not fully explained in the plan for Banff. The most heavily used terminology in the MP was 'ecological integrity', for which a definition is supplied (Banff MP, 1997:3.1). The Blue Mountains plan also failed to define terminology like 'bioregion' and 'ecological integrity'. A definition list at the onset of the MP would be useful for those that do not have a scientific background.

The eighth principle refers to **Broad Participation**. Both plans had an average correlation with this principle and both rated 2. The first criterion deals with the issue of broad representation of key groups like grassroots

organisations, professionals, and indigenous peoples for instance. Both parks fulfil this criterion by involving a wide group of people in the development of the management plan. Banff involved nation-wide public involvement and participation of various stakeholders through various initiatives like task forces, advisory groups, open houses, round tables and panels over an eight-year period. Multi-stakeholder roundtables for example are just one way to resolve conflicts among stakeholders that also allow the public to have input into the decision-making process (Eyre and Jamal, 1998). The development of the Blue Mountains plan, although not as sophisticated also involved various stakeholders through an advisory committee and a one-month public display of the draft MP.

It is important to note that there have been concerns regarding the over-representation of certain stakeholders in some advisory committees in Australia. These committees or councils are important in giving advice to the Minister of the Environment and NPWS in matters relevant to national parks and their plan development (Pallin, 2000). Various regional advisory committees for NPWS for instance are said to be heavily influenced by supporters of recreational use. This has resulted in the staff of NPWS having to "defend their need to protect and restrain excessive use, rather than being pressed to properly manage the wildlife and other values that the national parks protects" (Cox, 2001b). NPWS leadership in 2000 actually endorsed the addition of advocates from high-impact recreation groups and the tourism industry into the peak advisory body for the national parks – the National Parks Advisory Council, whilst endorsing the removal of nominees with conservation expertise from CSIRO (one of Australia's leading research agencies) for instance (Plumb, 2000). These groups can fiercely lobby for their right to access national parks, which has even resulted in a Memorandum of Understanding (MOU) between four-wheel drive groups and NPWS that legitimises their use in areas normally prohibited to other vehicles. In addition to this, they must also be notified in advance before any road closures can take place. It is the opinion of Cox that "the culture of the organisation has shifted. No longer does it stand up for the protection of the values of the national parks system" (Cox, 2001b).

The second criterion requires the active participation of decision makers to form a link to the adopted policies and resulting actions. In both case studies, the Minister of Heritage, Canada and the Minister for the Environment, Australia were not actively involved in the development of the management plan, but only responsible for its approval as a legal document. Another key decision maker are the mayors of the towns residing within the park boundary. In the case of Banff, the mayor was not actively involved in the development of the plan, with the opposite being true for the Blue Mountains MP. On the other hand, the park manager of Banff was an active participant. The same cannot be said for the Blue Mountains since there are a number of park managers for the Blue Mountains region, and it remains unknown whether all four were active participants. In some cases, field staff and rangers could have substituted park managers, as there is no legal requirement for their active participation. Perhaps it should be a legal requirement for *all* persons holding some kind of authority to be actively involved in the preparation of a plan, since it is fundamental that they are completely familiar with all goals and objectives that are meant to be implemented over the 10 to 15 year period.

The ninth principle relates to **Ongoing Assessment**. The Plan for the Blue Mountains rated very poorly and only managed to score one point, whereas the plan for Banff received a total score of 3. The first criterion is concerned with capacity development for repeated measurement as to determine trends. As mentioned previously, indicators can be used to determine trends and changes. The plan of Banff has placed great emphasis on the importance and use of indicators in the management of the park. As a result, Parks Canada is foremost in the field of indicator research and therefore they have already developed their capacity for repeated measurement (Banff SoP, 2003). The plan for the Blue Mountains on the other hand, is only starting to acknowledge the usefulness of indicators and is beginning to build their capacity to determine future trends. The second criterion requires the MP to be responsive and adaptive to change and uncertainty. It is argued by Salwasser (1999) that "adaptability is (the) key to sustainability". The plan for Banff has a specific objective aimed at adaptive, proactive and precautionary management. This approach has already been put into action through the management of human-wildlife conflicts by adopting adaptive measures to counteract these e.g. fencing. The counter argument for the erection of fences however is that it erodes the park's ecological integrity (Searle, 2000), probably by introducing a tone of artificiality to the landscape and reducing its 'wildness'. Also included in the plan is an 'Appropriate Use Framework' that allows management to be responsive to all changes by assessing them against a set of criteria. The opposing MP however has no objectives, actions or visions that mention adaptive or responsive management.

The third criteria of the Ongoing Assessment principle requires the adjustment of goals, indicators and frameworks as new insights are gained. The plan of Banff has a key action that aims to refine goals the moment

important information gaps have been filled. However, these changes are to be made to specific socio-economic goals and there was no mention of this refinement being extended to other goals in the plan. The plan for the Blue Mountains did not even refer to any adjustments being made once new insights were fulfilled. Then again, management plans are not rigid documents and are reviewed at least every 5 years where amendments are made once approved. The fourth and final criterion involves the promotion of collective learning and feedback to decision-making. The plan of Banff mentions the involvement of the public in certain research programs and coordinated research within the Central Rockies ecosystem. Moreover, a key action emphasises the feedback of this information back into the decision-making process. The same cannot be said for the plan of the Blue Mountains, as there was no specific mention of coordinated learning or feedback into decision-making. Although there has been a fair amount of research dedicated to the park and adjacent areas by the service, tertiary institutions and individuals – the plan however does not state whether there is any coordination between these (BM MP, 2001:4.3.10).

The last principle is **Institutional Capacity** that was not discussed in this study due to criteria relating to issues beyond the scope of this paper. Any analysis would not have been a fair assessment of Parks Canada and NPWS in providing institutional capacity.

In conclusion, the principles where the plan of Banff clearly out rated the plan of the Blue Mountains were Holistic Perspective, Essential Elements, Adequate Scope, Effective Communication and Ongoing Assessment. The principles where both plans were similarly rated were Guiding Visions and Goals, Practical Focus, Openness and Broad Participation. From these results it can be assumed that the plan of Banff is more in tune with the concept of ESD and could essentially serve as a blueprint for Blue Mountains NP management. However, without successful execution of the actions and goals set within the pages of a plan, they are nothing more than a waste of valuable resources. The following section delves into issue of plan implementation and the obstacles that hinder this

6.3 Plan implementation

*"**Plans only come to fruition when their recommendations are translated into actions**" (Wood, 1983)*

In many cases there may be encouraging signs in park management in the ministerial, legal and rhetorical levels although actual plan implementation or on the ground action remains inconsistent (Locke, 1999). In the case of Banff, many of the actions stated in the plan have been implemented, according to the State of the Park report (2003). The report also stated that over the past 5 years since the plan approval, there have been overall improvements in ecological integrity. Additionally, Banff as part of The Rocky Mountains Parks came sixth out of 115 worldwide destinations in a National Geographic survey, in terms of its ecological quality, social integrity, nature of tourism development (i.e. whether it is of appropriate character) and its long-term sustainability (National Geographic homepage). Alternatively, the Blue Mountains State of the Park report (2001) does not consider management plan implementation probably because both the report and the MP were published in the same year. In any case, there are many factors that can inhibit plan implementation that have been assembled throughout the literature study and interviews. This section will further explore the aspects concerning **i)** insufficient resources/funds, **ii)** implicit decision-making, **iii)** social forces and **iv)** philosophical splits within the managing organisation.

i) *Insufficient resources*

Plan Implementation is an on-going process that is paced with resource or fund availability (Informant 1, 13/4/04). A great majority of interviews undertaken with various stakeholders in this study identified a lack of resources as being the main obstacle to plan implementation for both parks. A recent study by the World Commission of Protected Areas (WCPA) of IUCN found that the protected area staff levels of Canada and Australia had lower than global mean staff inputs (Table 4). The global mean staffing for protected areas is 27 per 1,000 km^2. Some developing regions had higher than global mean staffing such as Asia, Africa and the Caribbean for instance. On the other hand, Canada had a protected area budget of $US1,017 that was substantially higher than the global mean of $US893 per km^2 - Australia in contrast was considerably lower with only $US359 per km^2 (James, 1999). It is now a fact, that Australia invests less on protected area management than any equivalent developed nation – and around a third as much as Canada (Ryan, 2000b). This lack of investment has meant that

in times of hardship (e.g. bushfire), employees are sometimes required to work 4 to 6 months away from their standard work programs (Informant 1, 11/5/04). Moreover, the shortage of staff in Australian National Parks has prevented the allocation of detailed studies on which an effective management plan may be based (Timms, 1997).

Table 4: National park resources for Australia and Canada in 1996

	Protected Area km^2	**Budget /km^2**	**Staff per 1,000 km^2**
Canada	295,345	1,017	13
Australia	445,600	359	6

Source: James, 1999

It is widely acknowledged that "Budgets and work programs provide a link between the actions in a management plan and their implementation" (Worboys, *et al.*2001). In many cases however the budget for park management is simply not being met. The Blue Mountains NP is an important revenue raiser of the region; still most of the proceeds are not being fed back into park management (Brown, 2002). A proposition for the State government of Australia by Ryan and Schwartz (2000) in the *Courier Mail* is to submit a public enquiry to effectively deal with the lack of management and funding of the national parks in Australia. Other suggestions include the re-structuring of the park system so as to make them more financially self sufficient, based on the user-pays philosophy (Leal and Fretwell, 2001). On the other hand, a former senior manager of Parks Canada stressed that the only way national parks will receive adequate funding is through an upsurge in public support (Searle, 2000).

Parks Canada on the other hand has a better-financed park system as suggested by the WCPA study. The service spends approximately $CAN400 million ($US292 million) per annum to maintain built assets and to supply management manpower (Beaman *et al.*1999). The service however, has been hit by a rising series of budget cuts since the 1980's in an attempt to improve Canada's economy, and as a Park Warden of western Canada states, "there is extreme pressure to generate revenue, which overshadows the mandate of maintaining ecological integrity" (Searle, 2000:39). To reduce costs, Parks Canada has had to cut back on its education and awareness programs and even the science programs required for ecosystem management according to Jacques Gerin, chair of the Panel on Ecological Integrity (Searle, 2000; Mitchell, 1999). In addition to this, the revenue raised by Banff National Park is currently being redistributed to support the rest of the Canadian park system (Respondent, 30/3/04). To increase the pressure on Parks Canada even further, the Senate in 1996 urged the federal government of Canada to fulfil its commitment of preserving 12% of the nation's landscape, compared to the 5% at the time of publication. A total of 16 new parks would need to be created to fulfil this criterion. Ironically, the acquisition of 16 new areas may be fulfilling the recommendations of the World Commission for sustainable development, but it may also be putting Banff at risk if it is expected to bear the burden. In any case, the issue of funds facing both national parks needs to be addressed so that the plans of management have a better chance of being fully implemented.

ii) *Implicit decision-making*

Another factor that may be an obstacle to management plan implementation is an implicit decision-making process. It is in the opinion of Salwasser (1999) that "we must make participatory decision making and interpretation (of) integral parts of ecosystem management, not luxuries that are available only if time and budgets permit" (Salwasser,1999). In Australia, protected area planning and the evaluation of management options are usually done *implicitly*, and the reason for choosing particular management options for achieving specific objectives is not articulated and disallows those that are not directly involved, the understanding or appreciation of the reasons why one option is superior over others. The groups involved in the planning and evaluation usually include advisory committees, park managers and rangers for instance. In the past, some planners did not even include rangers and ground staff in the planning process (Worboys *et al.*2001).

Banff management has also experienced problems in this area. The Banff-Bow Valley Task Force identified problems with Parks Canada implementation of open and shared decision-making that involved the public (Searle, 2000). Active public involvement is greatly emphasised in the Banff plan, but failure to put this factor into

practice may be influencing the implementation of the rest of the plan. A significant advantage in making this process explicit and participatory is not only can planners justify their decisions but also provide an opportunity to formally integrate the values of stakeholders, enabling a firm link to the plan and possibly ensuring its eventual implementation. Studies have actually shown that direct participation in resource management projects for instance has enabled people to reconnect with the land, educate scientists and managers and even rebuild their communities (Worboys *et al.*2001). This can be considered to be an important aspect belonging to the social sciences.

iii) *Social Forces*

Today, there is little emphasis on the social science sector in park management. Yet social forces are driving forces that can impede the sustainability of park systems (Machlis and Soukup, 1997). In 2000, the Panel of Ecological Integrity of Canada's National Parks, which was a follow up to the Banff-Bow Valley study, concluded in its report that Parks Canada was giving higher priority to use rather than park protection (Savage, 2000; Locke, 1999). However, when Parks Canada is proactive and proposes restrictions on hiking in certain areas to protect wildlife for example, there is public uproar.

The current Chief Park Warden of Banff acknowledges that public opinion is a potential obstacle to plan implementation (Informant 1, 22/4/04). This is clearly resonated by the spokesman for Preserving Access, Recreation, Tradition of the Bow Valley Parkway Tim Nokes who stated that "Parks Canada wants to take away people's long established rights, with no proof of any need to do so ….. If we cave in now, what will stop the bureaucrats from nibbling away more public access rights in future, bit by bit?" (Byfield, 1997). In some cases however, Parks Canada cannot substantiate its actions and may be basing its activities on the precautionary principle, which is a requirement by the management plan. But people, who do not have an understanding of this or just unwilling to accept restrictions ultimately boycott such actions. Parks Canada is dealing with this issue by including their constituents in the implementation of the plan through the identification of inclusive processes such as restoration programs, rather than just informing them (Informant 1, 22/4/04). But will people ever be willing to accept the sometimes radical measures required to protect the ecological integrity of a park, especially when there are no perceived problems with the park in the first place?

An interesting thought and one that is perhaps crucial for plan implementation is people's perception of a park at risk. Searle (2000) states that most Canadians do not perceive a problem with the national parks, and in fact, they hold values and beliefs that run counter to those needed to maintain ecological integrity. Studies have shown that a human's brain will respond first and foremost to dramatic or sudden change. Only when something affects us directly or when there is 'catastrophic evidence' will dramatic changes take place (Searle, 2000). The Australian government for instance has been accused of taking action only when there is an irrefutable crisis (Cox, 2002). This aspect is disconcerting for national parks since degradation like the loss of biodiversity can take place over years or decades and inevitably too slow for humans to perceive as acute problems. Still, the problem may run deeper than this if Searle (2000) is correct in his assumption that Canadians harbour values and beliefs that are ecologically destructive. A great assortment of social science questions still need to be further explored and considered, as it is an integral factor for national park management and overall plan implementation.

iv) *Philosophical split*

Lastly, and perhaps the most crucial factor to plan implementation is the philosophical split within the managing organisation itself. In both parks, management has been favouring activities to satisfy certain interest groups. As a result, NPWS leadership has been questioned and Parks Canada has been accused of being good talkers, but a failure in actually walking the talk (Plumb, 2000; Searle, 2000). This could be based on differing world views where the anthropocentric versus the ecocentric, with the former refusing to embrace the concept of maintaining ecological integrity. It is also this worldview that still dominates national park management in many cases. In the case of Banff, this has meant that the minority are actively discouraged from pursuing the path for ecological integrity maintenance. So much so that "the organizational culture discourages healthy debate on controversial issues, rather than encouraging commitment to the mandate of maintaining ecological integrity. Those who are committed to this goal are often marginalized" (Searle, 2000:224). If this is accurate, what hope is there for plan implementation if the very people who are meant to be endorsing it are at odds with its primary mandate? This is a true challenge for park management in our time and perhaps the only way this can be resolved as indicated by Searle (2000) is a cultural transformation where we reconnect with nature.

In conclusion, no matter how advanced or state of the art a management plan is, it is merely an insignificant document gathering dust on the shelf if the words are not transmitted into on the ground action. There are many obstacles facing plan implementation such as insufficient funding, implicit decision-making, social forces and the philosophical split within the management group. These obstacles are integral factors that current park management must come to terms with if their plans are to be fully executed.

7. Conclusion

In this day and age, we are experiencing the vital signs of environmental degradation and a general decline in what is termed 'natural heritage'. National Parks have become important areas that protect a countries natural and cultural heritage, and have essentially become the 'crown jewels' of that country. These protected areas however, are also under extreme pressure from internal and external pressures that will hopefully subside sometime in the future. In many ways, protected area management is still in the trial and error phase, but the quest to have management that is sustainable is becoming evermore pressing, especially if we are planning to conserve these areas for not only today's generation, but also for the many generations to come.

This study has clearly depicted the differences between two management plans of two very similar national parks in the developed countries of Australia and Canada. It has been identified that the plan of Banff National Park in Canada had a greater correlation with the Bellagio Principles than the plan of the Blue Mountains National Park. In this sense, the plan of Banff could be offering direction that is more in tune with the concept of Ecological Sustainable Development, and could therefore be accelerating the nations path towards ESD.

The management plan of Banff is actually the result of a concerted effort to rectify all the mistakes made in the past. Today, management of Banff is considered to be a world leader in terms of ecosystem-based management and rated amongst the top 10 destinations in terms of its ecological quality and overall sustainability. It can be fairly stated from this study that the plan of Banff National Park can serve as a type of blueprint for the Blue Mountains National Park, whereby management can essentially learn from the sequestered knowledge and mistakes already made in a park 74 years its senior. After all, the reversal of damaging decisions is usually the most challenging task.

It is needless to say that both management plans still need work, since neither had a perfect score when correlated to the Bellagio Principles. But even with the creation of a 'perfect plan', it would be rendered useless if it were not fully implemented. Perhaps the creation of an ideal management plan is not the ultimate challenge after all, but the many obstacles hindering its eventual materialisation.

References

Alden, D. 1997. Recreational User Management of parks: an ecological economic framework. *Ecological Economics*. **23**:225-236.

Anderson, T.L and James, A. 2001. Introduction: Parks, Politics, and Property Rights. In Anderson, T.L and James, A. eds., The Politics and Economics of Park Management. Rowan and Littlefield Publishers, INC, USA.

Baker, J. 2000. Ecological Sustainability: Applying global principles to local management issues. In Hale, P., Petrie, A., Moloney, D., and Sattler, P. eds., Management for Sustainable Ecosystems. Centre for Conservation Biology, The University of Queensland, Brisbane, Australia, pp.3-6.

Banff State of the Park report, 2003. Parks Canada.

Banff-Bow Valley Study, 1996. Banff-Bow Valley: At the Crossroads. Summary Report of the Banff-Bow Valley Task Force.

Benton, L.M. and Short, J.R. 1999. Environmental Discourse and Practice. Blackwell Publishers, UK.

Beaman, J., Perron, L. and Stanley, D. 1999. Park Canada's Economic and business models: perspectives on their development and use. In Aley, J., Burch, W.R., Conover, B and Field, D, eds., Ecosystem Management: adaptive strategies for natural resource organisations in the 21st century. Taylor and Francis USA. pp 155- 169.

Bernard, D., Pacas, C., Marshall, N (compilers), "State of the Banff-Bow Valley Report" prepared for the Banff-Bow Valley Study, August 26, 1995.

Blue Mountains City Council, 2003. Management Plan.

Commonwealth of Australia, 2003. Protecting Natural Heritage: using the Australian Natural Charter. 2nd Edition. Australian Heritage Commission.

Cornelis Van Kooten, G and Bulte, E.H. 2000. The Economics of Nature: Managing Biological Assets. Blackwell Publishers, UK.

Daily, G.C. and Ellison, K. 2002. The New Economy of Nature: The Quest to Make Conservation Profitable. Island Press, USA.

Darland, R. 2000. From His Energy and Creativity, America's National Park System Evolved. *National Wildlife*. **38**:49-50

Davis, G.E. and Halvorson, W.L. 1996a. Science and Ecosystem Management in the National Parks. The University of Arizona Press, USA.

Davis, G.E. and Halvorson, W.L. 1996b. Lessons learned from a century of applying research results to management of national Parks. In Davis, G.E. and Halvorson, W.L, eds., Science and Ecosystem Management in National Parks. The University of Arizona Press, USA. pp 334-343.

Dilsaver, L.M. and Wyckoff, W. 1999. Agency Culture, Cumulative Causation and Development in Glacier National Park, Montana. *Journal of Historical Geography*. **25**:75-92

Fox, A. 2000. The National Parks and Other Wild Places of Australia. New Holland Publishers, UK.

Friend, G, 1994. Fire Ecology of Invertebrates – Implications for Nature Conservation, Fire Management and Future Research. *Proceedings*, Fire and Biodiversity: The Effects and Effectiveness of Fire Management. Footscray, Melbourne, 8-9 October 1994, pp155-162.

Hale, P., Petrie, A., Moloney, D. and Sattler, P. eds. 2000. Management for Sustainable Ecosystems. Centre for Conservation Biology, The University of Queensland, Brisbane, Australia.

Hall, C.M. 2000. Integrated Heritage Management: Dealing with Principles, Conflict, Trust and Reconciling Stakeholder Differences. *Proceedings*, Heritage and Economics: Challenge for Heritage Conservation and Sustainable Development in the 21st Century. Australian National University, Canberra, Australia, 4th July 2000, pp.171-181.

Hannenberg, P. and Löfgren, R. 1998. Sweden's National Parks. Swedish Environmental Protection Authority.

Hardi, P. and Zdan, T. 1997. Assessing Sustainable Development: principles in practice. International Institute for Sustainable Development, Canada.

Harris, J.M. 2002. Environmental and Natural Resource Economics: A Contemporary Approach. Houghton Mifflin Company, USA.

Hundloe, T. 2000. Can't see the good for the trees. Courier Mail. January 25th, p13.

IUCN, 1994. Guidelines for Protected Areas Management Categories. IUCN, Cambridge, UK and Gland, Switzerland.

IUCN, 1998. Economic values of protected areas: Guidelines for protected area managers. Gland, Switzerland.

James, A.N. 1999. Institutional Constraints to Protected Area Funding. In Goriup, P, ed., Parks: Management Effectiveness of Protected Areas. IUCN. Volume 9. No 2. pp 15- 26.

Leal, D.R and Fretwell, H.L. 2001. Back to the Future to Save our Parks. In Anderson, T.L and James, A. eds., The Politics and Economics of Park Management. Rowan and Littlefield Publishers, INC, USA.

Locke, H. 1997. The Role of Banff National Park as a Protected Area in the Yellowstone to Yukon Mountain Corridor of Western North America. In Nelson, J.G., and Serafin. R, eds., National Parks and Protected Areas: Keystones to Conservation and Sustainable Development. *Proceedings*, NATO Advanced Research Workshop on contributions of National Parks and Protected Areas to Heritage Conservation, Tourism and Sustainable Development, Krakov, Poland , pp 117-124.

Locke, H. 1999. (Preface) In Searle, R, 2000. Phantom Parks: The struggle to save Canada's National Parks. Key Porter Books, Canada.

Machlis, G and Soukup, M. 1997. Usable Knowledge for National Park and Protected Area Management: A Social Science Perspective. In Nelson, J.G., and Serafin. R, eds., National Parks and Protected Areas: Keystones to Conservation and Sustainable Development. *Proceedings*, NATO Advanced Research Workshop on contributions of National Parks and Protected Areas to Heritage Conservation, Tourism and Sustainable Development, Krakov, Poland , pp. 161-172.

Mitcham, C. 1995. The Concept of Sustainable Development: its Origins and Ambivalence. *Technology in Society*. **17**:311-326

Mitchell, A. 1999. Canada's parks facing crisis. *The Globe and Mail*.

McArthur, S and Hall, C.M. 1993. Strategic Planning for Visitor Heritage Management: Integrating People and Places through Participation. In Hall, M and McArthur, S, eds., Heritage Management in New Zealand and Australia: Visitor Management, Interpretation, and Marketing. Oxford University Press.

McKay, J. 1977. The Viability of the Blue Mountains National Park: A Dissertation. University of New England, Armidale, NSW, Australia.

McNamee, K. 1994. The National Parks of Canada. Key Porter Books Limited, Canada.

National Strategy for Ecological Sustainable Development, December 1992. Commonwealth of Australia, AGPS Press, Act.

New South Wales (NSW) National parks and Wildlife Service, 2001. Blue Mountains Management Plan, Australia.

Nelson, J.G., Sarafin, R., Skibicki, A and Lawrence, P. 1997. Land Use and Decision-Making for National Parks and Protected Areas. In Nelson, J.G., and Serafin. R, Eds., National Parks and Protected Areas: Keystones to Conservation and Sustainable Development. *Proceedings*, NATO Advanced Research Workshop on contributions of National Parks and Protected Areas to Heritage Conservation, Tourism and Sustainable Development, Krakov, Poland, pp. 43-61.

Nelson, J.G. and Sarafin, R.1997. Contributions of National Parks and Protected Areas to Heritage Conservation, Tourism and Sustainable Development. . In Nelson, J.G., and Serafin. R, eds., National Parks and Protected Areas: Keystones to Conservation and Sustainable Development. *Proceedings*, NATO Advanced Research Workshop on contributions of National Parks and Protected Areas to Heritage Conservation, Tourism and Sustainable Development, Krakov, Poland, pp. 1-10.

Nepstad, E and Nilsen, P. 1999. Toward a Better Understanding of Human/Environment Relationships in Canadian National Parks. In Aley, J., Burch, W.R., Conover, B and Field, D, eds., Ecosystem Management: adaptive strategies for natural resource organisations in the 21st century. Taylor and Francis USA. pp 97-110.

Parks Canada, 1997. Banff National Park Management Plan, Canada.

Parks Canada, 1995. Point Pelee National Park Management Plan Summary, Canada.

Peraboni, C. 2001. Yellowstone National Park. In Ildos, A.S. and Bardelli, G.G. eds., *The Great National Parks of The World*. White Star S.r.l, Italy, pp.244-254.

Pirot, J.V., Meynell, P.J and Elder, D. 2000. Ecosystem Management: Lessons from around the world. A Guide for Development and Conservation Practitioners. IUCN, Gland Switzerland and Cambridge UK.

Propst, L., Paleck, F.W and Rosan, L. 1998. Partnerships Across Park Boundaries: The Rincon Institute and Saguro National Park. In Knight, R.L and Landres, P.B, eds., Stewardship Across Boundaries. Island Press, USA.

Ryan, S. 2000a. Big end of town pushes into parks. Courier Mail. May 15th, p.9.

Ryan, S. 2000b. A case of natural neglect. Courier Mail. May 15th, p.13.

Ryan, S and Schwartz, S. 2000. Battle looms over parks. Courier Mail. January 19th, p.1.

Salwasser, H. 1999. Ecosystem Management: a new perspective for national forests and grasslands. In Aley, J., Burch, W.R., Conover, B and Field, D, eds., Ecosystem Management: adaptive strategies for natural resource organisations in the 21st century. Taylor and Francis USA. pp 85-96.

Searle, R. 2000. Phantom Parks: The struggle to save Canada's National Parks. Key Porter Books, Canada.

Tacconi, L. 2000. Biodiversity and Ecological Economics: Participation, Values and Resource Management. Earthscan Publishing Ltd. London and Sterling VA.

Tijmes, P. and Luiff, R. 1995. The Sustainability of Our Common Future: An inquiry into the Foundation of an Ideology. *Technology in Society*. **17**:327-336.

Timms, C.W. 1977. Carrying Capacity and management of National Parks. Thesis University of Sydney.

Towards Sustainability Report, 2001. Sydney Water.

Vail, D and Hultkrantz, L. 2000. Property rights and sustainable nature tourism: adaptation and mal-adaptation in Dalarna (Sweden) and Maine (USA). *Ecological Economics*. **35**:223-242.

Van der Maarel, E. 1997. Biodiversity: from babel to biosphere management. Opulas Press, Uppsala, Leiden.

Whitten, S., Salzman, J., Shelton, D and Protor, W. 2003. Markets for Ecosystem Services: Applying the Concepts. CSIRO.

Wilcox, L and Aengst, P.1999. Yellowstone to Yukon: romantic dream or realistic vision of the future? In Goriup, P, ed., Parks: Bioregional approach to protected areas. IUCN. Volume 9 No. 3 pp 17-24.

Winkler, T. 1997. Alpine land grab concerns council. The Age. p16

Wood, J.B. 1983. Management Plans. In Warren, A and Goldsmith, F, B. eds., Conservation in Perspective. John Wiley and Sons. pp 247-265.

Woodley, S. 1997. Science and Protected Area management: An Ecosystem-based perspective. In Nelson, J.G., and Serafin. R, eds., National Parks and Protected Areas: Keystones to Conservation and Sustainable Development. *Proceedings*, NATO Advanced Research Workshop on contributions of National Parks and Protected Areas to Heritage Conservation, Tourism and Sustainable Development, Krakov, Poland, pp. 11-21.

Worboys, G., Lockwood, M and Delacey, T. 2001. Protected Area Management: Principles and Practice. Oxford University Press. IUCN.

World Commission of Environment and Development. 1987. Our Common Future. Oxford University Press, Oxford, New York.

Zube, E.H. 1996. Management in National Parks: From Scenery to Science. In Davis, E.D and Halvorson, W.L. eds., Science and Ecosystem Management in National Parks. The University of Arizona Press, USA. pp11-21.

Websites

Banff National Park homepage No1:
http://www.pc.gc.ca/pn-np/ab/banff/plan/plan8b_E.asp#eco4 Accessed 17th February 2004.

Banff National Park homepage No 2:
http://www.pc.gc.ca/progs/np-pn/eco_integ/index_E.asp Accessed 24th February 2004

Banff National Park homepage No 3:
http://www.pc.gc.ca/pn-np/ab/banff/plan/plan5b E.asp Accessed 17th February 2004

Banff National Park homepage No 4:
http://www.pc.gc.ca/pn-np/ab/banff/plan/plan23a_E.asp Accessed 17th February 2004

Banff National Park homepage No 5:
http://www.pc.gc.ca/pn-np/ab/banff/plan/plan5a_e.asp Accessed 25th February 2004

Banff National Park homepage No 6:
http://www.pc.gc.ca/pn-np/ab/banff/plan/plan7-03_E.asp Accessed 17th February 2004

Blue Mountains City Council homepage:
http://www.bmcc.nsw.gov.au/index.cfm?L1=1&L2=2 Accessed 14th April 2004

Blue Mountains Tourism Limited homepage:
http://www.bluemountainstourism.org.au/ Accessed 22nd May 2004

Brown, I. 2002. Blue Mountains – a well-worn blueprint for tourism. *National Parks Journal*. Volume 46. No 4.
http://www.npansw.org.au/journal/200208/features-bluemountains.htm Accessed 5th February 2004

Byfield, M. 1997. A Privatization of Sorts. Alberta Report. **24**:9
http://search.epnet.com/direct.asp?an=9703175071&db=afh Accessed 27th January 2004

Cox, A. 2001a. Blue Mountains: is the Battle won? *National Parks Journal*. Volume 45. No 4.
http://www.npansw.org.au/journal/200108/index.htm#COVER Accessed 5th February 2004

Cox, A. 2001b. National Parks … captured by the users. *National Parks Journal*. Volume 45. No 6.
http://www.npansw.org.au/journal/200112/index.htm#COVER Accessed 5th February 2004

Cox, A. 2002. State of Our Environment – good or bad news? *National Parks Journal*. Volume 46. No 3.
http://www.npansw.org.au/journal/200206/index.htm#COVER Accessed 5th February 2004

Eisler, D. 1997. The Battle over Banff. *Maclean's*. **110**:44
http://search.epnet.com/direct.asp?an=9708052841&db=afh Accessed 27th January 2004

Eyre, M. and Jamal, T.B. 1998. Addressing Stakeholder Conflicts In a Canadian Mountain Park. *Parks and Recreation*. **9**:86
http://www.search.epnet.com/direct.asp?an=1092722&db=afh Accessed 27th January 2004

Hitchcock, P.2000. Ecological Sustainable Development and National Parks. *National Parks Journal*. Volume 44. No.5
http://www.npansw.org.au/journal/200010/index.htm#COVER Accessed 5th February 2004

IUCN, 2003. Draft Durban Accord. http://www.iucn.org/themes/wcpa/wpc2003/ Accessed 19th September 2003

IUCN homepage No 1:
http://www.iucn.org/about/index.htm Accessed 15th March 2004

IUCN homepage No 2:
http://www.iucn.org/themes/wcpa/wheritage/wheritageindex.htm#convention Accessed 15th March 2004

Macey, R. 2004. Green weed fighting machines pitched Hawkesbury infestation battle.
http://www.smh.com.au/articles/2004/04/22/1082616262330.html Accessed 23rd April 2004

Mulawka, B. 1998. Welcome to Copps National Park. *Alberta Report*. **25**:8
http://search.epnet.com/direct.asp?an=828832&db=afh Accessed 27th January 2004

National Geographic homepage:
http://www.nationalgeographic.com/travel/sustainable/ Accessed 27th April 2004

NPWS homepage No 1:
http://www.nationalparks.nsw.gov.au/npws.nsf/Content/media_050204_advisorycommittees Accessed 4th March 2004

NPWS homepage No 2:
http://www.nationalparks.nsw.gov.au/npws.nsf/content/advisory_committees Accessed 4th March 2004

NPWS homepage No 3:
http://www.nationalparks.nsw.gov.au/npws.nsf/Content/Who+we+are Accessed 14th April 2004

Pallin, R. 2000. The National Parks and Wildlife Advisory Council. National Parks Journal: Volume 44. No4.
http://www.npansw.org.au/journal/200008/index.htm Accessed 5th February 2004

Panel on the Ecological Integrity of Canada's National Parks:
http://www.pc.gc.ca/docs/pc/rpts/ie-ei/report-rapport_1_e.asp Accessed 1st September 2003

Plumb, N. 2001. National Parks Laws: Vision or sell-out? *National Parks Journal*: Volume 44. No 2.
http://www.npansw.org.au/journal/200004/index.htm#COVER Accessed 5th February 2004

Savage, C. 2000. A Highway Runs Through It. *Canadian Geographic*.**120**:34.
http://search.epnet.com/direct.asp?an=3237330&db=afh. Accessed 19th January 2004

Sillars, L. 1995. Quotas and demolition loom over Banff. *Alberta Report*. **11**:12.
http://search.epnet.com/direct.asp?an=9503217739&db=afh Accessed 19yh January 2004

Sydney Morning Herald: Blue in the Mountains, 2003.
http://www.smh.com.au/articles/2003/09/19/1063625218635.html. Accessed 22nd September 2003

Tourism New South Wales homepage:
http://corporate.tourism.nsw.gov.au/scripts.runisa.dll?CorporateLive.327814:2COLUMN:1700707706:pp=STATESTATS,pc=REGIONPRES Accessed 17th May 2004

Woodford, J.2004. Snow-making trial has science, and now the law, against it.
http://www.smh.com.au/articles/2004/03/05/1078464638279.html Accessed 10th March 2004

Appendices

Appendix 1: Interview Questions

Questions for informant groups 1, 2 and 3.

- To your knowledge, has the management plan for the national park been successfully implemented in any way to date? If so, in which ways?
- In your opinion, what are the main obstacles to plan implementation?
- Was the local council involved in the development of the plan?
- Is there sufficient coordination between local councils and NPWS/Parks Canada? In which ways?
- Are responsibilities within NPWS/Parks Canada clearly assigned?
- Who assesses the direct impact of urban areas on the park?
- Who is responsible for town boundaries, planning and commercial growth?

Questions for respondents

- How often do you visit the area?
- How do you value the national park?
- In your opinion, what is the general health of the park?
- Do you think there is too much development in the park? E.g. roads, commercial areas etc.
- Do you think the NPWS/Parks Canada is managing the area successfully? In what ways?
- What else do you think could be done to improve the service's management of the area?
- Do you know if there is any coordination between your city council and the NPWS/Parks Canada?

Additional questions to informants and respondents

- How extensive is the problem with elk in Banff?
- Will the population be capped in Canmore/ Blue Mountains City?
- Is there a lot of development occurring in the wildlife corridors?
- Wildlife and ecological corridors between the town and park facilitate the movement of species between habitats and help to compensate for loss of ecosystem function. Is the council ensuring these areas have special protection and management? How?
- Who is responsible for the Lake Louise community?
- How do you know that the mandate of maintaining ecological integrity is being fulfilled?
- How important is the national park to the regional economy?

Appendix 2: The Bellagio Principles

Principle	Description	Banff NP	Blue Mountains NP
1. Guiding Vision and goals	▪ Be guided by clear vision of sustainable development and goals that define that vision	**1**	**1**
2. Holistic Perspective	▪ Include review of the whole system as well as of its parts ▪ Consider the well-being (including the state as well as the direction and rate of change of that state) of human, ecological and economic sub-systems, their component parts and the interaction between parts ▪ Consider both positive and negative consequences of human activity, in a way that reflects the full costs and benefits for human and ecological systems, in monetary and non- monetary terms	**2**	**1**
3. Essential elements	▪ Consider equity and disparity within the current population and between present and future generations, dealing with such concerns as resources use, over-consumption and poverty, human rights and access to services, as appropriate ▪ Consider the ecological conditions upon which life depends ▪ Consider economic development and other, non-market activities that contribute to human/social well-being	**3**	**2**
4. Adequate scope	▪ Adopt a time horizon long enough to capture both human and ecosystem time scales thus responding to needs of future generations as well as those current short term decision making ▪ Define the space of study large enough to include not only local but also long distance impacts on people and ecosystems ▪ Build on historic and current conditions – where we want to go, where we could go	**4**	**2**
5. Practical focus	▪ An explicit set of categories or an organizing framework that links vision and goals to indicators and assessment criteria ▪ A limited number of key issues for analysis ▪ A limited number of indicators or indicators combinations to provide a clearer signal of progress ▪ Standardizing measurement wherever possible to permit comparison ▪ Comparing indicator values to targets, reference values, ranges, thresholds, or directions of trends, as appropriate	**1**	**1**

6. Openness	▪ Make the methods and data that are used accessible to all ▪ Make explicit all judgments, assumptions, and uncertainties in data and interpretations	**2**	**2**
7. Effective communication	▪ Be designed to address the needs of the audience and set of users ▪ Draw from the indicators and other tools that are stimulating and serve to engage decision-makers ▪ Aim, from the outset, for simplicity in structure and use of clear and plain language	**3**	**2**
8. Broad participation	▪ Obtain broad representation of key grassroots, professional, technical and social groups, including youth, women and indigenous people – to ensure recognition of diverse and changing values ▪ Ensure the participation of decision makers to ensure a firm link to adopted policies and resulting action	**2**	**2**
9. Ongoing assessment	▪ Develop the capacity for repeated measurement to determine trends ▪ Be iterative, adaptive and responsive to change and uncertainty because systems are complex and changing ▪ Adjust goals, frameworks, and indicators as new insights are gained ▪ Promote development of collective learning and feedback to decision making	**3**	**1**
10. Institutional capacity	▪ Clearly assigning responsibility and providing ongoing support in decision –making processes ▪ Providing institutional capacity for data collection, maintenance, and documentation ▪ Supporting development of local assessment capacity	**N/A**	**N/A**

(Source: Adapted from Hardi and Zdan, 1997)

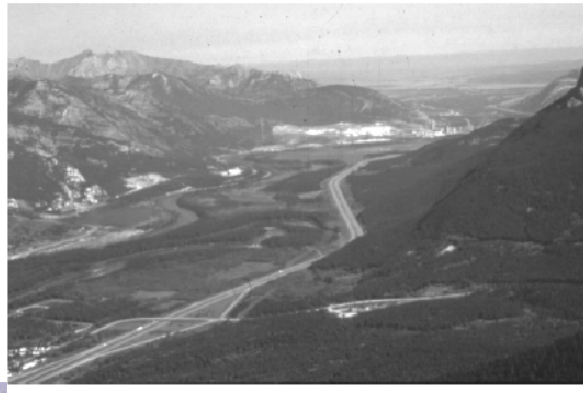
Total Score	**21**	**14**

Appendix 3: Site Comparison

	Banff National Park	Blue Mountains National Park
Country	Canada	Australia
Region	Part of Rocky Mountain System	Part of Great Diving Range System
Established	1885	1959
Status	UNESCO World Heritage Site and World Biosphere Reserve	UNESCO World Heritage Site
Management	Parks Canada	National Parks and Wildlife Service and Sydney Catchment Authority
Binding Laws	Canada National Parks Act, 1988	National Parks and Wildlife Act, 1974 and the Sydney Water Catchment Management Act, 1998
Surface Area	6,640 sq km	2,470 sq km
Shared Boundaries	3 other national parks	6 other national parks and one reserve
Natural Features	Deep canyons, rivers, hot springs, glaciers	Deep valleys and gorges, waterfalls, rivers
Cultural Features	Archaeological and historic sites	Archaeological and historic sites
Urbanisation	Town of Banff and Visitor Service Centre	Twenty six towns and villages
Permanent Population	7135 in year 2001	73,675 in year 2001
Transportation System	Trans-Canada National Highway and Canadian Pacific Railway	Great Western Highway and Main Western Railway
No. of Visitors	Approx. 4 million per annum	Approx. 3 million per annum
Visitor Activities	Snow skiing, camping, canoeing, bushwalking	Abseiling, Horse riding, camping, bushwalking, bike riding
Designated Walking Tracks	1,500 km	140 km
Fauna	Grizzly and Black bears, Moose, Elk, Mountain Goats, Wolves	Wallabies, Snakes, Lyrebirds, Cuckatoos, Skinks, Possums
Flora	Pine, Spruce, Aspen, Fir,	Eucalypt, Banksia

Appendix 4: Development within the parks

Banff National Park, The Fairmont Chateau Lake Louise
Source: http://www.tripadvisor.com/
Accessed 28th January 2004



Transport corridor in Bow Corridor near Banff National Park
Source: Wilcox and Aengst, 1999

Blue Mountains National Park, Peppers Fairmont Resort, Leura
Source: World Heritage Blue Mountains: Lithgow and Oberon holiday book 2002-2003

Blue Mountains National Park, Tourism at Echo Point, Katoomba
Photo: Nathaly Hanke