

SHIFTS IN ENVIRONMENTAL POLICY MAKING DISCOURSES:
THE MANAGEMENT OF THE ST LUCIA ESTUARY MOUTH

by

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DECLARATION

Submitted in fulfillment of the requirements for the degree
of Master of Social Science, in the Graduate Programme in Geography,
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I declare that this dissertation is my own unaided work. All citations, references and borrowed ideas have been duly acknowledged. It is being submitted for the degree of Doctor of Philosophy in the Faculty of Humanities, Development and Social Science, University of KwaZulu-Natal, Durban, South Africa. None of the present work has been submitted previously, for any degree or examination in any other University.



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ABSTRACT

Global shifts in environmental decision-making from technocratic, top-down models to democratic, open-ended forums to address environmental issues have highlighted the complexity of environmental issues. As a result, the definition of these environmental problems in the political arena is highly contested and thus the process of formalising environmental discourses through environmental policy-making has become very important. Hajer's (1995; 2003) argumentative discourse analysis approach is used as a methodology to examine environmental policy-making regarding the St Lucia estuary mouth, in KwaZulu-Natal. This is also used to structure the presentation of the analysis particularly according to the terms of the policy discourses, such as the broad societal discourses, the local discourses and the storylines. The environmental discourses are characterised using Dryzek's (1997: 8) taxonomy of environmental discourses, based on his broad definition of discourse as "a shared way of apprehending the world". This research aims to identify the environmental discourses that emerged in the 1940 to 2005 period regarding the management of the St Lucia estuary mouth and the shifts in discourses that have taken place during this time. An analysis of the shifts in environmental discourses in the Greater St Lucia Wetland Park over a 65 year period revealed two significant events that punctuated the management discourses of the protected area and effectively divided the analysis into three succinct periods. These two events were the Kriel Commission of Enquiry in 1966 and Cyclone Demoina in 1984. The promethean, ecological modernisation and survivalist discourses were dominant throughout the three periods analysed. The evidence also shows that there has been a shift from modernist engineering discourse to a more ecosystem discourse which advocates that 'let nature take its own way'. Science remains a dominant force in shaping environmental policy-making in St Lucia; however environmental problems have become discursive in the post-apartheid period in a democratic South Africa and thus require a discourse that has wider stakeholder representation.

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CHAPTER ONE

INTRODUCTION

1.1. Introduction

The late 1960s saw the emergence of the environmental crisis. With the production of the first picture of the earth from the moon in 1969, the fragility of the planet was brought firmly into popular environmental discourse (Dryzek, 1997) While this awareness became common across the globe, uncertainty and confusion over solutions to the threats to the natural environment prevailed. National governments spent the following decades implementing measures to address these emerging environmental problems, such as acid rain, desertification and global warming, however this was followed by the recognition by governments that environmental problems were not being adequately addressed (Crosby, 1995). This was accompanied by a rise in international environmental cooperation, driven by agreements put in place by organisations such as the United Nations Educational, Scientific and Cultural Organisation (UNESCO) and the International Union for the Conservation of Nature (IUCN).

In response to this and to the realisation of the complexity of the environment, there has emerged a wide range of approaches to framing environmental problems and their solutions. Due to the existence of these competing perspectives, environmental politics has become apparent where competing stakeholders advocate alternative interpretations of environmental problems and their solutions (Dryzek, 1997). An important area of government activity has been the creation of policies to enable governments to make decisions that will enable the management of environmental problems (Hajer, 1995). In addition, there have been shifts in global environmental decision-making from the dominant technocratic, top-down models to more democratic, open-ended forums to address environmental issues (Hajer, 2003).

Discourse analysis is an approach for making sense of these competing environmental perspectives. Dryzek defines discourse as “a shared way of apprehending the world” (Dryzek, 1997: 8). He further notes that people, such as government officials, citizens and politicians, who are not directly concerned with the environment, use environmental discourses in their decision-making. Although these environmental

discourses seem to be used on an informal basis, they are in fact more universal than previously realised.

Environmental policy-making by the state is a process that involves formalising these environmental discourses. It draws on a range of competing discourses, formalising them into policy (Hajer, 1995). South Africa, since 1994, has experienced sweeping legal and institutional reforms. Of importance here is the fact that the environmental laws are now among the most progressive in the world (Scott and Oelofse, 2005). These laws include the National Environmental Management Act (Act 100 of 1998), the World Heritage Convention Act (Act 49 of 1999), the Protected Areas Act (Act 57 of 2003) and the Biodiversity Act (Act 4 of 2004).

The aim of this thesis is to account for the policy discourses and the consequent shifts in environmental decision-making that has taken place with regard to the management of the mouth of the Lake St Lucia. The approach adopted is historical, as the aim is to make sense of the policies applied from 1940 to the present to regulate the opening of the estuary mouth. This in turn is key to maintaining the ecological integrity of the entire estuarine system. The lake system is the largest estuary in South Africa and has, since 1897, been part of a declared game reserve¹. Since 2000, the lake has become part of the Greater St Lucia Wetland Park (GSLWP) – a World Heritage Site. During this period it has experienced a number of large-scale interventions due to human activities. Most notably has been the development of large-scale sugar cane plantations on the lower reaches of the Umfolozi River. This led to the diversion of the Umfolozi, which historically fed into the St Lucia estuary, into the Indian Ocean. Over this length of time the management of the Lake St Lucia mouth has also been subject to the jurisdiction of a number of government departments.

Furthermore, the case study was selected to gain an understanding of conservation management in South Africa in the period of late modernity. It also aims to reveal the shift in environmental policy-making in the post-apartheid era, particularly with

¹ Up until 1974, the Natal Ordinance distinguished between seven different types of protected areas: commercial game-reserve, game park, game reserve, national park, nature reserve, private nature reserve and private wildlife reserve (Fuggle & Rabie, 1999). Thus, particularly in KwaZulu-Natal, there are many terms for protected areas. The Park is now a proclaimed 'national park' under national legislation.

reference to protected area management. The research also aims to investigate the conventional conservation discourses in order to reveal the environmental politics of the earlier period, as they are challenged by those emerging in post-apartheid policies. Of particular interest here is the role of science in policy-making and the study of these shifts toward democracy in the context of a developing country.

In addition, motivation for this study draws on perceived research needs in the field of environmental policy and decision-making, in addition to current relevancy to geographic studies in South Africa. There is lack of research being done on environmental policy in the field of geography at present. A perceivable need to insert the geographic dimension into policy development, gives a clear indication that a spatial perspective is missing. In contributing to the creation of a new broader field of study – the “geographies of policy formation” – a more critical geographically-couched approach would be enabled (Peet, 1998:2). This applies particularly to the internationalisation of environmental discourses in the post-apartheid period, where South Africa has engaged internationally and adopted and adapted global environmental discourses into South African environmental policy.

The policy dynamics exhibited in the management of the GSLWP provide opportunity to apply critical policy studies. The Park is currently the focus of much attention, particularly in political, development and academic circles. The formation of the GSLWP Authority in 2000 signified an important transformation in the management of the Park. The mandate of the new Greater St Lucia Wetland Park Authority, to undertake conservation and development, represents the implementation of the new model of park management in South Africa as embodied in the World Heritage Act (Act 49 of 1999). The Park's World Heritage status has drawn stakeholders from beyond South Africa's borders into the policy formation process, resulting in a plethora of discourses on park management being adopted and presented. The differences in these positions (seen in language contained in policies and in the way communication is conducted) provide opportunity to study the discourses – similar and competing – that are continually engaging around the issue of protected area management.

Thus this study finds relevance on theoretical and practical levels. The use of discourse analysis as a methodology allows for a rigorous study of discourses using qualitative data. This is well suited to the study area and topic chosen, as the context is highly localised, involving few stakeholders in significant decision-making roles. The historical element of the study presents an opportunity to observe the changes in management styles and in policy decisions, showing how discourses have changed during the transitions in management of the St Lucia estuary mouth which is now park of the larger GSLWP. It also will enable the study of policy partnerships that have developed over time.

1.2. Aim and objectives

The aim of this study is to gain an understanding of the policy discourses that informed decision-making in the Greater St Lucia Wetland Park, with particular reference to the management of the estuary mouth from 1940 to 2005.

In order to achieve the aim stated, the following objectives are proposed: to

1. Identify the dominant discourses in policies that have informed decision-making since 1940
2. Explore the nature of alternative/oppositional discourses and how they influence decisions taken
3. Explore the nature of discourse coalitions that have existed
4. Identify the role of science in influencing the construction of these discourses.

1.3. Structure of the Thesis

The first chapter is the Introduction, providing the context in which the research is situated. This is followed by the motivation for this study to be pursued, as well as its perceived relevance. The aim and objectives of the study are then explained, followed by an outline of the structure of the thesis. Chapter 2 sets out the theoretical framework which underpins this research. Chapter 3 presents background information for the study, providing details of the recent history of environmental legislation in South Africa, the context for the study site, as well as the stakeholders that have been involved in decision-making around this study site. The methodology used in this research is qualitative and is detailed in Chapter 4. Chapters 5, 6 and 7 present the results, with Chapter 5 covering the period of 1940 to 1966, Chapter 6 covering 1967

– 1984 and Chapter 7 covering the recent period of 1985 – 2004. Chapter 8 presents the conclusions of the research conducted.

During the course of this research, the Greater St Lucia Wetland Park was re-named the iSimangaliso Wetland Park (DEAT, 2007). The name change was approved and gazetted after a two year consultation process which formed part of the new Wetland Authority's consultative approach to protected area management (DEAT, 2007).²

² As the field work for this study was undertaken prior to this renaming, the name Greater St Lucia Wetland Park (GSLWP) will be used.

CHAPTER TWO

THEORETICAL FRAMEWORK

2.1. Introduction

This chapter provides an overview of literature for understanding the global shifts in thinking about the environment in the twentieth century. This will provide a conceptual tool for the analysis of the empirical case study presented in Chapter 5. Firstly, in Section 2.2, the construction of environmental problems is discussed. This introduces the post-structuralist theoretical foundation of this research. It emphasises the importance of language within the constructivist paradigm of study, highlighting the way in which reality is constructed. The conflict created through this construction process is framed through a discussion of the resulting environmental and cultural politics, in addition to a discussion of discourse. As discourses are the medium through which contestation is conducted, discussion extends to the products of this contestation, namely hegemonic and counter-hegemonic discourses. Secondly, in Section 2.3, environmental policy is examined. Discussion focuses particularly on the environmental policy formation process, of which regulation is an important result. The role of science in policy is also addressed, as this is an important objective of this research. Thirdly, in Section 2.4, the theory of discourse analysis is presented, as it is the most applicable methodology to conduct this research. Lastly, in Section 2.5 the environmental discourses that are expected to arise in the data of this study are presented.

2.2. The Construction of Environmental Problems

2.2.1. Theoretical context

The theory guiding this research falls under the 'post-structuralist' philosophy. While structuralist thought places emphasis on the study of the underlying structures of society and the objectivity of this study, post-structuralism moves beyond this. It recognises, firstly, that an understanding of human systems is gained by studying more than the underlying structures of society and, secondly, that in this process it is not possible to obtain complete objectivity (Demeritt, 1996). Social constructivism purports that all realities are influenced by the socio-cultural context in which they occur and are not independent entities. Thus implying that reality cannot be isolated

from the context in which it exists. This does not, however, mean that nature exists only in peoples' minds, but rather that "human beings cannot objectively know or understand the environment unmediated by social factors" (Whittaker and Mercer, 2004: 264). Consequently, an environmental problem, although existing in reality, will invite many different understandings of what the problem actually is.

This 'social constructivist' way of approaching environmental problems is contested. The implication that nature does not exist in reality and the acceptance of subjective interpretations are the focus areas for critics of this approach. Consequently, opposing arguments exist in the debate, with scholars either described as 'constructivist' (seeing nature as entirely linguistically constructed) or 'anti-constructivist' (seeing nature represented as one truth, that which is observed and can be measured) (Kitchin and Tate, 2000: 50). For anti-constructivists, the discussions with constructivists are just "...word games, played while the natural world is being disintegrated" (Drengson 1996: 1). Hay (2002: 37, in Whittaker and Mercer, 2004: 11) furthers this by arguing that the reduction of nature to language constitutes a "verbal attack on nature" and that by questioning nature's value, they could be contributing to its ongoing exploitation. Attempts have been made to reconcile the two theoretical viewpoints; however there remains contentious debate and incompatible differences.

The constructivist approach forms the basis of this study; which undertakes a discourse analysis of environmental problems. Whittaker and Mercer (2004: 10) explain that the theories of the social construction of nature, although many and varied, can be characterised by four principles:

1. The adoption of a *critical approach* when dealing with accepted knowledge
2. Being characterised by *historical* and *cultural specificity*
3. The acknowledgement of the link between *knowledge* and *social practices*
4. The recognition of a link between *knowledge* and *social action*.

Thus social constructivists have an interest in where knowledge is generated, how it becomes established as fact and how it changes with regard to social and historical contexts. Within all these spheres, social constructivist theory recognises that language is not neutral and that this has a strong bearing on the relationship between nature and society. This perspective allows for an investigation of how different

viewpoints contributing to the construction of nature can transform the understanding of an event from being one that seems exclusively natural and objective to one that is contested, thus leading to conflict. Foucault, a leading discourse theorist, initiated the view that ‘truth’ is socially constructed (Foucault, 1980: 131). Thus what is presented as truth in society is actually a representation of the truth that has become entrenched and prevailed as the accepted norm or knowledge. Accordingly, when looking at the ‘truths’ about nature that exist in society, it is apparent that,

“in a world with multiple realities of ‘nature’ that are constructed by diverse groups with differing motivations and access to power, decision-making in environmental management can become a contest over whose knowledge is ‘right’, or ... whose knowledge can produce the most powerful claim to the ‘truth’” (Pedynowski, 2003: 738).

This contestation over ‘truth’ is where environmental politics finds its basis, providing a basis for conflicts to be played out in the political arena.

2.2.2. Environmental and cultural politics

Characteristically, there are many different views on what constitutes the natural environment in a political context. Hajer (1995:12) explains this best by saying that it is clear “that people may have widely differing perceptions of what environmental politics is all about.” Environmental problems and events are inherently political because of the struggle over their definition. Within the sphere of politics there are many actors – people who take part in debating and drawing up policy and legislation. These actors have views about nature and how it should be dealt with. Certain views gain dominance over others according to power relations, leading to conflict. This struggle over defining the environment is the basis of environmental politics (Hajer, 1995). The struggle occurs due to the realisation that those who are able to define the problem accordingly are able to claim ownership over solution generation; thus being able to control the management of the problem. As a result the definition of a problem is a product of the ‘world-view’ adopted by those defining the problem. Hence, an appropriate basis for this struggle for definition to take place is through the use of ‘discourses’ (Hajer, 1995; Whittaker and Mercer, 2004). While discourse will be examined in the next section, Hajer’s (1995: 44) definition provides an introduction:

“Discourse is...defined as a specific ensemble of ideas, concepts and categorisations that are produced, reproduced, and transformed in a particular set of practices and through which meaning is given to physical and social realities.”

By using a ‘discourse approach’ the roles of knowledge and power can be examined, within the politics that encompass environmental problems. In the process of problem definition, the views which do not form part of an accepted solution, form part of the opposition views or oppositional or counterhegemonic discourses.

Further political contextualisation of the environment can be achieved through considering five points that characterise this contextualisation (Hajer, 1995: 20).

1. Environmental change is not transient and is structural in nature.
2. Likewise, environmental change is common to all times and societies however, the meanings assigned change according to cultural contexts.
3. Inequalities in social development are often reflected in the debates on the natural environment.
4. Emblems dominate the discussion and ways of thinking in certain time phases Groupings of actors form around these emblems.
5. Presently, environmental issues are constructed discursively.

When considering that environmental change is not a new occurrence, it follows that the environment is constant as an element but changeable in its meaning. In this framework, the relationship between social-cultural context and environmental change are significant. Each provides meaning for the other in a mutual structuring process that is located in a discursive environment (Hajer, 1995). Hence, environmental issues are created and defined using language.

While this thinking about environmental issues in politics has been emerging since the environmental movement gained its impetus in the 1970s, constant reflection on the role of the inclusion of environmental issues in the political arena has led to the current concerns over and interest in environmental politics. Firstly, the basis for legitimating decision-making is changing. This is as a consequence of many more views and issues being taken into consideration and is often compounded by the great

deal of trust being placed in experts. As a result, it is a common realisation that “scientific controversy is an inherent element of environmental politics” (Hajer, 1995: 11). Secondly, of concern is the previously unnoticed connection between science and politics. Their reciprocal relationship has often resulted in them being indistinguishable from one another. Hajer (1995: 12) says that by recognising this connection, one is able to discern between science and politics, allowing one to examine the definition process of priority issues in environmental politics and gain an understanding of the implicit political decisions being made through environmental discourses.

With the rising significance of science in the political arena, it is beneficial to reflect on the role of science and the recognition of the roles of other discourses in politics. Accordingly, it is implicitly acknowledged that science cannot be used as a starting point for politics, but should rather be seen as constituting part of the political arena, as do other discourses. Bird (1987: 256, in Hajer, 1996: 258) explains the reason for this, by stating that

“...Scientific paradigms are socio-historical constructs – not given by the character of nature, but created out of social experience, cultural values and political-economic structures ... the actual objects of inquiry, the formulation of questions and definitions, and the mythic structures of scientific theories are social constructs. Every aspect of scientific theory and practice expresses socio-political interests, cultural themes and metaphors, personal interactions, and professional negotiations for the power to name the world.”

This brings about an awareness of the emergence of different ways, other than scientific, of conceptualising environmental discourses and problems. One such way is the cultural politics approach. This approach allows for the separation of science and politics, in such a way that they can be examined as separate elements. Through the use of a social science ‘lens’, this approach is conducive to the study of environmental discourses due to its focus on the formation of the discourses from a cultural perspective. Hajer (1996: 256) explains that:

“what the social sciences have started to appreciate much more over the last decade is how environmental discourse, often unintentionally, can itself be a cultural force. Indeed, it can be analysed as a form of *cultural politics*.”

Thus, cultural politics involves the organisation and reorganisation of systems, dealing with concepts of identity, social relationships and the changing of these within societal norms. This perspective examines why certain aspects of reality are identified as priority problems and questions the role and influence of this on society (Hajer, 1996: 256). Thus when using a cultural politics approach, the way in which problems are constructed is examined, in order to uncover the political issues that are concealed beneath. This approach is appropriate for several reasons. Hajer (1996) identifies that, firstly, the approach allows for recognition of the way society mobilises around environmental issues, often assembling around specific emblems. Secondly, the method acknowledges that discourses in the environment are not about the environment alone. Thirdly, social movements are able to be examined in the form of discourse coalitions; displaying a means of examining these movements in an environmental context. And lastly, the approach provides opportunity to ascertain embedded ideas used in structuring prospective solutions and future policy (Hajer, 1996: 247).

2.2.3. Discourse

Environmental controversies have become discursive, i.e. they have entered everyday discussions and language use, and as a result, attention has proceeded from the recognition of environmental problems to the interpretation of these problems (Hajer, 1995: 12). These discussions can be conceptualised through the use of ‘discourses’. The concept of ‘discourse’ is embedded in social constructivism – the philosophy that all realities are socially constructed. This does not denote that the natural environment is fabricated but rather that understandings of the environment are not the same; differing according to social, cultural and political contexts and that these contexts provide the building blocks necessary for a view of the environment to be created. Within the framework of social constructivism, discourses represent the portrayal of a vision of reality that is not essentially seen but what is desired to be seen. It follows that each actor (person) is likely to have a different idea of what reality is to them and thus there abounds a plethora of discourses (Dryzek, 1997). Thus a discourse is a way of describing or thinking about an entity in a way that makes sense to the describer. This is done through making use of previous experience and consensual opinions from others in order to provide an account that best represents what is thought. Borrowing part of narratives from other discourses can also be used as a tool in order

to create a discourse that more aptly suits a person's worldview and has meaning for them.

The most relevant definition of discourse for this study is provided by Hajer (2006:46):

“Discourse is then understood as an ensemble of ideas, concepts and categorisations through which meaning is allocated to social and physical phenomena, and that is produced and reproduces in an identifiable set of practices.”

Thus a discourse is an ‘idea conglomeration’ that is used by a person so that the world around them makes sense. Although in order to be properly described as a discourse, these ideas need to be ascribed to by others as well. As Dryzek (1997: preface) states “a discourse is *shared* way of looking at the world” (emphasis added). Hajer and Ferguson (1995 & 1994, in Bakker, 1999: 370) agree that discourse is not enacted in isolation and that a person will tend to group themselves with others in a ‘discourse coalition’ – a group whose cohesion is based on “discursive ‘emblems’ that reflect common interests as well as shared understandings and definitions of a given issue”. The concept of discourse coalitions will be explained later in the chapter.

Interaction between people and the forming of relationships places a focus on *language*. Language is key to the communication of ideas, opinions and arguments, accordingly discourses can be described as a ‘communicators of ideology’ (Ockwell, 2001). A way to recognise the difference between discourses is to look at the different terminology that they are characterised by, e.g. for example, economic, scientific, development discourses. Thus people adhering to a specific discourse would use “a particular kind of language when talking about events, which in turn rests on some common definitions, judgements, assumptions and contentions” (Dryzek, 1997; preface). Dryzek (1997: 8) explains further that:

“[Discourses are] ... embedded in language, [they enable] those who subscribe to it to interpret bits of information and put them together into coherent stories or accounts. Each discourse rests on assumptions, judgements and contentions that provide the basic terms for analysis, debates, agreements and disagreements.”

Thus discourse constitutes more than simply talking about something. It manifests in the actions that people undertake, i.e. what they do in practice. Discourse can be a way of understanding that is evident not only in normative documentation (such as legislation and policy) but also in practice, in settings such as interactions at formal meetings or in the day-to-day operations of a company.

It is evident that discourse not only involves people adhering to ideas and information but also using this information to implement change. Thus discourses are ‘actively produced’ by people who in fact work as ‘actors’ or ‘agents’ and can therefore be described as having ‘agency’ within the dynamic discourse formation process (Ockwell, 2001). Thus, it can be said that they have power. However, these actors are influenced themselves. Discourses can have agency because they have a structuring effect, providing restrictions, exceptions, inclusions and exclusions within which actors must work (Ockwell, 2001). So, not only is discourse created but it also creates. Both human and discourse agency are important to the understanding of discourse formation processes. A prominent discourse theorist, Michel Foucault’s work stands in contrast to this understanding. Foucault’s main hypothesis is that power cannot be possessed but can only be exercised (Foucault, 1970). This purports that people cannot possess power and thus do not have agency. Aside from this distinction, Foucault’s work parallels that which has been discussed here. Through showing the historical differences between systems and regimes of thinking, Foucault provides an account of the historical transitions between dominant ways of thinking. These transitions exhibit similar patterns of change in which there are underlying existing conditions that dictate which discourses dominate the thinking of the period.

2.2.3.1. The Dominant Discourse: Hegemonies

While it is conceivable that all ‘policy participants’ are able to participate fairly and equally in policy processes, it is most probable that certain ideas and interpretations of a problem will dominate and take precedence over the others. These discourses are thus ‘hegemonic’. In terms of policy, a hegemonic discourse is one that is dominant and pervades all aspects of policy formation and application.

Hegemony begins as a prevailing rationality, or sense of practicality, within a community of experts (Peet, 2001). The scale of hegemony goes beyond the local level. Local discourses are influenced by discourses that prevail at the national level. These in turn find their basis in regional and global discourses. These globally hegemonic discourses originate predominantly from First World institutions in developed countries. The influence they exert on national and regional discourses in developing countries is often very significant. As a result, regional and national discourses are dubbed 'sub-hegemonic'. The process of 'translation' of discourses moves primarily in one direction – from the 'global' to the 'local' context (Peet, 2001). In addition to understanding what hegemony is, one also needs to know how a hegemonic discourse is reinforced. The Gramscian notion of hegemony provides an explanation for this:

“Hegemony is a prevailing commonsense formed in culture, diffused by civic institutions, that informs values, customs and spiritual ideals to induce 'spontaneous' consent to the status quo” (Peet, 2001: 4)”

Discourses are thus a widespread understanding that public institutions spread, shape values, customs and ideals, resulting in the status quo being accepted. In this sense a discourse is 'successful' if the view of the world that it projects is accepted as commonsense, i.e. the 'rational' way of thinking (Peet, 2001). The people who employ this discourse then experience their view as part of the general consensus.

Hegemonic discourses typically originate from a diversity of areas, ranging from academics in intellectual institutions, to financial organisations, government bureaucracies and the information media (Peet, 2001). They are legitimised on and through various levels:

1. On a *theoretical* level (an overarching notional means of conducting business)
2. At an *institutional* level (the way which governs how business is conducted),
3. On a *practical* level (seen through the recommendations by experts)
4. At a *popular* level (communicated from experts to the media and on to the public)

Institutional 'interweaving' further extends legitimacy and dominance, i.e. economic-cultural-political institutions all subscribing to the same discourse. This mixture of

mutually exclusive organisations provides a very strong support within which to exert influence and disseminate ideologies.

2.2.3.2. The Oppositional Discourse: Counter-hegemonies

In resistance to these hegemonic and sub-hegemonic discourses, 'counter-hegemonic discourses' develop. These arise predominantly at local and regional levels and often present alternative methods to policy formation; attempting to reverse the scalar direction that hegemonic institutionalisation of discourses predominantly takes. These counter-hegemonic alternatives have their basis in domains such as civil society movements, informal media and radical academia (Peet, 2001).

The discourses that characterise oppositional actors do not contain the power that is exhibited by dominant discourses. The ideas representing these oppositional discourses do not conform to the existing norms of society and thus the discourse is not as predominantly accepted, as the hegemonic discourses are. The lack of power is entrenched further by the fact that counter-hegemonic discourses are frequently defined by the subject of their opposition, rather than being defined by the identity of the movement which ascribes to it. As a result, oppositional discourse actors are constantly endeavouring to alter the predominant way of thinking. Castells (1997) details many of the effective mechanisms used by oppositional environmental discourse adherents to attempt to bring about these changes. Through the use of the media, the means with which to present alternatives and increase their agency have been improved substantially. Oppositional movements have used newspapers and television, to inform the public about controversies ranging from the local to global level, as well as the Internet and telecommunications devices, in order to disseminate ideas and information and to co-ordinate important events (Peet, 2001). These mechanisms provide a useful basis from which counter-hegemonic groups can lobby for change in policy and legislation, in addition to encouraging change to the dominant ways of thinking. The possibility for oppositional discourses to induce such changes is increased if partnerships are formed with actors within movements that share similar ideas and methods than those embodied in dominant discourses. This 'strength in numbers' philosophy has proved significant within environmental politics, especially at national levels of governance.

2.3. Environmental Policy and Science

2.3.1. Environmental Policy Formation and Regulation

In order to understand the politics of social conflict over the environment, it is necessary to study the regulation of these conflicts. This is achieved by studying the process through which regulation is generated, focusing particularly on policy formation. Hayer (1995, 23) notes that:

“ the art of regulation is to find a way to secure credibility in the face of these contradictions, to render regulatory strategies acceptable, and to generate trust for the institutions that are put in charge of regulation”.

Figure 2.1 shows the process of policy formation in a schematic diagram. Although depicted as a linear process, there is clearly a great deal of scope for feedback to occur within the process, which is typical in reality. The diagram shows the events preceding regulation formation.

The initial conflict \occurs over an environmental problem is dealt with initially through the formulation of applicable policy. This policy is then implemented. Once the policy has been implemented, regulation is undertaken in order to enforce the implementation. Hajer (1995: 23) describes regulation as having three main tasks:

1. Discursive closure

This is the process through which the problem gains a definition. As the starting point of regulation, discursive closure is important because it allows for an eventual conclusion to the environmental problem. There are characteristically many different views on what the problem is and how it is defined. These definitions compete for prominence, resulting in a final definition that has undergone an intense process of contestation. Thus the definition of a problem should not be overlooked as a taken-for-granted process. Once the problem has been defined, discursive closure has been achieved. Hajer (1995) notes that the importance of this process cannot be overstated.

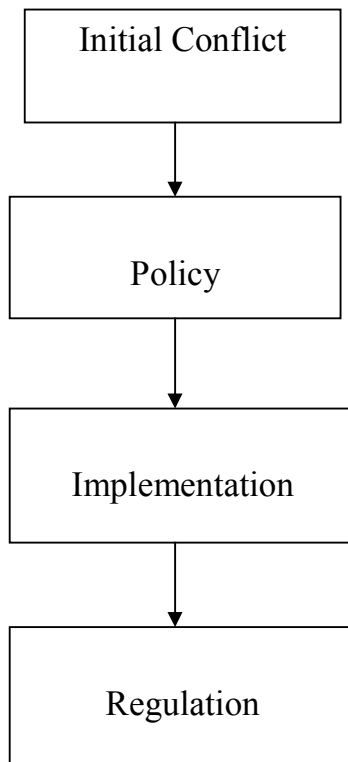


Figure 2.1. Process preceding the regulation of environmental problems (adapted from Hajer, 1995)

2. Social accommodation

Regulation should take cognisance of the social needs attributed to the problem in question. Accounting for the social reactions to the problem and ensuing regulation, provides a better chance for the regulation to be deemed appropriate and socially acceptable.

3. Problem closure

Lastly, regulation should allow for the problem to be addressed effectively, thus providing a “remedy [to] a situation that was perceived as problematic” (Hajer, 1995: 23). Although this does not indicate the end of the initial problem, it does represent an end to the initial cycle addressing the problem in question.

Another level to be examined is the *meanings* that regulation contains. These meanings deal with depictions of policy, existing on a more abstract level that deals

with perceptions and representations. The intangibility of this aspect of regulation does not represent a decrease in significance. With this in mind, it is pertinent to note that if a problem can be regulated, then the *image* of a problem can also be regulated. Thus symbols, emblems and historical markers are important when entering into the policy process (Hajer, 1995). By acknowledging this aspect of regulation, policy makers are able to improve strategies, thus increasing the success of regulation.

2.3.2. The Role of Science in Policy

“As a result of the special characteristics of environmental issues, science plays a different role than it traditionally has played in decision making on other issues” (Jäger, 1998: 152).

The role of science is addressed here because of its prominence in environmental policy-making. Due to the characteristics of the subject matter about which policy is being implemented, the involvement of science is seen as a prerequisite. While science is valued for its objectivity, the philosophy that it employs inevitably influences and structures policy production and implementation. Thus, to enhance and understanding of policy-making in the environment, it is essential that the different types of roles and places of science within this process are explored.

Shackley and Wynne (1995, in Jäger, 1998) characterise three different interactions that can exist between science and policy. First, there can be a two-way flow of information between science and policy, with each remaining a distinct realm. The flow of information occurs when scientific expertise is needed for specific policy problems. This is termed ‘science-based policy-making’ (Hajer, 1995). Second, some policy issues cannot be solved by science due to their complexity and as a result need to be addressed using non-scientific methods. Despite this, they are still framed in a scientific manner by being developed into policy-relevant scientific questions. This method is called “trans-science” (Weinberg, 1972, in Jäger, 1998). Third is an extension of the previous approach, called “regulatory science” where policy and science become a hybrid realm (Hajer, 1995). Policy problems are addressed through scientific methods, although this is done in a regulatory context, thus:

“the content and context of [scientific] research [is] subject to political pressures to provide answers, often in a short period of time, to a specific policy- or legally-driven question” (Jäger, 1998: 144).

Accordingly regulatory science involves evaluation and assessment, drawing on already established scientific research, by using “[scientific] papers, personnel and expert advice” (Jäger, 1998: 144). Regulatory science also plays a role in ‘problem closure’. Both science and policy realms ‘mutually construct’ each other. Science operates as a reinforcement of the particular knowledge that policy embodies, validating the policy that is produced. Policy simultaneously confirms the relevance and quality of the science that has been utilised (Shackley and Wynne, 1995: 221, in Jäger, 1998). This presents opportunity for the problem to be addressed on two fronts, thus providing problem closure.

Table 2.1. Three phase process identifying science and policy linkages (adapted from Jäger et al, 1998 (in Jäger, 1998: 145)

Phase		Description	Flow of Information
1	Monitoring and assessment	<ul style="list-style-type: none"> ▪ Scientific capacity is building up through monitoring and assessment activities ▪ Issues are located in the scientific domain ▪ Not on the broader policy agenda 	Little or no flow of information due to few interactions between the science and policy worlds.
2	Development of action plans	<ul style="list-style-type: none"> ▪ Scientific knowledge becoming the basis for goal statements on how to deal with the issue 	Unidirectional, moving from science domain to policy domain.
3	Further progression of policy agenda	<ul style="list-style-type: none"> ▪ Issue is firmly on the policy agenda ▪ Linkages developed between science and policy 	Linkages developed and moving in both directions.

While it is important to identify the types of linkages between science and policy, it is equally important to examine the stages at which these linkages occur. Jäger et al (1998) identify these in a three phase process. Table 2.1 shows these phases. Whilst there is no exchange of information between science and policy in the first phase, this changes to a unidirectional flow in the second phase. Due to the dominance of science in this phase, proposed solutions are dictated by scientific language and idea, thus facilitating the one-way movement of information. In the third phase there is movement of information in both directions. This indicates that linkages are originating in both sectors, ultimately allowing policy language to enter the policy agenda previously dominated by science.

2.4. Discourse analysis theory

Discourse analysis is a tool that can be used to analyse the environmental policy-making process. It is predominantly a social science methodology that originated in linguistics and psychology (Wetherall et al, 2001). The focus of the analysis is the spoken and written language. For this thesis, while language is the focus of analysis, the power relations between language users is of particular interest. This analysis is extended to include studying motivations for specific language usage and interactions. Thus through this method one is able to

“understand why a particular understanding of the environmental problem at some point gains dominance and is seen as authoritative, while other understandings are discredited. This is taken on to analysing the ways in which certain problems are represented, differences are played out, and social coalitions on specific meanings somehow emerge” (Hajer, 1995: 44).

The methodology of discourse analysis can focus on different aspects of language dependent on the aim of the research. Wetherell et al (2001: 9) provides a description of these differences in analysis. At an initial level, discourse analysis is:

- (a) focused on language, i.e. the actual words.
- (b) how language is applied in specific interactions.
- (c) the analysis of patterns created by language associated with a specific topic. This is particularly applicable when studying societal and cultural processes.
- d) At the most extensive level patterns in a larger context are found.

The last three levels of analysis, which involve the study of the *use* of language, are of relevance to this research. The focus of study is, firstly, on the language being used in specific interactions, secondly, recurrences of this language within a specific topic and thirdly, identifying these patterns in a broader framework. Accordingly this necessitates a shift from the use of traditional linguistically-based discourse analysis methods to a method that facilitates the study of discourse elements beyond language. In addition to this focus, importance must be placed on the use of discourse analysis in a temporal context. Thus, of particular relevance to this research is the study of prior conditions. The benefit of this is stated by Hajer (2005: 300):

“The analysis of discursive constructions such as narratives, story lines or metaphors is especially powerful when done in the context of the study of the socio-historical conditions in which the statements were produced and received.”

2.4.1. Argumentative discourse analysis

In order to refine the method of analysis this thesis uses Maarten Hajer’s (1995) concept of ‘argumentative discourse analysis’. While the importance of language in the policy analysis process has been stressed, this method of discourse analysis shifts the investigation of discourse beyond the components of language. Through argumentative discourse analysis, Hajer highlights the significance of ‘argumentation’. He proposes that this development in policy analysis is called the ‘argumentative turn’, rather than the linguistic turn which defines poststructuralist linguistic policy analysis (Hajer, 2002). Thus instead of focusing solely on the words being spoken, analysis is extended to the actors using these words and the positions they have adopted. This in turn places equal importance on the counter-positions that are assumed by actors. Billig (1987: 91, cited in Hajer, 2002) confirms the vital role that the argumentative approach holds in the policy analysis process:

“[T]o understand the meaning of a sentence or whole discourse in an argumentative context, one should not examine merely the words within that discourse or the images in the speaker’s mind at the moment of utterance. One should consider the positions which are being criticised, or against which a justification is being mounted. Without knowing these counter-positions, the argumentative meaning would be lost” (Billig, 1987: 91, in Hajer, 2002).

Hajer outlined this approach most clearly in his paper *'Frame in the Fields'*, in addition to his chapter in the book *'Deliberative Policy Analysis'*, edited by Maarten Hajer and Hendrik Wagenaar (2003). Hajer (1995) identifies three elements of analysis, namely the terms of policy discourse, the formation of discourse coalitions and the analysis of institutional practices. These elements are outlined below.

2.4.2. Elements of argumentative discourse analysis

This section will introduce (a) terms of policy discourse, (b) discourse coalitions and (c) epistemic notions. These three elements are the broad analytic framework of Hajer's (1995, 2003) argumentative discourse analysis.

(a) Terms of policy discourse

By looking at the language used in policy one is able to "show how language shapes reality" (Hajer, 2003: 103). Within this element of discourse analysis Hajer outlines three layers of analysis. These layers are (1) the analysis of storyline, myths and metaphors, (2) Policy vocabularies and (3) Epistemic notions. These layers contain the distinctive terms and concepts that structure policy encounters and products. In analysing policy language at these different levels one is able to examine the ideas that are structuring discourses and the nature of discourse interaction.

1. Storylines, metaphors and myths

Storylines

Discourses emerge when an environmental issue arises. The wide range of stakeholders that become involved in such issues all play an active part in the issue life-cycle, thus they are termed 'actors'. The number and variety of these actors results in a corresponding amount and range of ideas and opinions about environmental issues. These views are generated from the ideas and values that actors, individually and collectively, possess. Accordingly storylines are the meanings that actors piece together from ideas and values in order to comprehend, interpret and make sense of an issue. Hajer (2003: 10) defines storylines as "crisp generative statements that bring together previous unrelated elements of reality." They represent an actor's reality of an issue and are often used as 'short hand' in discussions (Hajer 2002; Peet, 2002; Hajer & Versteeg, 2006: 177). Although this understanding may encompass a wide range of ideas and knowledge, for the sake of effective

communication, it is usually reduced to a few key phrases that encapsulate the actor's position. Thus, storylines are described as "narratives that give meaning to an issue" (Hajer, 1995: 24).

Storylines allow people to communicate with each other using terms and concepts that enable mutual understanding. This facilitates the interaction needed within the policy-making process. It forms the foundation needed to assemble definitions for the environmental problems under debate. This is also enabled due to the way in which storylines reduce the complexity of problems thus providing common ground for people to communicate. Hence, a storyline "provides the narrative that allows the scientist, environmentalist, politician, or whoever, to illustrate where his or her work fits into the jigsaw" (Hajer, 2003: 63). However, despite this mutual understanding that storylines may generate, agreement about problem definition and closure is not necessarily guaranteed.

An important role of storylines is their assistance in the process of positioning. Positioning is a process in which actors manoeuvre in order to secure advantage in an interaction or series of interactions. It is this process which leads to ideas such as 'blame' and 'responsibility' developing and being reinforced (Hajer, 1995: 65). Language is an important building block of these discourses, thus the use and meaning of language in these interactions is paramount. The way in which actors use language to create and transform conflicts indicates the way in which power is exercised (Hajer, 2003). However, this does not signify that discourses do not possess power in themselves. Actors can be positioned by the discourse itself because of the power that the discourse possesses. This power may be derived from the fact that the discourse has been accepted as the mainstream way of thinking. As Hajer (2003: 107) explains,

"positioning is not merely a matter of cornering one's opponents in concrete discursive exchanges. The power of policy discourse is also a matter of routinising a particular 'parlance of governance', of excluding or marginalising alternative ways of seeing."

Ockwell (2001:13) corroborates this by asserting that agents "do not act within a vacuum." Agents may be conscious of the positioning process and their role in it. It is

possible, however, that they are not aware and thus ‘unintended positioning’ takes place (Hajer, 2003). This locates positioning as a result of an interaction rather than the purpose of an interaction. Thus the essence of positioning is the ‘locating’ of agents in the interaction and the use of language in this location process. The empirical results provide evidence of the shift in storyline over time in relation to the management of the St Lucia mouth.

Metaphors

The imagery and symbolism that are associated with storylines form an important part of the terms of policy discourse. As linguistic elements of speech, metaphors are words or phrases that are applied to something which is not literally applicable, i.e. they are symbolic of something else. They are used in speech to transfer meaning from one previously unrelated element to another in order to render the latter element understandable (Hajer, 2006). Thus, when examining the terms found in policy discourses, metaphors enable actors to understand an issue by interpreting unfamiliar elements through the use of concepts familiar to them. Accordingly, Hajer (2003: 6) describes them as “linguistic devices that convey understanding through comparison.” This is a valuable method for expert knowledge to be understood and disseminated effectively, particularly scientific knowledge (Schön, 1979, cited in Hajer, 1995: 61). Thus, metaphors are linked to storylines through the way in which they reduce the complexity of language being used in interactions between actors. This provides opportunity for actors to communicate more effectively. The function of metaphor as a representation of more complex ideas, links metaphors directly with storylines, as “the point of the story-line approach is that by uttering a specific element one effectively reinvokes the story-line as a whole” (Hajer, 2003: 62). Thus storylines are in essence extended metaphors. They represent a larger reality that an actor holds.

Myths

While metaphors are primarily linguistic devices, myths are not figures of speech. They are narratives that assist actors to understand and deal with issues and concepts that they are not familiar with. Myths provide explanation and ultimately reassurance for actors about sequences of events and occurrences. The constant reiteration of these myths shifts them from the realm of allegory to that of truth in the minds of the actors involved. Hajer describes two types of myths (Hajer, 2003). Constitutive myths are

those which bring people together through the reiteration of a foundational event. The constant telling and retelling of a myth occurs until it becomes a cohesive account around which actors join together. Dystopian myths are those in which actors join together in order to avoid disaster. Thus myths become an integral part of the dialogue of environmental issues.

2. Policy Vocabularies

The second layer of policy analysis focuses on policy vocabularies. These are “sets of concepts structuring a particular policy, consciously developed by policy makers” (Hajer, 1995:10). Policy vocabularies consist of the technical and conceptual terms that provide the structure for policy that is drawn up. The terminology provides structure for policy in two ways. Firstly, for the actual arrangement of the policy, i.e. how it is set out, and secondly, the vocabularies structure actors’ ways of thinking. Thus, these policy vocabularies are institutionalised structures of meaning that channel political thought and action in certain directions (Hajer, 1995).

What distinguishes the terms used in this second layer of policy analysis from those in the first is their conscious use by policy-makers. They are utilised by policy-makers to present a particular view of a problem. Another distinguishing feature is the nature of the terms and concepts that are used. They are characteristically technical and scientific as they are usually drawn from foundational research and studies (Hajer, 2003). Accordingly, policy vocabularies are also instrumental in supporting the formation of new vocabularies. Support is most often garnered for these vocabularies through the credibility gained from their links to scientific theories and research. In the context of the management of the St Lucia estuary mouth, the description of St Lucia as an ‘ecological system’ was a common policy vocabulary that was used to justify dominant research streams and management decisions.

3: Epistemic Notions

The final layer of policy analysis deals with epistemic notions. These are defined as “a regularity in the thinking of a particular period, structuring the understanding of reality without actors necessarily aware of it” (Hajer, 2003: 8). These ways of thinking provide certain rules of formation that underpin theories or policies. As with the first layer of policy analysis, these notions are not formulated consciously by

actors. These ideas may seem too broad to be significant but they are in fact influential enough to have an effect throughout society, across public and private sectors. Thus, they exist on a societal level and can operate on a wide range of scales, i.e. from both national and international platforms. In examining the shifting discourses and storyline in the management of the St Lucia mouth, a number of enduring epistemic notions were identified which influenced the policy making process.

(b) *Discourse coalitions*

Actor groupings form around certain storylines according to shared concepts and terms in arguments. While the use of shared discourse and storylines is not conscious, the positioning of actors within the discourse arena is deliberate. Thus, discourse coalitions are an extension of ‘positioning’. They involve partnerships that are formed between actors that espouse similar or overlapping discourses over a certain time period (Hajer, 2005). Where commonalities with other agents are found the result is the formation of a partnership or alliance. Coalitions are seen as a way for actors to position themselves positively in relation to other actors and achieve their objectives. Although these alliances are formed on the basis of similarities in arguments, this does not indicate that there is complete agreement between agents. Thus it does not always indicate common goals or concerns between actors. Through the similar ‘storylines’ that agents adopt, coalitions often enable previously independent policy domains to be combined (Hajer, 2003: 11).

As an example, sustainable development is a discourse around which a coalition between industry and environment proponents can form, with industry being the dominant discourse in the partnership. It is a very widespread and accepted discourse, illustrating how a discourse coalition, with a dominant discourse in the alliance, can be used to garner support and attempt to position other agents in interactions. Hajer (2003) describes how support can be generated by creating different interpretations of an environmental problem in order to appeal to the public and assuage their worries. He does this by using an example of national environmental policy formation in the Netherlands, where different storylines were derived in order to gain support for ideas that the government were implementing. Firstly, the policy of recreating nature was framed as ‘nature for nature’, whereby biodiversity would be enhanced. This was put

forward as the official goal of the government in their nature development policy. Secondly, 'nature for the economy' was emphasised. It was proposed that nature development would have an influence on the choice of international business to settle down in the region, thus increasing investment. Thirdly, the policy was presented as 'nature for the rural community'. Through the government policy it was planned that nature redevelopment would help introduce new functions to the countryside beyond industrial agriculture (Hajer, 2003: 12). Thus, this policy process provided more opportunity for discourse coalitions to be formed, creating more probability for actors to agree with the interpretations that were on offer. Prominent discourse coalitions identified in this research were between the provincial conservation management authorities and independent scientists, in addition to coalitions between the conservation management authorities and the Umfolozi sugar farming community.

(c) Institutional Practices

The third element of discourse analysis shows how discourses are exhibited in reality through institutional practices. These discourses are a "product of institutional practices and individual activities that reflect particular types of knowledge" (Ockwell, 2001: 13). If one looks at a discourse that informs a particular discipline that exists in reality, one can see how it manifests and influences the policy field in which it is relevant.

For example, Hajer (2003) explains how the increase in importance of an ecological approach to managing the environment in the Netherlands resulted in ecology becoming a major influence on the policy outcomes. The terms used in policy were becoming increasingly ecologically orientated and the partnerships formed in the policy formation process were based progressively more on ecological premises. Hajer (2003: 108) concluded "ecology became the language that would discipline the debate on the politics of nature." Thus close examination of a discourse should enable an understanding of what disciplinary knowledge is being used to inform the discourse. The use of ecological language was particularly evident in the context of the management of the St Lucia estuary mouth. Institutional practices were tailored to take science into account when formulating environmental policy.

2.5. Environmental Discourses

2.5.1. Dominant environmental discourses

This section presents a summary of the environmental discourses that are considered to be dominant in environmental decision-making studied in this research. Dryzek's (1997) taxonomy for environmental discourses is used and thus the discourses discussed below have been derived predominantly from Dryzek's work. The 'template' for each discourse definition examines: (1) Basic entities whose existence is recognised or constructed, (2) Assumptions about natural relationships, (3) Agents and their motives and (4) Key metaphors and other rhetorical devices. This template is used in the following section to describe the promethean, ecological modernisation and administrative managerialism discourses.

2.5.1.1. Promethean (economic growth) discourse

This discourse bases its premises entirely on economic principles, allowing the market to guide policy response to all aspects of society. This includes provision for economic growth to have an unhindered path in the efforts to maximise the potential of all available resources (Dryzek, 1997). Thus the Promethean discourse advocates a 'no limits to growth' approach. The Promethean discourse is widespread as almost all major economies in the world are capitalist. Accordingly the primary goal of states globally is economic growth and the facilitation of this growth. The Promethean discourse has been the driving discourse embodied in capitalism and as a result has remained unchallenged until concerns were raised in the 1960s and 1970s about the effect that unchecked economic growth was having on the natural environment. This prompted a strengthening of the discourse in order to defend its ideals (Dryzek, 1997). Due to the degree to which capitalist thinking was and remains ingrained in society, the Promethean discourse still prevails and provides the backdrop for environmental decision-making processes.

The basic entities of the Promethean discourse centre on markets, prices and people (See Table 2.2). What is striking is the Promethean view that nature as a separate entity does not exist. Prometheans see natural resources as matter that is there to be transformed by people. Until this change occurs, the importance or existence of the environment is not recognised (McCarthy and Prudham, 2004). Thus the environment is only valued when it becomes a marketable good. Prometheans believe that through

Table 2.2. Promethean discourse profile (Dryzek, 1997: 53)

1	Basic entities whose existence is recognised or constructed
	<ul style="list-style-type: none"> – Nature as only brute matter – Markets – Prices – Energy – Technology – People
2	Assumptions about natural relationships
	<ul style="list-style-type: none"> – Hierarchy of humans over everything else – Competition
3	Agents and their motives
	<ul style="list-style-type: none"> – Everyone; motivated by material self-interest
4	Key metaphors and other rhetorical devices
	<ul style="list-style-type: none"> – Mechanistic – Trends

technological innovation, humans are able to overcome any environmental problems that are presented to them. The result of which is the continuing of the economic growth imperative.

Natural relationships in the Promethean discourse are represented strongly through hierarchy. Humans dominate the environments in which they exist and the only other important relationship is the competition that exists between humans. The government’s role is reduced to that of market facilitator and negotiator between competitors. Accordingly agency is assigned exclusively to those participating as economic actors and the importance of people as a resource is emphasised. The key metaphors in the Promethean discourse are characteristically mechanistic. This relates to the ability of humans to use their skill and intellect to construct solutions through previously separate elements. Prometheans also make extensive use of trend forecasting, shown predominantly through the use of single-variable graphs. These are used to show likely future scenarios (Dryzek, 1997).

2.5.1.2. Ecological modernisation discourse

Martin Jänicke and Joseph Huber are credited as being the originators of the theory of ecological modernisation (Mol and Sonnenfeld, 2000), highlighting its development in the 1980s as a “new policy-orientated discourse in environmental politics” that was emerging as a response to the reactionary environmental policy construction that

existed in the 1970s (Hajer, 1995: 25). Ecological modernisation differed from the prevailing economic growth orientated discourses because it required “conscious and coordinated intervention” into economic systems. This contrasted with the existing laissez faire reliance on the “invisible hand” of the market to determine the outcome of environmental issues in the Promethean approach. Its emergence ran parallel to a simultaneous rise in environmental awareness taking place in industrialised countries (Berger et al, 2001). It developed as a method of mitigating the environmental consequences of industrial technologies, “advocating internal system restructuring as a solution to these problems rather than radical system change” (Blowers, 2000: 377). Due to the considerable benefits this discourse provides to natural resources users, it is predictable that the thinking represented by the ecological modernisation discourse was brought about and strongly championed by the industrial sector. Thus ecological modernisation is:

“the discourse that recognises the structural character of the environmental problematique but none the less assumes that existing political, economic and social institutions can internalise the care for the environment” (Hajer, 2003: 25).

The ecological modernisation discourse presents a world that is viewed and understood through a systems approach (see Table 2.3). The processes contained in these systems interact in complex ways, with nature forming part of these interactions. Nature is seen as a source of resources and is recognised for its role in dealing with waste. While the discourse does not dispute that economic growth can be detrimental, it pushes the ‘limits to growth’ argument into the background. Thus ecological modernisation as a discourse comfortably maintains its place in a capitalist economy.

It is assumed that relationships are typically fostered between government, business and scientists in the quest to restructure systems to ensure both economic growth and environmental protection (Blowers, 2000). The anthropocentric nature of these relationships indicates the subordination of nature to human needs. Thus the agency of nature is dismissed. Ecological modernisation prioritises the prudent use of natural resources for public interest. Through the partnerships that have been formed, the agents propose a belief in the common good and the ideal of simultaneous economic efficiency and environmental conservation.

Table 2.3. Ecological modernisation discourse profile (Dryzek, 1997: 146)

1	Basic entities whose existence is recognised or constructed
	<ul style="list-style-type: none"> – Complex systems – Nature as waste treatment plant – Capitalist economy
2	Assumptions about natural relationships
	<ul style="list-style-type: none"> – Partnership encompassing government, business, environmentalists, scientists – Subordination of nature – Environmental protection and economic prosperity go together
3	Agents and their motives
	<ul style="list-style-type: none"> – Partners; motivated by public good
4	Key metaphors and other rhetorical devices
	<ul style="list-style-type: none"> – Tidy household – Connection to progress – Reassurance

Common phrases used in the ecological modernisation discourse focus on efficiency and progress, emphasising the benefits of the marriage between economic growth and environmental conservation. This comforting compromise functions as a reassurance to the public. Ecological Modernisation discourse within policy is characteristically technocratic, making use of top-down methods of governance. This is done whilst striving to gain advantage from environmental protection. By using technology to fix the environmental problems that exist and creating ways to benefit from this, policy-makers engage in what is called a “positive-sum game” (Hajer, 1995: 25). The applicability and appeal of ecological modernisation lies in how it allows a society that is in transition to reconcile two elements, one of which is familiar (modernisation) and the other desirable (environmental protection) (Blowers, 2000).

2.5.1.3. Administrative managerialism discourse

This discourse is also quite prevalent and is found in many institutions, agencies and also in the implementation of many environmental decision-making tools. It is frequently described as a problem-solving discourse that “seeks to organise scientific and technical expertise into the bureaucratic hierarchy of the service of the state” (Dryzek, 1997: 73). This discourse developed as a response to the environmental issues that arose in the 1960s. The existing focus on bureaucratic organisation and scientific knowledge, allowed for a natural transition into the use of administration as

Table 2.4. Administrative managerialism discourse profile (Dryzek, 1997: 76)

1	Basic entities whose existence is recognised or constructed
	<ul style="list-style-type: none"> – Liberal capitalism – Administrative state – Experts – Managers
2	Assumptions about natural relationships
	<ul style="list-style-type: none"> – Nature subordinate to human problem solving – People subordinate to state – Experts and managers control state
3	Agents and their motives
	<ul style="list-style-type: none"> – Experts and managers – Motivated by public interest, defined in unitary terms
4	Key metaphors and other rhetorical devices
	<ul style="list-style-type: none"> – Mixture of concern and reassurance – The administrative mind

a method of dealing with these environmental issues. Thus the idea of rational management of issues is strong within the administrative managerialist discourse (See Table 2.4).

This discourse thrives within a liberal capitalist environment, more specifically one that situates governance by the state firmly within the administrative realm. This accounts for the considerable emphasis placed on the role of managers and experts in administration (Dryzek, 1997). Natural relationships in the administrative managerialism discourse are characteristically hierarchical. The natural environment is seen as subordinate to humans, who are set apart through their problem-solving skills. Humans are not seen as a uniform population, but rather people are subordinate to the state. Within the hierarchy of the state, managers and experts dominate the state administration due to the importance placed on their expertise. Thus managers and experts are assigned more agency as individuals than other people within and outside of the state hierarchy (Dryzek, 1997). These prioritised individuals are motivated on behalf of the state to act on the part of the public in order to address collective public needs. As a result this role uses metaphors and rhetoric that are a combination of concern and reassurance. These are placed within the context of the ‘administrative mind’ of the impartial experts that the system is subject to. The lack of radical metaphors alludes to the preference of administrative managers for small incremental changes to the system rather than a complete overhaul.

2.5.2. Alternative environmental discourses

This section presents a summary of the environmental discourses that are considered alternatives to the dominant discourses described above. The discourses described are the survivalist, economic rationalism, green romanticism, green rationalism and wise-use discourses. While all of these environmental discourses are reviewed, only some are evident in the decision-making process in the management of the St Lucia estuary mouth.

2.5.2.1. Survivalism discourse

This discourse gained prominence in the 1970s predominantly due the effect of the moon landings in 1969 on the viewing public. The iconic visual of the earth from space highlighted the finite and fragile nature of the earth for the first time (Dryzek, 1997). This soon prompted calls for population growth to be curtailed and concerns were expressed that the human population was exceeding the earth's carrying capacity. The need for ecological limits on human activity was adopted by the 'limits to growth' campaigners as a primary goal (Ockwell, 2001). This was spearheaded by the gathering of high profile advocates at the Club of Rome meeting in 1972. This theme was supported initially through the prominent use of models to demonstrate the future effects of uncurbed population growth. The use of these models stemmed from the discourse's background in biology and systems dynamics. Thus the survivalist discourse placed responsibility for goal achievement with those who possessed the appropriate scientific knowledge (Dryzek, 1997). This created a focus on information elites who were relied upon for information to feed into the required models.

Thus the survivalist discourse posits that natural resources on which humans depend are finite. Natural relationships are defined through population units. The human population particularly is viewed and treated as a singular entity. There is a strong emphasis on hierarchy, this being due to the control it affords those in power. Accordingly the discourse presents itself most strongly in a system of governance that is centralised and authoritarian (Dryzek, 1997). Within this system, elites have agency while populations are not assigned any. This is due, firstly, to the view held by

Table 2.5. Survivalism discourse profile (Dryzek, 1997: 37)

1	Basic entities whose existence is recognised or constructed
	<ul style="list-style-type: none"> – Finite stocks of resources – Carrying capacity of ecosystems – Population – Elites
2	Assumptions about natural relationships
	<ul style="list-style-type: none"> – Hierarchy and control
3	Agents and their motives
	<ul style="list-style-type: none"> – Elites; motivation is up for grabs
4	Key metaphors and other rhetorical devices
	<ul style="list-style-type: none"> – Overshoot and collapse – Commons – Spaceship earth – Lily pond – Cancer – Computers – Images of doom and redemption

survivalists that populations are objects to be managed and, secondly, to the significant emphasis placed on expertise (Dryzek, 1997).

The survivalist discourse contains many metaphors. Most stem directly from the discourse’s background in biology. Terms such as ‘overshoot and collapse’ and ‘carrying capacity’ refer directly to the ecological limits that justify population growth restraints. Other metaphors such as ‘the commons’, ‘spaceship earth’ and the ‘lily pond’, serve as educational concepts, highlighting the benefits of limiting population growth (See Table 2.5). The early use of modelling in survivalism, discussed above, was driven by the advances made in computers at that time. This influence has continued, thus maintaining references to the use of computer analyses within the discourse. Much of the rhetoric is pessimistic, using terms commonly associated with disease. The use of images of doom and redemption result in the survivalist discourse producing phrases that purport the premise that ‘disaster is just around every corner’ (Dryzek, 1997).

2.5.2.2. Economic rationalism discourse

While the discourse of ‘economic rationalism’ appears similar to the Promethean discourse due to some common basic entities (i.e. emphasis on economic systems,

markets and prices), the increase in the role of government is the main differentiator between the two discourses. Whereas Prometheans reduce the responsibility of the state to that of a facilitator in a free market economic system, Economic Rationalists require some (but not complete) intervention on the part of government in order to use market instruments in the best public interest. This particular characteristic explains the rationalist element of the discourse, i.e. the move away from complete free market economics and rationalising the need for government intervention. This involvement is borne out of the realisation that in order to improve market efficiency, markets need to be created for goods that are not in demand yet. This is particularly the case with environmental resources (see Table 2.6.).

In its extreme form, economic rationalism advocates the privatisation of environmental resources. This allows environmental goods to be marketable and the rights to which their owners are assigned, to be tradable. This also prevents environmental abuses from occurring, stemming from the belief that private ownership of property provides incentives for proper care for natural resources. This however, deals exclusively with land resources (Dryzek, 1997). Air and water resources remain 'grey areas' with regard to private ownership and monitoring by authorities. The role of the government is seen chiefly to specify and enforce these private rights. A more prominent version of the economic rationalist discourse is found in neoliberalism (Peck, 2004). Prevalent in the current South African governance ethos, neoliberalism has been described as capitalism in a new form, where restructuring is undertaken in all sectors with an emphasis on economic growth (Fairclough, 2000).

Accordingly, natural relationships in economic rationalism are focused primarily on competition between those who have agency. Importance is placed on expertise, thus placing experts at the top of the hierarchy. As with other discourses that view the natural environment solely as a resource base, nature is situated at the bottom of the hierarchy (Dryzek, 1997). All elements contained within the economic system have agency and are motivated by self-interest. Some agents in government are also motivated by self-interest. As with the Promethean discourse, economic rationalism has metaphors that are mechanistic, regarding the social world as a machine to be

Table 2.6. Economic rationalism discourse profile (Dryzek, 1997: 115)

1	Basic entities whose existence is recognised or constructed
	<ul style="list-style-type: none"> – Economic system – Markets – Prices – Property – Governments (not citizens)
2	Assumptions about natural relationships
	<ul style="list-style-type: none"> – Competition – Hierarchy based on expertise – Subordination of nature
3	Agents and their motives
	<ul style="list-style-type: none"> – Economic system; self-interested – Some government officials must be motivated by self-interest
4	Key metaphors and other rhetorical devices
	<ul style="list-style-type: none"> – Mechanistic – Stigmatizing administrative rationalism – Connection with freedom – Horror stories

adjusted according to the desired results. Discourse rhetoric frequently focuses on the shortcomings of the administrative managerialism approach (discussed above in section 2.5.2.3). This involves highlighting, firstly, the ineffectiveness of the administrative managerialist method of exacting control through administrative management and, secondly, that solutions are to be found through the market and not through administration. This leads to the metaphors emphasising the advantages that free markets afford – freedom, independence and maximum efficiency. These metaphors are accompanied by horror stories about the results of government intervention that proved to be detrimental due to over-management and ill-advised intrusion.

2.5.2.3. Green romanticism discourse

Of all the ‘environmental discourses’, this particular discourse has an explicitly green focus. The discourse falls at the radical end of the green spectrum, focusing specifically on the natural environment, rather than concentrating on the market or the government.

Table 2.7. Green Romanticism Discourse Profile (Dryzek, 1997: 167 & 187)

1	Basic entities whose existence is recognised or constructed
	<ul style="list-style-type: none"> – Global limits – Inner nature – Nature – Unnatural practices
2	Assumptions about natural relationships
	<ul style="list-style-type: none"> – Natural relationships between humans and nature which have been violated – Equality across people and nature
3	Agents and their motives
	<ul style="list-style-type: none"> – Human subjects, some more ecologically conscious than others – Agency exists in nature too
4	Key metaphors and other rhetorical devices
	<ul style="list-style-type: none"> – Wide range of biological and organic metaphors – Passion – Appeals to emotions, intuitions

Although the belief in the existence of global ecological limits correlates with some of the discourses that are ‘scientifically-based’, green romanticism rejects science, favouring the romantic view of the world where the legitimacy of the individual’s experience of the world is emphasised (Dryzek, 1997). This represents the ‘inner nature’ that is given increased recognition with regard to decision-making affecting biophysical nature. Green romanticists contend that nature has been compromised by unnatural practices brought about by human actions. Discourse adherents operate predominantly outside of political structures due to their disinterest in social and institutional arrangements (Dryzek, 1997). The mandate of Green Romantics requires the changing of ideas rather than structures (see Table 2.7).

Green romantics believe that people and nature are equal. Accordingly there is no hierarchy in the relationship between people and the natural environment. Part of the motivation of green romantic agenda stems from the belief that the relationship between humans and nature has been violated (Dryzek, 1997). Human agency is recognised, although this is on an individual basis. The ability and need for humans to act upon the intuitions of their ‘inner nature’ is believed to be more enlightened than the action of collective agents, such as government, who are disregarded. The equal status between humans and nature indicates that green romanticists ascribe agency to nature. They believe that the ecosystems, species and other elements that nature

comprises of are alive and able to act in their own capacity (Dryzek, 1997). While there are many obvious biological and organic metaphors, these are mainly used to appeal to logic. Green romanticists justify the move beyond using only objective reasoning as a tool and employ emotion and emotive language as a means to convey the essentials of their discourse (Dryzek, 1997). Thus the radical basis of this discourse results in rhetoric that invokes passion and appeals to the public's emotions.

2.5.2.4. Green rationalism Discourse

While they may advocate radical changes, green rationalists envisage these changes through existing social and political structures. Thus they are related to the green romantics in ideals, but differ methodologically. People who use this discourse do so because they believe that “multi-faceted social and ecological crises which can only be resolved through radical political action and structural change” (Dryzek, 1997: 184). (See Table 2.9)

Green Rationalists are motivated by perceived global ecological limits. Nature is not seen as one-dimensional, but rather as a set of complex ecosystems. Damage to nature is incurred through the relationship with humans. Green Rationalists view this as grounds for people to change their behaviour which they believe is possible due to the human capacity for rationality and analysis (Poncelet, 2001). Thus green rationalists do not reject scientific approaches, as do the green romantics. Natural relationships in this discourse are based on the belief that all people are equal and that this equality is extended to nature. However, humans are set apart from nature due to their ability to reason (Dryzek, 1997). The relationship between people and nature is characterised by complex linkages. (See Table 2.8)

Due to the positioning of this discourse within the political sphere, actors are numerous and varied. Accordingly, actors can exist on individual and collective levels, with their motivation consequently being multi-dimensional (Poncelet, 2001). Despite the egalitarian attitude towards nature, agency in nature is downplayed but not necessarily denied (Dryzek, 1997). The green focus of this discourse accounts for the organic metaphors that are used. This is counterbalanced with appeals to reason, in order to negate the need for a complete change of social structures. Thus, by using argument instead of emotion, green rationalists feel that progress can be made

Table 2.8. Green Rationalism Discourse Profile (adapted from Dryzek, 1997: 187; Scott and Oelofse, 2005; Bond, 2000; Castells, 2001)

1	Basic entities whose existence is recognised or constructed
	<ul style="list-style-type: none"> – Global limits – Nature as complex ecosystems – Rational humans – Social, economic and political structures
2	Assumptions about natural relationships
	<ul style="list-style-type: none"> – Equality among people – Complex interconnections between humans and nature
3	Agents and their motives
	<ul style="list-style-type: none"> – Many individual and collective actors, multi-dimensional motivation – Agency in nature downplayed, though not necessarily denied
4	Key metaphors and other rhetorical devices
	<ul style="list-style-type: none"> – Organic metaphors – Appeals to reason, and potential rationality of social structures – Link to progress

towards environmental goals. Green rationalism was evident in the results, although not throughout the three periods examined. Green rationalism is an environmental discourse that encompasses a wide range of movements. Some of these movements are discourses in themselves, such as the Environmental Justice movement. Whilst this movement originated in the United States in the late 1970s, it has developed into a globally prominent rights-based discourse (Bond, 2000). It is primarily concerned with “the spatial distribution of environmental quality and risk as well as the process of how environmental decisions are taken” (Scott and Oelofse, 2005: 449). In South Africa, the effects of apartheid have resulted in an uneven distribution of environmental externalities that are racially oriented. Environmental justice, however, does not only deal with the uneven distribution of environmental ‘bads’ but also environmental ‘goods’. The surge in development since the democratisation of the South African state in 1994 has seen the problem of uneven distribution of development have an increasing impact on the natural environment (Oelofse and Scott, 2001). Scott and Oelofse (2005: 449) assert that “the costs and benefits of development need to be clearly understood by decision makers and more evenly spread.”

2.5.2.5. Wise-use discourse

The wise-use discourse is essentially a utilitarian discourse and is typified in the Wise-Use Movement (Whittaker and Mercer, 2004). While this movement originated and is most prominent in the United States, it proves to be relevant within the South African context (McCarthy, 2002). Its founding manifesto was signed in 1988 in Reno, Nevada at a meeting of various resource-use groups, such as the Independent Petroleum Association of America and the National Forest Products Association (Whittaker and Mercer, 2004: 279). It has roots in the quest of resource-user groups to gain access to certain resources. Many people ascribing to this discourse feel resource access is justified due to the way in which they are ‘stewards’ of the resources (Whittaker and Mercer, 2004).

Accordingly, proponents of the wise-use approach regard nature as a resource which is there for human use (Arnold, 1996). It is assumed that while resources are limited, this is due to unsustainable use and not because resources are finite. Thus proponents of the wise-use approach believe that nature can be rendered infinite through human ingenuity (Whittaker and Mercer, 2004). While there are no explicit references to hierarchy within this discourse, the utilitarian position of the wise-use movement suggests that humans are situated above the natural environment. This is justified through the belief that human survival is dependent on natural resources but that nature is tough and resilient and hence able to withstand this use (McCarthy, 2002). Accordingly, proponents of the wise-use approach assert that only humans are able to have agency. While the agency of individuals is recognised and encouraged, the focus is primarily on collective agency, such as resource-user groups, e.g. fishers, water-sports enthusiasts and resource-extractions industries (timber, mining) (McCarthy, 2002). These groups are motivated by the need to gain access to resources they feel they have the right to use. The denial of access rights leads to coalitions being formed with people or groups who have been denied these rights through environmental policy (Whittaker and Mercer, 2004). (See Table 2.9)

Proponents of the wise-use approach strive to maintain their rights-based image (McCarthy, 2002). This is done by assigning themselves eco-friendly names and often through claiming the title of ‘true environmentalists’. Labelling opposing environmentalists as radicals, allows wise-use groups to present themselves as the

Table 2.9. Wise-use Discourse Profile (Arnold, 1996; Beder, 1997 and Rowell, 1996, in Whittaker and Mercer, 2004: 280)

1	Basic entities whose existence is recognised or constructed
	<ul style="list-style-type: none"> – Nature as a resource – Nature made infinite through human ingenuity
2	Assumptions about natural relationships
	<ul style="list-style-type: none"> – Humans, like all organisms, must use natural resources to survive – The earth and its life are tough and resilient, not fragile and delicate
3	Agents and their motives
	<ul style="list-style-type: none"> – Individual and collective – Form coalitions with those who perceive they have been harmed or threatened by environmental policies – Gaining access to public land for resource extraction interests
4	Key metaphors and other rhetorical devices
	<ul style="list-style-type: none"> – Give themselves eco-friendly names, calling themselves ‘true environmentalists’ – Label environmentalists religious fanatics, elitists, extremists and terrorists – Downplay threats to the environment – Stress the economic costs of environmental policy

more logical party within disagreements. Other effective rhetorical devices include downplaying the threats to the environment and highlighting the perceived economic costs of environmental policies (Whittaker and Mercer, 2004).

2.6. Conclusion

This chapter reviews four components which make up the theoretical framework of the research. Firstly, the understanding that the environment is socially constructed is supported through the discussion on constructivist thinking in section 2.2. The study of environmental and cultural politics that follows this, illustrates the way in which conflicts over environmental problems are played out in reality. The discursive nature of these environmental conflicts assists in highlighting the role of discourse and language. Through the interaction of discourses, dominant ways of thinking become established. Thus, the discussion of dominant and oppositional discourses provides the basis for understanding the power relations among actors engaged in decision-making processes.

Secondly, the discussion of environmental policy regulation in section 2.3 provides an understanding of the politics of social conflict over the environment. The study of the regulation of these conflicts illustrates processes through which discourses operate.

The further discussion of the role of science in environmental policy highlights a way of thinking that was expected to be prominent within the data collected through this research. Thirdly, the methodology of discourse analysis is discussed in section 2.4. Hajer's methodology is presented as the method of analysis that is most applicable to the research conducted. This qualitative methodology proves essential in the study of the nature of discourses within environmental policy. Lastly, the presentation of a range of environmental discourses expected to be found in this research data in section 2.5, provides knowledge of the mediums through which environmental debates take place. These discourses are 'promethean', 'ecological modernisation', 'administrative managerialism', 'survivalism', 'economic rationalism', 'green romanticism', 'green rationalism' and 'wise-use'. The work of Dryzek (1997) proves particularly relevant in this regard.

Chapter Three presents the background information necessary to contextualise the research conducted. It focuses on environmental legislation and policy in South Africa, in addition to a presentation of issues relevant to the research study area.

CHAPTER THREE

BACKGROUND

3.1 Introduction

To situate decision-making regarding the management of protected areas within the realm of policy in South Africa is to encounter a complex state of affairs. At present the standards and principles required to be exercised in reserved natural areas are being set at a national level. This is evident in the new legislation and policies that have been put in place since the transition to democracy in the country. The topic of study, i.e. the management of the St Lucia estuary mouth, calls for an understanding of the translations of these national policies into the day-to-day nature conservation operations and local policies. Also to be taken into consideration is the profound effect that past policy approaches have had and continue to have on current interpretations of policy, hence the historical perspective of this study. In the past, policy that guided protected area management was characteristically not generated and received from a national level, with provincial control being more evident. This study provides rich material with which to study policy discourses that have developed and informed decisions made at a local level in the management of a prized natural area.

Thus, a study focusing on the management of the St Lucia Estuary mouth requires an understanding of the broader context within which this process is situated. On an institutional level its management has required input from many government departments and organisations over time, whilst on a physical level, it is linked to Lake St Lucia in the Greater St Lucia Wetland Park. Accordingly this chapter sets out, in Section 3.2, to provide a brief context to the broad changes within environmental policy and legislation in South Africa since 1970. Four important new pieces of national legislation that are important to this study are described. Section 3.3 briefly reviews the history of institutions involved in formal nature conservation and protected area management in KwaZulu-Natal since it began in the former colony and province of Natal in the late 1800s. Section 3.4. described the study area. First is a brief history of the reserves that form the Greater St Lucia Wetland Park. This is followed by current descriptions of the Park and the St Lucia estuary mouth respectively. Further context is provided within this last section through a discussion

of the events that have shaped the current state of the estuary mouth. This includes a discussion of three government bodies that have been closely involved with the study area.

3.2 An overview of the development of relevant national environmental legislation

Before looking at the implementation and management undertaken by protected area institutions, a broad outline of environmental and protected area legislation and policy is required. South Africa's environmental legislation and policy has followed global trends since the 1980s, however, the democratisation of the country in 1994 has led to the promulgation of progressive environmental legislation in the new context of democracy.

Fuggle and Rabie (1999:72) divide South Africa's environmental policy and legislation into five developmental phases:

1. Preservation of species through legislation (1655 – 1875)
2. Institutionalisation of the conservation function (1875 – 1960)
3. Need for a comprehensive approach (1960 – 1980)
4. The quest for a national environmental policy and conservation strategy (1980 – 1990)
5. Unified environmental management (1990 – present)

This evolution has seen South Africa enact recent environmental legislation that is among the best in the world (Scott and Oelofse, 2005). However, historically, South African environmental legislation has not always mirrored the exact path of global trends. This may have been because of the delay in bringing television (a vital medium for the globalisation of the environmental crisis) into South Africa³, however it is thought that the apartheid-induced political isolation proved more significant in this regard (Steyn, 1999). Up until the 1960s, the environment had not been defined as a concept (Dryzek, 1997). This underwent a worldwide change at the start of the 1970s, with the enactment of the National Environmental Protection Act (NEPA) in 1970 in the United States of America (Vaughn Switzer, 1997). Although South Africa

³ Television broadcasts only commenced transmission in South Africa in 1976 due to restrictions imposed by the ruling government of the time (Steyn, 1999).

did not introduce similar legislation until the 1990s, there were endeavours to consider the environment and its interdisciplinary nature. This was seen initially through the formation of the Environmental Planning Professions Interdisciplinary Committee (EPPIC) in 1974, in addition to the appointment of the Council for the Environment in the early 1970s in an advisory capacity for government decision-making (Fuggle and Rabie, 1999). Despite Fuggle and Rabie's (1999: 25) assertion that "the protection and conservation of wildlife preserves has always predated other environmental concerns in South Africa", prior to the 1970s the environment in South Africa has been envisaged mainly as a resource base for progress and development. This modernist approach is further emphasised when looking at the first 'environmental' laws in South Africa (such as the Marine Resources Act, 21 of 1935) which were in fact focused on preserving nature only for economic benefit (Fuggle and Rabie, 1999).

In this early legislation, in phases 1 – 3 outlined at the beginning of this section, the environment was defined as the biophysical environment. The development of the Integrated Environmental Management (IEM) procedure that followed, allowed for the integration of 'brown' issues into environmental policy in the late 1980s and early 1990s, proposing a more holistic definition of the environment (Scott and Oelofse, 2005). It was the IEM process that broadened the definition of the environment and linked it to sustainability. Accordingly, changes in environmental policy since the early 1990s have seen a move towards concerns about these "brown" environmental issues, such as pollution and the effects of development on the natural environment (Fuggle and Rabie, 1999). The new democracy in 1994 brought sweeping changes, with legal, policy and institutional reforms commencing. With the change in government in 1994, principles of social and environmental justice were further firmly entrenched in environmental legislation, in order to bring laws and policies in line with government commitments to social and economic development (Scott and Oelofse, 2005). Environmental legislation has continued to be reformed, seen in the revision of the Environmental Conservation Act (Act 73 of 1999), as well as the promulgation of new legislation. Before considering specific institutions and policies in the next section, a broad overview of legislation that is relevant to the management of the St Lucia estuary mouth needs to be outlined.

3.2.1. National Environmental Management Act (NEMA), (Act 100 of 1998)

NEMA is an ‘umbrella’ act that identifies principles required in the management of South Africa’s environmental resources. It signified the culmination of reforms in environmental legislation, brought about after South Africa’s transition to democracy. The Act forms an overarching framework within which specialised pieces of domestic environmental legislation fit. Two of these pieces of legislation are outlined here, due to their relevance to the management of the St Lucia estuary. The Protected Areas Act (Act 57 of 2003) is one of many included under the NEMA framework. It defines the different types of protected areas that exist in South Africa. It also provides description of the purpose of protected areas, how they should be managed and which bodies should undertake this management (RSA, 2003). The GSLWP in which the St Lucia estuary falls is such a protected area and thus benefits from the protection that this act affords. Also under NEMA is the Biodiversity Act (Act 10 of 2004), which focuses on the conservation and management of biodiversity in South Africa. Most importantly this includes the “protection of species and ecosystems that warrant national protection...and...the sustainable use of indigenous biological resources” (RSA, 2004). It also addresses the issues of enforcement of international agreements and the use of biological resources. This act is the principle piece of legislation used by EKZNW in their conservation management of the GSLWP and accordingly is taken into consideration in the management of the St Lucia mouth.

3.2.2. Marine Living Resources Act (MLRA) (Act 18 of 1998)

This Act legislates the conservation of South Africa’s marine resources, as well as their sustainable utilisation. Much of its focus is on providing fair and equitable access to these resources and thus it establishes a variety of fishing rights and regulations, coming under the control of the Minister of Environmental Affairs and Tourism (RSA, 1998). It repeals most of the Sea Fishery Act (Act 12 of 1988). It provides for the declaration of Marine Protected Areas (MPAs), of which there are two in the Greater St Lucia Wetland Park – the St Lucia and Maputaland MPAs. The mouth of the St Lucia estuary falls at the southern end of the latter MPA. As a result, this act is relevant to estuary and mouth management.

3.2.3. World Heritage Convention Act (WHCA) (Act 49 of 1999)

The World Heritage Convention Act incorporates the World Heritage Convention into South African law through “the enforcement and implementation of the World Heritage Convention in South Africa and the recognition and establishment of World Heritage Sites” (RSA, 1999). It also mandates the establishment of authorities to manage South African World Heritage Sites. The WHCA is a landmark Act as it situates South Africa as only one of two countries⁴ in the world to reinforce the World Heritage status of their sites with domestic legislation (Commonwealth of Australia: Department of Environment and Heritage, 2005). It allows the South African government to conserve natural and cultural resources while simultaneously ensuring the social and economic development of the communities and areas surrounding the protected areas (Porter et al, 2003). As in Australian legislation⁵, this Act set up a dedicated Authority and a Board to undertake the management duties set out in the legislation. The Act also enforces the creation of a management plan for the World Heritage site, in order for management strategies to be designed and implemented by the Authority (RSA, 1999). It is in terms of this Act that the GSLWP Authority was set up in 2000 to manage the Park.

3.3. Historical overview of nature conservation institutions in KwaZulu-Natal

The contemporary legislative situation in South Africa was predated by a significant history of nature conservation in the country, particularly in KwaZulu-Natal. The history of institutional involvement in nature protection in the province is briefly discussed here in three sections. The first section examines the early records of conservation in the former British colony of Natal from 1895, tracing the origins of thinking that brought about the formation the foundational nature conservation legislation. The emergence of the dominant conservation agency in the Natal province, i.e. the Natal Parks Board, is detailed in the second section. The last section

⁴ Australia is the only other country to bring national legislation in to protect its World Heritage Sites. The World Heritage Properties Conservation Act of 1983 enabled protection of all Australian sites listed on the World Heritage list. This legislation was recently reinforced in 1999 through the Environment Protection and Biodiversity Conservation Act (Commonwealth of Australia: Department of Environment and Heritage, 2005: online)

⁵ The Great Barrier Reef Marine Park Authority was set up in 1975. Through the Great Barrier Reef Marine Park Act of the same year, the Authority was made responsible for the management of the Marine Park.

reviews the commencement and the effects of legislative reform on conservation due to the democratic changes that have happened in South Africa since the early 1990s.

a) 1895 to 1947

Although the conservation of nature in KwaZulu-Natal has been undertaken by one agency from 1947 to 1994, this does not indicate that the conservation history prior to 1947 was straightforward. The roots of nature protection in the province took hold in 1895, when Zululand was a British colony. A Government Notice (Zululand No.12, 1895) in that year formalised five areas in which there was protection of wild animals (Brooks, 2001). The prevailing philosophy of the sport of game hunting and ensuing preservationist mentality for this purpose meant that the legislation and policy enacted during this time was orientated towards game protection. Thus the initial focus of conservation was on game and not the natural environment in which they lived. Zululand became a colony of Natal in 1897 and as a result formed part of the province of Natal when it joined the newly-formed Union of South Africa in 1910 (Brooks, 2001). From this time all provinces had a Provincial Council. 'Game and fish preservation' was one of the areas in which they were able to legislate, separately from state government. This allowed the Natal Provincial Council to govern the protected areas by appointing Game Conservators (as had been done since 1895), many of whom became quite prominent figures in conservation in the province (Porter et al, 1999). As their name suggests, the conservators' work centred on the game in the protected areas. The land that the wild animals existed on was under the national Department of Lands and thus was not under provincial control (Brooks, 2001). During this phase in provincial conservation numerous threats to deproclaim the protected areas arose. The most significant threat over the 1920s and 1930s was posed by the measures taken to control the cattle disease *nagana*. The result of which was the brief deproclamation of some of the protected areas in Zululand (Brooks and Harrison, 1997). After failures to nationalise provincial game reserves under the National Parks Board Act of 1926 in an attempt to secure the future of the threatened protected areas, the provincial conservators turned to an alternative, which was to strengthen the provincial control over these reserves. This drive to centralise control, coupled with an increased interest in tourism potential in the area in the late 1930s, saw the creation of the Zululand Game Reserves and Parks Board in 1938. Increased powers were afforded to the Board through the Zululand Game Reserves and Parks

Ordinance in 1939 (Brooks, 2001). This was followed by the creation of the Natal Game and Fish Preservation Board (known as the Natal Parks Board) in 1947 as a statutory board⁶.

b) 1947 – 1980s

This consolidation of conservation in the province in 1947 heralded an era of stability in managing wildlife in Natal. One significant factor contributing to this stability was the freedom afforded to the NPB mainly due to less national state interference than other provinces experienced⁷ (Brooks, 2003). At this time apartheid policies were being put in place with the National Party coming into power in 1948, strengthening the separatist legislation put in place in the preceding decades. Thus the prevailing political climate was conducive to defence and protection of the game reserves in Natal. The Natal Nature Conservation Ordinance No.15 of 1974 further entrenched the role of the NPB. It established the NPB as the conservation agency of the province and appointed them as conservators of the fauna *and flora* of Natal (Porter et al, 1999). Thus their role was gradually extended from that of ‘game conservators’ to ‘*nature* conservators’, recognising the equal importance of the biophysical environment contained in the boundaries of the game reserves. The benefits of encouraging tourism in the protected areas continued to be acknowledged. The focus of conservators on game protection culminated in several successful conservation programmes, the most well-known of which was the programme to save the Black Rhinoceros. Accompanying the endeavours to conserve game, were numerous programmes aimed at rehabilitating degraded land across the province (Porter et al, 1999). Accordingly, during this period a rich conservation history developed in Natal.

In 1972 the KwaZulu Homeland was established in accordance with the apartheid government’s policy of separate racial development as a self-governing territory. Thus areas in Zululand were designated to the homeland of KwaZulu. As a result, some protected areas fell within the KwaZulu Homeland regions and thus conservation in Natal and KwaZulu were managed jointly by the NPB and the newly-

⁶The NPB was established through Ordinance No. 35 of 1947. The 1947 Ordinance replaced the 1939 Zululand Game Reserves and Parks Ordinance; the 1942 Natal National Parks Ordinance and all legislation regarding management of Natal's fishing stocks (Brooks, 2003).

⁷This was for two reasons: (1) the Natal Parks Board was assigned executive powers, which were for (2) administering conservation areas that were already well-established and state-owned (Brooks, 2003).

formed KwaZulu Nature Conservation Department (Porter et al, 1999). This was the case until 1994, when homeland areas across South Africa were officially reintegrated during South Africa's first democratic elections, thus dissolving the KwaZulu Nature Conservation Department (Porter et al, 1999).

c) 1990 - present

The change in dispensation in 1994 saw appropriate changes in all government departments. The transition into democracy was thus accompanied by transformation in environmental legislation and policy, as well as changes in the structure of conservation agencies. The NPB remained the same until the enactment of the KwaZulu-Natal Nature Conservation Management Act No. 9 of 1997. This Act formed four new authorities: (1) the Provincial Minister responsible for the environmental and tourism functions in the province, (2) the KwaZulu-Natal Nature Conservation Board, (3) the KwaZulu-Natal Nature Conservation Service (NCS) and (4) Local Boards assigned to each protected area (Porter et al, 1999). Thus this Act allowed authorities to ensure effective management of nature conservation, as well as the "development and promotion of ecotourism facilities" (EKZNW, 2005: online). It also established Ezemvelo KZN Wildlife (a combination of the old NPB and KwaZulu Nature Conservation Department), the body appointed to be in charge of the daily operations required for nature conservation in the province. The KwaZulu-Natal Nature Conservation Amendment Act of 1999 that followed replaced the Natal Nature Conservation Ordinance 15 of 1974, bringing the province's nature conservation agencies in line with national democratic reforms (Brooks, 2003). Most importantly this Act also legislated the protection of biodiversity and detailed the permit system that is in place to ensure the sustainable use of KZN's natural resources (EKZNW, 2005: online).

The democratisation of South Africa's legislation and policy opened up the country to international examination. Accompanying these reforms in legislation was a stream of international agreements to which South Africa became a signatory. Many of these agreements brought new ideas and methods for nature conservation. One such method of protection was that offered by the World Heritage Convention. The Convention was signed by South Africa in 1997. This commitment was entrenched in domestic legislation through the World Heritage Convention Act, No. 49 of 1999,

discussed previously in section 3.2.3. The legislation allowed separate authorities to be established to manage these World Heritage Sites. These are appointed to work in conjunction with existing conservation authorities, concentrating on the financial and social aspects of managing these protected areas.

3.4. Study area

This section will describe two periods in the history of the study area, the early period from pre-1900 to 1994, briefly detailing the history of the St Lucia Game Reserve and the post-apartheid 1994 period, which introduces the protected area's transition to become a World Heritage site.

3.4.1. History of establishment - St Lucia Game Reserve

The St Lucia Game Reserve is that part of the current GSLWP in which the Lake St Lucia and its estuary mouth are situated. The St Lucia Reserve was established in 1895, through the Government Notice (Zululand No.12, 1895), detailed in the above section. The reserve, shown in Figure 3.1, was first described in this document as

“...the range of hills and lagoons bounded on the North and West by St Lucia Lake and the Umfolozi river, on the East by the Indian Ocean and on the South from a point on the sea coast four miles south of Cape St Lucia in a direct line to the southernmost point of the Umfolozi river” (Natal Government Gazette, 1895: 406, in Brooks, 2001).

Subsequent legislation in 1897 confirmed the St Lucia Reserve as a protected area, validating it as one of five areas in which there would be protection of wild animals, mainly to ensure protection for sustainable hunting (Porter et al, 1999; Brooks, 2001). Until 1910 the reserve was under the control of the Colony of Natal. After South Africa became a Union in 1910, conservation management became the duty of the Provincial Council. Management was undertaken by a Game Conservator appointed by the Council. In 1947 control was transferred to the newly-formed Natal Parks Board and, in 1974, the Natal Nature Conservation Ordinance (No.15 of 1974) confirmed the St Lucia Game Reserve as one of the first of a group of reserves under the control of the Natal Parks Board after it came into being. Since this time it has increased in size through several proclamations of adjacent areas (Porter et al, 1999). While being administered by the Natal Parks Board, a site in the St Lucia Game

Reserve was one of two sites in Zululand that were declared Wetlands of International Importance under the RAMSAR treaty in 1986 (IUCN, 2003). Despite the changes in structure and name of the conservation authority that occurred in the 1990s (discussed in the preceding section), the reserve continued to be managed daily by the Natal Parks Board. In the late 1980s the reserve was the subject of major controversy. This was due to an application made by a mining company to mine the dunes on the Eastern Shores of the St Lucia Game Reserve, after prospecting leases had been granted in the 1970s (Porter et al, 1999). Significant public opposition resulted in a government-sanctioned Environmental Impact Assessment (EIA) being conducted the result of which was a ban on mining in the ecologically sensitive area (Porter et al, 2003). Recommendations made by the independent panel formed the basis of an application for the reserve to form part of a World Heritage Site.

3.4.2. Current - The Greater St Lucia Wetland Park

The result of the application for World Heritage status was the Greater St Lucia Wetland Park. As mentioned, the St Lucia Game Reserve was one of the protected areas which was consolidated to form part of the World Heritage Site. The study area for this research falls within these boundaries and as a result the natural characteristics of the site and the dynamism of the systems in which it is situated need to be discussed.

South Africa signed the World Heritage Convention in 1997 and on the basis of this applied for World Heritage site listing. The Park was listed in 1999 based on three of a possible four World Heritage natural criteria:

Criterion (ii) Ecological Processes,

Criterion (iii) Superlative Natural Phenomena and Scenic Beauty and

Criterion (iv) Biodiversity and Threatened Species (IUCN, 2003).

Under the World Heritage Convention Act, the Greater St Lucia Wetland Park Authority (the Wetlands Authority) was established and the Park consolidated in 2000. This included the reserves formerly managed by EKZNW. A memorandum of agreement drawn up between the GSLWPA and EKZNW established each organisation's role in a partnership (GSLWPA, 2003). Through this Management

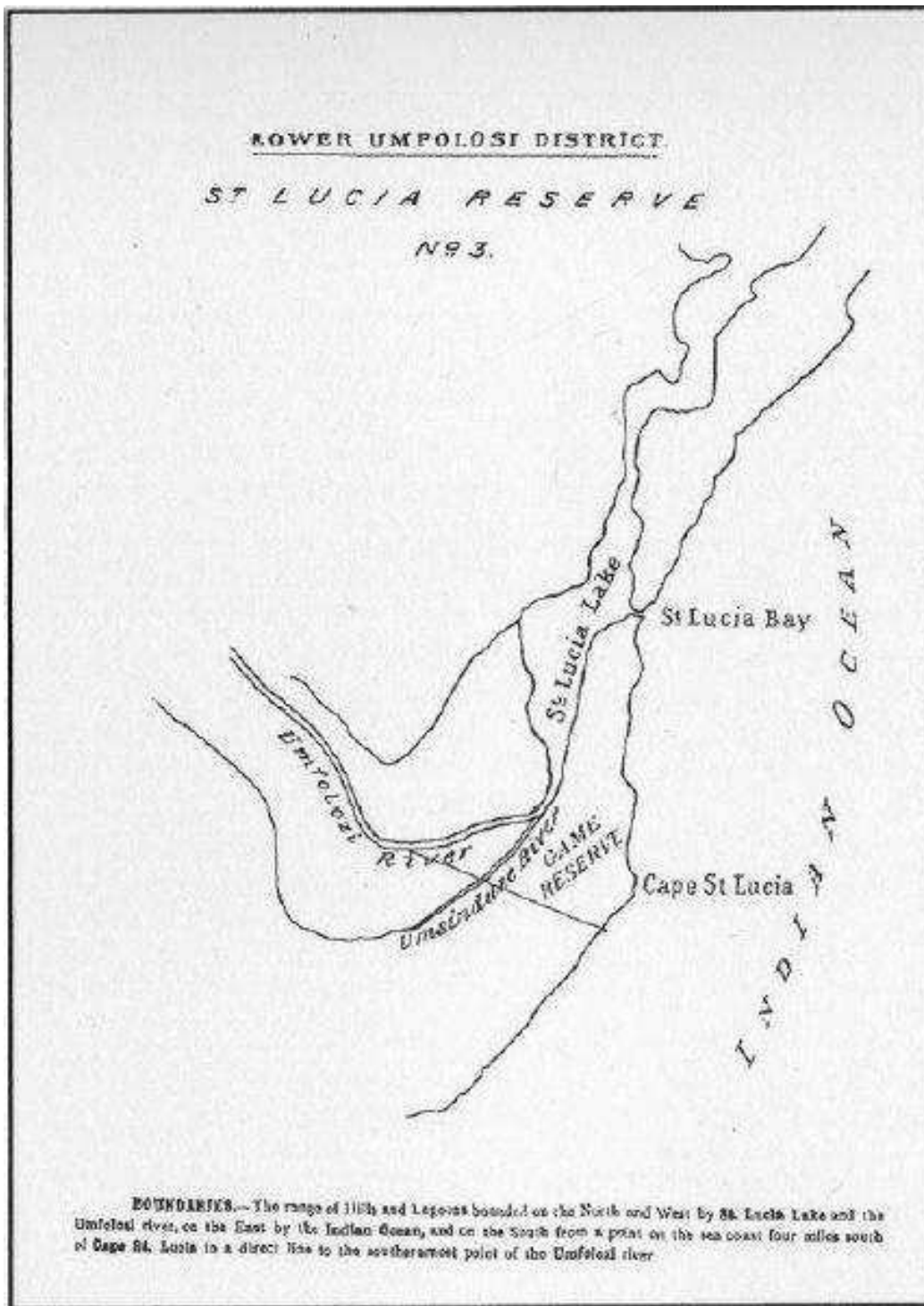


Figure 3.1: Sketch map of St Lucia Reserve, 1895

(Government Notice, Zululand Proclamation No.12, *The Natal Government Gazette*, 1895, p.406, in Brooks, 2001: 204)

Agreement EKZNW is responsible for “the biodiversity management of the GSLWP, including policing and law enforcement activities and assisting the Authority in monitoring compliance by concessionaires with contractual and statutory obligations” and the Authority has the duty to “monitor and regulate conservation and conservation management⁸ in the GSLWP ... and to ensure compliance with the World Heritage Convention” (EKZNW, 2002: 5).

The Act also stipulates that the Authority is responsible for the creation and, along with EKZN Wildlife, the implementation of a management plan for the Park. At present this document is known as the Integrated Management Plan (IMP) and is currently in draft form. The Greater St Lucia Wetland Park, shown in Figure 3.2, is the broader context in which the question of the management of the St Lucia Estuary needs to be framed. The Park is situated on the coastal and inland regions of northern KwaZulu-Natal and all its land and marine areas cover approximately 325 000 hectares. The coastline extends 230kms from the St Lucia lighthouse, Maphelane in the south, to the Mozambique border in the north (IUCN, 2003). The fragmented and irregular western border is restricted by the N2, a national highway running from Durban to Swaziland, and human settlements while in the south the border is limited by extensive agricultural endeavours in the Umfolozi valley. The land is particularly fertile due to thousands of years of deposition of alluvial soil in the valley and, despite the effect of floods and droughts, still proves to be a profitable industry in the province (Porter et al, 1999). Also noteworthy is the Park’s importance as the anchor project for the Lubombo Spatial Development Initiative (LSDI)⁹. Its significance as a tourist destination and its role in spearheading development in the region must be emphasised. It is also a pioneer with regard to the recent national legislation promulgated to protect World Heritage Sites in South Africa (Porter et al, 2003). The Park is a site in which there are five ecosystems, each recognised for their unique natural characteristics.

⁸ Conservation management is defined as being “concerned with (1) maintenance of biodiversity, (2) ensuring ecological integrity and ecosystem functioning and (3) wise and sustainable use of natural resources (EKZNW, 2002: 6)

⁹ Spatial Development Initiatives are regionalised development projects initiated by the South African government as part of the Growth, Economic and Redistribution (GEAR) strategy brought about after the 1994 national elections. They concentrate on uplifting underdeveloped areas through local economic development and focused investment, often across international boundaries. The Lubombo SDI region stretches from southern Mozambique to eastern Swaziland and down into northern KwaZulu-Natal, an area into which the Greater St Lucia Wetland Park falls (Porter et al, 2003)

1. The Eastern shores ecosystem, which consists of the coastal dune system, subtropical forests, grasslands and wetlands
2. The marine ecosystem, which consists of the Indian Ocean, coral reefs (the southernmost reefs in Africa) and pristine beaches.
3. The Mfolozi and Mkuze swamps, which consist of swamp forest and reed and papyrus wetlands.
4. The inland Western shores ecosystem, which has examples of ancient shoreline terraces and dry savannah woodland.
5. The lake system, which consists of freshwater and estuarine lakes (Porter et al, 2003).

The principal estuarine lake is Lake St Lucia (shown in Figure 3.2), the largest estuarine system in South Africa and in Africa (Porter et al, 1999). It is 32 500 hectares in size, dominating the extent of the Park. The following is a definition of an estuarine lake typical of the one in St Lucia:

It occurs where a coastal lake is connected to the sea by a channel of varying length and width. The mouth of an estuarine lake can be either permanently or temporarily open. Salinity levels vary in both space and time and they largely reflect the balance between freshwater and seawater inflow into the lake, as well as evaporation from the lake surface. Because they are usually large and shallow, water temperatures in these systems are more related to solar heating on their surfaces than to the influence of the temperature of either rivers or the sea (Whitfield, 2001: 11).

Figure 3.2 also depicts the eastern shores of the GSLWP and the blue area the lake St Lucia. The St Lucia mouth is in the south of the map where the Lake enters the Indian Ocean. In accordance with its large size, the Lake has an abundance of functions. Some of the most important are the variety of habitats that are provided in and around the Lake. These habitats support a wide array of species, ranging from waterfowl to mammals and reptiles, some of which are endemic. Thus the Lake environs are essential for their survival. The Lake also provides breeding areas for many animal species and in addition provides an invaluable nursery area for marine species to breed and repopulate (Taylor, 1992).

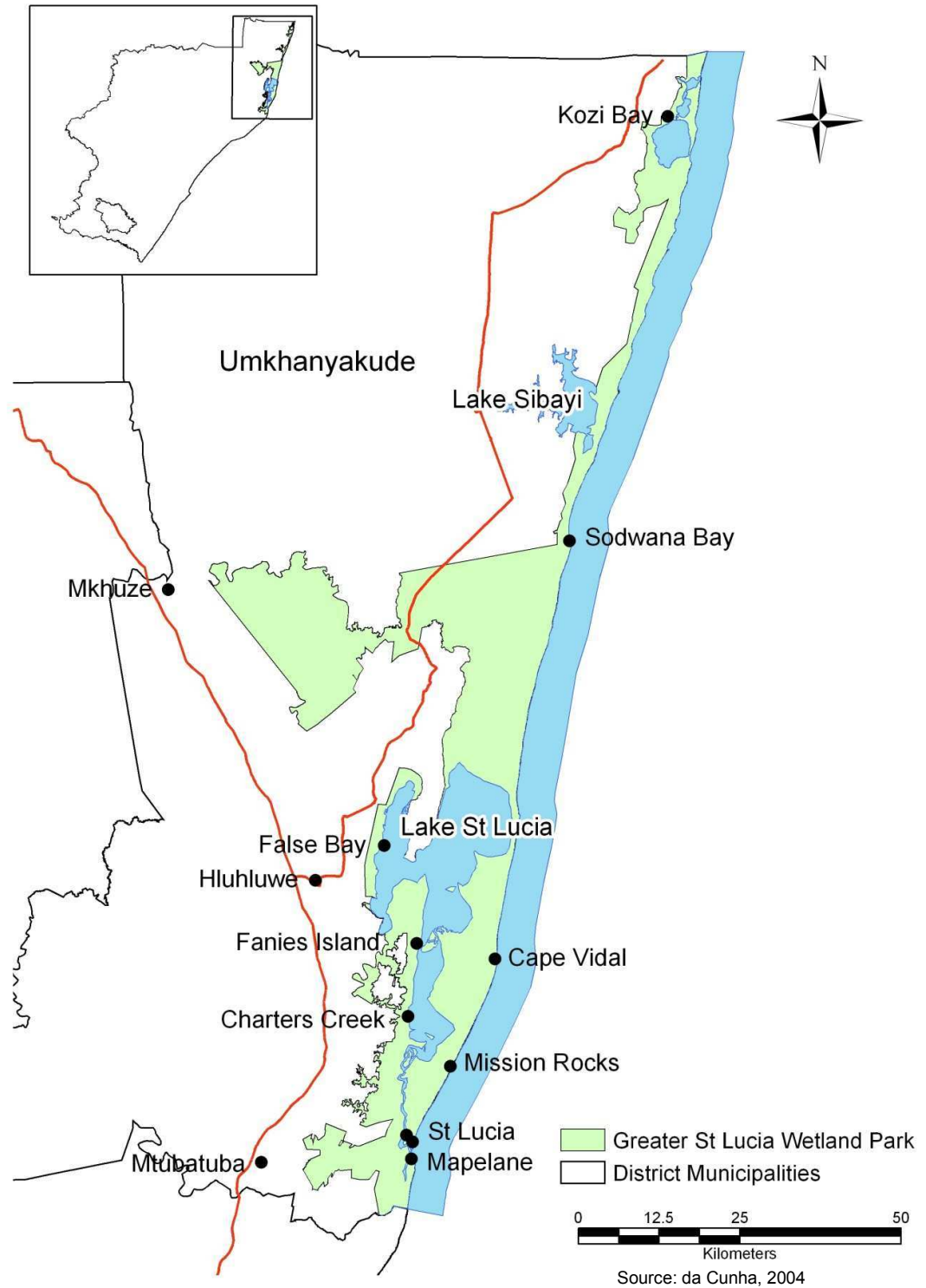


Figure 3.2. The Greater St Lucia Wetland Park

Accordingly, the biological importance of the Lake, nationally and internationally, is immense. The salinity level of the lake is the main driver for change in the environment that the lake supports and thus, the Lake is affected by the amount of freshwater entering its system. As a result, extreme weather events also play an important role in the lifecycle of the system. The system is subject to a cycle of floods and droughts of varying severity, the occurrence of which have been recorded since the early 1800s (Huizinga and van Niekerk, 2004). The result of this extreme range in weather is a variance in the state of the Lake ecosystems. While the effect of floods on the system is noteworthy, the impact of drought has been the more significant, especially in the last decade (Taylor, 10/05/2004). While drought forms part of the natural lifecycle of the ecosystem and thus is a naturally occurring event, the visual and ecosystem effects are perceived negatively. Hypersaline conditions typical of a severe drought cycle result in a reduction in species numbers, visual and biophysical changes to the ecosystems and the closure of the estuary mouth, which, among other effects, prevents the movement of marine species between the Lake and the ocean (Taylor, 10/05/2004). Consequently the state of the Lake and the estuary mouth have an influence on the state of all five ecosystems encompassed in the Park. These different ecosystems, together with the estuary mouth, compose vital pieces of an ecological “jigsaw puzzle” (Taylor, 1992: 5). Through time the various agencies and institutions responsible adopted different approaches in response to the dynamism exhibited.

3.4.3. The St Lucia Estuary Mouth

This section describes the context related to the St Lucia Estuary mouth. Section 3.4.3.1 describes the early history of the management of the mouth and the factors that influenced the state of the mouth, while Section 3.4.3.2 provides an overview of the government units and councils that were most involved in the management of the St Lucia estuary mouth.

3.4.3.1. Factors influencing the St Lucia Estuary mouth and early management history

The focus of this research is on the management of the St Lucia estuary mouth and the institutions that have been involved in managing it. Over time these institutions and

their opponents from civil society have influenced the decisions made about the management of the mouth. At times the decisions taken have been controversial. As a result, the St Lucia estuary is well-suited for a study on environmental decision-making and politics. The interactions between the dominant role-players involved in decision-making and those in opposition are very evident throughout the recorded history of involvement with the estuary. In order to understand the technical and scientific issues that form the substantive basis of the debates, this section provides background on the St Lucia mouth. In addition, the rise of sugar farming in the region, and the change in management of the mouth over time, is described. These factors have had a strong influence in the shaping of estuary mouth events since the early 1900s.

The estuary mouth performs an important role in the functioning of the St Lucia lake system (Taylor, 1992). Figure 3.2 shows the lake tapering as it heads southwards, winding towards the Indian Ocean. This channel that connects the lake to the estuary is referred to as the Narrows. Beyond this, moving past the ‘island’ town of St Lucia towards the sea is Honeymoon Bend – an easterly turn in the course of the estuary as it makes its way towards the Indian Ocean. The area between this point and the point at which the estuary meets the sea is referred to as “the estuary mouth”. Just south of the mouth of the estuary, the mouth of the Umfolozi River is seen entering the sea.

Countless natural and human-induced openings and closures of the mouth, recorded since the early 1800s, have resulted in the estuary mouth having a dynamic history. Table 3.1 shows a summary of these events. As shown, the closure of the mouth was a natural occurrence that formed part of the normal cycle of the system which responded to the successive phases of drought and flood accordingly. This natural process of opening and closing remained in place until 1932, when the first artificial breaching of the mouth occurred. Thus the last natural opening of the mouth was in 1923. This can be attributed to the modification of the Umfolozi floodplains during the 1920s, indicated on the table as the “drainage and canalisation of the Mfolosi swamps” in 1927. This followed the settlement of the Umfolozi valley.

Table 3.1: Recent history of St Lucia Estuary mouth events, up until 1970 (Huizinga and van Niekerk, 2004)

Year	State
1823	Closed
1833	Closed
1849	Open
1851	Closed
1852	Open
1853	Open
1856	Open (after floods)
1885	Closed (Sept – Nov)
1895	Closed (Sept – Nov)
1902	Closed (mouth could not be crossed)
1903	Closed
1905	Open
1911	Mfolosi flood
1918	Mfolosi flood
1922	Closed
1923	Open (last natural breaching)
1925	Mfolosi flood
1927	Drainage & canalisation of Mfolosi swamps
1932	Closed, re-opened (first artificial breaching)
1951 - 1955	Closed
1955	Flood
1956	Serious flood
1955 - 1961	Closed, re-opened artificially 3 times
1963	Serious flood
1965	Closed for a few days, dredged open

Zululand was opened up for settlement through the Zululand Delimitation Commission undertaken from 1902 to 1904 (MacKinnon, 1990). The report released by the commission in 1904 specified the areas allocated for European occupation in Zululand (Figure 3.3). Prior to this Zululand was largely uninhabited by Europeans, except for the British and Natalian officials posted there for administration purposes. The region was viewed by settler Europeans mainly as a game hunting ground. The settlement of Europeans in Zululand opened up the region for commercial cultivation.

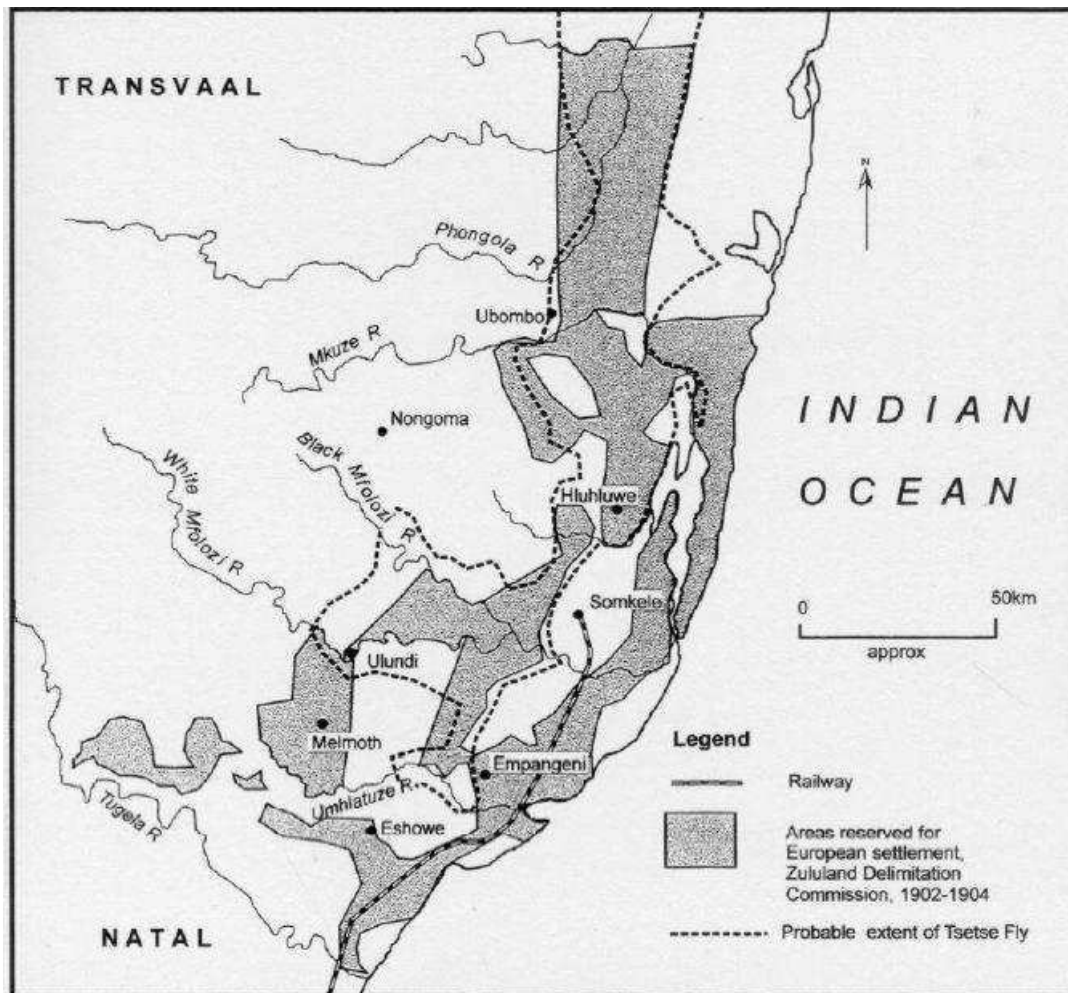


Figure 3.3: Delimitation of European Settlement, including extent of Tsetse Fly (Source: MacKinnon, 1990)

Sugar had been established as the best crop to grow on the Natal coast by farmers further south, following unsuccessful experimentation with other crops prior to 1900 (Anon, 1965). In order to make sugar farming profitable in the Zululand region, prospective millers were offered concessions in order to start up mills and then small-scale growing was encouraged by settlers. Umfolozi Co-operative Sugar Planters (UCOSP) was founded in 1923 by sugar farmers in the area, with George Heaton-Nicholls as the first chairperson (Anon, 1965). Following numerous floods, the decision was made in the late 1920s to canalise the Umfolozi River in order to protect the farms (Wiseman, 1992). This involved dredging, widening and straightening the Umfolozi on its course to the St Lucia estuary (Anon, 1965). Soldiers returning from service during World War II in 1945 were given land in the Umfolozi valley. The result of ensuing negotiation between the Lands Department and UCOSP was the opening up of the lower Umfolozi valley for cultivation, extending the sugar farming area and increasing the production potential of the existing mill (Anon, 1965). The increase in production enabled the construction of a sugar refinery in the 1950s in Mtubatuba (Wiseman, 1992).

The 1950s were also a significant time for the St Lucia estuary. While the estuary has experienced numerous human interventions in its natural functioning since the early 1900s, perhaps the most significant was the diversion of the Umfolozi River into the Indian Ocean in 1952. Up until 1952 the Umfolozi River entered the St Lucia estuary.. Due to the canalisation of the Umfolozi by the sugar farmers in the 1920s, silt was being washed down the canal into the estuary, causing the estuary to silt up and the estuary mouth to close. A permanently open mouth was seen as the vital to the healthy functioning of the estuary and lake and thus UCOSP proposed the diversion of the Umfolozi River into the sea. This was put forward to the provincial authorities. Following recommendations provided by organisations such as the National Resources Development Council, it was agreed that a new mouth for the Umfolozi River should be created (Anon, 1951). UCOSP undertook this procedure (Anon, 1965). This was done by blocking the path of the Umfolozi into the estuary and digging a new path through to the Indian Ocean (shown in Plates a) and b) in Appendix B).

At present the estuary and estuary mouth are under the jurisdiction, nationally, of the Department of Environmental Affairs and Tourism (DEAT) through the GSLWPA, as well as the Department of Water Affairs and Forestry. Provincial government involvement is headed by Ezemvelo KZN Wildlife under the Department of Agriculture and Environmental Affairs. EKZN Wildlife holds a management agreement with the GSLWPA, in which they provide the daily conservation services needed to run the Park, which includes the physical management of the mouth.

3.4.3.2. Management of the St Lucia estuary mouth

Reclamation Unit

The management of the St Lucia estuary involves dredging and maintaining the mouth area and deciding when to open the mouth artificially. Intricately involved with estuary mouth management since the 1950s has been the Reclamation Unit (Crass, 1976). The Reclamation Unit was established in 1952 by the sugar farmers of UCOSP when the diversion of the Umfolozi River was carried out. The Unit undertook the diversion as well as the subsequent dredging of the St Lucia estuary. Initially, the Unit operated without any machinery, relying on local labour to divert the Umfolozi River in 1952 (as discussed in the previous section and shown in Appendix B). Dredgers were brought in to undertake the dredging that was needed to clear the silt that had accumulated in the estuary. Subsequent to this, continual dredging was recommended for maintenance purposes (Anon, 1951). As shown in Appendix B (c) and (d), the dredging operation had a visual impact on the St Lucia estuary and mouth area. Plate (c) shows the dredger 'Inkwazi', depicted on the St Lucia estuary in operation in 1976. Plate (d) shows the construction in the 1970s of a small harbour area on the St Lucia estuary, needed to house the Reclamation Unit and its dredging operation (Nidia Brits, 18/03/2005.). This industrial machinery and accompanying equipment and constructions formed an interesting juxtaposition to the beauty of the natural environment within and outside the St Lucia protected areas.

Despite the continuous operation of the Unit, its management has changed frequently since its inception. Table 3.2 shows the different authorities that have been in charge of the Reclamation Unit since its inception. After 17 years of operation the Unit was handed over to the Department of Water Affairs, thus coming under government control for the first time. The Department of Public Works took over instruction of the

Table 3.2: Managing Authorities of the Reclamation Unit (Nidia Brits, 18/03/2005)

Year	Managing Authority
1952	Umfoloji Co-operative Sugar Planters (UCOSP)
1969	Department of Water Affairs
1976	Department of Public Works (Building Services)
1977	Roads Department (Natal Provincial Administration)
1988	Natal Parks Board

Unit in 1976, handing the Unit shortly thereafter over to the Roads Department the following year. The latter two departments were originally involved with the Unit due to infrastructure within the estuary area that they were responsible for (Nidia Brits, 18/03/2005). The Natal Parks Board took over management of the Unit in 1988. The tasks performed by the Unit have been incorporated into the daily conservation duties of EKZN Wildlife. Present management focuses on the removal and repositioning of silt, to free up the estuary and mouth areas in preparation for the estuary to benefit optimally from prevailing weather conditions.

St Lucia Advisory Council

Also noteworthy for its involvement in mouth management has been the St Lucia Scientific Advisory Council (SCADCO). This Council was set up in 1968 and comprised members from government, industry and academia (Crass, 1976; Porter et al, 1999). They provided advice on the management of Lake St Lucia and the estuary. SCADCO had two sub-committees – the Technical and Ecological committees. Through regular meetings and symposiums, members were able to provide professional input for management carried out in the Natal Parks Board (NPB) conservation areas in and around St Lucia (Taylor, 17/07/2003). The Council also proved to be an excellent means to foster partnerships that were of great benefit to the Natal Parks Board and the areas they managed. Evidence is provided by the fact that several working agreements between the NPB and various professional institutions were maintained for many years.

SCADCO maintained their input until the late 1990s, when the NPB began undergoing the transition to become Ezemvelo KZN Wildlife (Taylor, 17/07/2003). As a result of pressures on staff, lack of resources and difficulties due to changing

management structures, SCADCO's input was diminished and does not exist in its original form today. Despite this, many former members of the Council continue to be consulted by conservation authorities, either in their personal capacity or from their current organisations¹⁰.

3.5. Conclusion

This chapter has provided essential background by first describing the legislative context that the study area is situated in and exploring its recent developments. The key pieces of legislation influencing the management of the mouth over time are National Environmental Management Act (Act 100 of 1998), the Marine Living Resources Act (18 of 1998) and the World Heritage Convention Act (Act 49 of 1999).

This chapter also provides a historical description of the institutional involvement in KwaZulu-Natal nature conservation. The chronology of nature conservation is divided into three sections, (a) 1895 to 1947, (b) 1947 to 1980s and (c) 1990 to present. The discussion of these three periods includes the formation of the Natal Parks Board in 1947 and its transition to form part of the Greater St Lucia Wetland Park Authority management at present. The final section focuses on the study area chosen for this research, the St Lucia estuary mouth, and briefly discusses the history of establishment of formal protected areas in St Lucia. Lastly, the history of management of the St Lucia estuary mouth is presented, including the recorded closing and opening events at the mouth and a brief discussion of the the Reclamation Unit and the St Lucia Advisory Council as significant role-players that have been involved in the management of the St Lucia estuary mouth.

While providing background for the study conducted, the chapter also provided a framework for this research. The drawing together of the legislative and nature conservation elements of the study situated the study area at the meeting point of these two arenas within the realm of policy. By discussing the past involvement of institutions, the multi-stakeholder history of the St Lucia estuary mouth becomes evident. This was further enhanced by the introductory examination of the strong

¹⁰ Long-serving members of SCADCO included managers from the NPB, scientists from organisations such as the Oceanographic Research Institute (ORI) and South African universities and engineers from private companies.

coalitions formed between prominent institutions within this time period, highlighting the origins of the prominent interplays between industry, conservation and science and the importance placed on each. This presents an entry point for an analysis of the inherent discourses within environmental policy. Chapter 4 presents the methodology used to study these discourses.

CHAPTER FOUR

METHODOLOGY

4.1 Introduction

The main aim of this research is to gain an understanding of the policy discourses that inform decision-making about the St Lucia estuary mouth in the Greater St Lucia Wetland Park. Thus the aim of this chapter is to describe the methodology that was applied in order to achieve this aim. The methodology was thus designed to collect oral and documentary evidence which could then be analysed. Through discourse analysis of the qualitative data collected, the discourses apparent in policy-making for the St Lucia estuary mouth are revealed.

It is important to note that discourse analysis is used here in this research as both theory and methodology (Hajer, 1995; 2003). The theoretical framework provides an overview of the assumptions associated with a discourse analysis approach to policy analysis. As described in the Theoretical Framework (Chapter 2), language is the focus of discourse analysis. This is extended to the study of power relations between language users and their motivations for specific language usage and interaction. As a methodology, discourse analysis is used to firstly identify the best points at which to capture this communication, secondly, how to collect this information appropriately and lastly how best to analyse these language interactions in order to identify and understand the ways in which stakeholders have positioned themselves with regard to other stakeholders in a policy environment (Hajer, 2003). Thus, through the discourse analysis of the qualitative data collected, the discourses apparent in policy are revealed. The nature of the data required demanded that a deductive and qualitative methodology be adopted in this study. A deductive research design begins with a set of theoretical propositions, in the case of this research, through the use of conceptual categories. Using this as a starting point, the conceptual categories were used to guide the subsequent data collection and analysis. This analysis was iterative in order to ensure the wide range of data was suitably considered.

Accordingly, this chapter begins by detailing the method of data collection and sampling used in undertaking this research in section 4.2. This is accompanied by a presentation of the collection of data, firstly, through a description of the data itself

and, secondly, through a description of the techniques used in data collection. Following this is a discussion of the discourse analysis process in section 4.3. A broad framework of the procedure is presented. Subsequent to this is a description of the Hajer's (2003) proposed methodology for argumentative discourse analysis that was used in this research. This section is concluded with a description of the actual process of analysis that was undertaken using the above framework and methodology. Lastly, section 4.4 details the limitations presented by the data collection and analysis processes.

4.2 Data Collection

4.2.1 Data description

An intensive data collection process was deemed most effective. The data required accounts of different people's experiences and the meanings they assign to their world. Robinson (2000: 409) identifies these different views as being the main interest to a social scientist and thus "interpretive methods are required which can give special attention to the knowledge and understanding of individuals and groups." The context in which these experiences occur is important. Intensive studies typically have a smaller sample size, allowing more specific and detailed information. Although this does not allow for generalisation, this does not hinder the research as the focus lies in describing and contrasting experiences in a specific context (Sayer, 1992).

Data collected for this research can be divided into the established groupings of primary and secondary data. Primary data is that which is sourced from firsthand documents; as records of events as they are first described, without interpretation or commentary (Kitchin and Tate, 2000). Secondary data is any interpretation of primary data. The primary data consisted of:

- 1) Interviews of key stakeholders
 - Greater St Lucia Wetland Park Authority
 - Ezemvelo KZN Wildlife
 - Independent scientists
 - Local St Lucia business people and residents

2) Documentary data

- Key documents
 - Greater St Lucia Wetland Park Integrated Management Plan (IMP)
 - South African Acts and Regulations
 - Minutes of key meetings
 - Natal Parks' Board (NPB) archive material
- Other documents
 - Conference papers
 - Speeches
 - Media reports from the following print newspapers: The Witness, The Mercury, The Daily News and The Sunday Tribune
 - Promotional material from EKZN Wildlife, the GSLWPA and the KZN Tourism Authority.
 - Transcripts from television programmes.

The secondary data was derived from journal articles and book chapters.

4.2.2 Data sampling

Since the early 1940s, the closure at the St Lucia estuary mouth was identified as a problem. This date marks the beginning of mouth management. Since then the management of the mouth has been divided into three periods. The first period is from 1940 until 1966, when a Commission of Enquiry was established to better understand the closing of the mouth and possible solutions to this problem. The second period is 1966 to 1984 when the mouth was naturally opened by a tropical cyclone Demoina and management practices changed significantly. The third period is from 1984 until 2004 when the data for this thesis was collected.

Codes were used to signify the three periods covered in this research. The data was arranged accordingly to represent the three periods:

A: 1940 – 1966

B: 1967 – 1984

C: 1985 – 2004

Period A commenced in 1940, as this was just the start of a decade that was important for both conservation and economic growth in the province. Data collection for this period focused on collecting documentary material in the Ezemvelo KZN Wildlife and Natal Parks Board archives. The transition into period B was signified by the Kriel Commission in 1966; a watershed inquiry into environmental damage in the St Lucia area. Data collection for this period also drew heavily on documentary archival material, with minutes of meetings, memoranda and letters proving quite fruitful. In addition to this, some of the stakeholders who were active during this time period were able to be interviewed to provide firsthand accounts. The end date for period B was determined by a major natural event – a cyclone – that changed policy thinking significantly in period C. Data collection for the third time period had the widest range of all the periods. Data from stakeholder interviews and email correspondence was supplemented by material collected from archives. The researcher was also able to attend conferences and presentations where stakeholders presented papers relevant to this research. In addition, media and press releases were collected from newsprint and newspaper websites.

The need to encompass three time periods in the analysis necessitated a varied approach to sampling. Sampling for this research had to be designed around the differences in each period. These differences were mainly in data availability, organisational changes and events that were unique to each period. Interviews formed the key data technique for producing the data set that this research generated.

A number of interviews were conducted using open-ended questionnaires which were then transcribed to form texts. It was noted that in discourse analysis the basic format and design of the interview is paramount, as it is sets out to determine how people create their own realities related to the question at hand (Kitchin and Tate, 2000). Semi-structured interviews were used with key stakeholders because the interviewees were not to be limited in their possible answers, giving a chance for free discussion on the topics at hand. Questions asked were customised from a set template of basic questions. The interview schedule was altered for each respondent to ensure that their particular viewpoint could be captured. As Sayer (1992: 223) explains, when conducting “a less formal, less standardised and more interactive kind of interview, the researcher has a better chance of learning from the respondents” (See Table 4.1).

Not all members of each stakeholder group could be interviewed, thus purposive sampling was used. Although purposive sampling “is the most subjective sampling method”, it was used because the individuals chosen had specialised information from specific periods that could contribute to the research aims (Kitchin and Tate, 2000: 10). The iterative nature of the research aided in confirming that the small representation of stakeholders would not compromise the research.

During the initial interview process it became evident that face-to-face interviews could not be conducted with all stakeholders, thus email interviews were carried out with stakeholders that were not central to the research, e.g. St Lucia business people. As the research proceeded the number of stakeholders relevant to the research question were fewer than originally anticipated. Difficulty was experienced in obtaining interviews with certain people in positions of authority. The researcher then decided to conduct further interviews with the same respondents with the aim of drawing on the previous interviews and deepening the understanding gained. Recording the interviews using a tape recorder was found to inhibit the responses of some of the participants, thus a combination of interview recording and note-taking was used. All the respondents listed in Table 4.1 were interviewed between 2003 and 2005.

Table 4.1. List of main stakeholder interviews

Respondent	Role/Stakeholder Position	Organisation
Ricky Taylor	Ecologist	Ezemvelo KZN Wildlife (current employee)
Carl Freer	Ecologist (Operations)	Ezemvelo KZN Wildlife (retired in 2005)
Nidia Brits	Reclamation Unit employee	Natal Parks Board (retired)
Bruce Dade	St Lucia Resident and Businessman	Independent
Robert Crass	Fisheries expert & manager	Natal Parks Board (retired)
Kian Barker	Biologist and St Lucia Businessman	Independent

4.2.3 Sources of documentary data

A range of documents relating to the management of the mouth and the St Lucia estuary were collected from a number of sources. The policy focus of this research translated into a ‘document-heavy’ collection process. Documents were gathered from more than one source. Primary data was collected from the following sources:

- a) Interviewees were asked for documents that they felt echoed their sentiments and/or represented their organisation’s involvement in the St Lucia estuary mouth management.
- b) Relevant *legislation* from 1994 to present was obtained from the South African Government website. Legislation promulgated prior to this was acquired from Ezemvelo KZN Wildlife policy documents.
- c) All of the *policy and management documents* relating to EKZNW’s involvement with the estuary mouth prior to 2000 were found in the EKZNW’s St Lucia and Pietermaritzburg archives.
- d) *Minutes* from key meetings that occurred prior to when the commencement of the research were obtained either from key stakeholders or from the EKZNW’s St Lucia and Pietermaritzburg archives.
- e) *Memoranda and letters* regarding the management of the St Lucia estuary mouth were found in the EKZNW’s St Lucia and Pietermaritzburg archives.
- f) *Presentations and speeches* were sourced from the conferences that the researcher attended and from website repositories containing relevant papers
 - Carl Freer – ‘Management of the St Lucia Mouth: the key to maintaining the integrity of the estuarine ecosystem’ (St Lucia Conference - pre-conference meeting for World Conference on Sustainable Development, 4th - 7th September 2003, Cape Vidal)
 - Janice Tooley – ‘Environmental Management in the GSLWP: On shifting sands’ (St Lucia Conference - pre-conference meeting for World Conference on Sustainable Development, 4th - 7th September 2003, Cape Vidal)
 - Greater St Lucia Wetland Park Drought Management Workshop (21st January 2004, Royal Natal Yacht Club, Durban)
- g) *Press releases* were gathered from an email distribution list and organisation websites.
- h) *Media reports* about the St Lucia estuary mouth were gathered from weekly searches conducted on South African newspaper sites and press releases from the

GSLWPA (The Wetland Wire) and EKZNW. Newspaper reports were limited to the extent of the newspapers' online archives – thus newspaper articles were sourced from approximately 1996. Relevant media reports prior to this were sourced from the print newspaper archives at the Don Africana Library and EKZNW's archives.

- i) *Brochures* and *promotional material* were found in the booking offices of EKZNW, online and at local St Lucia businesses.

Secondary data was collected from the following sources:

Journal articles were found by looking through reference lists of research work done in St Lucia. This information was then used to search online journals for the specific work.

The sampling of documentary data was governed by the period that the research covered (1970 to 2005), thus all documents collected related to this phase in the St Lucia estuary mouth management. Some of the data predates the early period. This was done to provide background for the data that was analysed. Media reports that formed part of the data were selected according to the relevance of their content, i.e. articles that were specifically about the St Lucia estuary and mouth.

Documents from the archives at EKZN Wildlife St Lucia were sampled by searching for policy and media specifically about the mouth from 1950 to present. This was done by searching the documents for references to following topics:

- a) The St Lucia estuary mouth,
- b) Dredging and
- c) The Reclamation Unit.

Documents relating to the St Lucia Scientific Advisory Council (SCADCO) found in archives at EKZN Wildlife Pietermaritzburg were sampled in a similar way. The documents had been boxed into approximately four year groupings, from 1968 to 1997. Each box contained minutes of SCADCO meetings and the policy documents that were discussed and related to these meetings. These were ordered chronologically in each box. Thus, each box was searched for references to St Lucia estuary mouth, dredging and the Reclamation Unit. Documents detailing significant policy changes and events, as well as evidence of partnerships were also selected.

4.3 Data Analysis

4.3.1. Framework for process of analysis

The data had to be prepared in order to be analysed. This was done over several stages by adapting the approach described by Kitchin and Tate, shown in Figure 4.1. Firstly, the ‘Description Stage’ was undertaken, in which the main action was the collection, cataloguing and transcription of the data. The aim was to ensure that the data was ordered in a way that could be easily interpreted (Kitchin and Tate, 2000: 233). This provided the initial database from which the rest of the data analysis process could proceed. Secondly, the data was categorised in the ‘Classification Stage’. Using categories generated from the research objectives set out in Chapter 1 and conceptual categories derived from the theory (Chapter 2), each piece of evidence was interrogated and coded into a relevant category or sub-category. The text was read and relevant words and phrases were highlighted and noted in the margin with a code identifying the text’s categorisation. These text pieces were then grouped according to their codes and put into separate spreadsheets. Thirdly, in the ‘Connection Stage’, the data was analysed using discourse analysis and related discourse linked together (discussed in further detail in sections 2.4.2 to 2.4.4). The theoretical categories were then linked to empirical data and then discussed accordingly. This is the stage in which the researcher searches for recurring patterns within the data set in order to describe the data according to the research objectives.

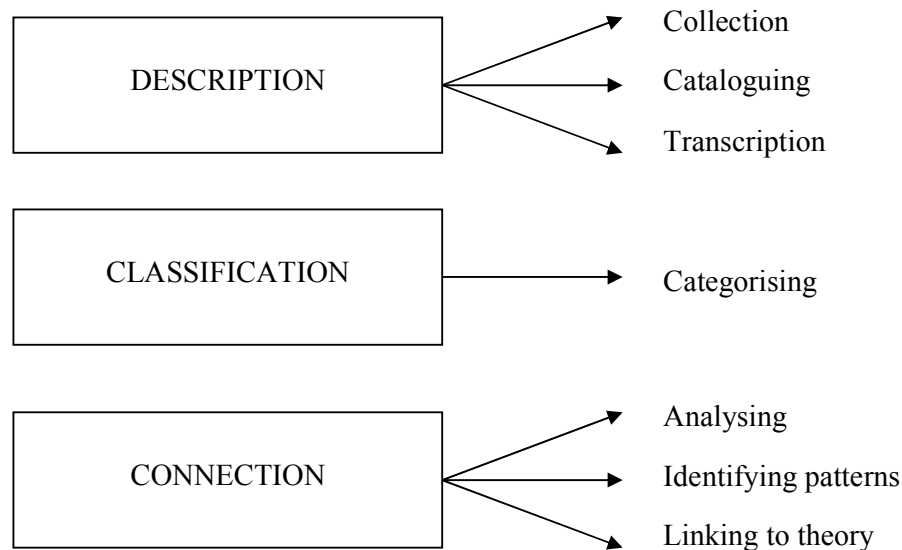


Figure 4.1. Data analysis stages (adapted from Kitchin and Tate, 2000)

4.3.2 Argumentative discourse analysis

Qualitative analysis was needed to develop a coherent account from the empirical data collected. The subtle ways in which issues are included or excluded in the policy formation process need to be examined in order to examine the data effectively. The most effective way of undertaking this is through discourse analysis. While the theory of this qualitative methodology is discussed in the previous chapter, the diagram in this section aids in illustrating the determination of discourses. Hajer recommends the use of argumentative discourse analysis - an extension of the methodology, which advocates moving beyond dissecting the language within policy, and looking at what is being criticised and what “counter-positions” are being adopted against the policy (Billig, 1987: 91, in Hajer, 2002). Once patterns within what is being said or written in policy are recognised, then what is being said can be contextualised using the social backgrounds of the communications that are taking place around policy formation (Hajer, 2003). This then identifies the dominant discourses, as well as what influence counter-hegemonic discourses have had on policy.

Argumentative discourse analysis pays particular attention to the different positions adopted by actors, thus focusing on the arguments themselves and not the text contained within these disagreements. Table 4.2 (the elements of which were described in Chapter 2) shows the framework outlined by Hajer (2003). The elements of analysis are divided into three groups – the Terms of Policy Discourse, Discourse Coalitions and Institutional Practices - indicating the elements of discourse that are being sought. The terms of policy discourses are analysed on three levels. Firstly, the terms of the policy discourse are analysed. This is done by looking at the storylines, metaphors and myths that are offered by actors subscribing to each identifiable discourse. Secondly the policy vocabularies, which are consciously developed by policymakers, are identified. Thirdly, the notions structuring thinking in society in the period under investigation, the epistemic notions, are recognised. This, in turn, allows for discourse coalitions forged between actors to be identified. Lastly, the effects of these discourses on institutional policy and practices in reality are studied. By analysing discourses on more than one level, the researcher is able to examine not only the discourses themselves but the discourse groupings that occur and the implementation of discourses within policy.

Following the collection and preparation of data, the data requires coding. The aim of this research is to gain an understanding of policy discourses that informed decision-making regarding the management of the St Lucia estuary mouth in the Greater St Lucia Wetland Park. Four objectives were stated in the introduction of this study, that were proposed to achieve this aim. They were to:

1. Identify the dominant discourses in policies that have informed decision-making since 1970
2. Explore the nature of alternative/oppositional discourses and how they influence decisions taken
3. Explore the nature of discourse coalitions that have existed
4. Identify the role of science in influencing the construction of these discourses.

It was felt that in order to ensure focused research, these objectives should be used to structure the coding process, as well as the format of the results chapters (Chapters 5, 6 and 7). Thus coding was structured as follows in order to identify the dominant discourses:

1. Epistemic notions
2. State of the mouth
3. Causes of the state of the mouth
4. Policy responses and solutions (government and other stakeholders)

Coding commenced by reading *all* texts and coding them as described above. The coding and analysis of all layers of policy analysis were done together, firstly, because of the wide variety of documents that were collected and, secondly, to ensure the cohesiveness of analysis. In this process statements that were relevant to the decided coding categories were underlined and coded. Once this had been done, all statements relevant to the research objectives were transferred to spreadsheet documents. This assisted in identifying the storylines that were apparent in the text. All storylines (including myths and metaphors) were named, thus aiding in the process of identifying common storylines. Theoretical categories of environmental discourses were then applied to the discourses and storylines that emerged from the coded data.

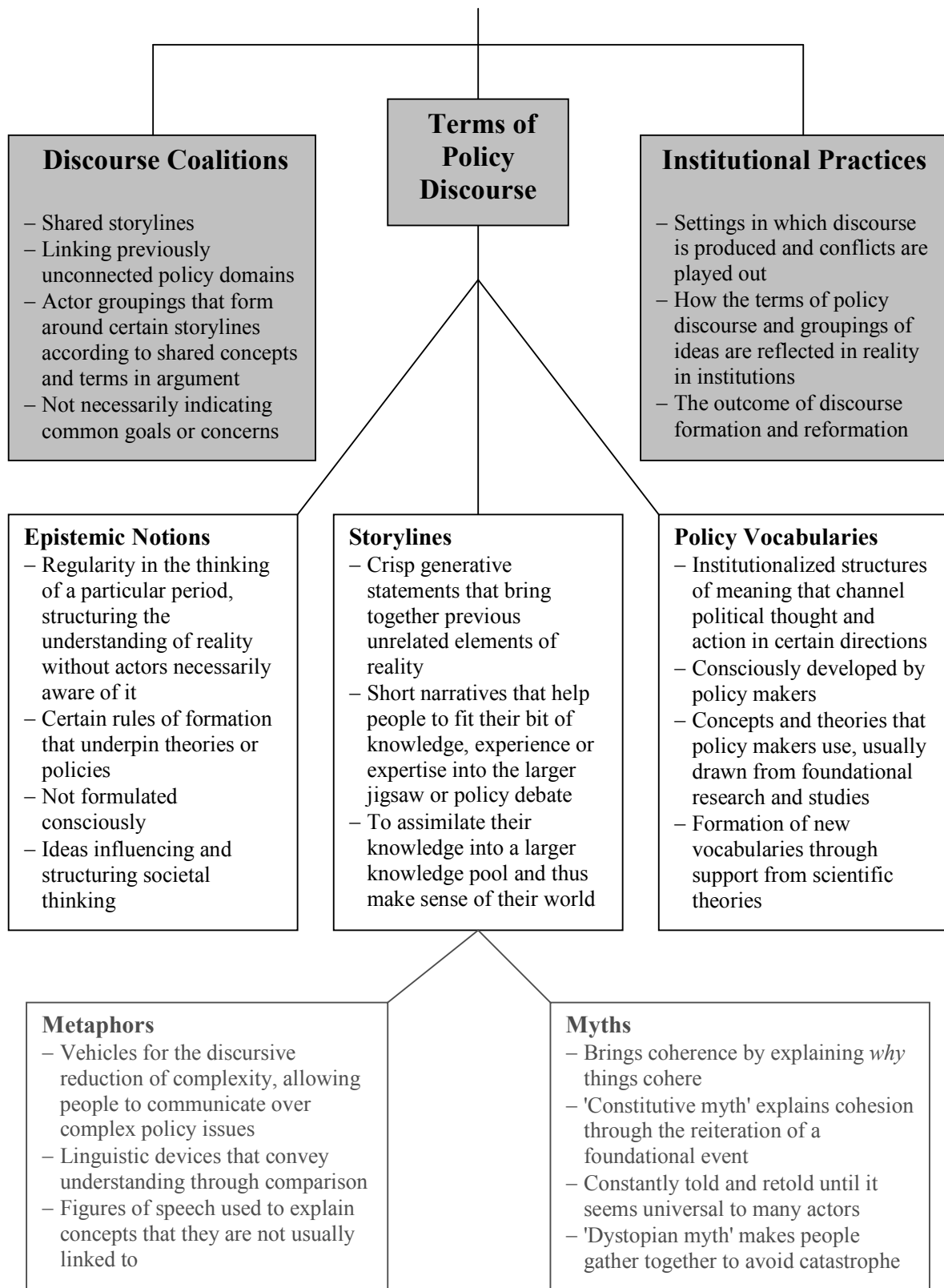


Figure 4.2. Framework of data analysis methodology (after Hajer, 2003)

This process of coding was also used to identify policy vocabularies. Due to the fact that all selected statements were referenced, vocabularies coming from policy documents were able to be identified and analysed accordingly. Although epistemic notions do not appear as frequently as storylines in the data, their importance was identified and thus these broad societal ideas were also coded and grouped for each time period. Discourse coalitions could also be identified through this process, as it presented clearly the discourses that were common to different actors. Institutional practices were primarily identified through the study of all statements that emerged as policy responses and statements.

Lastly, Dryzek's (1997) method of identifying environmental discourses was used in the analysis in order to identify the discourses that were apparent in each time period. The list of environmental discourses that were used to complete the analysis process are shown in more detail in the Theoretical Framework (Chapter 2). The checklist developed by Dryzek assisted to describe a discourse proved extremely useful in identifying the profile of the different discourses. This checklist has four discourse elements to be identified, namely:

1. Basic entities whose existence is recognised or constructed
2. Assumptions about natural relationships
3. Agents and their motives
4. Key metaphors and other rhetorical devices

4.4 Limitations of the study

The study was limited foremost by the lack of access to data. This unavailability was for two reasons. Firstly, a portion of the data related to the newly formed GSLWP was considered confidential, thus only being available in draft form or being of a politically sensitive nature. Secondly, access was limited because the location of some of the data was uncertain. For example, although the majority of the Natal Parks Board and EKZN Wildlife's data is stored at their headquarters in Pietermaritzburg, some data that were very relevant to this research were housed separately in the St Lucia office. Thus it was initially quite difficult to ascertain exactly where the important St Lucia archive material was stored and then also to gain access to this information. In addition to not knowing who to approach to access this data, there were also ownership and confidentiality issues associated with it. This was mainly

due to the newly-formed relationship between the Greater St Lucia Wetland Park Authority and Ezemvelo KZN Wildlife, where there were still unresolved debates around many issues, including to data ownership. Once some of the key stakeholders had been interviewed, this particular data was more accessible and proved valuable to this research. This was due to the age of material in addition to the speciality of the data required. The range of data needed to create the data set resulted in many different forms of data. This provided difficulties in the collection and preparation of the data; the latter point proving more complex due to the need for standardisation of the data for analysis purposes.

Limitations with the interview data related to the small number of stakeholders available who were involved in the issues during the earlier periods. This resulted in a small number of interviews. Contributing to this was the lack of availability of key stakeholders. For example, many conservation authority stakeholders had retired when the Natal Parks Board underwent transformation in the mid-1990s, had moved out of the province and were thus not available for interview. The lack of availability was particularly true for those occupying government positions, where the positions are characterised by understaffing and a lack of resources. In this regard, this loss was supplemented by the use of documentary data (current and archival) which proved advantageous because it gave the data set the depth it required.

The method of analysis itself provided limitations. In addition, the process of using Dryzek's method to supplement Hajer's methodologies proved to be problematic in certain aspects (described above in section 4.4). Although the methods are complementary, their amalgamation at times felt contrived. Thus every attempt was made to ensure that this merger was not forced. Lastly, due to the intensive nature of the research design, the results are not applicable to other study areas. As Sayer (1992: 222) notes, the "actual concrete patterns and contingent relations [that were identified] are unlikely to be 'representative', 'average' or generalisable." Despite this, the descriptive and retrospective value of the research is seen as vital to the understanding of the policies related to the study area.

4.5 Conclusion

The research conducted in this study required qualitative data collection and analysis. The research design was deductive and intensive. The methodology adopted was primarily influenced by the assumption that environmental problems, policies and stakeholder interests are framed by discourses.

Oral data was collected using semi-structured, open-ended interviews of key stakeholders. Seven face-to-face interviews were conducted with six stakeholders. A purposive sampling method was employed because not all members of each stakeholder group were available for interview and because it was felt that certain individuals had specialised information for specific periods that could contribute to the aims of this research. Documentary data was collated from a variety of sources, mainly St Lucia policy and management documents and Natal Parks Board archive material.

Data analysis was undertaken using coding, which was structured as follows in order to identify the dominant discourses:

1. Epistemic notions
2. State of the mouth
3. Causes of the state of the mouth
4. Policy responses and solutions (government and other stakeholders).

Hajer's argumentative discourse analysis provided an appropriate way to conceptualise and analyse the data collected. It enabled a detailed analysis process to be conducted and allowed for flexibility according to the changing needs to the research process.

The last section provided details of the limitations that this research presented. The most significant limitations were due to confidentiality related to recent data for the GSLWP, ownership and location issues with older archive data, in additions to the lack of availability of key stakeholders. These limitations extend to the results that are described in the following chapters

CHAPTER FIVE

DISCOURSE ANALYSIS OF MANAGEMENT POLICIES AT THE ST LUCIA ESTUARY MOUTH

1940 - 1966

5.1. Introduction

Through the use of discourse analysis, the results of this study aim to identify the dominant environmental discourses in policies that have informed decision-making around the St Lucia Estuary mouth. The temporal changes in policy necessitated analysis that was structured chronologically. Accordingly, the results have been divided into three periods that have been determined through the identification of important dates, as described and justified in the methodology section of this research (Chapter 4). These dates were then used to determine the length of each period. The first period is from 1940 to 1966, which encompasses the start of concern for the impact of human intervention on the St Lucia estuary and Umfolozi Flats area. The second period follows from 1967 to 1984, which was a period of solutions for these impacts, with an engineering bias. The third and final period is from 1985 to 2004, covering the change in focus for those implementing policy for the St Lucia estuary after the event of the cyclone Demoina. Thus Chapters 5, 6 and 7 present the results of the three periods respectively.

The chapter begins with Section 5.2 which provides a brief discussion of the prevailing political and social conditions in order to provide some context for the period being discussed. This is followed in Section 5.3 by a description of the different ‘epistemic notions’ that informed the thinking of the government and society during this period. In Sections 5.3 and 5.4 the state of the St Lucia estuary and mouth is discussed, followed by a description of the reasons given by stakeholders for this state. Section 5.5 examines the causes for the state of the St Lucia estuary mouth that were identified. The last two sections set out to analyse the responses to the state of the St Lucia estuary and mouth area. Firstly, in Section 5.6.1 the ‘official’ response, i.e. the response from the Natal Parks Board (NPB) and the national government is discussed, and secondly in Section 5.6.2, the response from other stakeholders

including independent scientists and the public is presented. Table 5.1 shows the key events of this period.

Table 5.1. Key events of the 1940 – 1966 period

Date	Event
1945	End of World War II
1945	Formation of UNESCO (United Nations Educational, Scientific and Cultural Organisation)
1946	South Africa joins UNESCO
1947	Natal Game and Fish Preservation Board (Natal Parks Board) formed
1948	National Party comes into power in the South Africa government
1952	Establishment of Reclamation Unit
1952	Diversion of Umfolozi River mouth
1957	Dredging of St Lucia estuary mouth commences
1961	South Africa becomes a Republic
1951 – 1955	St Lucia estuary mouth closes
1955, 1956	Floods
1955 – 1961	St Lucia estuary mouth opened artificially 3 times
1963	Serious flood
1965	St Lucia estuary mouth dredged open
1966	Kriel Commission of Enquiry

5.2. The modernisation of the rural landscape: The rise of commercial agriculture

This chapter presents the results and analysis pertaining to the management of the St Lucia estuary and mouth for the period between 1940 and 1966. Whilst the analysis begins from this period, a context is provided of the pre-1940 period through a brief discussion of preceding events that are relevant. South Africa's national government was in transition to an apartheid government during the 1940 - 1966 period. Preceding this transition of South Africa's national government, the ideals of the separate development of the races were already evident in national government policy. At a provincial level, the settlement and cultivation of Zululand by whites was accompanied by transitions in conservation management in the Natal province.

At the national level, during the period from 1940 to 1966, the national government in South Africa was in transition. In 1948 the National Party defeated Jan Smuts' United Party to take control of the national government (Ross, 1999). Concerted efforts were

being made by the ruling authorities to consolidate separatist regulations and ideals that had gradually been increasing. This was achieved when the National Party came to power in 1948. Thus during this period nationalist feeling amongst white South Africans was growing, and particularly the support for the ideals embodied in ideology of ‘separate development’ of the different races (Beinart, 2003). After World War II ended in 1945, nationalist sentiment was also fueled by the change in status of South Africa from a Union (under the British Crown) to an independent Republic in 1961.

The opening up of Zululand for European settlement proved to be an important factor in the modernisation of rural Zululand. This occupation was sanctioned through the Zululand Delimitation Commission released in 1904 (MacKinnon, 1990). Occupation of the land by Europeans was followed by initial forays into commercial agriculture, with the focus being mainly on sugar cultivation (Chapter 3). The new sugar farmers held the view that they were improving the Zululand landscape that existed there previously. The rural Zululand area was seen as a wild, useless landscape that required taming, as shown here by a comment from a prominent early 1900s settler:

“The Umfolozi Flats ... was a waste of forest, papyrus and elephant grass in the river delta.... To tame this wild place and bring it into fruitful production appeared a man’s full sized job” (Heaton Nicholls, 1961: 92-93).

Bunn (1996: 41) also highlights this view, contained in an entry in the South African Sugar Journal in 1930, which quotes a comment on a film made to promote the sugar industry in Zululand:

“The interest [is] sustained by a story based upon the savage conditions of the country when Chaka’s hordes held sway. A fine herd of elephants....and hippo in their natural habitat concentrate interest upon the country and its conditions before the Sugar Industry came into being to rescue it from its primeval wilderness.”

Accordingly, this is the period when commercial enterprise was taking root in the province and the country. The beginnings of a fledgling agricultural industry was being driven by the capitalist ideals that were generated and facilitated initially by colonial government and later by the Union of South Africa (Beinart, 2003).

Additional sugar farmers were added to the number already recently settled in Zululand, as soldiers returning from service during World War II in 1945 were allocated lots in the Umfolozi valley (Wiseman, 1992).

Prior to the centralisation of conservation management in the Natal province, South African Railways & Harbours (SAR&H) was instrumental in the 1920s and 1930s in creating interest in protected rural natural areas by promoting the idea of the “renewing ‘short break’” to city dwellers in South Africa in these ‘compensatory’ conserved spaces (Bunn, 1996: 38). Conservation in the province of Natal was also undergoing transition. As discussed in Chapter 3, the protection of wildlife was centralised through the formation of the Natal Game and Fish Preservation Board (known as the Natal Parks Board) in 1947 (Brooks, 2001). This afforded the conservators a legal statute for consolidation and improvement of wildlife management and the Natal Parks Board becoming established in the management of the St Lucia Nature Reserve.

5.3. Epistemic notions during the period from 1940 - 1966

In order to frame what was happening during the period of 1940 - 1966, a discourse analysis necessitates a broad understanding of the societal thinking of the time. Accordingly, this section commences with an analysis of the ‘epistemic notions’. Hajer (2003: 8) defines these as “a regularity in the thinking of a particular period, structuring the understanding of reality without actors necessarily aware of it” (see Chapter Two).

Societal thinking during this period was dominated by the capitalist ethos that drove economic growth. Industrialisation commenced in South Africa’s urban areas and was spreading to the country in the form of commercial agriculture. Whilst the 1940s were initially characterised by an economic slump during the post-World War II depression, this was soon followed by renewed post-war economic growth (Feinstein, 2005). This was evident in the South African market and particularly in agriculture. Further development of the Umfolozi valley was stimulated through the government policy of providing servicemen returning from duty in World War II with land to settle and cultivate (Anon, 1965; Heaton-Nicholls, 1961). Thus, the growth of the economy was stimulated and the area of St Lucia was subject to these changes. This

change was influenced particularly by the ‘frontier’ outlook that many sugar farmers exhibited (Bunn, 1996). Dryzek (1997) refers to this environmental discourse as the part of the Promethean discourse. Advocates of this discourse believe that there are no limits to economic growth and thus that the environment is there to be subjugated and tamed to ensure that economic growth increases (Dryzek, 1997). Thus the rural Zululand area was seen as a wild, useless landscape that required taming.

The majority of this second wave of settlers coming to northern Natal (the first group of returning servicemen coming after the First World War from 1918 onwards) settled into sugar farming on their plots. This meant that most of the settlers were concentrated in the Umfolozi Flats area, on the fertile land along the Umfolozi River (Lincoln, 1995; Heaton Nicholls, 1961).

Their ‘frontier’ thinking soon changed to some extent, with the realisation that whilst cultivation of the rural land in the Zululand area and particularly the Umfolozi Flats was positive for economic growth in the area, it could be compromising the tourism potential of Lake St Lucia. Thus in the 1960s the protection of St Lucia’s natural assets became a priority for the national government in recognition of the area’s potential for the tourist economy. This realisation was evident in the Kriel Commission in 1966. In 1963 the national Government commissioned an investigation into the state of Lake St Lucia. The Government appointed a panel of experts that comprised academics, engineers and well known figures that had already been involved in environmental issues in the St Lucia area. The panel was led by Prof. J. P. Kriel who was Assistant Chief Engineer in the Department of Water Affairs at the time (Kriel Commission, 1966: 2)¹¹. Their brief was to investigate the alleged human-induced threats to the St Lucia estuary and mouth and provide recommendations in order for the authorities to move forward and act on any identified threats (Kriel Commission, 1966: 2). Thus the Kriel Commission report provides a valuable source of data regarding the discourses presented by government and scientists of the time and an important turning point in the management of the

¹¹ The other commissioners were Emil Adler (Chief of the Natal Region, Department of Agricultural Technical Services), Prof. Adolf Bayer (Professor of Botany, University of Natal), Andrew Brynard (Nature Conservator, Kruger National Park), David Davies (Oceanographic Research Institute), Prof. John Day (Professor of Zoology, University of Cape Town), Allen McKay (Chief Agricultural Officer of Natal, Department of Bantu Administration and Development) and Peter Stewart (Research Officer, Natal Parks, Game and Fish Preservation Board).

mouth. Important to note is that prior to this point when the ‘problem’ was identified, there were studies that were used to inform the management of the St Lucia estuary and mouth. Important preceding studies include two reports submitted to the then newly formed, Natal Parks, Game and Fish Preservation Board in 1948. They were a preliminary report by a Professor Day¹² on an ecological survey of the St Lucia area during July 1948 and a report by Col. D. E. Paterson, South African Harbour Engineer, on the silting problem at St Lucia (Kriel Commission, 1966). Despite the increase of information sources and commentary in newspapers, the chief documentary source of information about this period was the Kriel Commission report, published in 1966, as it reflects on the earlier period of concern.

In the Kriel Commission it was stated that “[the] preservation and proper utilisation of St Lucia Lake and its surroundings would give it a great economic potential” (Kriel Commission, 1966: 206). It must be noted, however, that the economic value of tourism at St Lucia was not intended as an alternative to the agricultural production taking place in the surrounding areas and in the Umfolozi Valley but rather as a supplementary stimulus to the economy. As a result, conversion of the Umfolozi floodplain to sugar cultivation continued unabated (Kriel Commission, 1966). The notion of economic growth and progress constructed a dominant societal theme during this period. Thus the ‘promethean’ discourse in the 1940 – 1966 period was a hegemonic discourse that framed environmental problems and their solutions. A hegemonic discourse is “a prevailing commonsense formed in culture [...] that informs values, customs and spiritual ideals to induce 'spontaneous' consent to the status quo” (Peet, 2001: 4). The rise of feelings of nationalism during the 1940 – 1966 period and earlier provided a vehicle for protectionist policies to ensure areas of natural beauty in South Africa were afforded the necessary safeguarding (Kriel Commission, 1966). This coincided with concerns about the protection of natural resources which were gaining prominence in government debates. National pride of noteworthy natural assets became a national focus point frequently during the rise to power of the Nationalist Party (Carruthers, 1989, 1995, 1997). Although this was advantageous for the preservation of the unique St Lucia area, in political discussions and debates Lake St Lucia and its environs took second place to the Kruger National

¹² Later to be nominated as a commissioner on the Kriel Commission

Park, which was the natural asset that most embodied the government ideals of the time of establishing a national park (Carruthers, 1995). However, the St Lucia Lake was an area of concern, as shown by the establishment of the Kriel Commission of 1966. It was in response to the threats from human intervention to St Lucia, that the importance of protecting St Lucia was emphasised by the Kriel Commission. The protection of this national asset would be "...in the best interests of the region and of the country as a whole..." (Kriel Commission, 1966: 2-4).

Whilst this protection was positive for white people who were able to experience the natural environment of the St Lucia and greater Zululand area, the black residents of the area were not allowed to enjoy the beauty and natural assets of St Lucia. The conservation of natural resources was viewed by the state as a method of reinforcing separation of the races (Carruthers, 1995). This was in line with national government policies that promoted, and later enforced, the separate development of the races in South Africa. As a result this period was characterised by spatial maneuvering on the part of the national government in order to restrict the movement of black people and reserve certain favourable areas for whites (Carruthers, 1995). Thus the Kriel Commission (1966: 200) also contained frequent references that exhibited this ideology:

"The Umfolozi and Hluhluwe Game Reserves are completely surrounded by large Bantu Reserves, and may be used by Bantu in future. Hence the desirability of having St Lucia as a large nature conservation area and game reserve situated within an area occupied by Whites, is evident."

The 1940 – 1966 period was characterised by three epistemic notions. Firstly, the dominant discourse of economic growth and progress was evident throughout the time period, particularly in government policy. Secondly, the notion of conserving natural resources through their protection within parks was becoming evident. And lastly, the notion of separate development of the races, which informed much of the thinking of the Government and decision-making authorities.

5.4. The State of the Mouth

The epistemic notions presented above provide the broader societal context for a discussion of the terms of policy discourse. This section sets out to identify and describe the discourses employed by the state, i.e. the ‘official response’ in explaining the state of the mouth. The discussion of the policy vocabularies and the inherent storylines are influenced by these ideas structuring societal thinking. In order to do this, the prevailing conditions during the 1940 - 1966 period need to be explored. This is achieved by studying what is stated in government policy, i.e. the ‘official response’, as well as in the responses of other stakeholders. The evidence shows that these other stakeholders include independent scientists (those commissioned by the state in addition to other experts interested in the state of the St Lucia environment), the public living in and outside the St Lucia area, sugar farmers farming in the Umfolozi Flats and private business people in the St Lucia area. The range of discourses employed to represent the state of the mouth will be revealed in the following analysis. Some of these discourses became institutionalised and part of what is termed ‘policy vocabularies’. Section 5.4.1 will discuss ‘natural conditions under threat’ as the dominant storyline and survivalist discourse as related to the state of the St Lucia estuary and mouth. Section 5.4.2 presents the storyline detailing the effect of mouth closure on human activity.

5.4.1. ‘Natural conditions under threat’

During the period 1940 – 1966, the condition of the St Lucia Estuary mouth was seen to have changed significantly due to human intervention. Thus the storyline most commonly associated with the state of the St Lucia mouth was that the ‘natural conditions were under threat’ (Kriel Commission, 1966). While this concern for the state of the environment seemed to reflect an early ‘survivalist’ discourse, the motivation for concern actually stemmed from a utilitarian viewpoint (Dryzek, 1997). The discussion of ‘threats’ to the natural environment echoed the alarmist language typically used by survivalists, but stopped short of describing nature’s resources as finite (Dryzek, 1997). It was apparent at the time the natural resources of the St Lucia environs were intended for many uses, including recreational and livelihood uses (Kriel Commission, 1966). St Lucia was important economically and had been pinpointed as an important tourism growth area. Significantly, the Umfolozi catchment area was vital to the sugar farming industry (Anon, 1965). However, to the

NPB and the nature-loving public, the threats to the natural conditions in St Lucia were viewed as affecting the naturalness and pristine natural quality of the area (Gordon, 28/05/1968). These stakeholders felt that natural processes were being disrupted by events which they deemed were ‘unnatural’ (Player, 03/11/2003). Ian Player (03/11/2003: 9), a prominent figure in wildlife conservation at the time, described the changing natural conditions in the St Lucia area:

“The estuary mouth closed because of the canalising of the Umfolozi river. I watched thousands of mullet coming down the lake trying to get out to sea. Pelicans glided out of the sky onto the fish. Crocodiles and sharks followed, churning the water red with blood. The pelican could hardly fly they were so gorged.”

A range of concerns were raised by the NPB and the public, included concerns about siltation and increased water salinity and their threat to the natural environment. Considerable attention was paid to the effect of *siltation* in the estuary. References to siltation problems could be traced back to the beginning of the 20th century (Kriel Commission, 1966). Although it was accepted that the phenomenon of siltation was natural, scientific evidence showed that the level of siltation was being exacerbated by development in the Umfolozi catchment that fed the St Lucia estuary. As stated in the Kriel Commission (1966: 10): “(w)ith increasing development in the catchment areas and the draining of the Umfolozi swamps, this tendency for the estuary to silt up appears to have increased.” The Kriel Commission (1966: 28) emphasised the “considerable changes” that had taken place due to siltation and dredging of the St Lucia mouth. The phrasing that was used was not alarmist, but it was clear that there was nonetheless a high level of concern. This concern was also reflected in the concern about the increased *water salinity*, which was reducing the amount of fresh water available. However, the impact of increased siltation and salinity on the tourist economy was identified by government as the main cause for this concern:

“There are indications that the saline content is increasing; there are clear indications to that effect at the lake, and I agree that we must take certain measures to see whether we cannot preserve it as a nature resort and a beauty spot and an attraction for tourists for generations to come” (Minister of Water Affairs, in Hansard, 1963, in Kriel Commission, 1966: 14).

The concerns over the impact on tourism were, however, blamed on the poor state of Lake St Lucia. The scientists highlighted the effect of littoral drift on the system, as noted by SCADCO¹³ (1973: 5):

“In the past a small bay existed between the present Estuary mouth and the Umfolozi River to the South. As a result of drainage of the Umfolozi Flats for sugar cane planting, in addition to littoral drift, silt was carried into the bay.”

This focus on ‘natural causes’ could have been for two reasons – firstly, because the extent of the unnatural effects on the system were not fully understood and, secondly, because of the political sensitivity, from the 1940s onwards, of blaming the sugar farmers for the impacts as they were considered as important economic actors (Bunn, 1996: 41). Thus, whilst the effects of sugar farming on siltation were intuitively obvious and direct, the blame was placed on natural causes in the government report (Kriel Commission, 1966).

The criticism of sugar farming as the major impact on reducing the quality of Lake St Lucia was voiced particularly by independent scientists (Weiss and Midgeley, 1976). Independent scientists, such as Weiss and Midgeley¹⁴ (1976: 2) highlighted the effects of sugar farming:

“Intensified occupation and unwise land management ... [as well as the] drainage of swamps for the planting of sugar-cane has given rise to silting problems in the lower reaches of the St Lucia estuary”.

However, the NPB were still debating whether the siltation of the mouth was natural or man-induced:

“The earliest identified threat was the possible closure of the St Lucia mouth by sedimentation. The threat arose from the transformation of the upper portion of the Mfolozi Swamps by agriculture. [...] The north flowing in-shore current then moved these sediments into the mouth of the estuary, causing the temporary closure of the mouth. This has been managed by the

¹³ St Lucia Scientific Advisory Council (see Chapter 3)

¹⁴ Weiss and Midgeley were independent scientists that were contracted by the Natal Parks Board in the 1970s and 1908s to undertake engineering studies for the NPB, specifically on finding solutions for the effects of the Umfolozi River on the St Lucia system. They were also member of SCADCO during this time.

Natal Parks Board since 1957 using a dredging operation, according to nature-based guidelines” (Porter et al, 1999: 69).

It must be noted, that while the scientific results such as those of Weiss and Midgeley’s were independent, these studies were sanctioned by the NPB [Kriel Commission, 1966]. Independent scientists and engineers such as Weiss and Midgeley also sat on advisory bodies such as the St Lucia Advisory Council (SCADCO)¹⁵ (see Chapter 3).

Public sentiment echoed the concerns raised by the independent scientists. The public were beginning to notice the visual changes to the area that were being brought about by siltation. A member of the public noted in 1951 that “there has been an alarming change during the past 15 years” (Anon, 1951: 53). The language used was more emotive than the scientific language contained in reports on the area, with a member of the public disdainfully describing the St Lucia lake and estuary as “a shallow, muddy reed bed” (Anon, 1951: 53).

Perhaps the most frequently cited comments about the state of the mouth related to the closure of the estuary mouth. Whilst records were provided to show that periodic mouth closure forms part of an estuary’s natural cycle, the St Lucia mouth closures were increasingly considered detrimental to the estuary (Kriel Commission, 1966:20). In the lead up to the Kriel Commission, the debate focused on whether the process of mouth closure was natural or not (SCADCO, 1973). The NPB’s stance was that, although mouth closure was natural, closure was becoming more frequent and this was interfering with the connection of the estuary to the sea (Kriel Commission, 1966: 20). This view proposed that mouth closure was unnatural. Much of the focus of debate within the NPB and with commissioned scientists was on the connection of the estuary to the sea. This connection was described as “vital”, especially the function of “[permitting] entry of marine organisms into the Lake” (Kriel Commission, 1966: 20). Despite describing mouth closure as natural, the consensus was that a closed estuary mouth was not favourable. This was reflected in the Kriel Commission report (1966: 20) – “the existing mouth was said to be closing and would close permanently were it not periodically opened.” An open mouth was described as “desirable”, allowing the

¹⁵ SCADCO was formed in 1968.

“system [to be] at its best” (Kriel Commission, 1966: 18, 120). This ‘survivalist’ discourse adopted by government to argue for the need for a ‘natural system’ was reinforced by evidence of the impact of mouth closure on the system. Historical records showed that:

“Since as early as 1823 it has been known that the Estuary Mouth as St Lucia closed periodically. This normally has a very drastic effect on the life in the Lake and occasions where dead and dying fish were trapped just inside the Estuary are known” (Kriel Commission, 1966: 118).

This functioned as a reassurance to the public and other concerned stakeholders that the current conditions were not unusual and also provided justification for the need to keep the mouth open. It must be noted that while the Kriel Commission was a national government commission, it relied on the work of scientists and engineers as commissioners to research and compile the report¹⁶. Thus, the ‘survivalist’ discourse was dominant during this period and was being used by both the NPB and other stakeholders. This can be seen by the dramatic language used to describe the condition of the St Lucia estuary and mouth and the dependence on scientific experts to provide solutions to the perceived environmental problems.

5.4.2. ‘Fishing conditions are deteriorating’: The effect of mouth closure on human activities

The evidence reveals an anthropocentric discourse about effect of mouth closure on human use. The anthropocentricity of the debate around the management of the St Lucia mouth was evident in the official discussions at this time, even at this early stage. Whilst those affected by the changes occurring in the St Lucia lake and estuary were concerned for the well-being of the system, it was clear these concerns were not for the sake of the natural system itself. A commonly cited concern about the state of the estuary and mouth was that the fishing conditions were deteriorating (Kriel Commission, 1966). St Lucia has a reputation of being one of the best angling venues in the country. The tourism potential of St Lucia was described in the Kriel Commission (1966: 86) as an “angler’s paradise” that could be “even better in the future”. This stimulated the fledgling tourism industry in St Lucia. Thus, in the light of St Lucia’s revenue earning potential, the siltation of the mouth became a concern

¹⁶ See list of commissioners in this Chapter’s introduction

for the government. Fishing conditions were described by the St Lucia conservation managers and scientists as having “greatly deteriorated” and there were calls for action to be taken to “restore natural conditions [that are] favourable to fish life” (Kriel Commission, 1966: 24).

Although relegated to the background of the public debate, the effect of the changes in St Lucia on the adjoining sugar cane fields was also of concern to the NPB. Sugar farming was of significant commercial importance and, consequently, solutions were demanded for the damage to the crops and farming potential caused by upstream flooding due to a blocked estuary mouth. The siltation of the estuary was caused by the large scale clearing of the wetlands in the Umfolozi Valley and consequent removal of silt during flooding and its deposit in the estuary (Kriel Commission, 1966). This led to the increasing frequency of mouth closure. These concerns about siltation and mouth closure had to be considered, however, in the context of the effect of sugar farming itself on the St Lucia system. These changes to the St Lucia and estuary mouth are clearly recorded in statements such as the following:

“In the 1950s the combined St Lucia-Umfolozi mouth blocked up, raising water levels which began to flood the upstream sugar cane. To alleviate this, the then department of Irrigation dredged a separate mouth for the Umfolozi, just south of the estuary” (GSLWPA, 2004a).

While these concerns were evident predominantly within the Kriel Commission, there were comments from the public on the impact of farming along the Umfolozi Flats on the functioning of the St Lucia system, with one member of the public remarking that “the original deep St Lucia Bay has silted up and now there is little left” (Anon, 1951: 53). These allegations were not widespread in the public arena. This was due to the fact that many of the sugar farmers were influential businessmen and politicians. For example George Heaton Nicholls was a well-known sugar farmer in the Umfolozi Flats and a prominent politician. He was the first president of the Umfolozi Cooperative Sugar Planters (UCOSP) and became a Member of Parliament for Zululand (Heaton Nicholls, 1961; Brooks, 2003). The priority of sugar farmers was the capitalist enterprise of extensive land cultivation, which was enabled through the national and provincial government support for economic growth for the area.

A stakeholder group that supported the economic growth discourse included the independent scientists who undertook commissioned studies of the St Lucia area at the time (Kriel Commission, 1966). In acknowledging the issues raised by both the sugar farming associations and the NPB, some of these scientists were of the opinion that the cultivated state of the Umfolozi Valley was an improvement for the St Lucia area, i.e. agriculture was preferable to the potential state the area if unused (Weiss and Midgeley, 1976). Weiss and Midgeley (1976: 2) stated that the Umfolozi Flats had been a ‘waste of space’ previously, as it was “an inhospitable malaria-infested swamp” prior to cultivation. Thus this view presented a strong ‘Promethean’ discourse (Dryzek, 1997). The scientists acknowledged that there were problems but argued that these could be overcome through engineering solutions (Weiss and Midgeley, 1976).

The descriptions of mouth management can therefore be understood through the ‘frames’ or discourses that were used by the different stakeholders (Laws & Rein, 2003). Whilst such discourses recognised Nature as a separate entity from people, no stakeholders espoused ‘green’ discourses, such as green romanticism or green rationalism which considered Nature as equal to humans (Dryzek, 1997). Thus, to many independent scientists and farmers (as discussed above) Nature existed there to be tamed. It was described as “wild” and “inhospitable” and needed to be managed so that it could become useful and not harm humans (Heaton Nicholls, 1961; Weiss and Midgeley, 1976). The instability of Nature needed to be controlled, as noted by Robert Crass¹⁷ (16/10/2003: online), a former Natal Parks Board employee:

“St Lucia is, however, highly unstable. The lake is so shallow that evaporation, in the absence of adequate inflows, may drastically reduce the water level in the course of a single season. Inflows consist of fresh water from rivers and sea water from the ocean. The marine connection is important for two reasons: the first is to maintain lake level when freshwater flow is deficient, the second is to allow movement of fish and other saltwater fauna into and out of the lake”.

As a result, most stakeholders were engaged in a ‘frontier’ mindset that drew strongly on the modernist economic growth and utilitarian discourses, which conceived of

¹⁷ Robert Crass was employed by the Natal Parks Board as a fisheries expert in the 1970s. He became a prominent manager for the wildlife authority in the St Lucia area.

Nature merely as a resource to be used for human progress and development (Dryzek, 1997). Thus measures and solutions were adopted that would promote economic growth and management of the natural environment to ensure its continued use as a resource for tourism growth. The sugar farmers and provincial government authorities viewed Nature as their tool to be used in order to achieve economic growth (Kriel Commission, 1966). While not all problems in the estuary were due to human intervention, this separation of Nature from people did allow farmers and the NPB to interpret Nature as a cause of the human-induced problems (Crass, 16/10/2003).

5.2. Causes of mouth closure

This section explores the perceived reasons for the closure of the St Lucia estuary mouth, i.e. the drivers influencing the state of the mouth in the 1940 – 1966 period. These can be divided into two main discourses, the ‘survivalist’ discourse and the ‘Promethean’ discourse, which influenced thinking about whether the causes of the state of the mouth were natural or due to human intervention. The storylines that emerged to explain these discourses around mouth closure were that ‘mouth closure was natural’ and that ‘human intervention caused the degradation.’

5.5.1 ‘Mouth closure is natural’

Many phenomena or variables of change in Lake St Lucia were deemed natural in origin, with their fluctuation accepted as part of a natural process and viewed as necessary to ensure the diversity of species in the area (Kriel Commission, 1966). This contributed to the view that natural processes were the cause of mouth closure which was associated with the both ‘survivalist’ and ‘Promethean’ discourses. The association with the ‘survivalist’ discourse was due to the dramatic language used to describe the changes in environmental conditions at the St Lucia estuary and mouth, in addition to the extensive use of scientific experts who were heavily relied on to define and provide solutions (Dryzek, 1997). The ‘Promethean’ discourse is exhibited in the promotion by the national government and the NPB of an open St Lucia mouth as the most favourable state as this state was the most beneficial for tourism and sugar farming in the St Lucia area (Kriel Commission, 1966). Much of the discussion that was generated by the Kriel Commission Report focused on the influence that the state of the Umfolozi catchment had on the estuary mouth, as well as references to the effect of the Umfolozi River on the St Lucia estuary and lake system (Kriel

Commission, 1966: 10; 78). In the Kriel Commission (1966: 178) the salinity variations in the lake were described as “natural”, as were seasonal weather fluctuations. In the view of the NPB, these changes were not seen as a threat, despite the fact that they had an impact on the natural environment of the lake. The dynamics of the natural system were seen as advantageous to the lake system as shown by the following quote from the Kriel Commission (1966: 116):

“... there is a continuous fluctuation in the salinity of the Lake and these natural fluctuations are unlikely to alter the eco-system of the Lake markedly and it appears that long-term fluctuations involving floods and periods of drought have a beneficial effect on the ecological system of the Lake.”

This storyline was supported by commissioned scientists and wildlife managers in the NPB. This is particularly evident as throughout the Kriel Commission Report natural processes were identified as causes of change in the St Lucia lake system. For example, littoral drift was seen as a natural process that shaped the coastline, particularly over the long term. As a result littoral drift was viewed as a benign threat in relation to other natural processes that were identified, such as the effect of sedimentation and mouth closure on the lake system which were also constructed as a natural process (Kriel Commission, 1966: 288). In addition, the closure of the lake mouth was viewed as a completely natural occurrence, occurring as a result of “littoral drift and wave action” (Kriel Commission, 1966: 296).

5.5.2. ‘Human intervention caused the degradation’: The impact of human activity on Lake St Lucia mouth

Through the Kriel Commission, human intervention was presented as the main drivers for change in the St Lucia estuary and lake. This was reinforced by the fact that the aim of the Kriel Commission (1966: 2) was:

“To ascertain whether any natural or artificial factors exist which affect the water of the St Lucia Lake in such a manner as to cause it to become gradually saltier and less suitable for the various forms of water life in the biological and ecological chain...”

Perhaps the most frequently cited ‘unnatural’ driver for change was the effect of the degradation of the Umfolozi River and its catchment. Development in the catchment

had been significant; this included modifications to divert water from the Umfolozi for agriculture, the dredging of a separate mouth for the Umfolozi, the expansion of agriculture in the catchment and engineering modifications to stop silting in the estuary (SCADCO, 1973). As a result of these changes, less fresh water was reaching the estuary and there was erosion and degradation in the Umfolozi catchment and swamp areas (Kriel Commission, 1966: 10, 20, 22, 34). The modifications of the Umfolozi floodplain by agriculture were identified as the cause of the problems in the St Lucia estuary, however, further modification and human intervention were deemed necessary; particularly the decision to “exclude” the Umfolozi River from the St Lucia estuary in 1951 (Kriel Commission, 1966: 80).

Catchment degradation was proposed as a significant cause of the siltation of the St Lucia mouth. It was recognised that while this was significant in the Umfolozi area, there was also damage occurring in other catchments, resulting in a very wide area of land transformation in the province. The NPB felt these changes in the catchment were sufficient justification for the remedial actions taken, as noted by Weiss and Midgeley (1976: 2):

“Intensified occupation and unwise land management of the catchment of the Mfolozi has, over the years, led to sharply increasing sediment yields, while drainage of the swamps for the planting of sugar-cane has given rise to silting problems in the lower reaches of the St Lucia estuary.”

One of the key remedial actions was the dredging of the St Lucia mouth area. This was managed by (but not under the authority of) the Natal Parks Board from 1957 according to “nature-based guidelines” (Porter et al, 1999: 69). The rationale for dredging was that it would remove the sediments that were accumulating at the estuary mouth which were causing the estuary mouth to close and compromising the marine environment. Fish and other marine fauna were not able to migrate into the lake to spawn and were also not able to move back out to sea to breed again as adults (Crass, 16/10/2003). The sedimentation and accumulation at the estuary mouth was one of the most visible results of the catchment degradation and was seen as the one of the main contributors to the state of the estuary by the NPB and the public (Barker, 13/05/2004).

While most of the catchment degradation was blamed on agriculture in general, there were some stakeholders who specifically identified the sugar industry as the main culprits. Public criticism during this period was vocal, with the sugar industry accused of being given ‘preference’ by government and being directly responsible for the state of the estuary and mouth area (Barker, 13/05/2004; Weiss & Midgeley, 1976). The criticism by the NPB and SCADCO, however, was clothed in technical terms in an effort not to blame the sugar industry directly. In addition, other reasons for damage besides sugar farming were given concurrently:

“In the past a small bay existed between the present Estuary mouth and the Umfolozi River to the South. As a result of drainage of the Umfolozi Flats for sugar cane planting, in addition to littoral drift, silt was carried into the bay” (SCADCO, 1973: 5).

The siltation and subsequent closure of the St Lucia estuary mouth was cited as the cause of many of the problems with the estuary. Mouth closure was presented as an unfavourable state of the estuary, particularly by the sugar farmers, and was described as “undesirable” (Kriel Commission, 1966: 18). In accordance with these views the pelican nesting failure that occurred between 1951 and 1953 were construed as a result of mouth closure (Kriel Commission, 1966: 120). Thus the dredging and manual opening of the estuary mouth was supported as a means of maintaining an open estuary mouth. This interpretation of the problem, as one that was caused by human intervention in the form of sugar farming, was formulated through the use of particular terminology and language. The opening of the mouth was described by government as a ‘restoration’ of the system to normal and thus mouth closure needed to be ‘prevented’ to ensure the estuary and lake were not left in ‘isolation’ from the sea (Crass, 16/10/2003). Emphasis was placed on the ‘revival’ of the system once the link to the sea was restored. This view was also consistent with that of the public. The changes that the public saw occurring were described as ‘alarming’ (Anon, 1951: 53).

Thus two prominent discourses are apparent in this discussion of the drivers for change at the St Lucia mouth. Firstly, the ‘Promethean’ discourse used most frequently by the NPB and sugar farmers in the St Lucia area. The focus on economic growth necessitated a close study of the state of the mouth as this influenced the current and future economic potential for the area. Secondly, the ‘survivalist’

discourse used mainly by the NPB and the public. As discussed, through ‘alarmist’ terms and language, the drivers for change at the St Lucia mouth were noted for their effect on the natural environment and the role of humans in bringing about these changes.

5.6 ‘Keep the mouth open’ – the policy response

The response of the NPB to these changes in the state of the St Lucia estuary and mouth area shows two things. Firstly, the way that the institutional practices of environmental decision-making by the NPB were established and secondly, the way in which they became entrenched in policy. The entrenchment of discourses in policy occurred through the emergence of coalitions that formed to support these decisions. This section examines, firstly the Government response (i.e. the ‘official’ response’) and then secondly the response of other stakeholders to the state of the mouth. These are examined in the context of the discourses that each response uses in addition to the discourse coalitions that developed. Both storylines presented below fall under the ‘keep the mouth open’ storyline embodied by the national government, primarily communicated through the report from the Kriel Commission (1966).

5.6.1 ‘Fix the Umfolozi problem’: the Natal Parks Board response

The primary focus in NPB decision-making during the latter half of the 1940 to 1966 period was the effect of the Umfolozi River on the St Lucia estuary. This was evident in the high frequency of policy responses and solutions apparent in the documentary data that addressed the Umfolozi River specifically, rather than solutions just for the St Lucia estuary and mouth. Control of this river was seen as the key element in managing the estuary and the first prominent storyline emerged – the need to ‘keep the mouth open’. Thus the policy response was to ‘fix’ the ‘Umfolozi problem’ and as a result the Umfolozi River was the focus of many technical reports and proposals from 1951 onwards (Kriel Commission, 1966: 12). This was not an issue that the government was dealing with independently. The Umfolozi Sugar Association¹⁸ were also involved with environmental decision making and had been the driving force behind the diversion of the Umfolozi River mouth in 1952. Up until 1952 the Umfolozi River entered the St Lucia estuary rather than the Indian Ocean. Due to the

¹⁸ Later known as the Umfolozi Co-operative Sugar Planters (UCOSP) or the Umfolozi Co-op.

canalisation of the Umfolozi by the sugar farmers in the 1920s, silt was being washed down the canal into the estuary, causing the estuary to silt up and the estuary mouth to close¹⁹. Nidia Brits, a former Reclamation Unit employee, whose father was also initially employed by the UCOSP²⁰, discussed how much emphasis was placed by the sugar farmers and the NPB on keeping the Umfolozi River mouth open to the sea. She stated that:

“...in 1952 he (her father) was asked then by the Umfolozi Sugar Association to come and open the Umfolozi mouth...it was being flooded...no, their farms were being flooded...so that was when he opened the mouth in 1952...but of course it made no difference because they had previously diverted the Umfolozi, the Umfolozi Co-op had diverted the Umfolozi...”
(Brits, 18/03/2005).

The option of diverting the Umfolozi or altering existing agricultural practices in the Umfolozi floodplain was not considered, thus solutions concentrated on managing the problem via engineering the river. These solutions were predominantly engineering-based and included building large sluice gates to restrict silt-laden water and canals to channel this water away from the sugar farms and the estuary (Kriel Commission, 1966; Barker, 13/05/2004). These solutions focused on the ‘maintenance’ of the natural system. Included in the management of the Umfolozi River was the drive to conserve the swamps and soil in the Umfolozi catchment area. This strategy was identified as crucial to the functioning of the Umfolozi and St Lucia systems and as a result emphasis was placed on controlling and managing the St Lucia estuary by ensuring that it was protected as a natural resource within a park reserve area (Kriel Commission, 1966: 118, 120).

An important aim of NPB policy was to maintain the open state of the St Lucia estuary mouth. However, more important was to reduce the effect of the Umfolozi River on the estuary system. The Kriel Commission (1966: 120) stated “it is essential for the mouth of the St Lucia Estuary to be kept open permanently.” Thus the key storyline of this period was to ‘keep the mouth open’. Reasons provided for this

¹⁹ Refer to the Background Chapter for further details of the Umfolozi River diversion.

²⁰ Her father at the time was employed by (UCOSP) in the newly-formed Reclamation Unit in 1952. During this period the Reclamation Unit remained under the authority of UCOSP. Responsibility for this dredging operation was ultimately transferred to the Natal Parks Board in 1988 (see the Background Chapter for details of other managing authorities between this time).

policy decision were focused on how essential it was for the mouth to be open for the benefit of marine life (Kriel Commission, 1966: 96). Proposals were submitted to the NPB by independent scientists in addition to commissioned scientist for studies on how to ensure the mouth was kept open, including proposals to make a second mouth from Lake St Lucia to the sea and bringing fresh water in from the Umfolozi River (Kriel Commission, 1966: 118).

The new work that was required to maintain this open system facilitated the formation of a new institution. The Reclamation Unit, initially formed by the UCOSP, was transferred to provincial government responsibility²¹ (Brits, 18/03/2005). The Unit's main task was to "overcome the silting problem started in 1951" (Kriel Commission, 1966: 296). This was done by continually dredging the estuary and mouth areas to ensure silt was regularly remove. Reclamation was seen as essential in the bid to keep the mouth constantly open and much deliberation and public money were spent on these efforts (Kriel Commission, 1966: 12). The purchase of dredgers and construction in the 1972 of a small harbour area on the St Lucia estuary at Honeymoon Bend to house them, accounted for a significant part of budget for reclamation (Brits, 18/03/2005).

Over time the efforts to maintain the open mouth became increasingly engineering based. This engineering approach was typical of the modernist instrumentalism and efficiency approach that enabled the promotion of economic growth. Thus it follows that the 'man over nature' storyline began to emerge. As Dryzek (1997) notes that those ascribing to this Promethean discourse believe that through technological innovation, humans are able to overcome any environmental problems that are presented to them. Proposals were submitted for the building of permanent structures in the mouth area in 1963 in order to 'protect' the mouth from natural processes (Kriel Commission, 1966). The methods were deemed "a matter of hydraulic engineering and economics" (Kriel Commission, 1966: 210). As mentioned, modification of the Umfolozi was seen as essential to assist in keeping the mouth open. This proposal formed part of many suggestions brought forward during and after the Kriel Commission (SCADCO, 1973). The construction of concrete structures at the St

²¹ Refer to the Background Chapter for further information on the Reclamation Unit.

Lucia estuary mouth only took place after 1966, which is after the period being addressed in this chapter.

The period between 1940 and 1966 was dominated by the build up to the Kriel Commission of Inquiry, the subsequent formation of committees and many ensuing reports. As a result of the “public outcry” that had developed by the end of this period, the national government felt compelled to investigate the problem of the siltation of the St Lucia estuary mouth (Crass, 16/10/2003: online). National government action was also prompted by concerns within the provincial conservation body, the NPB (Kriel Commission, 1966). Thus, it was concerns that were shared by both the government and the public, which culminated in the official government enquiry into the state of the Lake in 1966. The Kriel Commission itself, although stating that it was investigating an ‘alleged’ threat, concluded that the threats were very real and needed immediate solutions (Kriel Commission, 1966: 116). This survivalist thinking would prove to be an enduring discourse that is still prevalent today.

Whilst the Kriel Commission was effective in creating awareness of problems in St Lucia, its success in defining these problems and their solutions was not as effective. An NPB manager stated that further investigations and research were needed (Crass, 26/07/2005),

“academics, [...] at Wits and also Natal University immediately pounced on [the Kriel Commission] and tried to tear it to pieces, without much success really but nevertheless they did refuse to sort of go along with the recommendations as put down by the Commission and started saying that further investigations and research were needed and with agreement were put on SCADCO.”

As a result, when the St Lucia Scientific Advisory Council was formed in 1968, these academics were invited to sit on the Council. Together with government scientists, they contributed the scientific response to the St Lucia issues (Crass, 16/10/2003). Thus, whilst there were disagreements between the scientists and the NPB, they formed a discourse coalition based on ‘survivalist’ thinking (Crass, 26/07/2005). Their solutions were based on taming nature; controlling it in order not to disadvantage the economic growth of the region at that time. This was despite the rise

(at the time) in natural heritage protection, both locally and internationally (Carruthers, 1995). Thus while there were elements of both ‘survivalist’ and ‘promethean’ discourses, the ‘promethean’ discourse was a hegemonic discourse. A hegemonic discourse is one that is dominant and pervades all aspects of policy formation and application (Peet, 2001). This discourse which proposed the use of Nature as a resource for economic gain was one that was used within the government policy for the maintenance of natural areas. This could be seen within the government reports, where the state of the mouth and estuary were described using scientific evidence couched within a survivalist discourse that focused on the threats to the system (Kriel Commission, 1966). The engineering solutions proposed and implemented were justified due to the perceived need for drastic action (Kriel Commission, 1966). Due to science being strongly linked to modernist engineering solutions during this period, the aim of the solutions to the closure of the St Lucia estuary mouth was to control the estuary and lake systems and ensure their functioning was maintained and streamlined (Kriel Commission, 1966; Weiss & Midgeley, 1976).

5.6.2 ‘Set St Lucia right’: other stakeholder responses

Other stakeholders, including members of the public, sugar farmers and politicians, were heavily influenced by scientific opinion about what policies should be adopted (Anon, 1965). The majority of tourists and nature lovers from outside the area who visited were not significantly involved in the debate.

Solutions proposed were focused on keeping the mouth open and using dredging to maintain the estuary. The provision of a new mouth for the Umfolozi was agreed with, although there were some reservations that were noted, such as the fact that this “action would cause the mouth of the estuary to become completely blocked by sea action unless it was continually dredged (Anon, 1951: 53). This was contrary to the plans suggested by government and scientists (Kriel Commission, 1966). Thus, it was understandable that the NPB policy to keep the mouth open was dominant and that consequently a significant amount of government money was being spent on the proposals and solutions for the area (Kriel Commission, 1966). The wasting of money on ‘fruitless’ projects was cautioned: “the taxpayers’ money must be used wisely” (Anon, 1951). Thus, the amounts being spent on addressing the changes in St Lucia’s

natural environment, was considered an indication of public consent and approval as shown in the following quote:

“...tremendous public interest and of course the public interest did spill over into an amazing willingness to spend money because the Reclamation Authority handled huge amounts of money because it wasn't a cheap operation and then the (Natal Parks) Board convinced them to divert the Umfolozi water and that also cost a lot of money and just the mathematical modeling, [...], that took at least 6 million, which was a lot of money in those days. So the fact was that people were quite happy to see a lot of money being spent in an attempt to set St Lucia right. So right back in the early days the importance of St Lucia was fully recognised and people hoped that something effective could be done” (Crass, 26/07/2005).

The majority of public opinion favoured intervention in order to ensure public usage of St Lucia's natural environment could continue unabated. This utilitarian viewpoint reflects the beginnings of a 'wise-use' discourse. Whilst these stakeholders may have felt that they were advocates for protecting the natural environment, this was essentially for their own purposes, i.e. in this case, nature was regarded as a resource for human use (Whittaker & Mercer, 2004).

5.7 Conclusion

This chapter describes and analyses the development of management policies for the 1940 to 1966 period. Table 5.2 provides a summary. There were three epistemic notions that dominated society during the 1940 to 1966 period. While the overriding notion was to promote economic growth through the Promethean discourse, there was also societal thinking at this time natural resources should be protected for the nationalist purposes. This was also linked to the 'separate development' ideology of the National Party that had come into power in 1948 in South Africa.

The state of the St Lucia estuary mouth was described through the use of two main storylines. The NPB and the public were concerned that the 'natural conditions were under threat' and the fact that, as a result of these threats, 'fishing conditions as deteriorating'. While the dramatic language used to describe the state by both the public and the NPB is consistent with a 'survivalist' discourse, it was apparent that

the impact of human activity was only of concern due to the fact that these impacts and mouth closures would restrict the potential economic growth and recreational use of the area. This is associated with the ‘wise-use’ discourse. The causes of the state of the St Lucia mouth and estuary mouth were most strongly associated with both the ‘Promethean’ and ‘survivalist’ discourses. While mouth closure was described as ‘natural’, the driver for change and degradation at the St Lucia mouth was identified by the NPB as being due to ‘human intervention’ in the system.

Carrying the ‘survivalist’ and ‘Promethean’ discourses through, the policy response from the NPB concentrated on ‘fixing the Umfolozi problem’ as this was believed to be the correct route to ensure that the St Lucia estuary mouth remained open. The need for ready solutions presented an opportunity for a discourse coalition to form between the NPB and independent and scientific experts. The national government’s response, espoused most vividly in the Kriel Commission report, focused mainly on ‘keeping the mouth open’ and highlighted the importance of economic development in the area and thus drew strongly on the ‘Promethean’ discourse. The public response to the state of the St Lucia estuary and mouth highlighted the need to ‘set St Lucia right’ using whatever method was most effective, even if this meant further interference in the system in order to ensure continued human use of the system for

Table 5.2. Summary of the environmental storylines and discourses of the 1940 – 1966 period

1940 - 1966	Storylines	Class of environmental discourse (Dryzek)
Epistemic notions	‘economic growth’ ‘separate development’ ‘white nationalism’	Promethean
State of the mouth	‘natural conditions under threat’ ‘fishing conditions deteriorating’	Survivalist Wise-use
Causes of the state of the mouth	‘mouth closure is natural’ ‘human intervention caused the degradation’	Promethean Survivalist
NPB response	‘fix the Umfolozi problem’	Promethean/Survivalist
National government response	‘keep the mouth open’	Promethean
Public response	‘set St Lucia right’ ‘no interference’	Wise-Use Green Rationalist

recreation and agriculture. The 'no interference' lobby from the public, indicative of the 'green rationalist' discourse, was small in comparison.

The next chapter presents the next period, 1967 - 1984. This follows on from the Kriel Commission in 1966, discussing the implementation of plans initially proposed through the official report.

CHAPTER SIX

DISCOURSE ANALYSIS OF MANAGEMENT POLICIES AT THE ST LUCIA ESTUARY MOUTH

1967 - 1984

6.1. Introduction

This chapter provides the next period in the development of management policies for the St Lucia estuary mouth, covering the period of 1967 to 1984. This is the second period of the three examined, the first being 1940 – 1966 and the last period of 1985 - 2004. The starting point for this period is defined by the publishing of the Kriel Report, published in 1968, as a result of the official inquiry undertaken by the Kriel Commission from 1966. As with the previous period, despite the increase of information sources and commentary in newspapers, the Kriel Commission report remains an important documentary source as it provides a record of proposed policy responses that were intended to be implemented during the 1967 to 1984 period. The chapter is structured to mirror the elements of Hajer's (1995) discourse analysis and to focus on the storylines that became evident through the analysis. Thus, the sections are divided according to the storylines identified. Firstly in Section 6.2, the epistemic notions that dominated the thinking of this period are described. This is followed in Section 6.3 by an investigation of the state of the St Lucia estuary and mouth, including identifying the storylines that the stakeholders presented. These are then explored further in Section 6.4 with a discussion of the causes of the state of the estuary and mouth and, in Section 6.5, the official policy response to these causes in order to identify the key policy vocabularies and discourse coalitions illustrate the institutional practices. Section 6.6 presents the public response. Lastly in Section 6.7, Cyclone Demoina is introduced as a significant flood event that changed the state of the mouth and estuary and the thinking of the authorities. This provided a transition into the next period. Table 6.1 shows the key events of this period.

Table 6.1. Key events of the 1967 – 1984 period

Date	Event
1968	Kriel Commission Report published
1968	St Lucia Scientific Advisory Council (SCADCO) formed
1969	Groyne structures completed at the St Lucia estuary mouth
1972	World Heritage Site programme established by UNESCO
1973	Convention of International Trade in Endangered Species (CITES) adopted
1976	Charters Creek workshop
1979	St Lucia estuary mouth manually opened
1980	St Lucia estuary mouth manually opened
1982	Concrete intake works and Umfolozi link canal partially completed
1984	Cyclone Demoina

6.2. Epistemic notions: ‘Man over Nature’

This period was characterised by a global increase in environmental awareness. This can be attributed to a rise in concern, originating in the United States, about air and water pollution and people’s contribution to these environmental problems. These issues were further described and criticised in Rachel Carson’s influential book, *Silent Spring*, published in 1962 (Carson, 1962). Public concern began to grow and, as a result, a more cohesive environmental movement began to emerge (Kline, 1997). This in turn, facilitated the development of international cooperation between environmentally orientated organisations and bodies, e.g. the United Nations Environmental and Social Committee (UNESCO), established in 1945 and the Convention on International Trade in Endangered Species (CITES), adopted in 1973. Also significant was the Convention Concerning the Protection of World Cultural and Natural Heritage held in 1972 by UNESCO, which established a programme of World Heritage sites (UNESCO, 1972). Thus, the idea of ‘collective assistance’ bound them together in an international community with the shared aim of assisting States with environmental protection (UNESCO, 1972: online). With the world becoming more accessible, important natural areas and fauna could be monitored and news of their well-being broadcast more easily (Young, 1997). Thus the epistemic notions during this period consisted of a range of discourses that were global rather than national, as they tended to be in the previous period.

This period also saw the rise of a new value system being associated with the natural environment. The intrinsic value of the natural environment was recognised, as well

as its value beyond the existing generation, stressing the intergenerational nature of environmental conservation issues (CITES, 1973: online). This new focus on intergenerational environmental protection established the roots of the sustainable development discourse during this period. International environmental cooperation developed concurrently with the extensive use of science in finding solutions to the many environmental problems that were identified, leading the way for “environmental regimes” of thought to be created beyond this period (Young, 1997: 87). This echoed strongly with the principles of environmental stewardship which were also gaining prominence during this time. Environmental stewardship is rooted in religious (particularly Judeo-Christian) principles and was becoming prominent just prior to and during this period. Palmer (2006: 66) notes that there was an “upsurge in the use of the word ‘stewardship’ in the 1950s and 1960s”, which created a definition that was removed from the religious context. Environmental stewardship was a way of regarding humans’ relationship with the environment in which humans’ value and therefore care for the environment (Berry, 2006). The non-religious context was also borne out of concern that the ever-growing industrial development during this period of high modernism was exploiting nature and thus there was a need to protect the environment in the interest of society and future generations, despite the fact that this was an anthropocentric way of thinking (Palmer, 2006).

Whilst these values associated with international environmental cooperation and environmental stewardship were gaining prominence, they continued to exist alongside the ongoing promotion of capitalist principles in South Africa (Feinstein, 2005). The discourse of economic growth was identified as increasingly important for the South African economy, particularly during this period as there was a temporary slowing in economic growth at this time; this included the agricultural sector (Feinstein, 2005).

The apartheid government in South Africa had firmly entrenched their political ideals of separate development of the races since 1948 and, as a result, a period of consistent economic growth and increasing environmental protection were strived for in order to further achieve the South African government’s aims of creating a self-sufficient, protected white society (Bond, 2000).

6.3. The State of the Mouth

During the period 1967 - 1984 the condition of the St Lucia Estuary mouth was viewed similarly to the way it had been in the preceding period. Thus, the natural conditions were still considered to be under threat by both the authorities, farmers and the public. There was more emphasis, however, on the advantages of an open mouth for the estuary. Two discourses relating to the mouth were dominant during the 1967 – 1984 period. The storylines relating to these discourses were that “St Lucia was dying” and that there was a need to “keep the mouth open”.

6.3.1 ‘The death of St Lucia’

The focus during this period was not only on the threat to the natural conditions at the St Lucia mouth but also on the actual deterioration of the environment. There were concerns that the damage was becoming irreparable, with a St Lucia fisheries manager noting that the changes that were occurring “spelt doom for all the fish and other life in the southern lake” (Crass, 1974: 1). These concerns were expressed through the use of increasingly dramatic and negative language and metaphors. People spoke of the “death of St Lucia”, raising concerns that the lake would never recover (Crass, 1974: 1; Crass, 1976: 5-6; Taylor, 10/05/2004).

During this period, in addition to a concern about the threats to St Lucia, there was also a focus on the sensitivity of the St Lucia lake, mouth and the systems that sustained them. Of particular concern at this time was the high salinity and lack of fresh water that were affecting the natural conditions (Pegram et al, 1988). The NPB acknowledged that these conditions were extreme, noting that “urgent relief” (Mercer, 1973: 1) was needed and that salinity was rising to “unprecedented heights” (Crass, 1979a: 3). It was also recognised that the strong public reaction was understandable considering the ecological importance of St Lucia (Heydorn, 1976). Despite this, the public response was still deemed an “emotional response” that was stimulated by the press (Crass, 1976: 5-6). Together, the press and public were called “prophets of doom” (Heydorn, 1976: 3). Although high salinities and low fresh water levels were acknowledged, these were described by scientists as not uncommon and not cause for the concern, as noted below:

“...the [...] salinity in the lake is not a problem..... high salinities are common in systems throughout the world, but that this does not mean that these systems are destroyed” (Pegram et al, 1988: 11).

There was temporary relief from the drought in the form of floods in the early 1970s after which the lake returned to normal, allowing for the recolonisation of marine life. However, it is interesting to note that St Lucia was described as a “ghost town” during the drought years (Crass, 1974: 2-3). There also remained ongoing concerns from the public that the damage was irreparable and that “you can’t turn back the clock of history” (Crass, 26/07/2005). The use of dramatic language and metaphors by the NPB and the public when addressing the deterioration of the natural conditions are evidence of what Dryzek (1997) categorises as a ‘survivalist discourse’.

6.3.2 ‘Keep the mouth open’

The concerns for the St Lucia estuary and mouth during drought years cultivated a growing interest being in the benefits of manually opening the estuary mouth, in order to maintain and not “disrupt” the conditions that had ensued for a “lengthy period” (Gordon & Lillevang, 1971: 4). The NPB presented opening the estuary mouth as the most favourable option and increasingly justified this decision by describing the conditions in the lake in scientific terms. This allowed them to define the lake in a scientific context, thus asserting the NPB as the experts in managing the St Lucia lake and estuary mouth. This process of describing the St Lucia estuary in scientific terms is shown by the following quote from Robert Crass, a NPB manager at the time:

“In its natural condition Lake St Lucia was the most magnificent scientific instrument you can imagine for illustrating climatic fluctuation because as soon as you reduce the rainfall, immediately you’re going to get reduced level of the lake and increased salinity. The point is that it has always been subject to fluctuation. Historically, long before any development affected the catchment, there were periods when the mouth closed, there’s no question about that but it’s completely changing the system if the mouth remains closed for more than a certain time” (Crass, 26/07/2005).

Thus, whilst mouth closure was described in places in policy literature as completely natural, as illustrated above, there was a trend towards ensuring that this natural mouth closure was permitted to occur less and less (SCADCO, 1973). The negative

impression associated with mouth closure was spurred on by ideas that mouth closure exacerbated problems already existing with the St Lucia estuary and lake systems (Crass, 1974). Authorities made frequent mention of ‘improvements’ needed to be made at the St Lucia mouth and this was ultimately the justification used for introducing a continuous dredging programme in the estuary mouth (Gordon & Lillevang, 1971; Midgeley, 1980). The drama associated with the mouth was also heightened with descriptions of the mouth as a “battlefield between the waves [and] incoming tides” (Blok, 1980). Note that the mouth was described as a natural battle between elements of nature, in which there was no human interference (Blok, 1980). Thus the role of ‘Man’ as the chief agent of intervention was identified as important and positive, i.e. ‘Man’ was intervening in order to save the system from itself. Interestingly, the authorities almost ‘wear two hats’ in this period, as they shifted to the discourse of ‘administrative managerialism’ during this period. Within this approach, expert scientific explanations are provided for the problems at hand. Through the use of science to define the state of the mouth, the NPB is able to firstly provide the knowledge about the problem and solutions related to the mouth and then, construct the dominant definition of the problem. The above discussion of the ‘improvements’ needed in St Lucia at the estuary also indicates that a utilitarian discourse was also being used by the NPB and farmers, as they were willing to intervene in the environment in order to ensure that the needs of society are met. Whittaker and Mercer (2004) describe this as a ‘wise-use discourse’.

Thus, the evidence related to the state of the St Lucia estuary and mouth reveals that there are three identifiable environmental discourses. Firstly, a ‘survivalist’ discourse used by the NPB and the public, which Dryzek (1997) identifies as containing many metaphors centred on doom and redemption associate with finite natural resources. Secondly, an ‘administrative managerialism’ discourse, which is characteristically focused on bureaucratic organisation and scientific knowledge as the appropriate response to environmental problems (Dryzek, 1997). Thirdly, a ‘wise-use’ discourse which was used by the NPB and sugar farmers in St Lucia in which the focus was on intervention in the natural environment to ensure human needs were met.

6.4. Scientific explanations for the causes of the state of the mouth

This section explores the reasons provided by stakeholders for the change in conditions at the St Lucia estuary mouth, i.e. the drivers influencing the state of the mouth. Due to the predominant use of science by the authorities during this period to provide explanations for the conditions, the main discourses are heavily influenced by the premises of scientific discourse. The Kriel Commission published at the start of this period was precipitated by preceding scientific studies, and based on the production of knowledge contained through this period.²² A workshop was organised by the St Lucia Scientific Advisory Council (SCADCO) in 1976 at Charters' Creek²³. This provided a significant event towards the end of this period for the preceding scientific studies to be gathered, presented and recorded. Thus there was a culmination of a wide range of scientific research questions that had been asked during this period (Crass, 1979a). These questions were focused on which engineering solutions were most appropriate for the St Lucia system, in addition to understanding the system through ongoing hydrological, geological and biological studies (Mercer, 1973; Crass, 1979a).

As discussed above, the main justification provided by authorities for the state of the St Lucia estuary mouth was the closure of the mouth as a response to previous human intervention in the St Lucia estuary and mouth. This was identified as a “recurrent problem” which had been ear-marked for “major works” to be implemented” (Crass, 1979a: 4). Fluctuating weather conditions were also identified as a cause for the changes in conditions, as they were affecting the amount of fresh water entering the lake and thus the salinity levels of the lake (Dutton, 12/02/2004: 15).

“Probably no one would have listened to Dr James, if rainfall had been normal and the Lake fed with fresh water. A severe drought was drying up the rivers, however, and Lake salinity was rising to unprecedented heights” (Crass, 1979a: 3).

²² The preceding studies include two reports given to the, then newly formed, Natal Parks, Game and Fish Preservation Board in 1948. They were a preliminary report by a Professor Day on an ecological survey of the St Lucia area during July 1948 and a report by Col. D. E. Paterson, South African Harbour Engineer, on the silting problem at St Lucia (Kriel Commission, 1966)

²³ This workshop was hosted by the NPB. Presenters at the workshop were NPB managers, independent and commissioned engineers and scientists who had contributed or were contributing to ideas on the management of St Lucia (see Appendix E for a list of contributors and the presentations relevant to this research)

The NPB acknowledged, however, that the conditions of the St Lucia lake and mouth were predominantly due to the effect of human settlement and the subsequent development of the catchment (Crass, 1976: 2). Long-term usage of the Umfolozi floodplain had resulted in less fresh water being available for the estuary and had removed some of the valuable ‘filtering’ function of the Umfolozi Swamps (Heydorn, 1976). Similarly, the authorities were compelled to recognise that the process of manually opening and then maintaining an open mouth would contribute to an alteration of the state of the estuary. Keeping the mouth open required the introduction of hard engineering structures during this period, coupled with continuous dredging of sediment (Van Heerden, 1984). These modernist engineering interventions had a marked effect on the state of the St Lucia estuary and mouth area:

“Firstly, creation of the groynes and associated sediment trapping caused shoreline progradation in the vicinity of St Lucia mouth.... Secondly, the silting of the heaviest groyne on the north bank of the estuary led to sediment trapping in St Lucia Estuary mouth. That is, sediments supplied by the Mfolozi migrated along the coast to the estuary mouth where they ‘sat’, necessitating near continuous and expensive dredging operations” (Van Heerden, 1984: 8).

6.5. ‘Science-based policy’ – the policy response

The response of NPB to the changes in the state of the St Lucia estuary and mouth area represents, firstly, the way that institutional practices for environmental decision-making were continued and secondly, the way in which they became further entrenched in policy. The entrenchment of policy occurred through the use of science to define problems relating to the estuary and mouth and the continuation of coalitions that had formed to support these decisions in the previous period. Thus, this section examines, firstly the Government response (i.e. the ‘official’ response’) and then secondly the response of other stakeholders to the state of the mouth. Responses to the science based policy making of this period include discourses of ‘Man over Nature’, ‘development is a priority’ and ‘administrative managerialism’.

6.5.1. ‘Managing the mouth’ - the realm of the engineers

“Ever since the initial proclamation of the St Lucia Game Reserve on 27 April 1897, the consensus has been that the Lake and its shoreline are to be

maintained in its natural state, or at least as close to its natural state as possible. Differences of opinion have arisen over what should be done to maintain the system and how it should be done” (Crass, 1976: 2).

The focus of the authorities during this 1967 – 1984 period was keeping the St Lucia estuary mouth open (Crass, 1974: 3). Thus, the focus was on ‘controlling’ the system to ensure that the state of the mouth could be managed accordingly (Gordon & Lillevang, 1971: 53). The proposed solutions were to use ‘man-made’ structures that were primarily engineering-based. As noted by Freer (2003: 8), a former manager of EKZNW and the NPB,

“The initial management approach was to dominate the natural processes – by extensive dredging and the construction of hard structures to maintain a narrow mouth channel. This stabilised the position of the mouth and it was hoped that, by being narrow, the mouth would be self-scouring.”

This domination of the St Lucia mouth and estuary through the use of modernist concrete structures led to this period being retrospectively described as belonging to “the realm of the engineers” (Taylor, 10/05/2004). This was further highlighted through the constant positioning of humans as the source of power that would save the system from itself. Human beings were positioned as intervening in the battle between the forces of water at the estuary mouth (Gordon & Lillevang, 1971). The importance of keeping the mouth open was emphasised frequently in NPB meetings and policy documents, with the most common reasons being for the benefit of marine life and for recreation reasons (SCADCO, 1973). An NPB memorandum stated that (1984: 5): “The Chairman commented that, because of political factors, the estuary mouth must be kept open, despite the ecologist point of view that matters be left in the hands of nature.” An initial solution proposed during this period by the authorities was a groyne system²⁴ at the St Lucia estuary mouth. Whilst this was presented in policy documents as a suitable conclusion to the “extensive hydraulic model study” that had been done in 1963 by the CSIR²⁵, Gordon and Lillevang (1971) expressed doubts over

²⁴ Groynes are “shore protection structures” that are built along a shoreline or as part of an inter-tidal zone and are used to change the way the shoreline responds to wave action and tidal conditions (Reeve et al, 2004: 322). In an estuary groynes may be built as single structures or, in the case of St Lucia, two parallel structures extending out from the estuary mouth (Cooper et al, 1999).

²⁵ This study was commissioned by the Natal Provincial Administration, which was the provincial body managing the Natal Parks Board (Kriel Commission, 1966).

the reliability of the study and the cost of building and maintaining the berms (SCADCO, 1973). However, despite these worries the concrete structures were completed in 1969 and maintained for the majority of this period (Cooper et al, 1999). As stated by Gordon and Lillevang (1971: 1, 2), the system ensured the St Lucia estuary mouth was kept open and that it enabled “man to manage the mouth”. The concrete groynes are shown in Plate (e). Plate (f) shows the concrete intake works built in 1982, the aim of which was to remove silt from the Umfolozi River before it reached the estuary. Plates (g) and (h) show the mouth of the St Lucia estuary being manually opened in 1979 and 1980 respectively (Appendix C).

During this period the Reclamation Unit played an important part in managing the St Lucia estuary and mouth. The Unit was established in 1952 by the sugar farmers of the Umfolozi (UCOSP) in order to divert the Umfolozi River and take charge of the subsequent dredging of the silt that regularly accumulated in the estuary (Brits, 18/03/2005). The Unit was in existence throughout this period, although its management changed often during this time (from 1966 to 1988)²⁶. The Unit was thus part of the decision by the NPB and independent scientists that the establishment of a permanent link between the Umfolozi River and the St Lucia estuary was a more efficient solution to get fresh water into the estuary. During this period this solution was frequently identified as the scheme that should be prioritised above all others that were suggested (SCADCO, 1973). This was because in scientific circles it was understood that the fresh water in the diverted Umfolozi River was going straight out to sea, while it could have been used to reduce the salinity in the St Lucia lake and also reduce the need to keep the estuary mouth permanently open (Crass, 26/07/2005; Mercer, 1973).

The plan to divert the fresh Umfolozi River water was decided on after extensive hydrological and engineering-based studies that were commissioned by the authorities. A civil engineering consultant, Mr. Mercer, played a significant role in researching and collaborating with the authorities, along with Dr Hutchinson from the Hydrological Research Unit of the University of the Witwatersrand (Crass, 1973; Midgeley, 1982). Dr Hutchison used a simulation model which allowed authorities to

²⁶ Refer to Table 3.2 (Chapter 3) for the changes in Reclamation Unit managing authorities.

determine the effectiveness of various engineering methods of addressing the salinity problems. Thus, whilst mention was made of “discussions with biologists”, the focus during this period was exclusively on solutions offered through engineering structures, predicted on the preceding mathematical modeling studies that extrapolated the engineering solution. Potential solutions offered by the natural environment itself were not explored during this period (Mercer, 1973: 6-7).

The construction of the ‘link canal’ in 1973, between the Umfolozi River and the St Lucia estuary, included the construction of an intake works station through which it was planned that the Umfolozi water would pass through on its way to the St Lucia estuary (Midgeley, 1982: 1; Pegram et al, 1988: 2). Throughout this process it was necessary for the authorities to liaise with UCOSP in order to obtain approval for the engineering works which was situated on private land (Mercer, 1974: 1). The completed intake works are shown in Appendix C, (f). Despite the support for this solution, there was some disagreement from members of the St Lucia Technical Committee²⁷ of SCADCO regarding the effect that the ‘link canal’ would have on the fauna of the area around it, with one member remarking that the canal was an “ecological disaster” (Van Heerden, 1984: 11). The engineering response was that “numerous mathematical model tests” had determined that the ‘link canal’ was the best method to increase the amount of fresh water entering the St Lucia estuary (Pegram et al, 1988: 9).

Lastly, dredging continued to be a solution proposed and used by authorities to mitigate problems being experienced with the siltation of the St Lucia estuary mouth. Dredging was used to prevent silting up and the closing of the mouth. Authorities reiterated the necessity of an open estuary mouth being maintained and thus the role of the Reclamation Unit remained important during this period (Mercer, 1973). One wildlife manager remarked that “without the efforts of the Reclamation Unit ... over a period of more than 20 years the whole St Lucia system would have been throttled by silt blocking the Estuary ... the Unit was “an indispensable part of management” (Crass, 1974: 2; Crass, 1976: 5). In addition, despite the long-term need for the

²⁷ The St Lucia Scientific Advisory Council had two special committees, namely the Ecological Committee and the Technical Committee. Through regular meetings and symposiums, members were able to provide professional input for management carried out in NPB conservation areas in and around St Lucia (Ricky Taylor, 10/05/2004)

dredging operation, its occasional use remained less costly than the groyne scheme completed in 1969 which, before completion, was predicted to cost approximately R1,75 million (Natal Parks Board, 1970a).

The dominant discourse in the management policy for St Lucia was that of ‘Man over Nature’ through the implementation of engineering solutions and the focus on scientific studies – ‘science based policy making’ (Hajer, 1995). This was explicitly evident with the construction of the groyne system at the St Lucia estuary mouth. The ‘Man over Nature’ discourse has its roots in the concept of ‘creative destruction’ within the context of ‘implementing’ modernity (Harvey, 1989). In the context of St Lucia, the authorities felt that development necessitated changing the natural environment through the construction on new physical structures. As described by Harvey (1989: 16) “you simply cannot make an omelette without breaking eggs.” The anthropocentric ‘Man over Nature’ discourse correlates strongly with the ‘administrative managerialism’ discourse in which the natural environment is seen as subordinate to humans, who are set apart through their problem-solving skills and can ‘manage’ the environment (Dryzek, 1997).

6.5.2. ‘Creating imaginary pasts’ – the influence of computer modeling

A new technique for measuring and influencing the drivers for change at the St Lucia estuary mouth came into use during this period. The use of computers and simulation modeling to interpret data collected on the St Lucia system was introduced to authorities through already-established partnerships with academia and engineering consultancies (Midgeley, 1982). Part of this work was done by independent scientists as part of their private research, whilst the majority was commissioned by the NPB. The aim of using these models was to aid policy decisions regarding the St Lucia mouth and system as a whole. Provincial managers within the NPB felt that there were tremendous benefits to the use of computer modeling (Mercer, 1973). Members of the St Lucia Technical Committee (SLTC) felt that it would add benefit to the research already done on the St Lucia system and that the modeling would provide more “intensive” research (Mercer, 1973: 7). In addition, it was felt that computer models, because they undertook simulations of reality, may also even remove the need for testing methods of management in the actual field and allowed managers to

see options that were previously not able to be considered (Crass, 1979a; Midgeley, 1972).

Whilst the NPB in general supported computer modeling, there was opposition from within the NPB in St Lucia, with a few managers very hesitant to put their faith in these new technologies (Crass, 1979). Criticism centred on what they felt was lack of substance in results of the models and simulations produced, in addition to the influence of the novelty effect of “neat computer-drawn graphics” (Crass, 1979a: 5). There were also doubts over the applicability of the simulations to the needs of practical management, leading to one committee member of the SLTC stating that if St Lucia’s problems were to be solved, “any money is better spent on good data collection in the field than on theoretical model studies” (Crass, 1979a: 5). Thus, not only were there questions over the relevance of academic work in providing solutions for the state of the St Lucia estuary mouth and system, but the high hopes generated by these models were also cautioned, as shown in the following quote:

“[the] mathematical model system [is based] on an attempt to simulate virgin conditions, as existed before recent changes.... [T]he simulation is based on such inadequate data that it seems to be of academic interest only.... [S]o therefore the best part of the [...] model is no more than an attempt to invoke an engineering miracle, to create an imaginary past” (Crass, 26/07/2005).

This partnership between the NPB and academia presents strong evidence of a discourse coalition during this period. As shown above, both the NPB and the academics/consultant engineers espoused similar or overlapping storylines and discourses. This is defined as a discourse coalition by Hajer (2005). Thus, while it was a coalition with the same overall discourse of ‘the need to address the St Lucia estuary problems scientifically’, there was strong evidence that the partnership was fraught with contests over whether the mathematical modeling of understanding the St Lucia system was the most accurate basis for policy-making. In addition, this contestation extended to who had ‘ownership’ of the dominant knowledge and solutions generated through the decision-making process (Blok, 1980).

6.5.3. 'Development is a priority'

Although not a direct policy response to the closure of the St Lucia mouth, the influence of the need for economic development continued in all decision-making and policy during this period. As discussed in the previous chapter, the economic and tourism value of St Lucia had already been noted in reports, most prominently in the Kriel Commission (Kriel Commission, 1966). St Lucia had been recognised as a unique growth point due to both its natural beauty and its recreational potential that could be harnessed apart from the wildlife areas (Little and Phelan, 1976: 1). Thus, development plans for the area during the 1967–1984 period included recommendations that St Lucia “should be developed on a more recreational basis” (SCADCO, 1973: 1). One of the more interesting schemes proposed was the creation of an ‘Everglades’ type of development. The main aim of this was to create tourism interest in an area of waterways and islands within the St Lucia estuary area that would allow for the launching of nature tours (SCADCO, 1973; Crass, 1979b). This idea was not followed through as it was deemed impractical due to the expense and the extent of area involved (SCADC), 1973).

However, the focus on the development of St Lucia was mainly for the increasing need for agricultural facilities and resources, as well as the infrastructure needs of a growing local and regional population. This was spurred on by the economic benefits that were being realised from sugar farming in the Umfolozi River valley, with sugar placed as South Africa’s second-highest money generator in terms of exports during this period (Weiss and Midgeley, 1976: 2). Thus despite the recognition of the importance of St Lucia’s natural assets for the economic development of the area, the economic value and importance of the sugar farming in the Umfolozi floodplain resulted in the sugar industry continuing to remain as an important stakeholder in policy making. Accordingly, it was noted by the NPB that the agricultural sector was always going to be competing for resources with the use of St Lucia’s natural assets for tourism purposes (Crass, 1976). This provided further explanation for the constant consultation of the sugar farmers by the authorities in relation to decision making about St Lucia’s development. Weiss and Midgeley (1976: 6) described the decision-making situation when they stated:

“It [was] evident from the various measures proposed that the interests of the Mfolozi sugar farmers and of the St Lucia authorities [had] become intimately mingled and [could not] logically be tackled unilaterally.”

Thus whilst existing alongside the ‘administrative managerialism’ and ‘Man over Nature’ discourses, the Promethean ‘economic growth discourse’ proved to be a dominant and continuing strand of influence in the management of policies for the St Lucia estuary.

6.5.4. The role of research in planning for the future

A strong focus for the NPB in St Lucia was research into the preservation of the natural system and the use of the outcomes to provide solutions to the existing problems in the St Lucia system and to plan for the future demands on the system. One of the most effective ways of achieving this was to focus on undertaking quality research on the St Lucia system, including the estuary mouth as a basis for management. Crass (1979a: 4) states this aim clearly:

“Our overall management goals are simple: first, to maintain the integrity and diversity of the natural habitats and their associated biota, and secondly, to allow human use of the area consistent with the first goal.”

The use of engineering work in the estuary and mouth area was seen as playing an important role in the preservation of the system and thus applied research was also prioritised in the research agendas during this time (Blok, 1976).

There was a strong emphasis from the NPB on the research having “practical outcomes” and being beneficial to the system and the taxpayer, although what these outcomes should be was a point of debate (Crass, 26/07/2005). This emphasis resulted in a continuing significant research involvement from university departments from across the country, relevant national and regional government departments and engineering consultancies and scientific bodies, including the Oceanographic Research Institute (ORI) and the Council for Scientific and Industrial Research (CSIR). Their research contributions on the St Lucia system spanned a very broad range of topics (Crass, 1974). During this time research responsibilities were divided into two broad areas, with the Reclamation Unit forming the base for all physical,

hydrological and engineering investigations, whilst biological research was solely the remit of the NPB (Natal Parks Board, 1971: 1).

An important role in fostering research was played by the St Lucia Scientific Advisory Council (SCADCO). SCADCO was appointed by the Provincial Administration in 1968 as a recommendation of the Kriel Commission (Crass, 26/07/2005). The Council consisted of two committees – Ecological and Technical. The role of SCADCO and its committees were extremely important to the management of the St Lucia estuary and mouth during this period. However SCADCO, towards the end of this period was viewed as an advisory body rather than a decision-making body (Crass, 1979). Despite this, it did form an important focus for solution-generation for St Lucia and connected well with the future planning that was taking place. Workshops, such as that held at Charters Creek in 1976, proved valuable in gathering and presenting the research that had been undertaken (Crass, 1979a: 5). There was a growing emphasis on ‘planning for the future’ of St Lucia (Crass, 1974). It is also important to note that the main aim of scientific research in general is to ‘explain’ and ‘predict’ and it was the latter aim that formed the focus of research in this period. In addition, in the context of the management of the St Lucia estuary mouth, the description of St Lucia in as an ‘ecological system’ was a common policy vocabulary that was used to justify dominant research streams and management decisions.

6.5.5. The battle for scientific dominance

Throughout the policy-making process it was evident that the definition of problems and solutions at St Lucia was being contested between two main scientific disciplines within the scientific domain of the NPB. This contest was between biology and engineering as an applied science. Whilst there was recognition by the authorities that biology played an important disciplinary role in understanding the problems, it was engineering that would find solutions and implement them (Crass, 1976). Engineering as an applied science thus dominated the policy making process. During the earlier part of this period the policy documents asserted that the role of biologists was to explore and report on conditions in the St Lucia estuary while the actual definition of problems and creation of solutions was the domain of hydrologists and engineers. For example, Gordon (28/05/1968: 10), an engineer who worked closely with the NPB,

when discussing the issue of controlling lake salinity (1968: 10) reiterated this by asserting that “the ecologists must discover the precise conditions needed...the others (the engineers) must create them artificially.”

However, towards the end of this period, in the late 1970s and early 1980s, there was a shift and biological ways of thinking once again became more prevalent in policy. Thus, despite the existing dominance of engineering mindsets and techniques, the advisors and managers within the NPB began to emphasise the importance of “biological intuition” (Heydorn, 1976: 7). This gradually resulted in a change in thinking, culminating in statements in the late 1970s in policy that were very supportive of the role of biology in decision-making, such as the following from an NPB manager:

“while hydrologists and engineers are qualified to judge the technical possibilities and probable effect of physical management, subject to the provision of adequate data....it is up to the biologists, to state which of the possible management options are, in fact, acceptable” (Crass, 1976: 6-7).

In early 1984, fluctuating and high salinities in the St Lucia estuary were described by a fisheries expert as being not problematic:

“[The fisheries expert] replied that, despite the apparent poor mandate given to the engineers, it is his opinion that salinity in the lake is not a problem. He said that high salinities are common in systems throughout the world, but that this does not mean that these systems are destroyed. He said that from what has been learnt in the last eight to ten years, it is his opinion that the lake ‘problems’ were wrongly described, although it is recognised that fresh water is an intrinsic part of the system” (Pegram et al, 1988: 11).

This presented a change in conventional thinking regarding the management decisions regarding the St Lucia lake and estuary. Thus the most significant part of the above quote is the assertion that the problems with the St Lucia lake were not in fact problems at all and that the ‘problem’ was the problem was wrongly defined.

Despite the conflicts that these different ways of thinking created, all scientists, whether engineering or biological, agreed on the importance of science and its role in the management of St Lucia’s natural environment (Heydorn, 1976). This slow

'transition between sciences' essentially formed a discourse coalition, which effectively served to strengthen the position of the NPB regarding its role in problem definition and knowledge ownership of the St Lucia estuary and mouth area (Heydorn, 1976). The discourse coalition allowed for hegemony to be legitimised on and through both 'practical' and 'popular' levels. As explained by Peet (2001) legitimacy is provided on a practical level through recommendations by experts and on a popular level through the dissemination of these recommendations to the media and the public. Accordingly, as part of the policy regulation process during this period, the NPB were striving to continuously achieve 'problem closure' regarding the state of the St Lucia estuary and mouth. As defined by Hajer (1995) this is the desirable conclusion to a policy regulation process, in which there has been successful problem definition ('discursive closure'), in addition to 'social accommodation'. In addition, the extensive use of science in the policy arena provided evidence that the science being used in decision-making had become 'regulatory science' (Shackley and Wynne, 1995: 221, in Jäger, 1998). This is where science operates as a reinforcement of the knowledge that policy embodies and thus validates the policy that is produced. Policy simultaneously confirms the relevance and quality of the science that has been utilised (Shackley and Wynne, 1995: 221, in Jäger, 1998). Policy and science had become a hybrid realm, where policy problems were addressed exclusively through scientific methods (Hajer, 1995).

The dominant environmental discourse evident when examining the official policy response during the 1967 – 1984 period is 'administrative managerialism' (Dryzek, 1997). As discussed in the theory chapter, Dryzek (1997) described this discourse as a problem-solving discourse that aims to classify scientific information and expertise in a way that serves the bureaucratic state. This is evident in the engineering and computer modelling solutions proposed to address the St Lucia estuary and mouth problems, in addition to the collection of experts and managers gathered by the authorities to discuss, agree upon and implement these solutions. The 'Promethean discourse' was also prominent throughout this time and was particularly visible through the authorities 'development is a priority' storyline. This was directly related to the tourism potential and existing sugar farming industry.

6.6. ‘You can’t just sit back and watch’ – the public response

The public was the only stakeholder which was not involved directly in the policy-making process. The majority of the public response was generated in reaction to the perceived lack of effective action from the NPB (Crass, 26/07/2005). The persistent drought conditions during the period contributed to the strong public response, with frequent complaints that “something had to be done” and that the authorities “couldn’t just sit back and watch the lake deteriorate” (Crass, 26/07/2005). The main form of communication for the public was through the press, often in response to articles that had been written regarding the state of St Lucia (Gordon, 28/05/1968). One suggestion involved the construction of a system of levees that was proposed in order to “save St Lucia Lake”, whilst another suggestion was “to bring water in from Pongola” (Jacobs, 1972; Crass, 26/07/2005). Very emotive language was used, always accompanied with a sense of urgency. A wildlife manager of the NPB at the time remembers the authorities being criticised for allowing St Lucia to “die of hypersalinity” (Crass, 1979a: 3). It is interesting to note that solutions, such as the physical structures, suggested by the public were mainly engineering-based and were perceived to provide a “quick practical solution” (Gordon, 28/05/1968: 10). Thus, it was evident that physically changing the natural environment of the mouth through engineering structures in order to preserve the Lake was deemed acceptable by the public. Public concern was motivated primarily by personal use reasons and not out of concern for the natural environment itself. This correlates with the ‘wise-use’ environmental discourse (Dryzek, 1997).

6.7. ‘Starting afresh’ – the effects of Cyclone Demoina

The period of mouth management from 1967 to 1984 ends with the flooding of the St Lucia mouth and estuary caused by Cyclone Demoina. On 31st January 1984 Cyclone Demoina hit the northern coastal area of Zululand. During this time in excess of 600mm of rain fell within 20 hours in the St Lucia and Umfolozi valley areas. The flood was a natural event and was described as “the largest in living memory” (Van Heerden, 1984; Roberts and Pyke, 1984). As a result the natural environment in the St Lucia lake and estuary mouth was significantly altered. The flood caused a rise in lake levels, a welcome reduction in salinity levels and the widening of the estuary mouth (Fromme, 1985). At the estuary mouth, all manmade structures were washed away,

whilst the intake works and diversion canal further upstream were severely damaged, as shown in Appendix C, (i) and (j) (Van Heerden, 1984: 10). The cyclone generated such a powerful surge of flood waters that one of the dredgers used by the Reclamation Unit was washed upstream into a banana field, shown in Appendix C, (k) (Pegram et al, 1988).

In official documentation recording the effects of the event, the major concern was for the sugar cane and farms in the Umfolozi floodplain that had been damaged by the cyclone (Roberts and Pyle, 1984). Thus, whilst sugar farming was not completely halted by Cyclone Demoina, there was significant damage to the crops and the existing support infrastructure, which in turn had potential to affect the immediate and short-term export potential of the Umfolozi valley crop (Pegram et al, 1988). This focus on the sugar farming industry emphasized the continuing dominance of economic growth as a discourse for understanding and making decisions about the St Lucia estuary and mouth. This dominance was further apparent in the measures proposed to address the affects of Demoina. Whilst the damage to the engineering structures in St Lucia were acknowledged, the majority of the monetary and time resources of the provincial authorities devoted to flood damage was spent on the sugar farming industry in the Umfolozi valley (Roberts and Pyle, 1984).

In the ensuing official discussions of the floods caused by Cyclone Demoina it was felt that that nature had “completely wreck[ed] man’s efforts” and that ‘man’s environment’ had been totally “reshaped” (Crass, 16/10/2003: online, Crass, 26/07/2005; Van Heerden, 1984: 15). Notwithstanding the dominance of the Promethean way of thinking and the negativity towards the agency of the natural environment in St Lucia, it was apparent that Cyclone Demoina had initiated a changed mindset change within the wildlife authorities at the NPB. This in turn had a dramatic effect on further management plans for the St Lucia estuary. The NPB recognised the power of nature and began to reassess their management approach that had been predominantly focused on engineering methods of control. The engineering infrastructure to manage the mouth had literally been washed away and many managers from the NPB and SCADCO advisory council members felt that this presented a good opportunity to implement a new management approach with new methods. Van Heerden (1984: 15) stated that: “Nature has given man a chance to

undo all previous management ills and to start afresh". The authorities began to recognise that they had "little control over this dynamic system" and that they should rather work with, and not against, the natural processes (Crass, 16/10/2003: online; Freer, 2003: 8). Thus the management began to shift from managing the St Lucia system through, what was retrospectively termed, the "keep the mouth open at all costs" era, to an eventual "minimal interference" policy (Taylor, 10/05/2004; EKZW, 2005). It signaled the commencement of a realisation on the part of the NPB that it was not nature's impacts but rather human impacts that required management.

6.8. Conclusion

This chapter describes and analyses the development of management policies for the St Lucia estuary mouth for the 1967 to 1984 period. Table 6.2 provides a summary of the results. There were three epistemic notions that were prevalent in South African society during the 1967 to 1984 period. The importance of economic growth continued as a dominant way of thinking, reinforcing the hegemonic Promethean discourse. In addition, the influence of global environmental discourses, through South Africa's entry into a number of international organisations at this time, began to have an effect on policies and decision-making. Societal thinking in South Africa in particular continued to be influenced by the separate development policies of the Nationalist government.

The state of the St Lucia estuary mouth was described predominantly through the use of two storylines. The public description of St Lucia as 'dying' showed evidence of the use of the 'survivalist' discourse, whilst the storyline of the NPB and the sugar farmers to 'keep the mouth open' correlated most strongly with both the 'wise-use' and 'administrative managerialism' discourses. The main concern for the NPB during this time was the continuing perceived deterioration of the St Lucia estuary and mouth. As a result the response of the St Lucia system to the drivers for change at the St Lucia estuary and mouth was described as 'natural'. Thus, the official policy response from the NPB focused on keeping the St Lucia estuary mouth open and indicated that the NPB were using an 'administrative managerialism' discourse, as they were focused on using science and scientific experts to rationalise and provide solutions for the current state of the estuary and mouth. The use of this discourse was

also evident in the official response by the NPB. Prominent storylines were that the management of the St Lucia mouth was ‘the realm of the engineers’, that ‘man’ should overcome the natural environment and that despite the scientific discipline battles, the solution should be scientifically-based. The use of science by the NPB was evident throughout the decision-making process and progressed to become ‘regulatory science’. This influence on policy was further entrenched through the prevailing ‘administrative managerialism’ discourse and also influenced by the ‘survivalist’ discourse.

The discourse coalition between the NPB and scientific disciplinary experts focused on the importance of science in the decision-making process and the policy produced during this period. This thinking was altered significantly from 1984 onwards after Cyclone Demoina damaged the control measures put in place at the St Lucia estuary and mouth. Pervading the official response from the NPB was the response from national government which continued to prioritise economic development in the area and thus further entrenched the Promethean discourse. The public response to the state of the St Lucia estuary and mouth highlighted the perceived lack of appropriate action from the NPB, with frequent assertions that ‘you can’t just sit back and watch’. This drew strongly from the ‘wise-use’ discourse as the public were concerned by the lack of use they were getting out of the St Lucia estuary and mouth area due to its deteriorating condition.

Table 6.2. Summary of the storylines and discourses of the 1967 – 1984 period

1967 – 1984	Storylines	Class of discourse (Dryzek)
Epistemic notions	‘international environmental cooperation’ ‘consistent economic growth’ ‘separate development’	Promethean
State of the mouth	‘St Lucia is dying’ ‘keep the mouth open’	Survivalist Wise-use/ Administrative Managerialism
Causes of the state of the mouth	‘mouth closure is due to human intervention’	Administrative Managerialism
(Official) NPB response	Mouth management is ‘the realm of the engineers’ ‘Man over Nature’ ‘there is a battle between the sciences to provide a solution’	Survivalist/ Administrative Managerialism

(Official) National government response	'development is a priority'	Promethean
Public response	'you can't sit back and watch'	Wise-use

The next chapter presents the next period, 1985 - 2005. This follows on from Cyclone Demoina in 1984, discussing the change in policies in response to the devastating natural event.

CHAPTER SEVEN

DISCOURSE ANALYSIS OF MANAGEMENT POLICIES AT THE ST LUCIA ESTUARY MOUTH

1985 - 2005

7.1. Introduction

This chapter provides the final period of analysis of St Lucia estuary mouth management policies, covering the time period of 1985 to 2005. The time period being examined follows on immediately after the occurrence of Cyclone Demoina, on the 31st January 1984. Thus this chapter examines the changes in policy responses that were brought about by this seminal natural event. The chapter is structured identically to the previous two results chapters in order to ensure consistent analysis. Thus, firstly the epistemic notions that dominated the thinking of this time period are examined in Section 7.2. Secondly, the state of the St Lucia estuary and mouth is described in Section 7.3. This is then followed in Section 7.4 by a discussion of the causes of the state of the St Lucia estuary and mouth as evident in the storylines of the stakeholders. Lastly, the official policy response is discussed in addition to the response of other stakeholders in Section 7.5. Table 7.1. summarises the key events of the 1985 to 2005 period.

Important to note is the shift in conservation management authorities during this period. The Natal Parks Board merged with the KwaZulu Nature Conservation Department in 1997 to form Ezemvelo KZN Wildlife (EKZWN) (Porter et al, 1999). This Act brought the province's nature conservation agencies in line with national democratic reforms (Brooks, 2003). Under the World Heritage Convention Act (Act 49 of 1999) the Greater St Lucia Wetland Park Authority was established and the Park consolidated in 2000. This included the St Lucia Game Reserve and other reserves formerly managed by EKZWN. A memorandum of agreement drawn up between the GSLWPA and EKZWN established each organisation's role in a partnership. Through this Management Agreement EKZWN is responsible for "the day-to-day biodiversity management of the Park, including law enforcement, while the Authority is the overall manager of the Park and ensuring the vision of the Park is realised (Porter et

al, 2003; EKZNW, 2002). The Wetland Authority reports to the national Minister of Environmental Affairs and Tourism (Porter et al, 2003).

Table 7.1. Key events of the 1985 - 2005 period

Date	Event
1984	Cyclone Démonia
1986	St Lucia system designated a Wetland of International Importance under the Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention)
1987	World Convention on Environment and Development
1988	Reclamation Unit comes under NPB authority
1992	South Africa a signatory at the Rio World summit
1994	African National Congress elected to power in South Africa
1997	Natal Parks Board and KwaZulu Nature Conservation Service merged to form Ezemvelo KZN Wildlife
1989	Environment Conservation Act (Act 73 of 1989)
1996	Lubombo Spatial Development Initiative established
1997	South Africa's adoption of the World Heritage Convention
1998	National Environmental Management Act (NEMA)
1999	Greater St Lucia Wetland Park entered on World Heritage Site list; World Heritage Convention Act (Act 49 of 1999) promulgated
2000	Greater St Lucia Wetland Park Authority established
2007	Wetland Park renamed Isimangaliso Wetland Park

7.2. Epistemic notions – ‘poverty amidst plenty’

During the period between 1985 and 2005, the two dominant epistemic notions were ‘sustainable development’ and ‘economic growth’. The societal thinking during the latter half of this time period was dominated by the transition of the South African government from the apartheid policies. The period commences in the mid-1980s at the height of the anti-apartheid struggle, includes the advent of the new democratic South Africa in 1994 and concludes in 2005 when this study commenced. The transition had a profound effect on the way the environment was managed nationally. With the change in government, an extensive process of policy and legislative reform commenced in every sector, and thus the environmental sphere received renewed national interest (Fakir, 14/06/2003). Moosa (in Macleod, 05/04/2004) highlights the reform of environmental legislation as a result of the inclusion of environmental rights in the Constitution, which meant that the environment was now “mainstreamed.”

Prior to this it was predominantly NGOs that were interested in green environmental issues at a national level.

To this end, the governance change within the St Lucia Wetland Park was promoted as a symbol of transformation (Porter et al, 2003). The beginnings of the Greater St Lucia Wetland Park was formed by EKZNW in the 1990s from an amalgamation of several nature reserves, state forests and other protected areas (Fleminger and Briggs, 2008). Through the promulgation of the World Heritage Convention Act (Act 49 of 1999) and the consequent consolidation of further protected areas into the Park, the present-day Greater St Lucia Wetland Park was formed, under the management of a new authority (Porter et al, 2003).

National government stated that apartheid policies of separate development had exerted pressure on the natural, social and economic environment in the broader St Lucia region and that the planning measures put in place for the region needed to ensure that balance was restored to all these sectors through new local economic development policies and management plans that would encompass the broader region. In 1996 the Lubombo Spatial Development Initiative (LSDI) was proposed as a development framework based on the St Lucia Wetland Park as the ‘anchor project’ (Porter et al, 2003). There was a strong national government emphasis on social justice within the focus on the natural environment, as shown by this quote from the Department of Environment and Tourism (2004: 57) policy:

“After 1994 this changed. The new Constitution and the Environmental Right enshrined in the Bill of Rights has meant that environmental issues are now seen as an integral element to be addressed in the democratic transition. In the past ten years, major strides have been made in addressing environmental issues as part of an overall thrust towards the achievement of social justice, democracy and sustainable development” (DEAT, 2004: 57).

A dominant storyline emanating from this particular epistemic notion was the way in which the new democratic approach to environmental and protected area management should ensure that progress was made in the broader Maputoland region ending the “paradox of poverty amidst the plenty of nature” (Zaloumis, 14/06/2003: 12).

Alongside the official introduction of democratic principles into national environmental policy, was the emergence of ‘sustainable development’ within the environmental governance arena. Sustainable development can be defined as “development that meets the needs of the present without compromising the needs of future generations to meet their own needs (WCED, 1987). The use of this prominent environmental discourse was adopted as a key principle to ensuring the integration of both concurrent economic growth and environmental conservation and protection (DEAT, 2000). This was apparent within national environmental legislation. Institutional reform led to the creation of a ministry that manages both environment conservation and economic growth through tourism (the Department of the Environment and Tourism - DEAT). The management documents specific to the Greater St Lucia Wetland Park are also framed within the sustainable development approach, as the 1998 National Environmental Management Act (NEMA) has sustainable development as its framing concept.

A good example of the sustainable development discourse is the promulgation of the World Heritage Convention Act (Act 49 of 1999), discussed in Chapter 3. Whilst its main aim is to create nationally managed park authorities for South Africa’s world heritage sites, it was also seen as a key instrument in ensuring that the demand for economic growth to alleviate poverty did not result in the valuable natural and cultural environments being compromised (GSLWPA, 2004a). The twin objectives of economic growth and environmental protection are emphasised in addition to the importance placed on preservation and benefit for future generation, which is a strong feature of sustainable development. Thus whilst economic progress is encouraged, “unrepentant forms of commercial development” in theory were not (Fakir, 14/06/2003: 3). This ‘balance’ was a common theme throughout new legislation and policy documents, creating a combination of sustainable development tenets that was uniquely tailored to the South African context, as noted by commentators such as Moosa (in Macleod, 05/04/2004),

“South Africa has been able to find a way of creating the right balance between development and protecting the environment. We are a developing country, we need to create jobs and to do this we need more construction, more roads, factories, etc. We have the challenge of doing that without

sacrificing the environment. We have to put into practice the principles of sustainable development on a daily balance.”

The adoption of the World Heritage Convention by South Africa in 1997 in addition to the promulgation of the Biodiversity Act of 2004 (Act 10 of 2004) also raised the profile of natural heritage and biodiversity within the South African environmental agenda and committed South Africa nationally to global cooperative governance ideals (RSA, 2004).

Lastly, economic growth remained a strong ideological influence during this period as it had during the previous two periods discussed in Chapters 5 and 6. Within South Africa the economic benefits of tourism were finally being realised on an international scale, with the new government investing significantly in the development of the country's natural assets for this purpose (DEAT, 2000). The focus nationally in the Growth, Employment and Redistribution Programme (GEAR) adopted in 1996 was presented as economic ‘development’ rather than growth, although the resulting growth of the economy was the direct result of this policy. This is evident in the initial national development plans for the Spatial Development Initiatives (SDIs) for local economic development (GSLWPA, 2003). It was felt that the SDIs, although regional in focus, would enable investment to be channeled into previously neglected areas and allow sustained economic growth for the country, regionally, nationally and internationally (GSLWPA, 2003). The Lubombo SDI was the result of such national economic policies providing a powerful economic framework for the development of this region as well as the St Lucia Wetland Park which was listed as a World Heritage site in 1999 and promulgated as a consolidated protected area in 2000 (Porter et al, 2003). Thus the importance of ensuring economic growth in an area of important natural assets and beauty has remained a strong influence in the decision-making in St Lucia. To sustainably develop the broader region the ‘poverty amidst plenty’ is to be addressed by establishing programmes to equip local people to engage in the local economy (Porter et al, 2003).

7.3. ‘Biodiversity is under threat’: the state of the mouth

During the period 1985 to 2005 the major concern regarding the condition of the St Lucia Estuary mouth were the low lake levels and the deteriorating natural conditions

caused by persistent drought and closed mouth conditions. Whilst the initial part of this time period was not affected by drought due to the positive hydrological effects of Cyclone Demoina in 1984, there was increasing concern in the latter part of the period after 2002 about the state of the St Lucia mouth. The main storyline used to describe and explain the state of the mouth, that 'biodiversity was threatened'. This 'survivalist' discourse strongly influenced the concern that conditions at the St Lucia estuary and mouth were continuing to deteriorate.

The state of the St Lucia mouth was raised as an important issue throughout this time period by both the authorities, independent scientists and the public. The main focus by all stakeholders was the recurring drought conditions that were affecting the St Lucia mouth, estuary and lake (Van Heerden, 1993a). As a result of the drought periods, the St Lucia estuary mouth continued to close, as it had done over the previous periods, resulting in low levels of water in Lake St Lucia and hypersaline conditions (Taylor, 1986). The situation reached in 2004 was viewed by the public as a crisis point as the lake was at its highest salinity and lowest lake levels for decades and there were severely reduced fish populations (Taylor, 10/05/2004). As a result mouth closure was a huge concern for the public, with one St Lucia resident noting that the term 'estuary' was in reality 'annulled' in the St Lucia situation (Bates, 29/08/2005). This echoed the views of many residents and members of the public during this time period, in addition to sentiments expressed in the wide media coverage of the state of the St Lucia mouth and estuary from 2002 (Picard, 2003). Worries were expressed over the effect that a frequently closed estuary mouth was having on the biodiversity of the system (Dade, 12/05/2004; Barker, 13/05/2004).

The public's view that the lack of a passage between the estuary and the ocean had compromised a valuable nursery area (in the estuary) and spawning area (in the ocean) for migrating fish species and spawning (Barker, 13/05/2004). This, in addition to the high salinity levels, prompted the public to describe the declining fish populations in increasingly negative terms during this time period (Crass, 26/07/2005). In a newspaper article a local resident was quoted as saying that the

estuary's ecosystem had 'already died', while a WESSA²⁸ representative asked "this is a World Heritage Site, are we going to take away the very qualities that made it one?" (Jenkins, 24/08/2005; Gowans, 23/03/2003).

However, perhaps of even more concern to the public was the state of the recreational fishing industry that had long been established at St Lucia (Taylor, 10/05/2004). As discussed in the previous chapter, an open estuary mouth was viewed as the most favourable for good fishing conditions. Accordingly, an EKZMW manager noted that the number one complaint he received from the public during this time period was that a closed St Lucia mouth affected their fishing (Freer, 17/07/2004). As noted in a press article, the most common question from visiting and resident anglers has always been "Is die mond oop?" ("Is the mouth open?") (Bishop, 21/09/2001). Concerns were also expressed regarding the state of the marine fish populations. The media often presented the apprehension of residents and the public by describing the state of the mouth in very depressing terms, with one newspaper piece describing some of the dwindling fish species as 'annihilated' by the mouth closure and the recreational fishing industry as 'all but defunct' (Witness, 30/06/2003; Ngalwa, 07/03/2004). The language used by the public and media resonated with the negative terms used to describe the mouth, e.g. 'deteriorating', 'annulled', 'annihilated', 'defunct' and 'threatened' (Crass, 26/07/2005; Bates, 29/08/2005; Witness, 30/06/2003).

The EKZMW managers and independent scientists acknowledged that while the system was still a natural one, its functions had been impacted by human activities upstream and thus closure of the St Lucia estuary mouth was not completely due to natural causes:

"The mouth of the lake is no longer opened on a regular basis, mainly because of the drastic separation of the Umfolozi River mouth from that of Lake St Lucia, leading to greater variation in salinity in the lake than would be expected naturally" (Ellery, 14/06/2003: 2).

However, despite these concerns, the lake was described as being in a 'very healthy state' by EKZMW and that mouth closure was a 'temporary situation' that would be

²⁸ The Wildlife and Environment Society of South Africa is a non-governmental environmental organisation founded in 1926 (WESSA, 2008)

reversed once the estuary mouth opened (GSLWPA, 2003). EKZNW also emphasised the wealth of documentation on the lake conditions, which they felt stood their conservation managers in good stead in ensuring that they were managing the St Lucia system correctly (EKZNW, 2003a). Thus, in the face of frequent official assessments of the system during this time describing the St Lucia system as ‘severely degraded’, ‘already exploited’, ‘drastically modified’ and ‘under severe threat’, the authorities called for patience with the changes evident in the state of the estuary mouth (Forbes et al, 1986: 3; DWAF, 2004: 1; Carnie, 23/08/2005). This use of alarmist language is strongly consistent with ‘survivalist’ discourse, as is the reliance on scientific experts to provide these dramatic descriptions of the state of the St Lucia estuary mouth (Dryzek, 1997).

7.4. Drivers for change at the St Lucia estuary mouth

This section explores the reasons for the change in conditions at the St Lucia estuary mouth that were presented by the authorities in addition to reasons given by other stakeholders. These influences are discussed in the context of a transition in management authorities and approach. This is done in order to contextualise the factors influencing decision-making regarding the mouth. The reasons for change are encapsulated in the storylines of ‘a naturally changing system’ and the development of the Umfolozi catchment.

7.4.1. ‘A naturally changing system’

In the post 1985 period, the closure of the St Lucia estuary mouth continued to be identified as a significant driver for change in the natural conditions of the estuary and Lake St Lucia. EKZNW also presented the natural climatic cycles of the St Lucia system as a driver for change. These cycles of wet and dry periods were described by EKZNW managers as a natural part of the system’s functioning, being driven by climatic forces (Taylor, 17/07/2003; Taylor, 10/05/2004). It was explained that “floods and droughts are considered to be part of the natural forces that have operated over the past millennia” (Porter et al, 1999: 71) and had been recorded as occurring as far back as the 1800s (GSLWPA, 2003). The occurrence of Cyclone Demoina in 1984, as discussed in the previous chapter, was considered part of this natural climatic cycle. The influence of Cyclone Demoina on the St Lucia system was significant, as it washed away many permanent management structures and changed the state of the St

Lucia lake and estuary mouth considerably (Taylor and Collings, 1988). The changes across the lake between parts of the system with completely fresh water to conditions of very high salinities in the main part of the lake were also described as part of these climatic cycles. The hypersalinity period of the cycle was considered to be an ongoing problem due to the reduction of fresh water sources for the lake. The reasons for this were identified as dam construction on feeder rivers of the lake in addition to very high levels of water use in the Umfolozi catchment (Porter et al, 1999). Accordingly, the driver for change described by EKZNW in the context of the ‘survivalist’ discourse, which, as described by Dryzek (1997) highlights the sensitivity of the environment and emphasises the need for experts to manage it.

There was a strong emphasis by EKZNW on the closed state of the mouth being part of a natural climatic cycle. Thus the changes in the system were not considered unnatural and should be considered as part of a broader picture regarding the functioning of the St Lucia lake system and not an “ecological disaster” (EKZNW, 2003: 5). Thus the changes at the St Lucia estuary mouth during this time were described by EKZNW as part of a naturally changing system, as shown by the following metaphor from a manager,

“People don’t accept that the system goes through change. It won’t always stay the same. It’s like there’s a clock. They see it at 12 o’ clock. Then they close their eyes and then look at it at 12 o’ clock again. It looks exactly the same. What they don’t realise is that it’s changed in between. It’s the same with changes that occur in the system” (Taylor, 10/05/2004).

The movement of the estuary between fresh and salt water states was well documented during this period in addition to the seasonal closure of the estuary mouth that influenced the state of the mouth with the resilience and dynamism of the system receiving particular emphasis (EKZNW, 2005). These changing states were reiterated in the press, through direct statements in newspaper articles from wildlife managers and in the media, through the presentation of the views of independent scientists on wildlife interest television programmes. An article in a provincial newspaper, *The Mercury* (21/04/2005) stated:

“It is a testing time for all in the region, [...] which is clearly not immune to the serious knock-on effects of Zululand's cyclical climatic conditions.

Lake St Lucia has taken a hammering as a result of the drying up of rivers this summer. The level of this huge expanse of water has dropped dramatically, the estuary mouth has been closed for more than nine months and salinity levels are close to that of seawater. Conservation authority KwaZulu-Natal Wildlife says the situation is similar to the dry period experienced in 1993 but that the process is "natural and dynamic, resulting in changes in the lake through time".

While, Ticky Forbes, an independent scientist and estuarine specialist with a long history of research in St Lucia, was quoted on an evening wildlife television programme ('St Lucia Drought', 2004), explaining these changes:

"But the point that we should bear in mind is that the changing conditions do not necessarily herald the disappearance of everything around and if we look around here we can see flamingos, which typically move into such a system under these high salinity conditions. So the essence of what we are looking at here is a highly dynamic situation [...]. As the salinities change, as the water level changes, those plants will change, those animals associated with them will change and as we swing towards high salinity conditions that we have at the moment again we will come up with a totally different set of animals living there."

7.4.2. Umfolozi catchment development and intervention

In addition to the changing natural conditions in St Lucia, development in the Umfolozi catchment remained a driver for change in the state of the St Lucia estuary and mouth. The water draining into the Umfolozi River from its catchment area is vital to the functioning of the St Lucia system. Historically this was the main source of fresh water and the Umfolozi performed a very important filtering function to keep the estuary free of sediment (Ellery, 14/06/2003). The Umfolozi catchment, and other catchment areas surrounding St Lucia, have a long history of human intervention (Taylor, 10/05/2004). This intervention includes changes made to the:

- Umfolozi floodplain and catchment

The upper portion of the Umfolozi swamps were transformed to improve agricultural production, more specifically to aid irrigation for sugar farming. In addition, large levees were built along the banks of the Umfolozi River to provide protection for

sugar cane crops against floods. This significantly changed the natural flooding process and flow of the Umfolozi River and contributes to the closing of the St Lucia estuary mouth (GLSWPA, 2004)

- St Lucia estuary mouth and the Umfolozi mouth

Since the 1930s, catchment degradation and the canalisation of the Mfolozi floodplain led to sedimentation of the Umfolozi and St Lucia mouths which were combined. This caused the mouth to close. In 1952 the Umfolozi River mouth was diverted and a separate mouth was constructed south of St Lucia estuary. A management programme remains in place to dredge the estuary area free of sediment in order to create conditions that are ideal for maintaining a St Lucia estuary mouth that is open to the sea (GLSWPA, 2004; Taylor, 10/05/2004).

- Mkuze swamps prior to 1980

The Mkuze swamps have been losing water due to diversion over several decades. Canals were constructed by the NPB to divert fresh water into the St Lucia lake during high salinity periods. This has severely affected the functioning of the Mkuze swamps (Taylor, 1986; Ellery et al, 2003; GSLPWA, 2004; Taylor, 10/05/2004).

All of these interventions compromised the functioning of the St Lucia Lake system, in particular the supply of fresh water to the estuary from the Umfolozi and Mkuze rivers (Taylor, 1986). The reduction in fresh water inflows had a significant influence on the state of the mouth, causing it to close more frequently. However, the disconnection of the Umfolozi River from the St Lucia system is identified by the Department of Water Affairs and Forestry (DWAF) as the most significant influence on the mouth and the main cause of the hypersaline conditions (DWAF, 2004). The public and the media agreed that the development of the Umfolozi catchment for commercial sugar cane had a strong influence on the state of the mouth. These stakeholders, however, were more explicit in identifying who they felt was responsible for the catchment transformations. One St Lucia resident attributed the state of the mouth to “poor farming” and alleged that the fresh water was “stolen by sugar cane farming and logging” (Viviers, 30/08/2005). This view was confirmed through several media articles, with quotes similar to this one from an article in *The Witness* (30/06/2003) newspaper, which stated that “the swamp areas were drained to

make way for cane south of Mtubatuba, impacting on the water flowing into the Lake St Lucia system.” Thus while describing the interventions in the St Lucia estuary and mouth as the drivers for change during this period, the public were ascribing to the ‘wise-use’ discourse, as it was clear in the eyes of the public, that the interventions in the system in the past had prevented and were continuing to prevent effective use of the resources St Lucia offered (Whittaker and Mercer, 2004).

7.5. Official policy response to the state of the St Lucia mouth

The plans put in place by the GSLWPA and EKZNW in response to the state of the St Lucia mouth and the drivers for change they identified, are presented as the ‘official’ response. The responses are discussed in the context of the different environmental discourses and storylines that are used by the authorities and the stakeholders involved. The discussion also examines the institutional practices for environmental decision-making in the post 1994 period and the methods through which they became further entrenched in policy. This section also examines the response of other stakeholders, including the sugar farmers, local business people and members of the public, to the measures taken by the authorities. Section 7.5.1 examines the new ‘minimal interference’ approach that was used to manage the St Lucia mouth. Section 7.5.2 presents the management authority transitions, under the guidance of the national government, which took place in the latter half of this period towards the ‘benefits beyond boundaries’ approach. These transitions demonstrated the emergence of the ‘ecological modernisation’ discourse. Lastly Section 7.5.3 examines the new importance placed on the resilience of the St Lucia system and the rise in emphasis placed on biodiversity by EKZNW and the Wetlands Authority.

7.5.1. Managing the St Lucia mouth: ‘assisting Nature’ through ‘minimal interference’

“The key to the successful management of the St Lucia Lake and Estuary is the correct management of the mouths of the St Lucia and Mfolozi estuaries. The St Lucia Estuary mouth is especially important” (Van Heerden, 1993a: 1).

The occurrence of Cyclone Demoina in 1984 had a significant effect on the management philosophies of the conservation authorities in St Lucia. As discussed in

the previous chapter, the methods of controlling the St Lucia system through hard engineering structures, had been washed away by the cyclone, initiating recognition from the authorities that their management approach needed to be reassessed (Van Heerden, 1984). Evidence of these changes in thinking and the new management positions that evolved after the cyclone are discussed here. The key shift among the EKZNW managers and scientists was that interference in the estuary and mouth area should be reduced and that no more hard engineering structures should be built and that more research of system interactions was needed (Pegram et al, 1988).

Thus, the management of the St Lucia estuary and mouth remained the most important issue and continued to require significant resources and response from the authorities during the post-Demoina period. Whilst the official response was changing towards a ‘minimal interference’ approach, there remained a legacy of physical control that could not be eradicated entirely (Taylor, 10/05/2004; EKZNW, 2005). The initiation of these changes was most evident in the “Least Interference Plan” that was drawn up in 1984 and made public in 1985 (Van Heerden, 1993b). Van Heerden (1993b: 3) provides an extract of this plan, showing the reasoning for the change in thinking,

“1984 LEAST INTERFERENCE PLAN

The destruction of the groynes and seawalls at St Lucia Estuary, and its changed (deeper) character, resulted in the decision being made to review past management plans for the St Lucia Estuary mouth. This decision reflected the growing awareness that the mouth condition is a valve or throttle that very strongly regulates the system’s natural cycle from fresh to saline and back again. After a year’s intensive study, a Least Interference Management Plan was formulated....and based on the following assumptions.

- a) That it is necessary to understand the natural physical processes operative on the Mfolozi Flats as well as in the Mfolozi and St Lucia estuaries,
- b) That marine processes are extremely important in estuary mouth dynamics,
- c) That the St Lucia Estuary mouth configuration strongly influences the future condition of the lake.

The basis of the 1985 plan was the Mfolozi and St Lucia estuaries should have separate mouths; no hard structures to be constructed at either mouth; a dredger should be utilised at St Lucia to help manipulate the mouth cross section [...]; that at times it may be advantageous to the whole system to let the mouth close for periods which could extend into months.”

Thus the authorities took the decision in this period to abandon the reconstruction of all engineering structures that were washed away, in line with the new “minimum interference” policy (Pegram et al, 1988: 16). Despite the fact that authorities acknowledged that dredging was still necessary, it was felt that management methods were at least moving away from the heavy engineering approach, towards one that “assisted nature” (Taylor and Collings, 1988: 1). Thus, in order to assist nature in performing the vital biological interactions of the St Lucia system, the estuary mouth continued to be dredged and artificially opened at strategic times, as shown in Plates 7.1 and 7.2. EKZNW maintained this was done according to “nature-based operating rules” and essentially simulated small natural events such as floods, thus allowing natural processes to be mimicked for the benefit of the system (Van Heerden, 1993b; Porter et al, 1999; Taylor, 17/07/2003).

Towards the end of this period in 2005 a definitive change in the discourses and strategies of the previous management authority, EKZNW, was evident. There was a move from the administrative managerialism discourse that characterised the management policies of the NPB in the previous period, to the ecological modernisation discourse now being used by the EKZNW and Wetlands Authority management partnership. Hajer (2003) described ecological modernisation as a discourse that emphasises the benefits of the marriage between economic growth and environmental conservation, coupled with continual reassurance to the public. This discourse had become evident in the Wetland Authority policy. In a statement from the Greater St Lucia Wetland Park Authority, it was explained that the thinking had “moved on from those days” where a “fish management perspective” was used to keep the mouth “open at all costs” (Mkhize and Zaloumis, 02/09/2005: 10). As Mkhize and Zaloumis (02/09/2005: 10) explained further:

“the consensus is that St Lucia cannot afford another narrowly focused ‘mouth open at all costs’ intervention. For that reason we follow a holistic systems-management approach that considers all the ecological systems and biodiversity considerations within the St Lucia system. [...]we need to treat the system as though it were a living entity, and subject to new changes to meet new circumstances.”



Plate 7.1. Conservation authorities manually opening the St Lucia estuary mouth, July 1993 (photo: Nidia Brits)



Plate 7.2. Conservation authorities manually opening the St Lucia estuary mouth, September 1993 (photo: Nidia Brits)

Throughout this period the above management authorities ensured that regular communication was sent out through press releases to the public to endeavour to proactively resolve conflicts with the public about official policy decisions regarding the management of the mouth. This met with some success initially, when EKZNW was the conservation manager, as noted by the SCADCO (1997: 1) meeting minutes,

“It was noteworthy that public acceptance of the Board’s management of the estuary mouth had improved considerably and consequently there was less antagonism now than in the past. This is largely part attributed to increased effort by many staff to inform the public about the reasons for [the] breaching [of the mouth].”

In the latter years of the period, after 2000, the Wetlands Authority, which had now become the park manager, received a large amount of public criticism for their ‘minimal interference’ approach, which is expanded in section 7.6. The official response to this public pressure was to issue press releases to reassure the public and business owners of their confidence in the decisions made, to emphasise that the authorities remained “optimistic” and to provide reassurance regarding the levels of monitoring of the St Lucia system during stressful times (EKZNW, 2003b). The authorities also strove to point out the benefits of the changing state of the mouth, which until now, were overlooked:

“A positive spin-off for tourists to Lake St Lucia is that with the water levels being low there are greater concentrations of wading birds to be seen on the exposed sand- and mudflats along the shore-line” (EKZNW, 2003a).

Prominent consultations that took place during this period were the same as those from the previous period, i.e. between the Wetlands Authority and the sugar farmers, and the Wetlands Authority and the scientific community. Accordingly, when the Wetlands Authority and EKZNW took the decision to breach the Umfolozi River mouth on several occasions during this period, the Umfolozi sugar farmers were consulted, as detailed below,

“According to the Park's estuarine ecologist, Ricky Taylor, the recent decision to breach the Umfolozi mouth was taken in consultation with the UCOSP (the Umfolozi Cooperative Sugar Planters). He said: "Any decisions that affect farmers cannot be done without giving them sufficient warning. For instance, if we want to maintain the Umfolozi mouth closed for a long

period, we would have to inform the UCOSP as they would have to alter the way they keep their fields dry” (GSLWPA, 2004a: online).

7.5.2. ‘Benefits beyond boundaries’

In the latter half of this period from 2000 onwards, significant changes occurred in the management structures of the conservation authorities in St Lucia, provincially and nationally. The establishment of Ezemvelo KZN Wildlife (EKZWN) in 1997 was the result of a merger between the Natal Parks Board²⁹ and the KwaZulu Nature Conservation Department³⁰ to form an integrated conservation authority for the province of KwaZulu Natal (Goodman, 2003). Also significant in terms of conservation management in St Lucia was the establishment of the Greater St Lucia Wetland Park as a World Heritage site through the World Heritage Convention Act (Act 49 of 1999) (EKZWN, 2002). In terms of this legislation, a new management authority was established. In the management agreement between EKZWN and the GLSWP, the Wetlands Authority was responsible for monitoring, management and complying with statutory requirements, while EKZWN was responsible for biodiversity management and the daily management of the Park (EKZWN, 2002) (see Chapter 3 for more detail). A significant part of the transition was the development of a new management plan, termed the Integrated Management Plan (IMP). This policy informed all the decision-making in the GSLWP in its establishment phase and has been frequently reviewed (GSLWPA, 2003).

The promulgation of the World Heritage Convention Act in 1999 and the subsequent establishment of the Greater St Lucia Wetland Park authority in 2000 brought about changes in thinking, influenced by the sustainable development and ecological modernisation discourses. The Park uses a new model for protected area management in South Africa. The vision for the Park concentrates on conservation that empowers and develops local communities, while simultaneously protecting nature (Porter et al, 2003). The Park’s vision specifically is:

- to achieve a balance between optimal regional development on the one hand and conservation of ecosystem functioning and biodiversity on the other;

²⁹ This provincial body was established in 1947 through Ordinance No 35 of 1947 to provide for conservation management in the province of Natal in what were ‘white’ areas.

³⁰ This conservation body was part of the KwaZulu government and its mandate was conservation management in the KwaZulu homeland.

- to ensure the natural and cultural resources of the GSLWP are used and experienced by people equitably, now and in the future; and
- to ensure the world heritage values of the GSLWP are maintained and, where necessary, restored (GSLWPA, 2003: 6).

This vision was echoed in the official storyline of the Wetland Authority, that of ‘benefits beyond boundaries’.

Another less prominent but noteworthy change in management discourse was the emphasis placed on the values of the Wetland Park on natural, cultural and economic levels (GSLWPA, 2003). This was influenced by the listing of the Greater St Lucia Wetland Park as a World Heritage site in 1999 (Porter et al, 2003). Whilst this listing was on the basis of St Lucia’s ‘natural values’, the transition to a democratic government in South Africa encouraged the highlighting of other values such as cultural, social and economic, besides the natural environment. The new Park Authority frequently emphasised their commitment to these other values, particularly through the consultation of a wider variety of scientists and local knowledge experts than was used previously (GSLWPA, 2003: 2). This was in line in with the new national conservation objectives of focusing on “marrying science and management” for the benefit of people and the parks. This is evident in the following statement by the new head of the South African National Parks, David Madunda,

“Many of our problems ... are people orientated. We have ample scientific research, and plan to continue with this. But we lack social research. “Until we understand interactions between social management and natural science, we will not be able to ... [achieve] the state of the parks that we desire.” (Macleod, 04/12/2003: 12)

In addition a significant emphasis was placed on the importance of economic growth and the way in which this should be incorporated into the conservation of the natural environment for the public good (GSLWPA, 2003). This is in line with the tenets of the ecological modernisation discourse. Dryzek (1997) describes adherents to this discourse as striving to reconcile the promotion of economic growth in conjunction with environmental conservation. This is often motivated by the need to achieve balance between these two elements for the public good (Dryzek, 1997).

This 'benefits beyond boundaries approach is currently promoted by international organisations such as UNESCO, the International Union for the Conservation of Nature (IUCN), the World Heritage Convention (WHC) and the World Parks Congress. This discourse was particularly evident in the World Parks Congress that was held in Durban in 2003. The theme for the conference was 'Benefits beyond Boundaries, and the GSLWP's new policy fully endorses this theme (GSLWPA, 2003). Conference attendees were drawn from a wide range of international conservation organisations and national governments and were focused on the shift in protected area management to "development and conservation" (Scott and Ellery, 2008: 14). Particularly evident in the pre-conference and main conference discussion was the need to integrate traditional natural sciences and social, economic and political studies into common research programmes in protected areas (Scott and Ellery, 2008). This resonated with the Wetland Authority as the vision set in place for the GSLWP in the new management agreement mirrored this new policy direction.

In order to achieve the Park's vision and implement the tenets of the sustainable development discourse, the Wetland Authority goals are structured along specific lines that reflect the key drivers of the Wetland Authority's strategy (GSLWPA, 2003). The management goals are structured around four main areas (1) Commercial Development, (2) Local Economic Development (LED), (3) Conservation and (4) Management, Governance & Protection (Porter et al, 2003). This led to an organisational structure which includes tourism, community development and finance sections. While the restructuring of the Wetland Park's policy was primarily a response to the political changes occurring in South Africa at the time, the subsequent changes to management structures resulted in changes in conservation management discourses. These mindset changes can also be attributed to the changes in organisational strategies that were implemented. The Wetlands Authority, for example, became organised along "business rather than bureaucratic lines", as explained in official documentation (GSLWPA, 2003: 11). It was explained further that this would allow for "quick and responsive management and rapid decision-making" through the use of a "small, experienced and specialised management team" (GSLWPA, 2003: 11). The transition of the authority to a 'business' organisation brought about changes to the 'official' language in policy documentation, methodology and strategies. The phrases and terminology used became more business

orientated, rather than purely scientific and administrative (Goodman, 2002). Thus whilst scientific or biological terms such as ‘threats to biodiversity’ and ‘constraints’ remained common in documentation and reports, new business terms such as ‘strategic objectives’ and ‘hierarchy of concerns’ were also used (GSLWPA, 2003). This created an interesting mix of scientific and business language being used in official policy responses that was not present in previous periods.

The development of a new group of stakeholders was evident during this period, namely the businesses in the St Lucia area. Both the Wetlands Authority and EKZNW were very aware of the impact of the drought conditions on local tourism operations in and around the St Lucia system primarily due to the decline in the recreational fishing industry (EKZNW, 2003b). The Wetlands Authority attempted to encourage alternative tourism developments that did not depend on the state of the estuary and mouth (Van Heerden, 1993a). The consultation with local stakeholders was justified in policy documentation through the emphasis by the on “working with our neighbours to minimise the impact of our management on their enterprises” and to gain their input into management decisions (GSLWPA, 2003: 23). The Wetland Authority’s consultation continued through their collaboration with scientific experts. For example, during drought phases of this period the Wetlands Authority convened frequent meetings with independent scientists, provincial department representatives and EKZNW managers in St Lucia in order to discuss management options (GSLWPA, 2004b). The decisions not to breach the estuary mouth artificially were frequently justified using “valid ecological reasons”, being based on “scientific understanding” with the support of “scientists who are associated with St Lucia” (EKZNW, 2005: online). The Wetlands Authority and EKZNW assured the public that they were “availing [themselves] of the considerable body of knowledge and experience offered by these experts” (Mkhize and Zaloumis, 02/09/2005: 10).

The use of the ecological modernisation discourse by the authorities is quite prominent at this time. Dryzek (1997) highlights that ecological modernisation is characterised by relationships being established between government, business and the scientific community. These partnerships were particularly prominent in this period of environmental management in St Lucia. Hajer (1995: 25) describes an ecological modernisation discourse as that which emphasises ‘progress’ and the

economic benefits of a union between economic growth and environmental conservation. This is termed a “positive-sum game” and is often described in policy as a “win-win situation” (Hajer, 1995: 25). This was evident in the policy documents and in press releases issued by the Wetlands Authority and EKZNW. An ecological modernisation discourse is evident in the following statement by the editor of The Mercury newspaper:

“[we] needed to balance the interests of both sugar farmers and the future ecological security of a water system which provides direct benefits to thousands of people. These benefits extend far beyond tourism, nature conservation or recreation and it is essential to debate and formulate a long-term management plan for the region very soon” (Editor, 07/07/2005: online).

7.5.3. ‘The resilience of the St Lucia system and its biodiversity’

Alongside the changes in management goals of the Wetland Park during this period was a transition from engineering sciences towards biological sciences being used for policy decision-making. As briefly discussed in the previous chapter, this battle for scientific dominance in the previous period resulted in the biological sciences gaining prominence as the main focus of the research of the natural environment within the Greater St Lucia Wetland Park (Taylor et al, 1993). As a result, the protection of the biodiversity represented within the park became the main conceptual framework for ensuring that the St Lucia ecosystems were managed sustainably and according to the standards of a natural World Heritage site (Taylor, 2002). This focus on biodiversity is in line with international trends in conservation management, which placed an increasing amount of importance on managing natural environments as systems and ensuring ‘maximum biodiversity’ (UNCED, 1992). This was also strongly influenced by the Biodiversity Act (Act 4 of 2004) which also stressed the importance of protecting biodiversity in significant conservation areas. Accordingly, the St Lucia research office of EKZNW stressed the importance of researching the ‘resilience’ of the St Lucia system. Taylor (2002) explained resilience as the rate at which the system recovers from change. This fitted in with the minimum interference policy for managing the St Lucia and estuary mouth and reinforced the dramatic language of the survivalist discourse that had consistently characterised the EKZNW management throughout all periods discussed in this period (Taylor, 10/05/2004). However, this

extreme concern for the natural environment in St Lucia did not translate into interference in the estuary and mouth functioning but rather an emphasis on non-interference and a persistent focus on the positive effects of the drought part of the St Lucia system's natural cycle by EKZNW and the Wetlands Authority (Taylor et al, 2006). Accordingly, the latter part of this period allowed unique research to be carried out in the GSLWP during drought. Ricky Taylor, an EKZNW manager in St Lucia during this time and the previous period, conducted his PhD research on the ecological responses to these cyclical changes in the St Lucia estuary (Taylor, 2006). Taylor et al (2006: 598) concludes that it is an "important management task to [...] support the resilience of the estuary" and that "and integrated study of ecology and hydrogeology [would] give the managers the tool they need to take care of [the St Lucia system's] sustainability." Thus, this focus on non-interference and the importance placed on preserving St Lucia's biodiversity brings the survivalist and ecological modernisation discourses alongside each other in a partnership of thinking in order to use nature conservation to promote economic growth in the context of a global environmental discourse embodied in the UNESCO ethos of the World Heritage Convention. This is explained by Taylor et al (2006: 597) as follows:

"St Lucia has been a Protected Area for over 100 years. The region's obligations as a World Heritage Site stress the need to maintain the natural functioning of the area. Man-induced changes that can change the ecological function must be prevented whenever possible, and where this is not possible, measures to mitigate human impacts should be implemented. Whenever possible, it is necessary to restore natural processes that have been altered."

7.6. 'We can't just pray for rain': other stakeholder responses

The remaining stakeholders were St Lucia business owners and members of the public. The public and St Lucia business responses to the mouth management policies put in place by the Wetlands Authority were significant during this period. This was mainly due to the frequent occurrence of drought³¹ during the latter part of this period and the high percentage of local St Lucia businesses that relied on an open estuary mouth to attract regular clientele (Whitey, 15/09/2005). A good example of how strongly the public and local business owners felt about the need for an open estuary mouth is provided by an examination of the maps of St Lucia town issued by local tour

³¹ See Chapter 3. Table 3.1 provides a record of droughts since 1895

operators and accommodation providers. The majority of maps collected at the time of the study depicted an open St Lucia estuary mouth (examples of these maps are shown in Appendix D).

A strong focus of the public response was on the perceived need for the Wetlands Authority to intervene in the St Lucia estuary and artificially open the estuary mouth. While local businesses expressed some concern for the state of the Lake ecosystem and the apparent decline in biodiversity in the St Lucia estuary, they were more concerned with the knock-on effects of mouth closure on the local tourism industry (Barker, 13/05/2004). Local residents and business owners questioned why the authorities were now using a “hands-off policy” when it was felt that intervention at the mouth had worked in the past (Whitey, 07/07/2005).

During this period many alternatives to artificially opening the estuary mouth were suggested to the Wetlands Authority by the members of the public, including fishermen, residents of St Lucia, local businessmen and sugar farmers. The majority of suggestions focused on re-introducing hard engineering structures that were moveable to allow for periodic opening of the mouth and rehabilitating disused sluice gates (Barker, 13/05/2004; Jenkins, 30/08/2005). There were also suggestions from the sugar farmers that a new dam be constructed further upstream on the Umfolozi River in order to collect vital fresh water to relieve the system during the drought periods (Carnie, 23/08/2005: 8). It is interesting to note that while the majority of the public’s criticism of the state of the St Lucia mouth was directed at the Wetlands Authority and EKZNW, there was also criticism of the Umfolozi sugar farmers. Some of the proposals from the public, shown in the press and at public meetings, suggested that some sugar farms in the Umfolozi valley should be purchased in order to restore the ecological links of the system (Carnie, 23/08/2005: 8). In a newspaper article one member of the public explained this further:

“Why do the businessmen of St Lucia vent their anger on wildlife officials when the cause of the low water level is the farms? A win-win solution would be: 1. The businesses of St Lucia need to assist in this process by investing in restoring the wetlands. 2. The farmers need to bow out quickly by selling their farms” (Why not, 2005: online).

These criticisms and alternative suggestions were reported extensively in the press, describing the often tense relationship between the Wetlands Authority and EKZNW and the public during the St Lucia drought periods³². In one article the fishermen and ecologists were described as “clawing at each other's throats again because of the unrelenting drought” (Carnie, 07/02/2005: online). The official discourse of ‘let nature take its course’ approach resulted in the public perception that there was no plan in place and that the authorities could “do more than just pray for rain” (Whitey, 15/09/2005). In addition to these criticisms, the transition to a new management structures for St Lucia initially in 1997 and then in 2000 attracted much public criticism. The majority of the criticism was centred on an initial lack of communication regarding the roles and responsibilities of the new Wetlands Authority and then subsequently, the degree of decision-making power that the authority had in addition to the experts that were consulted (Dade, 12/05/2004). While there were extensive public participation opportunities created by the Wetlands Authority, the public felt these were often restricted to broad policy issues and that their issues of concern related specifically to the mouth were not being dealt with (Dade, 12/05/2004). The public were also quite vocal in holding the authorities to their biodiversity protection commitments. One St Lucia resident stated that “[they] have an international obligation to ensure sound and proper eco-system management [...] to ensure a sustained biological diversity!” (Barker, 13/05/2004).

There were, however, those who agreed with the ‘minimal interference’ policy of the authorities. One local resident interviewed stated “I think it’s wonderful that they’re leaving the mouth alone” (Brits, 18/03/2005). Another St Lucia resident agreed that there should be no more interference “unless it is on sound environmental grounds” (Barker, 13/05/2004). There was also evidence of public support for the expert scientific opinions being used by the authorities to justify their stance on mouth management. A letter to a provincial newspaper declared:

“LEAVE DECISIONS TO THE EXPERTS

Many people have become so emotionally embroiled in the argument, that perspective has been entirely lost. The crowds are, on one hand, ignoring advice from people who have devoted years of scientific study to these

³² Drought periods in St Lucia during this period were from 1992 – 1995 and from 2002 – 2006 (Taylor et al, 2006)

estuarine problems (and who have been rewarded with academic qualifications to support their success), as well as KZN Wildlife experience gained from past droughts, and, on the other hand, are allowing themselves to be swept along by the critical outcries of some locals whose expertise seems to rest solely on their years of living in the area. Come on, give the KZN Wildlife the scientific credit it deserves rather than blindly believing that a tour guide and local residents should be the experts on this subject just because they live there. For goodness sake, take scientific advice from the scientists.” (Read, 05/09/2005: online)

Apart from the above cases, the evidence shows that the public perception of how the mouth should be managed broadly correlates with a ‘wise-use’ environmental discourse. As explained by Whittaker and Mercer (2004) adherents to this discourse feel their access to resources is justified due to their stewardship of these resources and their belief in the utilitarian function of the natural environment. As stakeholders the skiboat clubs, tourism groups, fishermen and agricultural associations are resource users and it is not expected that they would adopt a ‘wise-use’ discourse. There is also evidence of these stakeholders playing down the effects of intervention on the natural environment and highlighting the economic costs of policy decisions:

“I suppose they are choosing the ‘lesser of the two evils’ if I could say that...meaning that they are looking after nature at the moment instead of commercial interests. But how long are they going to be able to maintain that? Biodiversity is becoming permanently affected and commercial places are always on the decline” (Dade, 12/05/2004).

7.7. Conclusion

This chapter describes and analyses the development of management policies for the St Lucia estuary mouth for the 1985 to 2005 period. Table 7.2 provides a summary of this analysis. There are three epistemic notions in South African society in the 1985-2005 period. Economic growth, and thus the Promethean discourse, remained a strong influence on the thinking of decision-makers in South Africa. The transition of the political situation in South Africa to a democratic national government influenced thinking about nature conservation. The conservation values and focus on biodiversity were further affected by the influence of global environmental discourses embodied in the World Heritage Convention and the listing of the GSLWP in 1999 as South

Africa's first world heritage site. The influence of the sustainable development discourse highlighted the emergence of the epistemic notion of 'poverty amidst plenty' that was reflected in societal thinking during this period and thus in the policies of national government. The state of the St Lucia estuary and mouth were described by all stakeholders in the context of its 'biodiversity being under threat' which once again reflected the survivalist discourse. The new management agreement between EKZNW and the Wetlands Authority meant that official explanations for the state of the St Lucia estuary and mouth were characterised by an emphasis on the natural cycles of the St Lucia system and its response to the human intervention in the past. The discourses evident in these explanations can be classified as a combination of the 'survivalist' and 'wise-use' discourses.

Following the frequent interventions in the system by the NPB, later EKZNW, in the previous period it was evident that the management policy changed in the post-Demoina period to one that advocated letting 'nature take its course', with 'minimum interference' in response to the impacts of Cyclone Demoina in 1984 and subsequent climatic cycles. This strategy was implemented in conjunction with a new effort to reconcile economic growth and environmental conservation for the public benefit in line with global protected area discourse. This projected strong evidence of the 'ecological modernisation' discourse, due to the partnerships between the authorities, disciplinary experts and the private sector, which made extensive use of this environmental discourse. The rise of the concept of biodiversity conservation was also prominent during this period and was highlighted through the focus of research on the 'resilience' of the St Lucia system. The 'rise of biodiversity' storyline reflected the 'survivalist' discourse due to the importance of scientific experts as well as the continuing use of dramatic, alarmist language. It also reflected the 'ecological modernisation' discourse by promoting the integration of biodiversity conservation and economic growth through tourism in St Lucia and the GSLWP World Heritage site. This was encapsulated in the 'benefits beyond boundaries' storyline of the national government policy response, which draws strongly on the 'sustainable development' discourse.

The response of the public to these policies was to support the storyline, 'we can't just pray for rain', that advocated system intervention by the authorities. This view was

also held by local residents, the private sector and resource-user groups and was consistent with the ‘wise-use’ environmental discourse which advocated taking care of the environment so that it could continue to support human activities. There were two other storylines, namely that decisions should be ‘left to the experts’ and that there should be ‘no more interference’. These storylines reflected environmental discourses that were counter to the more dominant view that official intervention in the St Lucia estuary and mouth was needed, namely the ‘ecological modernisation’ discourse and the ‘green rationalist’ discourse. However, these views were not as powerful in influencing policy making.

Table 7.2 Summary of the storylines and discourses of the 1985 – 2005 period

1985 - 2005	Storylines	Class of discourse (Dryzek)
Epistemic notions	‘Economic growth’ ‘Poverty amidst plenty’	Promethean Sustainable development
State of the mouth	‘Biodiversity is under threat’	Survivalist
Causes of the state of the mouth	St Lucia is ‘a naturally changing system’ ‘Umfolozi catchment development’	Survivalist Wise-use
GSLWPA/EKZNW response	‘Minimal interference’, ‘Let nature take its course’ ‘The St Lucia system and its biodiversity are resilient’	Ecological Modernisation Survivalist/ Ecological Modernisation
National government response	‘Benefits beyond boundaries’	Sustainable development
Public response	‘We can’t just pray for rain’ ‘Leave decisions to the experts’ ‘No more interference’	Wise-use Ecological Modernisation Green rationalist

The final chapter presents the conclusions of the research.

CHAPTER 8

CONCLUSION

The aim of the research is to gain an understanding of the policy discourses that informed decision-making in the Greater St Lucia Wetland Park, with particular reference to the management of the estuary mouth from 1940 to 2005. This is achieved through the following objectives:

1. Identifying the dominant discourses in policies that have informed decision-making since 1940,
2. Exploring the nature of alternative/oppositional discourses and how they influenced decisions taken,
3. Exploring the nature of discourse coalitions that have existed and
4. Identifying the role of science in influencing the construction of these discourses.

In order to understand the shift in discourses regarding the management of the St Lucia mouth it is necessary to describe the context of the study. The management of the St Lucia estuary mouth has required input from many government departments and organisations over time. Accordingly, this has been accompanied by many differing views on how the natural environment and its problems in St Lucia should be defined. Thus, the examination of the environmental policy-making process, which involves the state formalising these environmental discourses, provides an opportunity for the use of environmental discourses in policy-contestation to be studied. In addition, the internationalisation of environmental discourses in the post-apartheid period provides an important focus for study, especially at this time when South Africa is engaging internationally and adopting and adapting global environmental discourses into South African environmental policy.

This research applies discourse analysis as a methodology to examine the decision-making and policy processes over the period from 1940 to 2005, more specifically Hajer's (1995, 2003) argumentative discourse analysis approach, coupled with Dryzek's (1997) description of environmental discourses in order to provide a classification system for the discourses identified through this research. This combined method of discourse analysis provides an appropriate way to conceptualise

and analyse the data collected. It gives the necessary depth to the data set in order to identify the environmental discourses embedded in policy. Data analysis was undertaken using a coding process, to uncover and structure the evidence into themes in order to identify the dominant discourses. The themes identified in this thesis are: ‘epistemic notions’, ‘the state of the St Lucia estuary mouth’, ‘the causes of the state of the St Lucia estuary mouth’ and ‘policy responses and solutions’.

The data gathered for the study consisted of primary and secondary data. The main tool for gathering the primary data was an open-ended, semi-structured interview schedule, which was administered to six respondents. These respondents were sampled purposively as this was the best way to isolate specialised knowledge and expertise. Documentary data formed an important part of the primary data set. The documents used were mainly from South Africa legislation, St Lucia policy and management documents, Natal Parks Board meeting minutes, conference presentations, press releases and media reports. The majority of the key documents were sourced from Natal Parks Board archives in St Lucia and Pietermaritzburg.

This methodology is effective at extracting and explaining ways of thinking and how these have changed over time. This is especially useful in a study such as this which has a retrospective focus. Because this approach “assumes the existence of multiple, socially constructed realities instead of a single reality, governed by immutable natural laws”, it is an effective tool in identifying and separating out the different thoughts and perceptions of people involved in the debates under question. (Hajer, 2005: 176). It uncovers different thoughts and perceptions that one person or a stakeholder group can have and highlights the fact that these can differ. Discourse analysis also shows how certain ways of thinking and types of knowledge are accepted and become part of established knowledge (Hajer, 2005). The methodology identifies environmental discourses that have become institutionalised and analyses the process that led to this institutionalisation of previously ‘alternative’ ways of thinking. The study of the storylines that emerge in policy-making highlights the fact that the use of storylines allows stakeholders to debate environmental problems with each other using terms familiar to them. Discourse analysis provides a method of working with the plethora of discourses and storylines that emerge from these debates and focuses on the interpretation that they present, rather than focusing on which

interpretation represents the ‘truth’. This has enabled an alternative understanding of the historical process of the St Lucia mouth management and the dominant discourses that became institutionalised in this process.

Table 8.1. provides a summary of the storylines and discourses that emerged during the three periods of analysis from 1940 to 2005 and allows effective analysis ‘across’ the three periods.

During the 1940-1966 period, the dominant environmental discourses were the ‘promethean’ and ‘survivalist’ discourses. In the following period, 1967-1984, the ‘administrative managerialism’, ‘promethean’ and ‘wise-use’ discourses were most prominent. In the last period, 1985-2005 there were a number of prominent discourses, namely ‘sustainable development’, ‘survivalist’ and ‘ecological modernisation’ discourses. It is interesting to note that the environmental discourses have not shifted significantly over time. The ‘promethean’ discourse was a dominant discourse throughout the 1940-2005 period. In the 1967-1985 period, the ‘administrative managerialism’ discourse gained prominence, in addition to the ‘wise-use’ discourse. Also important to note, is that the ‘survivalist’ discourse began as a prominent discourse (1940-1966), was not as noticeable in policy in the following period, and then regained prominence in the 1985-2005 period.

In examining the dominant discourses, it is evident that the thinking around policy-formation in St Lucia was quite conservative. This is evident in the focus on economic growth throughout the 1940-2005 period. In addition, the dominance of the utilitarian ‘wise-use’ approach, focused on putting people first – further reinforced the anthropocentric ways of thinking. The ‘Promethean’ discourse was very dominant when examining the epistemic notions. The endeavour for continued economic growth continued throughout the periods discussed and, in relation to the St Lucia environment, was continued by the national government and agricultural stakeholders in order to “maximise the potential of available resources” (Dryzek, 1997: 53). With the influence of international environmental institutions in the 1967 to 1984 period, the epistemic notions were expanded in the 1967 to 2005 period to include that of the sustainable development discourse, which is a complementary discourse in that it allows economic growth to exist alongside environmental protection in the quest for

sustainability (Dryzek, 1997). Thus, the ‘ecological modernisation’ discourse and ‘sustainability’ approach are global discourses, pervading all decision-making regarding the environment. It is not unexpected that they would prevail in decision-making in St Lucia, especially in the context of the ‘benefits beyond boundaries’ approach evident in the last period (1985-2005). When discussing the state of the St Lucia estuary mouth the results showed that the ‘survivalist’ discourse, which was described as an ‘alternative’ discourse in the theory, turned out to be quite a prominent discourse when considering how the state of the St Lucia estuary mouth was described. This was evident in descriptions by both the management authorities (NPB/EKZNW) and the public. The state of the St Lucia mouth was described dramatically and always with increasing urgency for action to be taken. While this concern was focused on the effect on the natural environment in St Lucia, in the latter two periods from 1967 to 2005, the ‘wise-use’ discourse was evident in influencing these views so as to include the effect of the state of the mouth on human activities.

The public response was characterised throughout the periods examined by the ‘wise-use’ discourse. The public were consistently calling for action to intervene in the St Lucia system. While this intervention was often in the midst of calls to ‘save St Lucia’, the utilitarian focus of the public’s mindset meant that the calls to action were focused primarily on improving recreational and aesthetic conditions for their own benefit. Thus, in this context, it is important to note that the ‘survivalist’ discourse represents a truly ‘environmental’ discourse due to the emphasis on ‘limits to growth’ and the focus on the impact of humans on the natural environment.

In examining the interactions between policy and science throughout the three periods, it is evident that policy issues in St Lucia have always been addressed through the use of science and scientific experts. As a result the early emergence of science in the decision-making process is an indication of the adoption of the science-based policy making approach (Hajer, 1995). The dominance of science reached its zenith in the late modernist stage of the middle period where engineering became entrenched as an applied science and thus dominated environmental decision-making. This led to the development of a form of “regulatory science” where policy and science became a “hybrid realm”, as described by Jäger (1998: 144). This was particularly evident in the last two periods from 1967 to 2005. In 1967 to 1985,

	1940 – 1966		1967 – 1984		1985 - 2005	
	Storylines	Discourse	Storylines	Discourse	Storylines	Discourse
Epistemic notions	‘Economic growth’ ‘Separate development’ ‘White nationalism’	Promethean	‘Consistent economic growth’ ‘International environmental cooperation’ ‘Separate development’	Promethean	‘Economic growth’ ‘Poverty amidst plenty’	Promethean Sustainable development
State of the mouth	‘Natural conditions under threat’ ‘Fishing conditions deteriorating’	Survivalist Wise-use	‘St Lucia is dying’ ‘Keep the mouth open’	Survivalist Wise-use/ Administrative Managerialism	‘Biodiversity is under threat’	Survivalist
Causes of the state of the mouth	‘Mouth closure is natural’ ‘Human intervention caused the degradation’	Promethean Survivalist	‘Mouth closure is due to human intervention’	Administrative Managerialism	St Lucia is ‘a naturally changing system’ ‘Umfolozi catchment development is to blame’	Survivalist Wise-use
Local /Provincial management authority response	‘Fix the Umfolozi problem’	Promethean Survivalist	Mouth management is ‘the realm of the engineers’ ‘Man over Nature’ ‘There is a battle between the sciences to provide a solution’	Survivalist/ Administrative Managerialism	‘Minimal interference’, ‘Let nature take its course’ ‘The St Lucia system and its biodiversity are resilient’	Ecological Modernisation Survivalist/ Ecological Modernisation
National government response	‘Keep the mouth open’	Promethean	‘Development is a priority’	Promethean	‘Benefits beyond boundaries’	Sustainable development
Public response	‘Set St Lucia right’ ‘No interference’	Wise-Use Green Rationalist	‘You can’t sit back and watch’	Wise-use	‘We can’t just pray for rain’ ‘Leave decisions to the experts’ ‘Don’t interfere’	Wise-use Ecological Modernisation Green rationalist

Table 8.1. Summary of storylines and discourses for 1940 - 2005

science was so hegemonic that the debate was not over whether science was an influence on policy but rather which type of science should be used to provide solutions to the environmental problems in St Lucia. Alongside the dominance of science during the 1967-1984 period, was the prominent 'administrative managerialism' discourse, which focused on the importance of scientific experts and the use of bureaucracy to address environmental problems. This coincided with the emergence of the bureaucratic state as part of late modernism (Dryzek, 1997). In 1984, Cyclone Demoina coincided with the end of modernism and hence the end of the 'engineering approach' and the dominance of the bureaucracy to manage environmental problems.

The results of this study show that the types of environmental discourses that have been embedded in management policies for the St Lucia estuary and mouth have been strongly influenced by economic pro-growth discourses, as well as other discourses that have a concern for people's use (economic and recreational) of the environment, this being particularly through the identification of the utilitarian 'wise-use' discourses, and more latterly evident in the 'ecological modernisation' discourse. This discourse seeks to maintain economic growth at its present state and 'manage' the environment so as to allow current economic growth to continue.

While the environmental problems in St Lucia continue to be fiercely contested, they have provided a model for progression in the environmental debate and policy-making in South Africa. At the beginning of the period of study, in 1940, it was evident that environmental discourses were not part of the language of the debates regarding the management of resources and 'Nature'. The St Lucia estuary mouth and lake system have remained constant as a natural conservation site but the meanings assigned to this natural system have shifted throughout the 1940 to 2005 period and remain contested. With the current influence of international environmental organisations and conventions on local environmental decision-making, it is important to highlight and be aware of the ways in which these global discourses influence local environmental discourses. From an environmental policy perspective, discourse analysis, as shown by the application of this approach in this thesis, reveals the power that dominant discourses have in influencing the management of the natural environment.

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Appendix A – Interview schedule

Schedule of Questions (Interviews)

I am doing my Masters research at the University of KwaZulu-Natal, in the Geography Department. I am interested in the recent history of the management of the St Lucia estuary mouth (from approx 1980), as well as the present stakeholder interactions that surround the current mouth management issues.

A. General

1. Please could you give me an overview of your experience in the St Lucia area, areas of interest/expertise and how long you have been working and/or residing in St Lucia.
-

B. Understanding the System

2. Just for some background, what is your understanding of how the St Lucia system works?
 3. What different stages / states does the system go through? What is the main driver for the changes between these states?
 4.
 - a) Please explain your understanding of the importance the mouth is in the functioning of the system?
 - b) What changes do you see happening in the mouth?
 - c) Why is the mouth closed? Is this a natural phenomenon?
 - d) In looking at the history of the lake, what level of intervention has taken place?
 5.
 - a) When the mouth is open, what are the
 - i. positive effects
 - ii. negative effects
 - b) When the mouth is closed, what are the
 - i. positive effects
 - ii. negative effects(can be biophysical, social, economic)
 6.
 - a) What is the value of the system?
 - b) How the fact that this is a conservation areas been important in mouth management?
-

C. Stakeholders

7. a) What role have government played in the past? And presently?
b) Were there opportunities for groups outside of government to influence decision-making? Explain.
 8. a) Who were the most dominant stakeholders in the management of the mouth?
b) What ideas did they bring to management?
c) How influential were they?
 9. Are you aware of any stakeholder partnerships that formed over these issues? Explain.
-

D. Management and Policy

10. a) In your understanding, who was responsible for the management of the system and the mouth?
b) What was the mouth management policy?
 11. It is quite apparent that there is controversy about the way that the mouth is managed. Do you agree?
What is your perception of the conflicts, i.e. Who is involved? What are their viewpoints?
 12. Are the structures and policies in place at present adequate to ensure the mouth is managed properly?
-

E. Role of Research

13. In what way have scientists played a role? Has this always been the case?
14. What role has engineering played in the past?
15. Were there any scientific projects or commissions that have had a particular influence?
16. How has research in the park been affected by these issues we've discussed?
17. Is the mouth management research that has been conducted adequate for decision making, i.e. is research lacking in certain areas?

Do you have any papers or documents that detail these issues discussed?

Appendix B - Plates from Chapter 3



Plate (a): Labourers moving sand from the banks of the Umfolozi River to divert its course into the Indian Ocean, 1952 (Photo supplied by Nidia Brits)



Plate (b): The Umfolozi River flowing into the sea along its new course, 1952 (Photo supplied by Nidia Brits)



Plate (c). The dredger 'Inkwazi' on the St Lucia estuary, 1976
(photo supplied by N. Brits)



Plate (d). The Dredger harbour construction during the 1970s on the St Lucia estuary
(photo supplied by N. Brits)

Appendix C – Plates from Chapter 6



Plate (e). Groynes at St Lucia estuary mouth, November 1980
(Photo supplied by Nidia Brits)



Plate (f). The almost completed intake works, 1982 (Photo supplied by Nidia Brits)



Plate (g). Opening the St Lucia estuary mouth, August 1979
(Photo supplied by Nidia Brits)



Plate (h). Opening the St Lucia estuary mouth, October 1980
(Photo supplied by Nidia Brits)



Plate (i). Cyclone Demoina damage to the bank between the Umfolozi River and Link canal at the Intake Works, February 1984 (Photo supplied by Nidia Brits)

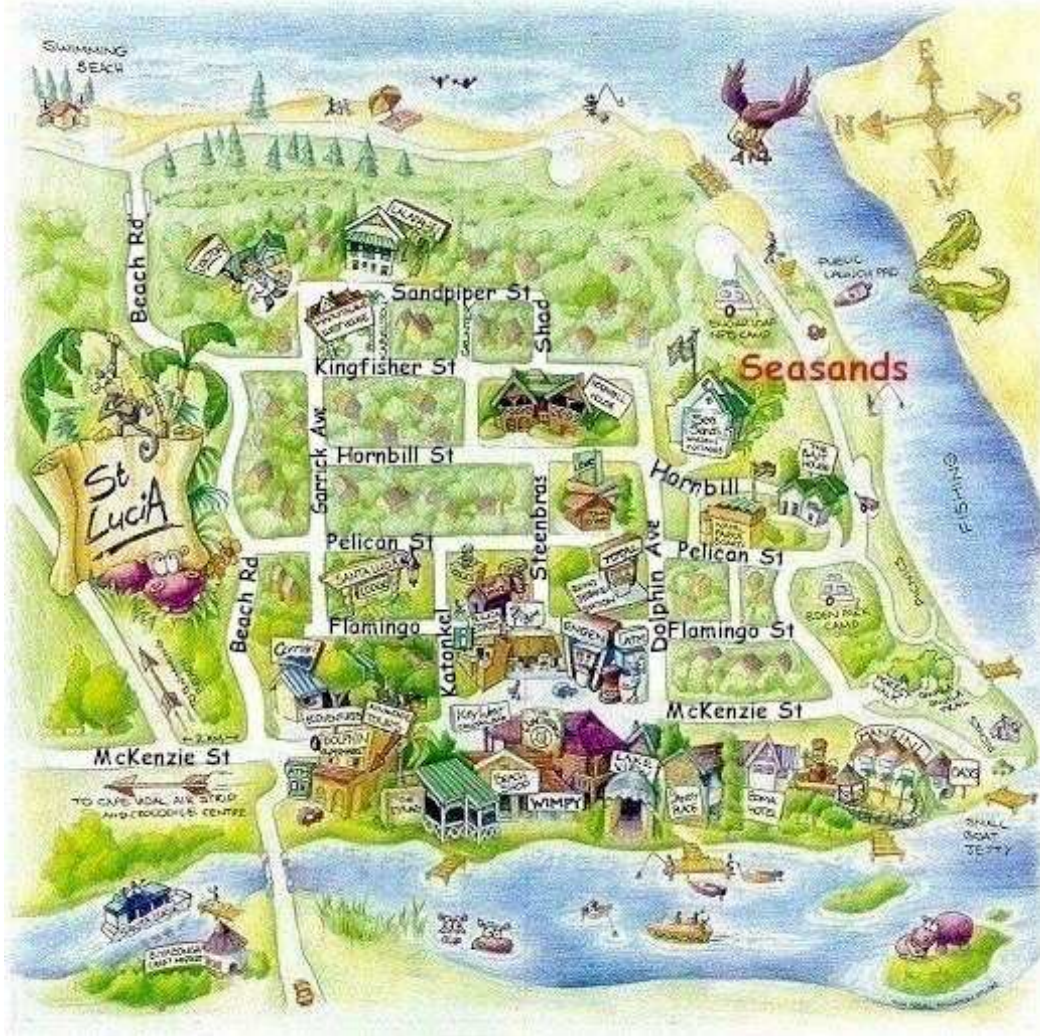


Plate (j). Cyclone Demoina damage to the Intake Works, February 1984 (Photo supplied by Nidia Brits)

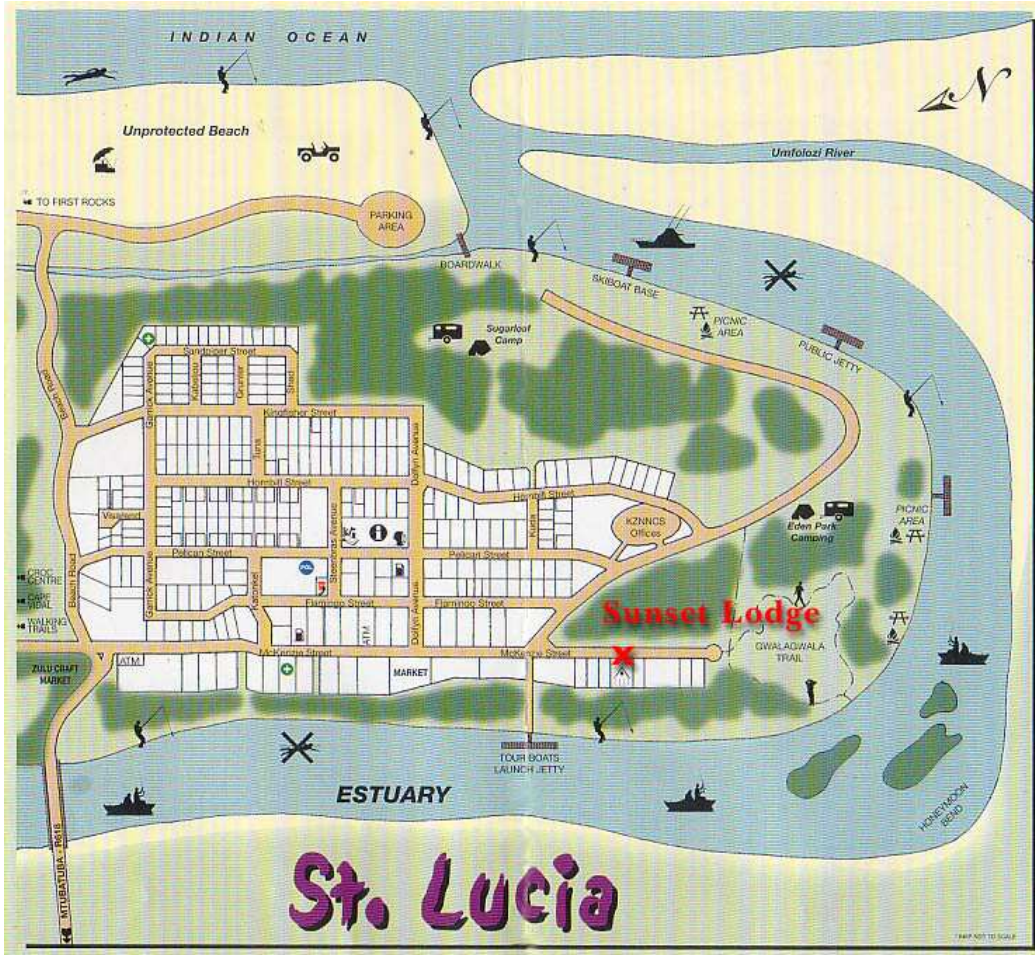


Plate (k). The dredger 'Inkwazi' washed ashore after Cyclone Demoina, February 1984 (Photo supplied by Nidia Brits)

Appendix D - Sample of St Lucia town maps depicting the St Lucia estuary mouth









Appendix E

St Lucia Scientific Advisory Council Workshop. Natal Parks, Game and Fish Preservation Board, 16th – 17th February 1976, Charters Creek.

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