Investigating stakeholder engagement cycles and identities within Water Resource Management, using narrative techniques

Report to the
WATER RESEARCH COMMISSION

by

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EXECUTIVE SUMMARY

BACKGROUND

This Water Research Commission funded research project, undertaken by The Narrative Lab during the course of 2012 and 2013, investigated the social dynamics of stakeholder engagement and volunteerism using narrative techniques at two study sites in the Western Cape, namely the Wilderness and Swartvlei estuaries which are situated on the Garden Route, close to the towns of Wilderness and Sedgefield.

In particular the study aimed to understand why citizens choose to engage with water resource challenges, how they translate that engagement into action and participation and how such engagement may be cyclical in nature. The study investigates how citizens become and remain engaged in the decision making regarding the management of the natural resource and to determine, (a) if they feel they are empowered, (b) if they have sufficient knowledge as well as (c) guiding principles on how to act or start an active engagement process.

RATIONALE

The terms ‘stakeholder management’ and ‘stakeholder engagement‘ are easily entwined with each other and used interchangeably when describing any process whereby an entity interacts and communicates with people or entities who are affected by a course of action or project. There is a nuanced difference between the term describing a broader, more inclusive, and continuous process between a company and those potentially impacted that encompasses a range of activities and approaches (IFC, 2007) and the term referring to the way in which stakeholders engage with a water resource challenge.

The focus of this research study was to investigate latter form of stakeholder engagement, i.e. the way affected individuals, groups, parties and entities choose to engage with a water resource challenge. In other words, stakeholder engagement refers to the manner in which citizens and representatives of stakeholder groupings come to the decision to participate and remain involved in alleviating the challenges associated with water in their locality.

This focus then also encompassed the traditional process of stakeholder engagement whereby an entity engages with stakeholders through a structured process of interaction and communication, but the primary intent was to understand how to create and sustain levels of engagement amongst stakeholders with a water resource challenge.

Two study sites were chosen in the Western Cape, the Swartvlei and Wilderness lakes systems near George. The study sites were chosen because of a recent track record of stakeholder engagement levels and events that were of interest to the project team. In particular, relationships between citizen stakeholder groups and the managing agency, South African National Parks, had become fragmented and had deteriorated significantly regarding the management of the lakes systems. In particular, engagement issues revolved around the opening and closing of the

estuary mouths at Swartvlei and Wilderness. Flooding of houses and properties was of significant concern to local stakeholders when the mouths were not being manually opened in time by SANParks.

OBJECTIVES AND AIMS

The main aims of the research were to:

1. Generate a body of knowledge on stakeholder engagement cycles within Integrated Water Resource Management in South Africa by investigating the history of engagement within selected communities.
2. Understand the dynamics that drive the cyclical nature of engagement and how to overcome them so as to create sustainable engagement levels in communities.

Additional aims of the study included:

- Establish what the High Potential Opportunities (HPO) are that present the ideal starting conditions for the creation or emergence of sustainable engagement.
- Investigate the influence of the following concepts/notions on stimulating and sustaining engagement: Salience, Agency, Social Learning, Identity Formation, Resilience, Leadership and Adaption amongst others.
- Investigate the role of identities in stakeholder management and engagement, with particular reference to the volunteer identity.
- Establish how sustainable helpful engagement identities can be stimulated in diverse stakeholder groupings that would transcend physical and social boundaries.

METHODOLOGY

The study used a qualitative methodology that focused on the application of narrative techniques to uncover the stories of engagement at the study sites. Stakeholder maps, historical timelines and engagement themes were generated through the collection of narrative material from respondents in interviews and workshops. Fieldwork was conducted by The Narrative Lab team in conjunction with a locally based Masters student, Aneri Vlok, who submitted her Masters dissertation based on the study.

RESULTS AND DISCUSSION

The outputs of the Stakeholder Mapping and Historical Timelines were of particular interest to the research team as well as stakeholders who are residents and representatives of stakeholder groupings in Wilderness and Swartvlei. Firstly, the stakeholder maps for the respective study sites are larger than residents had assumed. Through the dissemination of the maps citizens experienced a broadening of their own assumptions of who the stakeholders were at the study sites. They were also able to position themselves and their agendas within the context of other affected stakeholders who also have legitimate benefit sharing needs of the estuaries.

The history of engagement at the study sites dates back to the 1800s where the project team were able to establish that the opening and closing of the river mouths, originally performed by local farmers, became an issue as management agencies established themselves and began managing the estuaries.

Certain events are key to sparking increased levels of stakeholder engagement in relation to water management. These events were highlighted in emergent engagement themes that were extrapolated from the narratives contributed by participants in the study.

Specifically, the themes that spark the psychological and emotional engagement that transforms into active participation are:

- The role of key individuals and changes in personal within Water Forums
- The reason why people choose to engage
- The continuity of a forum
- Access to the natural resource
- Tourism
- Housing and Land Development
- Droughts and Flood
- Management of the Lakes
- Pollution.

A key finding of the study was that citizen engagement levels are highly individualised and variable in nature, driven by complex individual and social

dynamics. While engagement may not seem to be cyclical over time, it is certainly variable and the study has identified issues and discourses (themes) that affect engagement levels. Another key finding was that citizen stakeholders seem to be limited in their overall view of the stakeholder landscape and the history of engagement at the study sites. These partial viewpoints, while valid in their own right, are not the whole picture and citizens can benefit from stakeholder mapping and historical timeline activities that bring more people into the fold.

Swartvlei and Wilderness are unique in the sense that there exists a large cohort of retired people, many of whom have engineering backgrounds, who reside in the areas. These retired people are highly engaged and involved in the water resource challenges and are very vocal with regards to the shortcomings of SANParks in the area. Unfortunately, the retired community and SANParks officials have not yet found a way of working alongside each other constructively.

One of the key outputs of this study was the development of a user-friendly Citizen Engagement Guide (Appendix 2). The Guide was developed to equip average citizens with the narrative techniques utilised in this study so that they themselves could begin gathering material to characterise and understand the nature of engagement in their own areas, wherever they may be.

OBSERVATIONS & REFLECTIONS

While the results of this study are not exhaustive, there were some key observations that emerged from the project:

- For many citizens, engagement is not percieved as an issue worthy of spending time on being addressed or spoken about. For these people, the water challenge is the issue.
- There are subtle and sometimes direct identity dynamics at play in stakeholder groupings that influecen the way in which individuals choose to get involved.
- The socio-economic status of individuals plays a role in the extent to which they get involved as well as informing the nature of their concern regarding the natural resource.
- It is particialry difficult for representatives of a single stakeholder grouping to fully appreciate and understand the identity, mindsets, priorities, values and agenda of those in another stakeholder grouping. This seems to be due to the fact that representatives of stakeholder groupings socially interact with those mainly from within the same grouping.

In reflection, the project team felt the ethical burden of conducting stakeholder mapping and historical timelines. The power of deciding who is included in a stakeholder map is the power of inclusion and exclusion. The same is true of representing the history of a location, although different in that history is ultimately subjective and depends on how certain people prioritise the importance and significance of certain events over others.

RECOMMENDATIONS FOR FUTURE RESEARCH

The project team recommends that more work be done on applying the methods of stakeholder mapping and timeline analysis in WRC funded projects in order to establish solid literature on how to conduct and apply the methods.

We recommend that further research be conducted on stakeholder engagement as the project did not adequately characterise the cyclical nature of stakeholder engagement. Our experience was also that the complexity of engaging with engagement, so to speak, is interesting and should be of interest to management agency stakeholders who seek to engender greater co-management of our natural resources.

NOTE:
Please note that this report contains verbatim quotes from the interviews conducted by the researchers. These are rendered in *italics* with the reference to the specific interview appended in brackets with an 'I' followed by the interview number.

ACKNOWLEDGEMENTS

The authors would like to thank the residents and various stakeholders of Swartvlei and Wilderness who participated so willingly in this research project. It is always an honour to capture stories from people and we are thankful that you entrusted us with them.

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Mr K Khorommbi	Department of Water Affairs
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LIST OF ABBREVIATIONS

CMA	Catchment Management Agency
DWAF	Department of Water Affairs and Forestry
DWEA	Department of Water and Environmental Affairs
GRNP	Garden Route National Park
HPO	High Potential Opportunities
IBA	Important Bird Area
IWRM	Integrated Water Resource Management
NGO	Non-governmental organisations
PES	Present Ecological State
PHR	Pre-Hypothesis Research (PHR)
RAMSAR	The Convention on Wetlands (Ramsar, Iran, 1971)
SANParks	South African National Parks
SES	Social-Ecological System
S.O.S.	Save Our Streams
TNL	The Narrative Lab
WRC	Water Research Commission

GLOSSARY

- Benefit sharing – Wetlands provide a myriad of ‘free’ ecosystem services that all stakeholders share. Benefits range from carbon sequestration, recreation, water purification, disease mitigation, water recharge, healthy upstream habitat mitigating floods and green corridors for the free movement of seeds and pollinators
- Bridging agents – Key individual that is a catalyst for the success for adaptive co-management that emerged through self-organisation processes. These individuals are not easily replaced; they play the role of bridging agents and often have unique knowledge and abilities and are able to span multiple knowledge boundaries.
- Engagement – The manner in which stakeholders ‘harness’ and ‘decouple’ themselves from active involvement in addressing a water challenge.
- Engagement cycles – Waxing and waning levels of engagement.
- Identity – Identities are malleable as well as context sensitive and as a construct identity influences what actions individuals are prepared to take. Individuals use their identity as a frame of reference to make sense of the world through mental models.
- Narrative techniques – A qualitative methodology that focused on uncovering the stories of engagement at the study sites.
- Salience – It is defined as the state or quality that stands out relative to neighbouring issues.
- Social learning – A definition that seems to be the most accepted by authors is that change happens when people learn new perspectives from each other that benefits the social-ecological systems that they are part of.
- Stakeholders – Stakeholders involve a whole range of actors from statutory agencies through to individual citizens.
- Stakeholder engagement – The way in which stakeholders choose to engage with a water resource challenge.
- Stakeholder management – A broader, more inclusive and continuous process between a company and those potentially impacted that encompasses a range of activities and approaches.
- Stakeholder map – A stakeholder map is a document that shows either all possible stakeholders or limited stakeholders within a specified boundary.
- Stakeholder participation – It is when management are based on a participatory approach, involving users, planners and policy-makers at all levels.
- Volunteerism – Volunteerism can be viewed as a form of stakeholder engagement. Volunteerism becomes a lens through which we can better understand stakeholder engagement.

1 INTRODUCTION

In 2011 the Water Research Commission (WRC) approved a study by The Narrative Lab (TNL) to understand how one could mobilise the hearts and minds of stakeholders to engage with adaptive Integrated Water Resource Management challenges and to then remain psychologically engaged over time. The aim of this research was to investigate and understand how citizens become and remain engaged in the decision making regarding the management of the natural resource and to determine, a) if they feel they are empowered b) if they have sufficient knowledge as well as c) guiding principles on how to act or start an active engagement process.

Specifically, the research consisted of the following aims:

- Generate a body of knowledge on stakeholder engagement cycles within Integrated Water Resource Management in South Africa by investigating the history of engagement within selected communities.
- Establish what the High Potential Opportunities (HPO) are that present the ideal starting conditions for the creation or emergence of sustainable engagement.
- Understand the dynamics that drive the cyclical nature of engagement and how to overcome them so as to create sustainable engagement levels in communities.
- Investigate the influence of the following concepts/notions on stimulating and sustaining engagement: Salience, Agency, Social Learning, Identity Formation, Resilience, Leadership and Adaption amongst others.
- Investigate the role of identities in stakeholder management and engagement, with particular reference to the volunteer identity.
- Establish how sustainable helpful engagement identities can be stimulated in diverse stakeholder groupings that would transcend physical and social boundaries.

To achieve these aims it was important to identify the various citizen groups that would be affected by changes within the natural resource as well as to determine what the past engagement frame of reference was.

A specific focus area was to investigate the existence of highly variable engagement levels over time, i.e. whether engagement levels, if seen as a graph over time, would show repeated sharp peaks and deep troughs. If this variance did exist, the study sought to investigate ways of creating more sustained levels of engagement. In seeking to better understand engagement cycles (or waxing and waning levels of engagement), a key research question was around the impact of sustained levels of participation on psychological engagement. A question the researchers wanted to investigate was whether or not sustained periods of participatory activities potentially lead to burnout and lower levels of psychological and emotional engagement.

Key concepts that guided the research were:

- Understanding the forms of power that exist within the various communities that the researchers studied. Specifically, the researchers were interested in whether invisible power dynamics were at play that excluded certain groups and individuals from effective and sustainable engagement.
- 'Place attachment' or meaning, which in essence is a positive emotional bond that develops between people and their environment. This study aimed to understand the meaning which people had about a system, i.e. their 'place', and how it frames their involvement and engagement. Specifically, we explored the interplay between communities' identification with a system and their levels of effective commitment, i.e. a readiness to engage when needed.
- The role of leadership and so-called bridging agents and whether effective leadership can lead to sustained engagement and how greater resilience may be fostered in a system and its leadership.
- The role of issue salience – can the salience of water management issues, which have a longer time horizon, be raised to equal that of issues like crime, which have a more immediate impact in the communities we aimed to investigate.
- The study sites chosen for this study each had their own respective and relative levels of reported dysfunction. The approach by the researchers was to critically assess the social systems at play at the sites and to understand the dynamics and interactions that 'create' the supposed dysfunction, while also investigating what keeps that level of dysfunction present.

It is becoming increasingly important to understand the interdependence between people and ecological systems and the challenges faced in managing a common pool resource equitably and sustainably. Scientific assessments indicate that human activities now pose a rival to many geophysical and ecological processes at global as well as local scales (Anderies *et al.,* 2004; Steffen *et al.,* 2011). Scientists refer to this situation as the advent of a new time interval – the Anthropocene (Steffen *et al.,* 2011). It is therefore increasingly important to understand the interdependence between people and ecological systems. Furthermore, it is becoming necessary to alter our relationship with/behaviour towards ecosystems that provide services that we depend on (Anderies *et al.,* 2004). Many of the problems faced today that involve natural resources are due to individual human decisions that impact on collective benefits (Kollock, 1998).

The challenges regarding the effective and equitable management of water resources in South Africa could potentially be addressed more effectively if there was a deeper understanding of what drives and inhibits stakeholder engagement.

The study was rooted in the story of engagement at two study sites in the Western Cape, the Swartvlei and Wilderness Lakes systems.

The study adopted a qualitative approach that focused on a narrative methodology. Participants were identified at two study sites through a snowballing sampling technique and participated in a series of interviews and workshops where narrative material regarding engagement at the study sites was collected and analysed.

1.1 Study Sites

1.1.1 Selection Criteria

At inception of this research, two study sites were selected using the following criteria:

1. There was an implementation mandate, capacity and competency in the area, and amongst stakeholders to act upon and use the outcomes from the research
2. As a key focus of the study was understanding cycles of engagement, there needed to be a documented track record of contention and engagement that exceeded 10 years, and preferably before and after democracy
3. A diversity of stakeholder meanings, values and behaviours related to management of, access to and use of the eco-system resources
4. A socio-economic profile that had a past of exclusion and a present of inclusion, or attempts at inclusion, so that the influence of exclusion on engagement could be studied
5. The socio-economic profile of the community or society with the water challenge must not have been unique to the area – there should ideally be other communities in SA with similar socio-economic profiles that face water challenges
6. Stakeholders needed to be easily accessible
7. A suitable research student should easily access the sites and with local supervision available

Early in the project, a suitable student was recruited from the Nelson Mandela Metropolitan University Saasveld campus in George. At the time, the student, Ms Aneri Vlok, had begun an MSc in Botany, with her thesis based on the “Influence of stakeholder engagement on benefit sharing related to the use of the Wilderness and Swartvlei lake systems”. Site selection activities therefore focused on areas within the Breede-Overberg catchment that would be accessible to Ms Vlok.

1.1.2 Overview: Wilderness and Swartvlei estuaries

The Wilderness and Swartvlei estuaries are situated on the Garden Route, close to the towns of Wilderness and Sedgefield. The Wilderness lake system was classified as a Ramsar site (Wetlands International Global Site, 2007), which raises the importance of understanding the reasons for volunteerism, social learning and collective identity of the stakeholders around these systems and the cyclical nature of this type of engagement. These systems are managed by SANParks who expressed an interest in the outcome of this research in order to assist them in dealing with the multitude of complex stakeholder interactions that they need to manage. In both systems, residential houses were built within the flood zone and both systems are utilised extensively for tourist and recreational activities. There are also groups of people who rely on fishing (both legal and illegal) from the estuaries for survival.

The two systems, even though geographically close together, seemed to be in different stages of engagement. A paired study was conducted comparing the

different levels of engagement in sites in close proximity to each other. The Swartvlei system was in a very dynamic and volatile state of the engagement cycle. Just prior to this research beginning, it had reached a climax with a court case between SANParks and a particular stakeholder who attempted to intervene independently. The stakeholders of the Rondevlei system on the other hand seemed to be satisfied with the decisions made by SANParks on behalf of them on the management of the system.

An interesting dynamic that was present at the study sites is that many of the community members are retired experts, for example engineers. In most cases, stakeholders often disengage due to feeling overwhelmed by being exposed to information that has engineering specifications and are scientifically technical. However, because of the technical expertise of the stakeholders at the study sites, this was not a barrier to engagement and participation. In fact, many of these retired experts became more engaged because they believed they "knew best".

1.1.3 Location

The Wilderness and Swartvlei lake systems form an integral part of the Wilderness Section (33°50'-34°30'S; 22°33'-22°50'E) of the Garden Route National Park (GRNP) (Russell et al., 2010). It is located between Knysna (40 km) in the east and George (16 km) in the west on the south coast of the Western Cape in South Africa (Figure 1). The park is one of the most integrated urban conservation areas in South Africa and is an open access park with enclosed camping and chalet areas that border onto the estuary (South African National Parks, 2010). The two catchment areas of the lake systems extend in a southerly direction from the Outeniqua Mountain plateau seawards where it adjoins the Indian Ocean on the southern Cape Coast (Figure 1) (Russell et al., 2010).

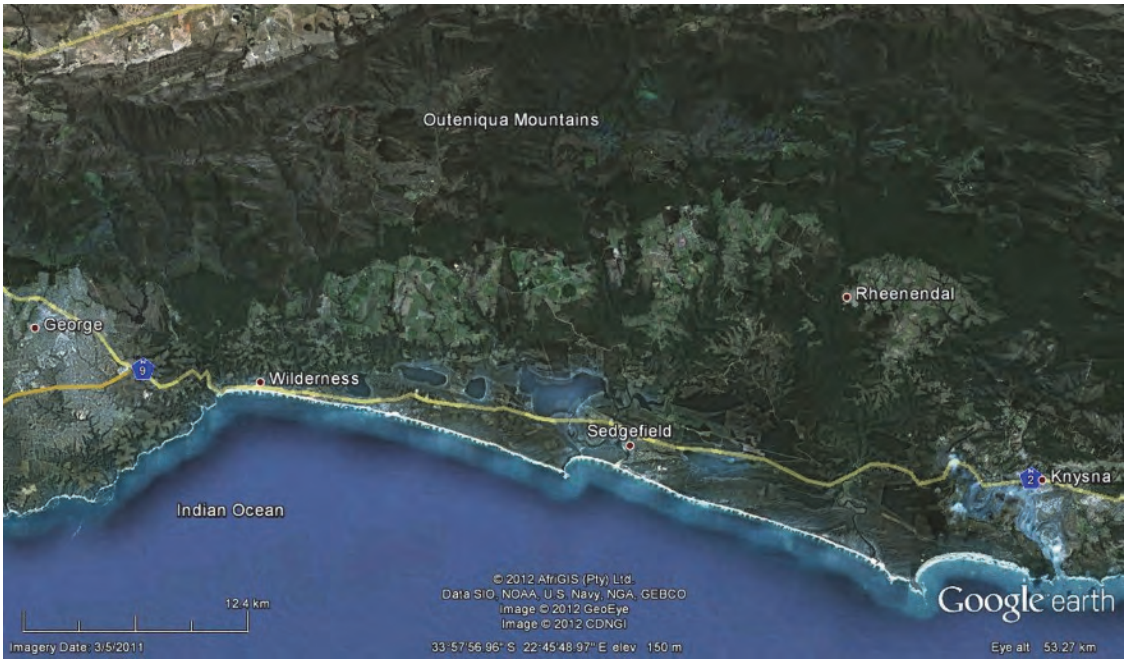

Figure 1: The location of the Wilderness and Swartvlei lake systems (Google earth, 2012).

1.1.4 Abiotic and biotic characteristics

The study area consists of various lakes. From west to east they are the Touw River Estuary (temporarily open/close estuary), Island Lake, Langvlei, Rondevlei (collectively known as the Wilderness Lakes) and Swartvlei with its estuary (temporarily open/close estuary) (Figure 1) (Russell et al., 2010). These lakes are some of the most intensely ecologically researched systems in South Africa (Whitfield et al., 1983; Russell et al., 2010; South African National Parks, 2010).

The catchment area of the Wilderness lakes system consist of the Touw River (96.2 km^2), Duiwe River (42.1 km^2) and Langvlei Spruit (8.2 km^2) (Whitfield et al., 1983; Fijen & Kapp, 1995b; Russell et al., 2010; South African National Parks, 2010) while that of Swartvlei (340 km^2) consist of the Diep River (98.3 km^2), Wolwe River (17.2 km^2), Hoëkraal River (110.0 km^2) and the Karatara River (101.6 km^2) (Figure 2) (Whitfield et al., 1983; Russell et al., 2010; South African National Parks, 2010).

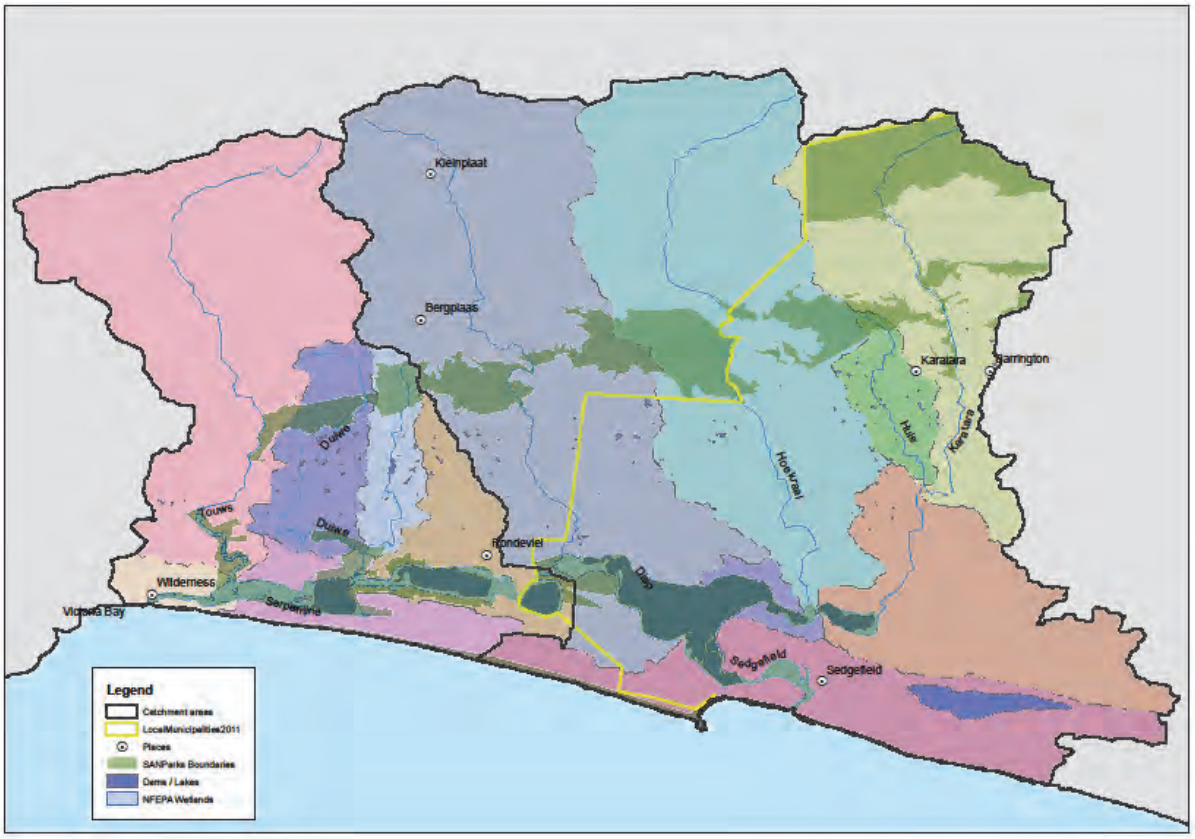

Figure 2: A map of the biotic and abiotic characteristics of Wilderness and Swartvlei

1.1.5 Climate

The area receives an all year average rainfall of 600-700 mm per annum in the low lying areas with an average rainfall between 900-1000 mm per year in the upper catchment with very little seasonal variation, but there are slight peaks between January to March and August to November (bimodal). The main wind patterns are the rain bearing south-western winds, desiccating north-western bergwinds and the fair weather south-easterly winds. Rain usually follows the bergwinds.

The region has a moderate climate with temperatures ranging between 15-25°C in summer and 7-19°C in winter with the temperatures of the water in the lakes and estuaries following the same seasonal patterns ranging between 25-29°C in summer and 10-14°C in winter (Whitfield et al., 1983; Russell et al., 2010; South African National Parks, 2010).

1.1.6 Hydrology

Little research has been published on the hydrology of the Touw River estuary. The estuary, however experiences short residency of flood waters highlighting the fact of rapid changes in water level especially within the estuary (Fijen, 1995b; Russell *et al.,* 2010).

On the Swartvlei system early research focused more on the influence of the freshwater input rather than on tidal exchange (Russell *et al., 2*010). The average annual input of freshwater into Swartvlei is 66 x 10^6 m^3 (Whitfield *et al.,* 1983; Fijen, 1995a; Russell *et al.,* 2010) with a total evaporation of 12.1 x 10^6 m^3 (Whitfield *et al.,* 1983) which under natural conditions makes it highly unlikely to become hypersaline (Russell *et al., 2*010).

Research has shown that the impact of the railway bridge, which was built across Swartvlei, had some effect on the flow of the water between the lake and estuarine sections. A study modeled the effect of removing the railway bridge and showed that there would be a 40% increase in the tidal exchange between the estuary and the lake (Whitfield *et al.,* 1983; Russell *et al.,* 2010). The main restriction on the flow of the water was the narrow estuary mouth (Whitfield *et al.,* 1983; Russell *et al.,* 2010).

1.1.7 Hydrodynamics

In South Africa 75% of estuaries are temporarily closed off to the sea by a sand berm. Wave conditions and wind are two important factors that determine the mouth dynamics. A temporarily open/close estuary mouth closes due to the following physical factors: limited freshwater run-off due to small catchments; seasonal rainfall interspersed with periods of drought; limited tidal influence while the mouth is open and a large sand load that is deposited due to high energy surf zone (Van Niekerk & Turpie, 2012). According to Whitfield *et al.* (1983) at Swartvlei mouth, the predominant wave action during spring and winter are from the south-west while in summer and autumn it moves to a south-easterly direction. The south-westerly wave conditions during winter usually causes the mouth to close due to the longshore sand transport (Whitfield *et al.,* 1983; Russell *et al.,* 2010). It is estimated that the mouth condition is in a closed state for 50% of the time and predominantly during the winter season (Whitfield *et al.,* 1983).

A modelling study by Fijen (1995c) showed that under natural conditions an open estuary mouth for Touw River Estuary and Swartvlei Estuary would occur for 40% and 65% of the year respectively. This dropped to 25% and 55% by 1995 and it was estimated that it could be reduced further to 19% and 51% due to more freshwater extractions in the future (Russell *et al., 2*010).

Due to the development in the floodplains it has been suggested that the mouths be artificially breached between 2.1 and 2.4 m (Touw River) and 2.0 m (Swartvlei) above mean sea level as this would protect the properties from a 1 in 50 year flood (Whitfield *et al.,* 1983; Fijen, 1995b; Russell *et al.,* 2010). At this height the ecological and hydrological functioning of the estuaries would be impacted minimally and flooding of the adjacent development would also be minimised (Russell *et al., 2*010).

An alternative solution to prevent flooding of properties in the Wilderness Lakes, is the dredging of the channels connecting the different lakes. Although the dredging of the inter-connecting channels would enhance water exchange between the lakes it will have little to no effect on the level of the flood waters at the estuary but would

affect the water level in Island Lake with between 30-40cm (Fijen, 1995b; Russell *et al.,* 2010).

1.1.8 Biodiversity and Present Ecological State

Nationally Swartvlei is ranked 7th and Touw River 24th for their overall contribution to conservation importance. The Touw River is also ranked 9th in South Africa for the conservation of water birds (Turpie, 1995; Russell *et al.,* 2010; South African National Parks, 2010). Part of the Wilderness lakes (Rondevlei, Langvlei, Island Lake and Serpentine and interconnecting channels) system was declared a RAMSAR site due to its biodiversity (Russell *et al., 2*010; South African National Parks, 2010) as well as an Important Bird Area (IBA) (Van Niekerk & Turpie, 2012). Swartvlei is classified as an important fish nursery area due to its high biodiversity (Van Niekerk & Turpie, 2012). The ecological importance of an estuary is the assessment of its biotic as well as abiotic components that is measured to determine the importance of an estuary to the conservation of its ecological functioning and biological diversity on a global, national or regional scale (Van Niekerk & Turpie, 2012). The ecological importance of an estuary is the assessment of its biotic as well as abiotic components that are measured to determine the importance of an estuary to the conservation of its ecological functioning and biological diversity on a global, national or regional scale (Van Niekerk & Turpie, 2012).

According to Van Niekerk & Turpie (2012) Wilderness lakes and Swartvlei are partially conserved with no no-take restrictions, but according to South African National Parks (2010) there is no-take restrictions in sections of Wilderness Lakes with Rondevlei and Langvlei only being utilised for birdwatching. The levels of protection are classified as low. Van Niekerk & Turpie (2012) state that management plans for the estuaries still have to be established in terms of the Integrated Coastal Management Act. There are however integrated park management plans that includes the management of the estuaries. Within the next five years the governance of the estuaries will be aligned with the National Estuarine Management protocols that were developed in relation to the Integrated Coastal Management Act in accordance with the National Environmental Management Act (South African National Parks, 2010).

The Rivers Health Programme (2007) classified the ecostatus of Touw, Duiwe, Hoëkraal, upper Diep and Karatara rivers as good or natural. The Wolweriver was classified as fair to poor. The biotic index of the Touw, Duiwe, Karatara and Hoëkraal river has always been below two with the Diep River occasionally exceeding two which indicates enriched waters (Russell *et al., 2*010).

According to the South African National Biodiversity Assessment of 2011 the pressures faced by the systems is of “no current threat”. The chances of change in flow were rated as low for both Wilderness Lakes and Swartvlei; chances of pollution were medium for Wilderness Lakes and low for Swartvlei and the chances of habitat loss were low for both systems. Current pressures are that the mouths of the estuaries are artificially breached for both systems; bait is collected from both

systems but fishing pressure is low with records for a 4.1 ton fishing effort in Swartvlei (Van Niekerk & Turpie, 2012).

The health condition of the two systems has been classified as good for hydrology and the physical habitat for both systems; hydrodynamics as fair; water quality as fair for Wilderness Lakes and good for Swartvlei; habitat state are fair for Wilderness Lakes and good for Swartvlei; the diversity of microalgae as fair for Wilderness Lakes and good for Swartvlei; macrophytes as fair for both systems; invertebrates, fish and bird diversity as good for Wilderness Lakes and the invertebrates as good and fish and birds and as fair for Swartvlei (Van Niekerk & Turpie, 2012).

Taking all of the above into consideration the biological state and estuary health state for both systems were classified as good. This would mean that the Present Ecological State (PES) for the two systems was both classified as B (i.e. largely natural with few modifications). A small change in natural habitats and biota may have taken place but the ecosystem functions and processes are essentially unchanged (Van Niekerk & Turpie, 2012).

1.1.9 Social characteristics

A map of the social-ecological infrastructure clearly indicates the complexity of the system (Figure 3). The main authorities that have a direct impact on the natural environment for the management of the area is nationally SANParks that manages the Wilderness section of the GRNP (indicated by the green highlighted areas). The local authorities are Eden District Municipality, George Municipality and Knysna Municipality. The yellow line indicates the municipal boundaries. The municipal boundaries do not follow those of the catchment making governance a challenge. As indicated on Figure 3 (red lines) there are national roads as well as a railway, that is managed by the Department of Transport that crosses the two estuaries at several places.

The main residential areas that border the lakes system are the towns of Wilderness and Sedgefield (Figure 3). Wilderness is managed by George municipality (Ward 4; left side of the yellow line in Figure 3) and Sedgefield by Knysna municipality (Ward 1 and 2; right side of the yellow line in Figure 3). Both these areas fall within the Eden District Municipality management area (Russell *et al., 2*010; South African National Parks, 2010).

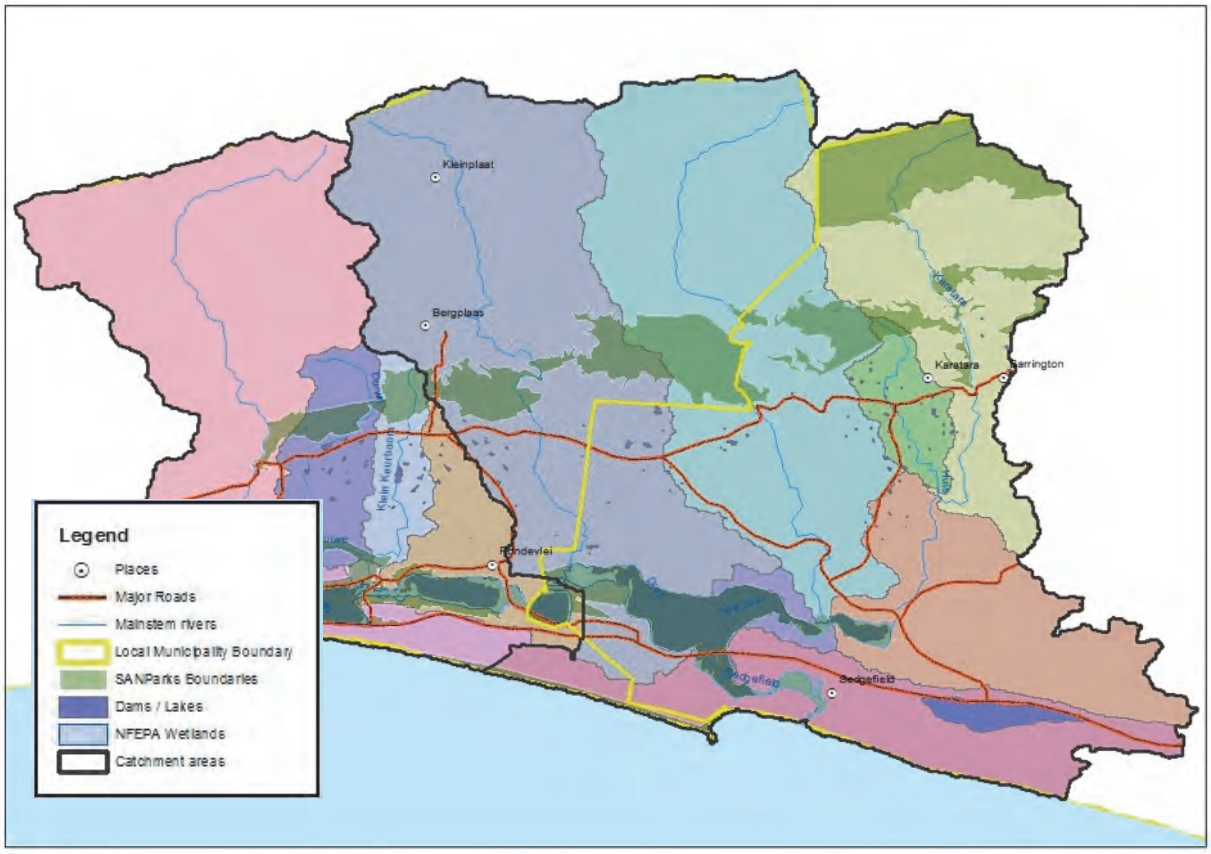

Figure 3: Map of social-ecological infrastructure

1.1.10 Demographic information

There is a marked increase in population numbers for all of the Eden District municipal areas. It is regarded that the main reason for this is immigration from rural Eastern Cape communities (South African National Parks, 2010). If comparing population figures for Wilderness area of 1991 to 2011 it is evident that there was a growth of 8% while the growth rate for 1985 to 1991 was only 4% (Fijen & Kapp, 1995b; Statistics South Africa, 2012). Similar for Sedgefield area that had a growth rate of 6.2% from 1985 to 1991 compared to a 22% growth from 1991 to 2011 (Fijen & Kapp, 1995a; Statistics South Africa, 2012).

The population residing within the catchment areas consist of 20 195 individuals that constitute 6 723 households. The dominant racial group in the area are Coloured with 42% followed by Whites with 38% and Black Africans representing around 18% of the population. These figures differ slightly from figures for the Western Cape of 49% Coloured, 33% Black African and 16% White (Figure 4) (Statistics South Africa, 2012).

In a similar comparison the three dominant languages spoken in the study area are Afrikaans (60%), followed by English (21%) and IsiXhosa (10%) that also differ

slightly if compared to the Western Cape with Afrikaans at 48%, IsiXhosa at 24% and English at 19.7% (Figure 5) (Statistics South Africa, 2012).

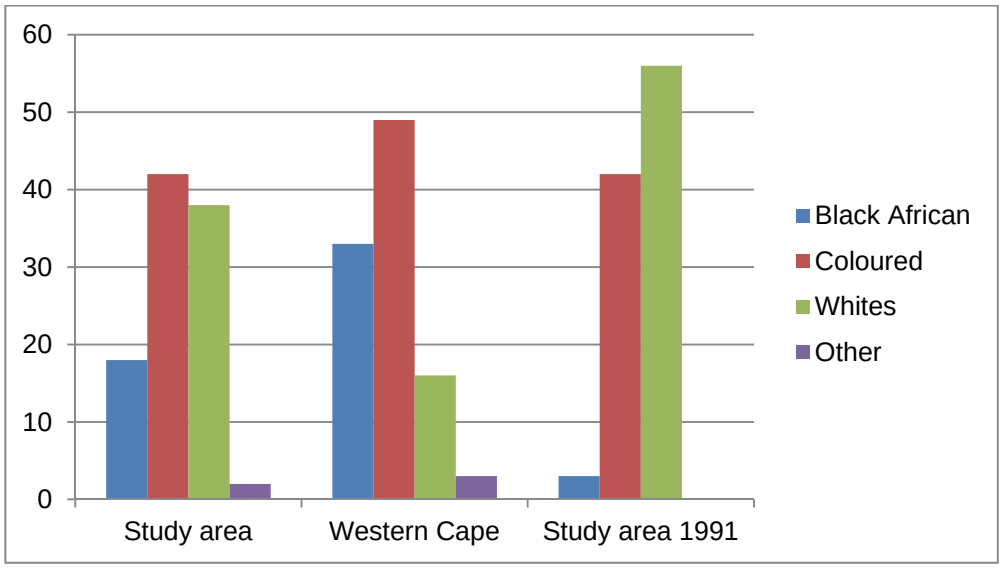

Figure 4: Racial groups at study sites and Western Cape

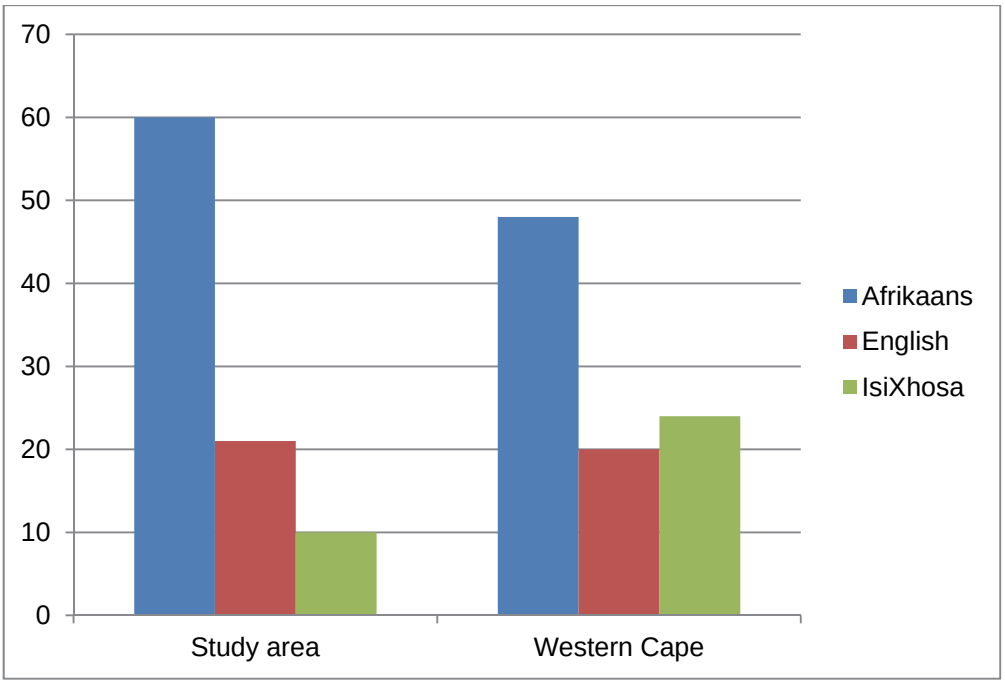

Figure 5: Dominant languages at study sites and Western Cape

In the study area 27% of the population is under the age of 20, with 54 % between the ages of 20 and 60 and 19% are over the age of 60. This differs slightly with age demographics of the Western Cape with 33% under the age of 20, 58% between the ages of 20 and 60 and only 9% that are over the age of 60 (Statistics South Africa, 2012). As can be seen a large proportion of the population in the study area are over 60 that indicates that the management agency need to deal with experienced retired individuals (Figure 6).

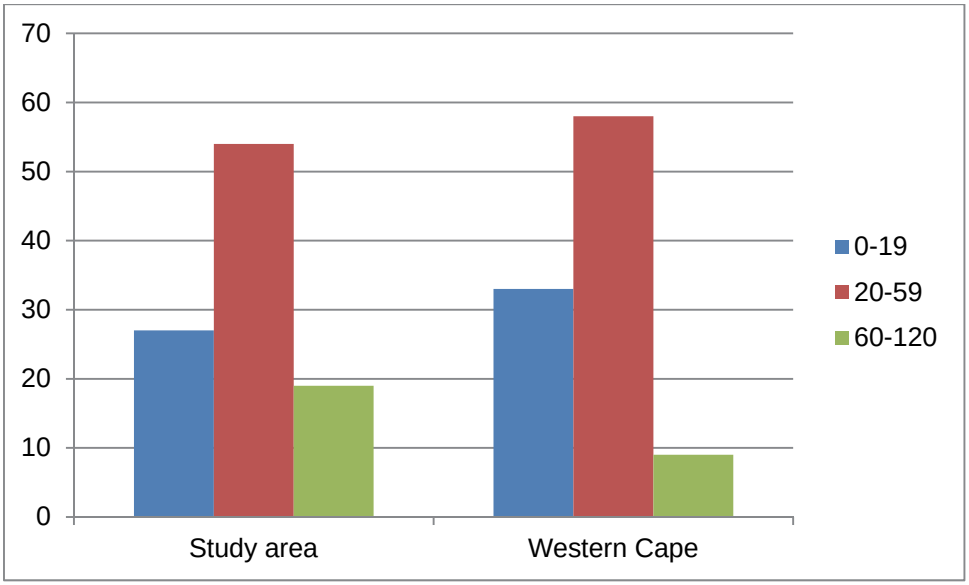

Figure 6: Age demographics of study sites and Western Cape

1.1.11 Socio-economic characteristics

The main land uses in the area are low intensity farming, plantations, residential areas and holiday resorts (Randall & Russell, 1995) (Fijen & Kapp, 1995b; Fijen & Kapp, 1995a). Local jobs includes domestic service, permanent and contract positions in SANParks, Working for Water and Working for the Coast, farm work, petrol stations, restaurants, hotels and B&B's (South African National Parks, 2010). In 1991 the influx of tourist during the December holiday season was estimated to be around 10 000 individuals (Fijen & Kapp, 1995a; Fijen & Kapp, 1995b) creating a huge influx of income. Alternatively people travel to and from George or Knysna respectively for jobs (South African National Parks, 2010). The unemployment figures for the study area are 7% which is slightly lower than that of the Western Cape of 12%.

The amount of people staying in informal dwellings are slightly lower at 5% for the study area compared to the Western Cape average of 7%. The percentages of people staying in formal dwellings (66%) are much lower than that of the Western Cape at 82%. The percentage of people staying in dwellings that are classified as other/traditional/farms or smallholdings is much higher (29%) in the study area if compared to those of the Western Cape (11%). Access to water, either in one's house or less than 200 m away, is in-line with the average of the Western Cape with 95% and 97% respectively. Access to electricity are slightly lower than that of the Western Cape at 85% for the study area compared to 93% (Statistics South Africa, 2012).

1.1.12 Socio-cultural Conditions

Various stakeholders utilise these lakes or the catchment areas. Agriculture, forestry and municipalities all abstract water from the various rivers that feed into these lakes. It is believed that the demand will rise in future due to ongoing developments

(Russell et al., 2010). On a recreational level, bait is collected from both these systems and fishing is allowed as per the Marine Living Resources Act (Act 18 of 1998) (Russell et al., 2010). Stakeholders also engage in boating, skiing, yachting, birding, picnicking and the use of various walking trails that is available (Randall & Russell, 1995).

1.1.13 Legislative framework

Over the last twenty years the lakes were managed by various governmental departments that kept records of the various stakeholder engagements. SANParks, or as they were then known, the National Parks Board, took over the management of the Wilderness Lake area on 1 April 1983 from the Lake Area Development Board (Russell *et al.,* 2010; South African National Parks, 2010).

On 2 May 1986 the Swartvlei system was proclaimed as a National Lakes area. In November of 1987 the Wilderness Lake Area and surrounding state land was proclaimed as the Wilderness National Park (Russell *et al., 2*010; South African National Parks, 2010). On 28 June 1991 the Touw system was proclaimed a Ramsar site (Russell *et al., 2*010; South African National Parks, 2010). Various sections of property were incorporated until 6 February 2009 when the Wilderness National Park was incorporated within the larger Garden Route National Park (Russell *et al., 2*010; South African National Parks, 2010).

According to Chapter 41 of NEMA:PA Act 57 of 2003 a Management Plan needs to be compiled within the context of a policy framework. For the GRNP the Management Plan was formulated within the framework provided by national legislations. The relevant legislations include:

- Constitution of the Republic of South Africa Act, No. 108 of 1996
- Constitution of the Western Cape Act, No 1 of 1998.
- National Environmental Management: Biodiversity Act, No. 10 of 2004
- National Environmental Management: Protected Areas Act, No. 57 of 2003
- National Veld and Forest Fire Act, No. 101 of 1998
- National Environmental Management Act, No. 107 of 1998
- Environment Conservation Act, No. 73 of 1989
- Marine Living Resources Act, No. 18 of 1998
- Sea Shore Act, No. 21 of 1935
- Mountain Catchment Areas Act, No. 63 of 1970

- National Forests Act, No. 84 of 1998
- National Heritage Resources Act, No. 25 of 1999
- National Water Act, No. 36 of 1998
- World Heritage Convention Act, No. 49 of 1999
- Sea Birds and Seals Protection Act, No. 46 of 1973
- Occupational Health and Safety Act, No. 85 of 1993
- Labour Relations Act, 1995 Act, No. 66 of 1995
- Public Finance Management Act, No. 1 of 1999
- Disaster Management Act, No. 57 of 2002

Park buffer zones are areas outside the parks boundaries that can influence the processes within the park. The park management are therefore mandated (DWEA Policy on Buffer Zones for National Park (2009)) to ensure that the management as well as scientists should respond to any new developments or change in land-use in these identified areas as well as serving as the basis for long-term protection of the park in the form of spatial development plans of the relevant municipalities (South African National Parks, 2010).

Within the GRNP there are three different levels of buffer zones 1) Priority natural areas – these are areas that are important for processes as well as biodiversity for the long-term success of the park. This excludes current land-use as well as benefits around the natural areas. 2) Catchment protection – these are areas that needs protection to ensure the protection and maintenance of key hydrological processes. 3) Viewshed protection – these are zones that if developed could impact on the aesthetic experience of visitors to the park (South African National Parks, 2010).

1.2 The task of managing water and involving stakeholders

The National Water Policy (1997), National Water Act (1998), National Water Resource Strategy (2001), and the Guidelines for Catchment Management Strategies (2007) explicitly outline the need and provide the context for public engagement in Integrated Water Resource Management (IWRM). In this respect, two concepts are important: that of engagement for IWRM, and that of the public, or stakeholders who are linked to the IWRM challenge faced within a certain geography. Catchment Management Agencies (CMAs) are mandated to collaborate with local stakeholders in their water management activities.

Documentation, guidelines and research into engagement platforms exist in abundance (DWAF, 2000; 2001a-d; 2004a,b; WRC, 2003; 2004a-c). Much of this research has focused on structural and/or practical arrangements to enable not only engagement, but also collaboration. For example, Du Toit *et al.*(2005) outlined a

proposal for task-oriented public participation in IWRM. Du Toit & Pollard (2008) document a summary of challenges facing IWRM processes based on the experiences of the Save the Sand project (Pollard *et al.,* 1998) and the Kat River Project (Burt, 2005; Burt *et al.,* 2005; Burt *et al*., 2007). Three main categories of issues are presented, namely a lack of holistic planning of public participation in IWRM, lack of clarity of different levels of engagement, and procedures that are too elaborate and sophisticated for initial stages of IWRM. These issues have many negative consequences, including stakeholder fatigue, confusion and exclusion of marginalised communities, to name a few. Du Toit & Pollard (2008) further propose a framework that aims to provide practitioners with practical steps, norms and standards for multi-stakeholder group engagement.

1.3 The complexity of stakeholder engagement

To build on this existing body of research, this research project sought to understand the more affective aspects of engagement. The authors believe that stakeholder engagement with respect to IWRM, or any other issue, is an inherently complex task. The complexity of this task manifests as an adaptive challenge. Heifetz *et al.* (2009) define adaptive challenges as those you have to grow into solving and require mobilising people's hearts and minds to operate differently. They require changes in values, beliefs, roles, relationships and approaches to interaction.

The multitude and diversity of stakeholders that need to be engaged at any location where water resource management is a key issue increases the complexity associated with managing the said resource. The interactions of these stakeholders, which are complex in nature, as well as their perceived (and possibly mandatory) roles, are key influencers to the effectiveness of management activities. The extent to which each stakeholder engages with the water issue (i.e. scarcity, benefit-sharing, over-supply, pollution, etc.) is highly variable within the South African environment. The complexity increases considering the seemingly cyclical nature of engagement which seems to wax and wane according to circumstances.

A core focus of this research study was to find ways in which the cyclical nature of stakeholder engagement in the water resource management arena could be overcome. For the purposes of this study, a cycle is defined as: a series of events that are regularly repeated in the same order. In terms of engagement, if levels of engagement could be seen as a graph over time, regular peaks and troughs would be observed. A cycle in this instance is not iterative, i.e. it does not form a return loop.

The challenges regarding the effective and equitable management of water resources in South Africa could potentially be addressed more effectively if there was an understanding of what drives and inhibits stakeholder engagement. The cyclical nature of stakeholder engagement creates a reality in which different levels of progress will be achieved at different points in the history of a water resource action or challenge. If one considers engagement cycles as a graph over time, the ability to spot and discern a change in the cycle from a trough to a peak, or vice versa, should translate into an ability to respond pro-actively to stimulate higher levels of

engagement from the associated stakeholders. It is at these points in time that disengaged stakeholders could be conscripted, thus increasing a community's ability to add value to water management processes through activities like financial support, alleviating resource and time constraints, resolving conflicts, etc.

1.4 Sustainable engagement

In seeking to better understand engagement cycles (or waxing and waning levels of engagement), a key research question was around the impact of sustained levels of participation on psychological engagement. A question the authors wanted to investigate was whether or not sustained periods of participatory activities potentially lead to burn-out and lower levels of psychological and emotional engagement. When faced with a threat to something that is highly valued, a community will often self-organise and be highly engaged. Once the threat is no longer there, the engagement drops naturally. However, what needs to be sustained is a level of continued commitment and a readiness to engage when needed.

Organisations such as SANParks and CMAs need communities and individuals to sustain the behaviours and commitment aligned with conservation or management efforts that they exhibited during phases of high engagement.

Communities and individuals who lose interest and change their behaviour when a crisis is resolved, or when an issue doesn't directly affect them, need to broaden their sense of meaning, and realise that they need to identify not just with their own meaning and values, but also with those of other communities. They need to find a more balanced sense of meaning, become aware of the impact of their own behaviour, and become (in a sense) self-regulating. This includes maintaining a low level awareness of what is happening in their environment, and to be ready to become engaged quickly should the need arise. In essence one wants to find a way to build a ground-level commitment to observation and behaviour that is prepared when higher level engagement is required – a form of self-regulatory engagement.

An understanding of what motivates a particular stakeholder (be it an individual, group or organisation) to engage with other stakeholders despite physical or social differences, and to actively engage with water-related issues is vital. The role that each stakeholder believes they fulfil is dependent on the identity they adopt. Motivations and factors that influence these identity roles are deep and complex in their make-up, but they could hold the key to creating sustainable engagement identities. Again, the sustainability of high stakeholder engagement levels and helpful identities, such as volunteerism, would go a long way in rectifying the poor history of efficacy that many communities have in addressing water challenges. For those contexts with relatively new water challenges, the knowledge generated by the study would be providing valuable "signposts" on the road to addressing their particular challenge.

2 Core concepts for this research

2.1 Engagement

The exact nature of engagement, and how it differentiates itself from other psychological phenomenon, motivation for example, is a debated point (Appleton *et al.*, 2006).

One conceptualisation is that motivation is characterised by the direction, intensity and quality of one's energies (Maehr & Meyer, 2006 in Appleton *et al.,* 2006). In contrast, Russell *et al.* (2005, in Appleton *et al.*, 2006) describe engagement as 'energy in action', that is, the connection between the person and the activity. Engagement is thus a reflection of a person's active involvement in a task or activity. (Reeve *et al.*, 2004, in Appleton *et al.*, 2006).

Engagement has been of particular interest in the realms of education and workplace management. A more engaged student is more likely to achieve better results, while a more engaged worker is more likely to be more productive. An understanding gleaned from employee engagement is useful in the context of this study. Kahn (1990 in May *et al.,* 2004) speaks of engagement as harnessing a person's self to their work roles. And so, in engagement, people employ and express themselves physically, cognitively and emotionally in performing their job role. Alternatively, disengagement is viewed as the 'decoupling' of the self from the work role.

For the purpose of this study, the researchers adopted Kahn's conceptualisation of engagement. That is, the manner in which stakeholders 'harness' and 'decouple' themselves from active involvement in addressing a water challenge formed the basis for understanding engagement and the sustainability thereof.

2.2 Stakeholders

A range of diverse understandings of stakeholder engagement and participation exists within the Integrated Water Resource Management (IWRM) arena.

In the broadest sense, Forrester *et al. (*2008) describes a stakeholder as "including any person, group, or community who has a concern in a process or in a geographical area through residence, employment, or interest. Stakeholders may be self-identified, or they may be selected. Stakeholders may represent themselves directly, or they may represent their community or particular interest groups. Stakeholders involve a whole range of actors from statutory agencies through to individual citizens. Stakeholder engagement may be differently mediated and may be with different groups or individuals at different stages of a process but to be complete it should be open to the whole range of possible stakeholders."

Reed *et al.* (2009) states that the term 'stakeholder' originated from the seventeenth century when the safekeeping of bets were entrusted to a third party, a stake holder. More recently in the business sector a stakeholder has been defined as those individuals that are affected or affects company decisions or those groups or individuals which play an integral part in the success or failure of any business (Reed

*et al., 2*009). Who or what a stakeholder is would then depend on the activities of such businesses (Reed *et al., 2*009). The definition of a stakeholder has developed and changed over time since the concept was introduced into various other fields of which natural resource management is one (Fassin, 2009).

Van Koppen (2000 in Lotz-Sisitka & Burt, 2006) describes a stakeholder as a person, a social entity, or even an entity like the "environment". The Environment Council, UK, in Hemmati (2002 in Lotz-Sisitka & Burt, 2006) however described stakeholders as people who have an interest in a particular decision, either as individuals or representatives of a group. The World Business Council on Development, in Hemmati (2002 in Lotz-Sisitka & Burt, 2006), describes a stakeholder as "anyone who affects or is affected by a company's operations", which could be extrapolated in the context of this study as "anyone who affects or is affected by water in the catchment".

The Department of Water Affairs and Forestry (DWAF, 2001 in Lotz-Sisitka & Burt, 2006) defines stakeholders in terms of their interests and whether or not they are likely to affect or be affected by an initiative and its outcome. It also distinguishes between those that are directly affected, and those that are indirectly affected. In the context of IWRM in South Africa, it would seem that participation is defined by notions of interests and affects in relation to a given intervention or initiative.

Appelstrand (2002 in Neysmith & Dent, 2010) broadly describes participation as an organised and equitable process, which facilitates the exchange of thoughts and information, or it may consist of any strategies employed by social actors to alter their life-world (Warner, 2006 in Neysmith & Dent, 2010). Participation is also described as a process that requires that stakeholders at all levels of the social structure have an impact on decisions.

Barr & Hashagen (2000) distinguish between three levels of stakeholders. The first of these levels are primary stakeholders, individuals, groups or organisations immediately affected by the decisions and actions taken regarding the main issue of concern, i.e. they have the most to gain or to lose. The second level is secondary stakeholders who are typically intermediaries tasked with management or implementation. These can include advocacy, governmental, NGO or private sector institutions. Lastly, there are external stakeholders such as politicians or traditional leaders in the community who have influence, but not a direct impact.

IWRM ideology draws on the critique of early development activists and the principles emerging from environmental movements. In doing this, IWRM recognises or assumes that people are part of the water resource, and that a way of ensuring equal and sustainable use of the resource is to be achieved through the inclusion and participation of various stakeholders who are affected by the resource.

The difficulty in stakeholder identification is to identify those people that are stakeholders (legitimate) from those that are not (un-legitimate) (Fassin, 2009; Freeman & McVea n.d.). Freeman & McVea (n.d.) highlight the difficulty in distinguishing between the two, especially in grassroots politics and environmental

issues. The solution would be to make sure that a definition of a legitimate stakeholder is developed for each situation (Reed *et al., 2*009; Freeman & McVea n.d.).

The focus of this research study was to investigate the way affected individuals, groups, parties and entities choose to engage with a water resource challenge. This focus then also encompasses the traditional process whereby an entity, for example a Catchment Management Agency (CMA), engages with stakeholders through a structured process of interaction and communication, but the primary intent was to understand how to create and sustain levels of engagement amongst stakeholders that experience a water resource challenge.

In a further refinement of this definition for this study, a stakeholder is defined as any person or group of persons that gain benefits from ecosystem services, either positive or negative, provided by the natural resource as well as those individuals or groups that have an effect or interest on the management of the natural resource (Forrester *et al., 2*008; Reed *et al., 2*009; Freeman & McVea n.d.). Most of the engagement by stakeholders surrounding natural resources is rooted in the sharing of the benefits that are derived from the ecosystem services provided by the natural resource.

Frequently, the utilisation of any benefit will take an opportunity away from another stakeholder to be able to share in the same suite of benefits. This would mean that whoever is closest to the problem or benefit would need to be involved in the managing or solving of the issue (Checkland & Holwell, 1998; Reed *et al.,* 2009). This point of view is congruent with solving adaptive challenges in complex human systems (Heifetz, Linksy and Grashow, 2009). Heifetz defines adaptive challenges as those you have to grow into solving and require mobilising people's hearts and minds to operate differently. They require changes in values, beliefs, roles, relationships and approaches to interaction. It is for this reason that the stakeholders closest to the problem need to be involved in finding a solution.

Through this definition of a stakeholder, a natural resource manager is able to define the specific stakeholders for specific issues. Freeman & McVea (n.d.) suggest that management authorities should be aware of the needs and expectations of stakeholders if they want to ensure buy-in on their management decisions. Nurturing and facilitating relationships with relevant stakeholders will make long-term success of management decisions possible (Key, 1999; Pushor, 2008; Morphy, 2011; Freeman & McVea n.d.). It is understood that only when the broader public take ownership of the conservation message (i.e. if they own the problem), there is a chance of successful engagement and participation (Booth *et al.,* 2010). The success or failure of a participatory process does not only depend on stakeholder continuity, decision making process and funding support but also leadership and facilitation (see Box 1 for more information) (Neysmith & Dent, 2010).

Box 1: Facilitation

Facilitation is a skill that only few people achieve as they not only need to balance steering the process in the correct direction but also allow a space for the emergence of a combination of new ideas (Roux *et al., 2*009).

The aim of any good facilitator is to be able to completely withdraw from a project once the process is successfully started. A facilitator's job is not so much in delivering the technical information as what it is to create an environment where the stakeholders from different backgrounds feel secure enough to raise individual opinions knowing that it will be considered seriously. A facilitator should also be able to challenge the viewpoints of stakeholders in such a way that they go away and think about the new information or viewpoint, internalise it and either come back with sensible counter arguments or a changed mental model (Mlazi River Catchment Management Programme Farmer Support Group 2011). Skilled facilitation can ensure that conflict within the group can be fixed (Hardy *et al., 2*005).

Qualities of a facilitator should be good negotiation skills, they need to understand group dynamics and possess of good conflict management skills. The facilitator should also possess a good general knowledge of the topic to be able to create a platform that speaks to the question in hand. (Mlazi River Catchment Management Programme Farmer Support Group 2011).

In previous facilitated water research management projects the participants stated that they would continue participating only if the facilitator ensures that the meeting is not intimidating, if they feel that they are being listened to and that the facilitating team is committed to the area and issues (Burt *et al., 2*005).

2.3 Stakeholder participation

The concept of IWRM is based on the Dublin Principles, so called as they were adopted from the 1992 International Conference on Water and the Environment in Dublin. These principles formed the foundation for the freshwater resources component of the UN Agenda for protection of freshwater resources (Agenda 21 Chapter 18). The second Dublin Principle states: "Water development and management should be based on a participatory approach, involving users, planners and policy-makers at all levels".

The participatory approach in resource management is encouraged due to the complexities involved. Environmental issues are very complex and integrally linked to human issues of a political, economic and social nature, and they manifest at different scales. It has been increasingly recognised that it is impossible for governments or fixed structures to have the full capacity to manage the complexity of issues that manifest from a local to a global scale. By drawing on the human resources within civil society and decentralising power to local governments, it is hoped that local resource issues can be dealt with more efficiently at a local level with the participation of local users (Lotz-Sisitka & Burt, 2006).

The South African Water Act makes provision for integrated and adaptive processes of resource management with the intention of satisfying the socio-economic and empowerment needs of people as these needs relate to the water resource management. In addition, the law requires that resource management processes be

centralised and participatory. According to Van Wilgen *et al.* (WRC K5/1062, 2003), this is based on recognition (by both the National Water Act and The National Environmental Management Act) that successful allocation and management of vital and stressed natural resources in a complex socio economic and political setting would require effective participation and co-operation between various stakeholders. The intention of these laws is that people must take ownership of their own future and that they collaborate with each other to find equitable and sustainable solutions to the utilisation and conservation of scarce resources.

The WRC K5/1062 project (2003) led by B.W. van Wilgen, reports that the interaction with stakeholders in the implementation of river management strategies led to a better understanding of the importance of a direct and explicit focus on the more social, participatory aspects of the resource management process. Mobilising people's energy for participation and including various stakeholders, results in the success of a project and the benefits of joint management. The report states that stakeholder engagement is a necessity in resource management, and that sustainability in river management will benefit by a more people-centred, co-operative, participatory process and this process should be a primary driver for co-operative resource management and decision-making.

2.4 Volunteerism

When one considers stakeholders in IWRM, some attention needs to be paid to the role volunteers fulfil. Volunteerism can be viewed as a form of stakeholder engagement. In addition to this, when one considers the theories underpinning volunteerism and how people make the decision to become involved, we learn something about stakeholder engagement. Volunteerism becomes a lens through which we can better understand stakeholder engagement. Again, understanding what facilitates the engagement of stakeholders will allow us to understand what influences that engagement over time and how we may be able to better cater for sustained engagement levels.

Volunteerism is at the heart of democracy (Verba *et al.,* 1995 in Measham & Barnett, 2007). In most countries, it plays a vital role in political, social and economic systems. As stated by Penner *et al. (*2004 in Measham & Barnett, 2007) volunteering can be defined as "pro-social behavior, done of one's own free will and without monetary reward, to benefit another person, group or cause". Whiteley (2004 in Measham & Barnett, 2007) suggests that volunteerism represents an essential means of participating in civil society, and has been referred to as an indicator of societal health, with research suggesting positive relationships between levels of voluntary activity, physical health and life satisfaction. According to Bell (1999 in Measham & Barnett, 2007) volunteering lies at the core of social action in civil society and represents a pro-active approach to bring about change and empowerment.

According to Hendee & Pitstick (1994 in Martinez & McMullin, 2004) volunteerism has a long tradition in natural resource and conservation efforts; this is from the contributions of national conservation organisations such as the National Audubon Society and the Sierra Club to local community groups fighting for the protection of

resources in their own backyards. Non-governmental organisations (NGOs) and their members have played major roles in natural resource management.

2.4.1 Volunteerism and Social learning

Social learning is a broad term that refers to processes of learning and change in individuals as well as in social systems (Roux *et al.,* 2009). According to Bandura & Walters (1963 in Sher, 2008), social learning theory was developed as an outgrowth of classical behaviourism. In addition to the belief that behaviour is shaped by antecedent conditions and consequences, social learning theorists focus on thoughts, expectations, emotions, and stresses that influence learned behaviours.

Social learning aims to facilitate a process whereby people go beyond their current values, social norms, and traditional ways of thinking about problems in order to cope with complex social-ecological problems (Cundill, 2010).

Several definitions are used in the literature in trying to define social learning. In the pedagogical literature, social learning is seen as a shift away from transmissive expert-based teaching, and toward transformative community-based learning (Cundill, 2010).

In 1977, Bandura defined social learning as an individual that learns new ways of interacting through following the example of role-models (Pahl-Wostl, 2006; Reed *et al.,* 2010). Ison & Watson (2007) define social learning as a group of people that changes over to a concerted action in an uncertain and complex system. Kilvington's (n.d.) definition is broken down into three components. There has to be (1) learning and thinking through (2) group participation and interaction from a (3) societal as well as an institutional level.

A definition that seems to be the most accepted by authors is that change happens when people learn new perspectives from each other that benefits the social-ecological systems that they are part of (Pahl-Wostl, 2006; Mostert *et al.,* 2007; Pahl-Wostl *et al.,* 2007a,b; Pahl-Wostl *et al.,* 2008; Reed *et al*., 2010). Reed *et al*. (2010) further defines social learning "as a change in understanding that goes beyond the individual to become situated within wider social units or communities of practice through social interactions between actors within social networks". This means that, in the field of natural resource management, amongst individuals as well as groups, social learning is a collective action and reflection when working to develop the management between the ecological and social systems (Cundill, 2010; Cundill & Fabricius, 2009).

Modelling and imitation are the central processes of social learning theory. These are processes where people can learn new behaviour or change their current behaviour by observing the behaviour of others. When someone engages in a behaviour, chances are that it invokes an imitative response in which observing individuals repeat the same behaviour, strengthen or weaken a previously learned behaviour, or prompt a previously acquired response behaviour. As people observe more and more behaviours and then engage in response behaviours, they develop a sense of

self-efficacy. Self-efficacy could be seen as a key concept of social learning theory that refers to the confidence people gain about their ability to master an activity. Moreover, as people develop a sense of self-efficacy in one area of living, it often has an effect on other areas and results in a sense of efficacy expectation. Efficacy expectation is a similar key concept of social learning theory that refers to people gaining an expectation about their ability to accomplish larger, more involved tasks (Sher, 2008).

Family and friends are often the paths by which people come to volunteer or be engaged. By hearing stories from their mothers and fathers and being brought along as children, individuals often develop an expectation that they too will be involved. Likewise, individuals who have colleagues at work who volunteer and talk about their experiences are more likely to consider volunteering. When individuals volunteer, the people they are working with reinforce their behaviour. The longer people engage or volunteer, the more willing they become to try other types of volunteer services because they have developed a sense of self-efficacy from their previous experience. Some individuals gain enough confidence from their experiences to assume leadership responsibilities as volunteers (Sher, 2008).

Roux *et al. (*2009) acknowledges learning as a distinctly social process. Although learning essentially takes place at the level of an individual in a cognitive sense, most learning is socially mediated and takes place in a social context (Brown, 1988; Kim, 1993). In fact, the sustainable well-being in social systems ultimately depends on the capacity to learn together and then respond to changing circumstances (Keen *et al*., 2005). Social learning includes learning through observation of others, like role models (Bandura, 1977) and learning through participation, which involves active group engagement (Wenger, 1998). A community of practice is an effective example of group learning and is characterised by voluntary participation, driven by a shared passion. These communities constitute networks of inclusive relationships in which people are not bound by organisational affiliations and where they feel valued when they share their knowledge (Wenger, 2000). (Roux *et al., 2*009).

Forester *et al.* (2008) describe a continuum that relates to participative processes (Figure 7). This model describes co-learning (or social learning) as being a higher order form of engagement or participation, beyond consultation and co-operation. Social learning should not however be confused with engagement as social learning can take place without any planned participatory process through mass media or in a non-participatory way. The engagement process may facilitate and encourage social learning but it should not be assumed that learning happens purely by engaging. The confusion is fuelled by the many different definitions and this has made it difficult to determine and facilitate if real social learning has happened (Reed *et al.,* 2010).

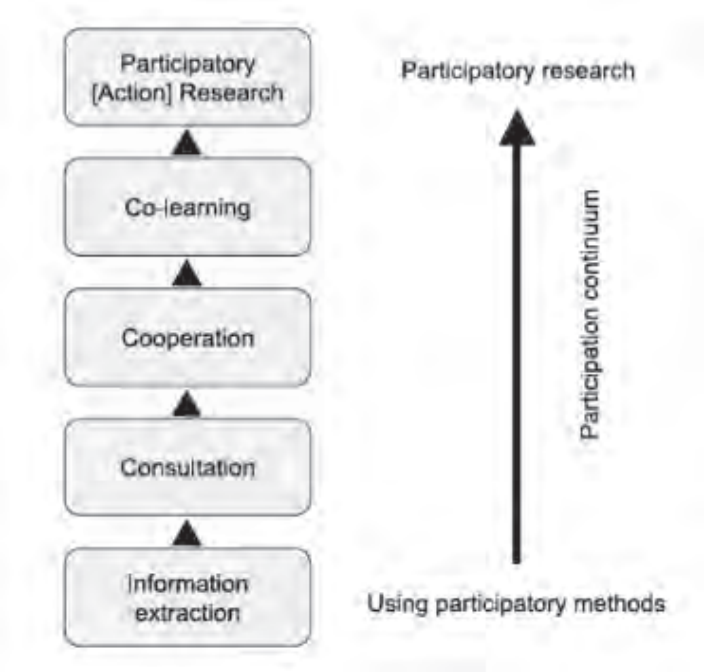

Figure 7: The relationship between participation in project work and a participatory approach

2.4.2 Volunteerism, Self-Actualization and Self-Transcendence

The second theory offering a useful framework for conceptualising stakeholder engagement through the lens of volunteerism is Maslow's Theory of Self-Actualization and Self-Transcendence. Instead of viewing human behaviour as largely determined by unconscious, instinctual, and selfish impulses, or as responding to stimuli and consequences, as described by behaviourists, Maslow focused on human strengths and the positive qualities of lovingness, spontaneity, meaningfulness, creativity, freedom, and dignity. Self-actualization and self-transcendence therefore are two concepts that describe the process of people developing their potential.

Self-actualization refers to people's natural inherent tendency to reach their innate potential. Self-transcendence is an extension of self-actualization, where people carry their potential beyond themselves to self-fulfilment, which emerges in companionship with others (Maddi, 1996 in Sher, 2008). Maslow's theory offers a unique perspective for understanding engagement and volunteerism. Although it is important to view volunteerism as a complex phenomenon, according to this perspective, volunteerism may simply be an activity that allows people to experience self-actualization and self-transcendence. Volunteerism, and hence engagement, provides people with opportunities to experience dignity, justice, meaning, mastery, and love for others (Sher, 2008).

2.4.3 Insights from research studies into the motivations of volunteers

Much of the understanding on environmental volunteerism has been drawn from the literature on volunteering in general and the research demonstrates that there are

multiple reasons why people volunteer and become engaged. Much of this research originates in countries like Australia, the UK, Canada and the USA, where there is a heavy reliance on volunteers in many government programmes and therefore a greater need to understand the motivations that drive and sustain this behaviour (Measham & Barnett, 2007).

The decision to volunteer is a complex one that must be considered in a much broader context of personal attributes, circumstances, social pressure, as well as the particular characteristics of the organisation or (in terms of environmental volunteerism) a place/site where the engagement or voluntary activity is taking place. Snyderim *et al*. (1999 in Measham & Barnett, 2007), offers a functional approach to understanding volunteer motivation, emphasising that the act of volunteering fulfils different functions for different individuals. Furthermore, motivations can change over time, such that the reasons for the initial decision to volunteer may differ from those sustaining continued voluntary action (Penner, 2004 in Measham & Barnett, 2007).

Although several studies have grouped volunteer motivations in different categories, Measham & Barnett argue that these relatively large similar categories do not possess much value and therefore they synthesised the groupings from existing literature into four broad areas. Firstly it is the helping cause – in this case the main concern is being of assistance and giving back to the community. Second is social contact – building social capital by associating with new diverse individuals and establishing a network. The third motivation is personal development, such as acquiring new skills, experience and building self-esteem. The final motivation is personal interest, which is when people are motivated to volunteer to suit their own interest; for instance: protecting their property or living conditions, developing a greater understanding of an issue or discovering new insight from the field of volunteering entered into (Hwang *et al.,* 2005; Sydney *et al.,* 1999; Rehberg, 2005 in Measham & Barnett, 2007).

Gooch (2003) found that an attachment to a particular local environment represented a motivating factor for most environmental volunteers, by having an interest in caring for such a place and developing an improved understanding of the place.

Similar findings are offered by Roggenbuck *et al.* (2001) in a case study on the Virginia Water Research Centre. The water centre launched a research project, where they aimed to investigate the motivations, retention and programme recommendations for their Save Our Streams (S.O.S) volunteer's programme. One of the motivations that emerged was protecting the environment – volunteers expressed a concern for protecting streams and other waterways in Virginia. Other volunteers had a concern for guarding against local threats – a number of volunteers expressed that they were motivated to volunteer in the programme because of a variety of concerns over local threats to a stream nearby. Another group of volunteers expressed that they wanted to be of service and participate in an activity where they felt a sense of accomplishment, and that they were doing something useful for the environment and their community.

Measham & Barnet (2007) suggest that environmental managers should recognise

that labour alone is unlikely to match motivations for volunteer engagement, and this could be one factor in explaining the phenomenon of burn-out and disengagement. Measham & Barnet (2007) state that the needs and motivations of volunteers change over time, so fixing volunteers/stakeholders within a single particular task will cause them to burn out and disengage as time proceeds. Failing to check more often to ensure that your volunteers' expectations are met, will hinder the success of a volunteer program.

From the Virginia Water Research Centre case study by Roggenbuck *et al.* (2001) where the water centre launched a research project aimed at investigating the motivations, retention and programme recommendations for their Save Our Streams (S.O.S) volunteer's programme, it was found that various factors have the potential of causing volunteer or stakeholder disengagement.

The majority of volunteers in the focus group discussions gave lack of time or too many other obligations as the main reasons for discontinuing participation in stream monitoring. Other reasons for dropping out included not seeing enough results from their effort, not enough training or follow-up, and difficulty arranging and organising a stream-monitoring event. For many, life just gets too busy, and in the end they are forced to give up activities like S.O.S volunteering. "Not seeing enough results" is aligned with the volunteer need to "make a difference"; therefore, as a result of not seeing a difference, volunteers will then disengage.

A lack of follow-up on the part of S.O.S Leaders was also a factor contributing to disengagement, which highlights that leadership is a crucial aspect within a volunteer or stakeholder engagement programme. In relation to leadership, lack of good communication was also a problem contributing to disengagement from the programme. A number of volunteers discontinued participation in S.O.S activities because they felt there was not enough communication and follow-up after the initial contact.

2.5 Fluctuations in engagement levels over time

To date, very little published research exists on engagement peaks and troughs over time. International research on volunteerism however, mentions factors that lead to sustained volunteerism, and to people disengaging from volunteering efforts. As a result of this, the following section will cover in broad terms the aspects and factors that may have a significant impact on engagement. It is the absence of such literature, and a definitive theoretical framework for fluctuating engagement, that creates a stronger rationale for the narrative-based pre-hypothesis approach employed in this study.

2.5.1 Factors/motives leading to fluctuations in engagement/volunteerism

Blignaut & Choles (2010) found several factors that could lead to disengagement in a research project that investigated the behavioural drivers of engagement around the Hartbeespoort Dam. These included:

- meeting fatigue;
- a lack of salience of water-related issues;

- a perceived lack of power and agency;
- a lack of sufficient leadership; and
- ineffective communication and a lack of follow through, i.e. initiatives are started but never seem to achieve anything.

Du Toit & Pollard (2008) mention several issues that lead to a lack of engagement. These include, amongst others:

- stakeholder fatigue due to too many workshops and too much repetition of content;
- unclear communication and incoherent presentation of IWRM tasks;
- a lack of feedback from meetings and no record of decisions and engagement;
- power gradients;
- geographical issues and access; and
- dense, lengthy and complicated procedures that many stakeholder groups have limited capacity to engage with.

According to Rossouw (2009) there are common constraints to stakeholder participation such as:

- poverty;
- dispersed communities;
- illiteracy;
- language barriers;
- culture/local values;
- lack of project awareness;
- stakeholder fatigue; and
- time and budgetary constraints.

Rossouw (2009) states that some of the common pitfalls to participation are: inaccessible information, which could be either because of very little information given on a project or that the information given is excessively technical; lack of commitment to the process; inappropriate approaches and timeframes; lack of capacity building; non-representative leaders; and a project used as a forum for advancing other agendas. Rossouw also suggests that misconceptions of stakeholder engagement are another constraint to participation. These misconceptions include: people perceiving stakeholder engagement as a public relations process, conflict resolution process, or a negotiation process. Thinking that every stakeholder must be personally informed or consulted and that stakeholder engagement seeks consensus also has the potential to derail the process.

Participating in project processes can be demanding on stakeholders. Project information typically contains engineering specifications and technical scientific information. For large projects, the sheer volume of specialised scientific information can be daunting. With the diverse range of scientific information (i.e. from ecological studies, to social impact assessment, to cost-benefit-analysis, etc.) debated in stakeholder engagement processes, non-experts with no specialised knowledge or

understanding can easily feel overwhelmed. Lack of specialised knowledge may effectively exclude some stakeholders from participating in debates.

2.6 Power dynamics

To understand patterns of engagement, especially in areas with a history of exclusion, one would need to understand power dynamics and have a framework with which to analyse the power relationships between various stakeholder groupings.

There is much debate over the definition of power (VeneKlasen & Miller, 2002). As stated by Gaventa (2006):

> "Power is often used with other descriptive words. Power 'over' refers to the ability of the powerful to affect the actions and thought of the powerless. The power 'to' is important for the capacity to act; to exercise agency and to realise the potential of rights, citizenship or voice. Power 'within' often refers to gaining the sense of self-identity, confidence and awareness that is a precondition for action. Power 'with' refers to the synergy which can emerge through partnerships and collaboration with others, or through processes of collective action and alliance building."

The power dynamics surrounding the stakeholder engagement process seem therefore to be a key inhibitor or enabler for continued engagement.

Du Toit & Pollard (2008) list power gradients relating specifically to language and resources as a key issue that places poorly resourced participants at a disadvantage in public participation processes. These participants are unable to participate equally when decisions are being made, and their voices are often silenced.

According to Neysmith & Dent (2010) there are mainly two concerns associated with stakeholder participation: firstly it is a question of power, and secondly identification of stakeholders, which is related to the question about power. It is stated (Appelstrand, 2002; Gaventa & Valderrama, 1999; Irvin & Stansbury, 2004 in Neysmith & Dent, 2010) that in order for stakeholders to exercise, or attempt to exercise, control or influence over decisions and outcomes which concern them, they must first be empowered. Lozare (1994 in Neysmith & Dent, 2010) indicates that power is a function of the relationships and resources which a person or an organisation can exert to achieve a desired outcome, in spite of opposition. With regard to natural resource concerns, power comes in many diverse forms, including occupying positions of authority, possessing information, having financial means, being able to rally support, or enjoying privileged access (Borrini-Feyerabend *et al*., 2004 in Neysmith & Dent, 2010).

A useful framework to understand these dynamics is Gaventa's Power Cube (Figure 9) which offers a way to examine participatory action in development and changes in power relations by and/or on behalf of poor and marginalised people (Guijt, 2009).

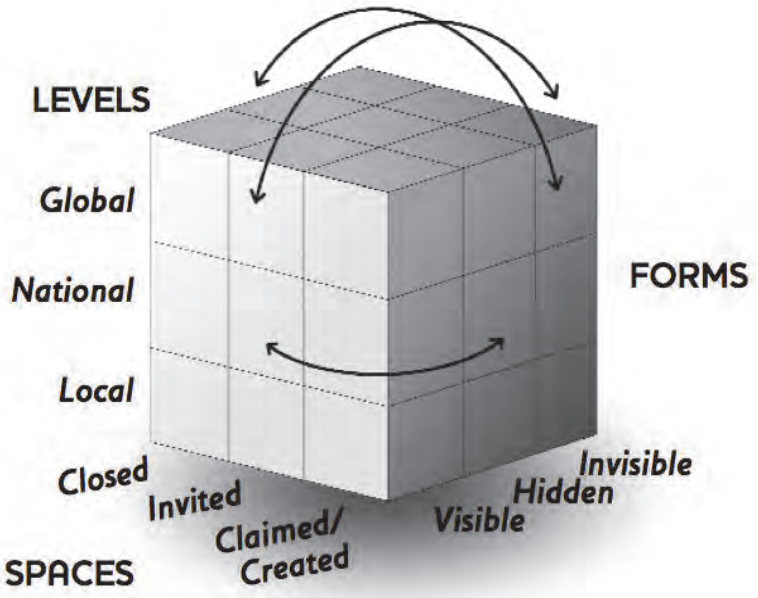

Figure 8: The Power Cube: the levels, spaces and forms of power (Gaventa, 2006)

In short, this cube is used to reflect on and analyse the various forms of power as well as the relationships between them that affect a given situation. According to this framework, the dynamics of power depends on the type of space in which it exists, the level at which it operates and the form it takes.

1. Spaces for participation

According to Gaventa (2006), spaces are seen as "opportunities, moments and channels where citizens can act to potentially affect policies, discourses, decisions and relationships that affect their lives and interests." Cornwall (2002) asserts that these participation spaces are not neutral, but are shaped by power relations which both surround them and are inherent to them, e.g. based on their starting conditions. These power relations define the boundaries of these spaces, and what is possible within these spaces, e.g. who may enter, what identities and discourses are allowed, etc. Often, those who created the spaces are more likely to have power within the spaces, although it doesn't guarantee that those same individuals or groups will have power in other spaces. To affect real change, one often needs to span multiple spaces, which may vary greatly in characteristics, from closed spaces where decisions are made behind closed doors with very little transparency, to invited spaces where a greater diversity of stakeholders are invited to participate in decision-making (Cornwall, 2002). Spanning these spaces is a complex challenge for which a special skill set is required.

2. Places and levels for participation

Levels and places for participation range on a continuum from local to national to global. These levels are inter-related and therefore participatory action cannot focus on a single level (Gaventa, 2006). Once again there seems to be a need

for individuals or groups who are able to span and influence across multiple levels.

3. Forms of power

This third dimension of the power cube is possibly of greatest interest to this research study. The dimension distinguishes between three forms of power which are listed below from VeneKlasen & Miller (2002):

3.1 Visible power: observable decision-making

This level includes the visible and definable aspects of political power – the formal rules, structures, authorities, institutions and procedures of decision making. Strategies that target this level are usually trying to change the 'who, how and what' of policymaking so that the policy process is more democratic and accountable, and serves the needs and rights of people and the survival of the planet.

3.2 Hidden power: setting the political agenda

Certain powerful people and institutions maintain their influence by controlling who gets to the decision-making table and what gets onto the agenda. These dynamics operate on many levels to exclude and devalue the concerns and representation of other less powerful groups. Empowering advocacy strategies that focus on strengthening organisations and movements of the poor can build the collective power of numbers and new leadership to influence the way the political agenda is shaped and increase the visibility and legitimacy of their issues, voices and demands.

3.3 Invisible power: shaping meaning and what is acceptable

Invisible power shapes the psychological and ideological boundaries of participation. Significant problems and issues are not only kept from the decision-making table, but also from the minds and consciousness of the different players involved, even those directly affected by the problem. By influencing how individuals think about their place in the world, this level of power shapes people's beliefs, sense of self and acceptance of the status quo – even their own superiority or inferiority. Processes of socialisation, culture and ideology perpetuate exclusion and inequality by defining what is normal, acceptable and safe. Change strategies in this area target social and political culture as well as individual consciousness to transform the way people perceive themselves and those around them, and how they envisage future possibilities and alternatives.

One of the key research questions that will be used to discover the reasons for fluctuating engagement levels will be around understanding the forms of power that exist within the various communities that the researchers will study. Specifically, the researchers are interested in whether invisible power dynamics are at play that exclude certain groups and individuals from effective and sustainable engagement.

2.7 Sense of place and emergent, or constructed, meanings

'Place attachment' is a positive emotional bond that develops between people and their environment. According to Stedman (2003), a sense of place is defined by three component viewpoints that weave together the physical environment, human behaviours, and social and/or psychological processes.

Ryden (1993) in Stedman (2003) states: "a place … takes in the meanings which people assign to that landscape through the process of living in it", suggesting that a sense of place resides in human interpretation of the physical environment, not in the physical environment itself. Stedman (2003) suggests a reciprocal relationship where local community culture influences place meanings, and that the nature of the physical environment in turn influences community culture.

The framework of landscapes (Greider & Garkovich, 1994) provides a vehicle for interpreting the sociocultural perspectives of multiple stakeholders. The authors state: "Every river is more than just one river. Every rock is more than just one rock." They assert that human beings confer meaning on nature and the environment, creating landscapes that reflect the self-definitions of the people within a given cultural context. Therefore, one physical thing, e.g. a river or an open field, can carry many different symbolic meanings that emanate from the values by which different people groups that interact with the thing, define themselves.

Any physical place or object thus has the potential to embody multiple landscapes, each grounded in the cultural definitions of those who encounter them. Often, power relationships are used to impose one group's social construction of meaning upon another (Greider & Garkovich, 1994).

There are often competing or opposing meanings that need to be managed. For example, in Australia, Aborigine people and western-thinking park rangers ascribe very different meanings to fire, and therefore have very different ways of managing it. Similarly in South Africa, there are often great differences in indigenous knowledge and western or scientific knowledge. Breen *et al. (*2006) found multiple differing beliefs and cultural traditions that shaped the way that people viewed and interacted with their natural environment, in this case a river. While many people used the river for day-to-day activities such as washing, many people also valued the river from a deeper cultural perspective as a sacred place where traditional and religious ceremonies were conducted. Farmers in the same area would most probably hold very different meanings of this same river, creating obstacles for potential collaborative engagement.

This study also aimed to understand the meaning which people have about a system, i.e. their 'place' and how it frames their involvement and engagement. In a sense, people will become involved proportionally to a perceived threat to the meaning or value that they hold. To understand the patterns of engagement of the various groupings, (the dominant voices as well as the suppressed) we needed to understand:

- what meaning/s do people groups attach to these systems and places and how do these meanings impact on or frame their engagement and

identification with the systems?
- if they attach no meaning, and therefore are not engaged, why is it irrelevant to them and can their position be influenced?

This project explored some of the interplay between a communities' identification with a system and their levels of effective commitment, i.e. a readiness to engage when needed. Many people may identify with a system, but have very low levels of effective commitment, i.e. they don't get involved when needed. A further assumption that emerges from this is that if people feel they are responsible for managing water resources, they may develop a sense of ownership and concern for resources that they use. If people understand how they are integrally connected to their resources, they are more likely to adopt or even demand more sustainable practices.

2.8 Leadership and bridging agents

According to Westley (2002) an entire network of interacting individuals and organisations at different levels is required to have the capacity to deal with the interactive dynamics of social and ecological systems. This seems especially true in light of the power dynamics that exist across multiple levels within these systems. Within these networks, the right links need to be created, between the right individuals or organisations at the right time around the right issues. This requires a very special form of leadership, where the leader assumes the role of "bridging agent".

In the Kristianstads Vattenrike case study (Olsson *et al.*, 2004) the role of a key individual that emerged as an early leader and bridging agent is highlighted. Although this individual did not act alone, he was a key catalyst for the successful adaptive co-management that emerged through self-organisation processes. A concern however, is that systems that are dependent on a single key steward are vulnerable to change (Olsson & Folke, 2001). These individuals are not easily replaced; they play the role of bridging agents and often have unique knowledge and abilities and are able to span multiple knowledge boundaries.

Leadership or bridging roles don't always rest on individuals however. Organisations or even projects can also fulfil this role. An example of where a project provided a common vision and therefore the necessary leadership to stimulate high levels of engagement is the role of the Strategic Adaptive Management process in the formation of the InKomati Catchment Management Agency (Rogers & Luton, 2010).

According to Hahn *et al. (*2006) the role of bridging organisations or individuals is to create arenas for trust building, knowledge generation, co-operative learning and conflict solving among actors in relation to specific environmental issues. These bridging organisations or agents mobilise resources, utilise social incentives for ecosystem management and provide inter-organisational arenas for building trust, vertical and horizontal cooperation, learning, sense-making, identification of common interests and conflict resolution.

Blignaut & Choles (2011) found in their study of engagement around the Hartbees-

poort Dam in South Africa, that appropriate leadership played a key role in initiating and sustaining stakeholder engagement, and that without this leadership, fragmentation results and passionate individuals tend to engage in unhelpful activities on their own. In the long run, these individuals become discouraged due to a lack of results and become disengaged. It was also found that it becomes increasingly difficult to get such individuals to re-engage.

In many instances, engagement levels are influenced by key individuals (Olsson *et al.,* 2004) or by precipitating events such as natural disasters or crises. Engagement of this kind often lacks resilience; when the crisis is over, or the key individual leaves, engagement levels wane or disappear altogether. The definition of resilience as a reflection of self-organisation capability of a social-ecological system as well as the capacity for learning and adaptation (Carpenter *et al.*, 2001) is especially relevant. It is therefore not simply about leadership in the moment, but about the leader building capacity in the system to sustain momentum should that leader fall away.

2.9 Issue salience

The salience of an issue is defined as the state or quality that stands out relative to neighbouring issues. The relative salience (or perceived importance) of an issue will largely determine the level of attention the public would pay to it. A crisis seems to significantly increase the salience of relevant issues in the minds of stakeholders. Personal experience could also be a key influencer on the salience of an issue (Blignaut & Choles, 2011).

A number of authors state that salience is closely related to the importance placed on an issue (Rabinowitz *et al*., 1982; Brooks, 1990; Holbrook *et al.,* 2005). Boninger *et al.* (1995) also argue that the attitudes that people consider as personally important are firmly crystallised and therefore are less open to change as a result of policy decisions. Salience is also perceived to be positively correlated with the potential personal impact of an issue on an individual, according to Rabinowitz *et al.* (1982). They note that these “feelings of importance” will vary for different people. Brooks (1990:515) argues that not all issues are equally important to the public. Edwards *et al.* (1995:111) agrees with Brooks, but adds that specific issues of importance to the public will vary over time. These conceptualisations all share the common underlying belief that individual perceptions of salience are generated by the ability of an issue to affect one personally. Core beliefs are also perceived as an important factor influencing issue salience and it is grounded in the assumption that issues relating to a person’s core beliefs will be of greater importance (and thus more salient) than issues that do not (Mooney & Lee, 2000). As an example Franklin & Kosaki (1989:767) argue that issues such as abortion are usually very salient since it has the ability to arouse unusually deep seated feelings or emotions in people.

The media plays a very important role in communicating the current salient issues in a country or community. Much research has been done on the role of issue salience on voter behaviour, and more specifically the role of the media in influencing issue salience in the mind of voters. A theory called Agenda Setting Theory (Wimmer & Dominick, 2006) proposes that “the public agenda – or what kinds of things people discuss, think, and worry about (and sometimes ultimately press for legislation) – is

strongly shaped and directed by what the news media chooses to publicize" (Larson, 1994).

According to Zyglidopoulos & Georgiadis (2006) the main tenet of Agenda Setting Theory is that the media set the agenda for public opinion by highlighting certain issues more than others. In other words, "while mass media do not tell people what to think, they determine what people think about (Shaw & McCombs, 1972)." This implies that whatever the news media determines to give the most attention to, will become the most important item on the audience's agenda. It could therefore be argued that issue salience could be a key driver for engagement peaks, and that the public would more readily engage around more salient issues (Blignaut & Choles, 2011). VeneKlasen & Miller (2002) provides guidelines on how to engage the media specifically around what they call media advocacy. According to the authors, media advocacy is important to get on the political agenda; make the issue visible and credible in policy debate; recruit allies; change public attitudes and behaviour; influence decision-makers and opinion leaders and to shape policies, programs and the conduct of public and private agencies. It seems clear that the media plays a key role in mobilising citizens and policy makers alike.

2.10 Identity

The notion of 'identity' has become an important analytical tool for determining and understanding the actions of various societies and communities (Fearon, 1999; Gee, 2000). Until recently research on identity has focused on the needs and ideas of the individual and on how to influence an individual. Over the last decade identity research has shifted from the individual ('I' or 'me') to the more collective ('us' and 'we' or 'we-ness') (Cerulo, 1997). Identities are malleable as well as context sensitive and as a construct identity influences what actions individuals are prepared to take. Individuals use their identity as a frame of reference to make sense of the world through mental models (Jones *et al., 2*011) and through social learning a notion such as identity can be used by natural resource managers to understand and influence the actions of individuals as well as groups.

In order to study an individual it is necessary to have an understanding of how the mind works. Over the centuries various psychologists have grouped theory on how the mind works into different schools of thought. A school of thought is defined as a grouping of people (collective identity) that share the same ideology (Theron, 2006b). They are structuralism (based on the study of the conscious mind), functionalism (focused on the function of the mind), behaviourism (humans respond to outside stimuli), gestalt psychology (psychologist focused on the individuals experience as a whole), psychoanalytical studies (focuses on the role of unconscious mental contents), humanism/phenomenology (study of free will), cognitive psychology (combination of gestalt psychology and phenomenology), metapsychology (combination of various schools) and postmodernism (combines metapsychology with other disciplines) (Theron, 2006b).

2.10.1 Identity development

As an individual develops they are subject to various processes. This development is unique to each individual or group and is influenced by biological and genetic factors (development of the body and its functions), cognitive and psychosocial factors/socializations (gender, ethnicity, education, status and cultural heritage) (Bergh, 2006) as well as geographical/environmental factors.

Cognitive development refers to processes that involve mental abilities, thought processes and the capability to gain, process, interpret, retrieve and use information, in other words the creation of mental models (which is discussed in section 2.10.3). These thinking patterns will change from very concrete to complex and abstract in adulthood. As these patterns get more complex the ability for an individual to adapt their behaviour to the changing environment becomes easier (Bergh, 2006). These thought processes help people to assign meaning to experiences and things (Bergh, 2006). Although each individual is unique, some of the processes do overlap with other individual's processes. As individuals develop their thought processes become more complex, sophisticated and unique with decreasing overlap with other individuals (Bergh, 2006).

Moral development is one of the important aspects of cognitive development. This determines what an individual sees as right and wrong and develops from reward and punishment (early stages), to using rules to create a perception of reality, to a set of internalized ethics and rules used to judge themselves as well as the behaviours of others (Bergh, 2006).

Psychosocial development entails the development of social interactions with the environment and other individuals. The development of skills, relationships and the coping behaviours in response to stress and challenges (Bergh, 2006). This entails the development of self-concept, attachment and self-identity, social knowledge development and social conflict resolution (Bergh, 2006). The development of group values also influence how an individual interprets the environment and the subsequent behaviour is determined accordingly (Bergh, 2006).

Society determines the accepted minimum for development in both physical growth and development (Bergh, 2006). This development happens throughout an individual's life-span and has been split into two broad stages: early phase (childhood and adolescent) and a late stage (adulthood) (Bergh, 2006). For this research the focus is on the late stage and various models (mental models/value orientation and paradigm models) and theories explain how individuals continually construct their identities, internalise their values and how that influences their decision making (Bergh, 2006).

2.10.2 Factors of development

The way individuals assimilate information is determined through their genetic make-up, environment and learning. Genetics determine the individual's health, growth-rate and talents (musical talent, being good at sport, etc.) (Bergh, 2006). The environment

and learning involves the values and experience gained through operant conditioning, classical conditioning as well as social learning.

Culture and ethnicity have a major influence on the shaping of identities as it creates expectations for living conditions, attitudes, core beliefs, values as well as prejudices and false perceptions (Bergh, 2006). These factors shape the feelings, actions, thoughts, behaviour and attitudes of an individual and it is important to understand when involved in discourse (Bergh, 2006).

2.10.3 The development of different views on life

In adulthood the development of the mind and identity go through various development stages/value-orientations. There are various value-orientations that have been identified and although they can all occur in an individual one of them would normally be a dominant orientation (Theron, 2006a) that could be represented through a mental model (Jones *et al., 2*011). Values are defined as the cognitive ideas that are based on what is acceptable and expected as a member of society or a group. These values are not always perceivable but become clear through certain behaviours (Theron, 2006a). These would influence the individual's aims, motivation, ways of life and preferences (Theron, 2006a).

Mental models are constructed based on an individual's life experience and understanding of the world or an issue. They form a basis for decision making and reasoning. A mental model offers not only a picture of the person's goals, preferences and values but also offers a picture of the level of understanding of the individual about a system. Mental models are used to filter and store any new information (Jones *et al., 2*011).

As these are unique to each individual the ability to represent the world accurately is limited. A mental model is seen as being an incomplete representation of reality and can be inconsistent as they are context dependent (Jones *et al., 2*011; Doyle *et al.* n.d.). Mental models change through learning to adapt to changing environments (Jones *et al., 2*011; Doyle *et al.* n.d.). Collective action can be supported when the similarities and differences of individual mental models are understood (Jones *et al., 2*011).

The following six value-orientations can make up various mental models:

- The theoretical person that values knowledge and objectivity. They need truth and are not concerned about the deeper meanings or aesthetics of an issue (Theron, 2006a).
- The economic person is driven by utility and values skill, thriftiness, reliability, orderliness and diligence. They are extremely ego-centric and only value the fulfilment of their own needs (Theron, 2006a).
- The social person lives through others and values receiving and giving love. This can be in the commitment to a friend or family member or people in general. This person lives for service to others and don't value possessions (Theron, 2006a).

- The power person values being superior to others and don't feel the need to understand other people, except to inspire or coerce them to follow his/her agendas (Theron, 2006a).
- The religious person values spirituality and belief is seen as the highest form of knowledge. They don't see anything/anyone existing in itself, as everything is part of the spiritual. This person may never experience loneliness as they have a sense that they are always with God (Theron, 2006a).
- The aesthetic person experiences life by creating beauty out of all experiences and objects. These people rely on intuition and do not value absolute truths. They also value spiritual unity with other people and do not necessarily value possessions (Theron, 2006a).

As noted previously, identities are malleable as well as context sensitive and influences what actions individuals are prepared to take (Jones *et al., 2*011). Individuals use their identity as a frame of reference to make sense of the world through mental models (Jones *et al., 2*011). This would indicate that mental models/value orientations can be influenced when appealing to their identities.

2.10.4 Categories of identity

Snow (2001) defines three categories of identity: *personal*, *societal* and *collective* identity. For Sherry (2008) and Fearon (1999) identity consists out of only two categories, *individual* and *collective* (figure 9). Alternatively Gee (2000) differentiates between four different identity categories: *Nature* identity (we are what we are because of our nature), *institution* identity (we are what we are because of the positions we occupy in society), *discourse* identity (we are what we are primarily because of our individual accomplishments as they are interactionally recognised by others through interaction) and finally *affinity* identity (we are what we are because of the experiences we have had within certain sorts of "affinity groups"). Interestingly, if you compare these to those of Snow (2001), Gee (2000) doesn't seem to have a category for personal identity as is defined below. Gee's (2000) first three categories are encompassed under Snow's (2001) societal grouping and his final category under that of collective identity. For the purpose of this research the focus was on the categories as described by Snow (2001) as it is the best differentiated description of the various types of identities. As this research focused on social-ecological systems the authors would like to add a fourth identity, namely that of ***system identity***, which accounts for how the environment has an effect on the identity of individuals (figure 9) (Cumming & Collier, 2005).

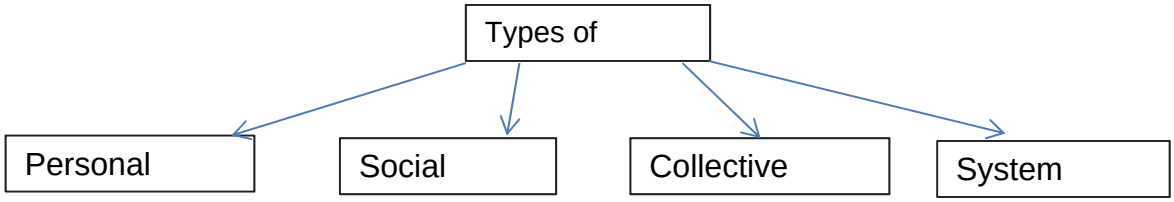

Figure 9: A graphical representation of the categories of identity

2.10.4.1 Personal identity

Personal identity is defined as those self-attributed characteristics, traits and goals that set one individual apart from others (Fearon 1999; Deaux, 2001; Snow, 2001; Stets & Burke, 2003; Sherry, 2008; Aaker & Akutsu, 2009). A person is recognised by society by his or her identity (Gee, 2000; Brickson, 2005). This would mean that people have various identities that are determined by the expectations of society (Ashforth & Mael, 1989; Gee, 2000; Brickson, 2005). Even though the environment plays some role in forming identities, the direct experiences with others and the environment will be the final forming/changing of an individual's ideas. This means that identities are not formed by others but rather by how individuals perceive others as seeing them (Stets & Burke, 2003; Brickson, 2005).

This happens through how individuals perceive others acting towards them, their evaluations of themselves, their dreams and desires (Stets & Burke, 2003). This would mean that identities consist of not only an idealized view, that is mostly unchanging and that encapsulates moral values, but also a working copy that can change and revise as a situation warrants it or as individuals collect new information (Gee, 2000; Stets & Burke, 2003). An individual's emotional goals and ways of thinking also grow and change as situations and time passes (Gee, 2000; Sherry, 2008; Aaker & Akutsu, 2009). There is however a core identity that encapsulates the moral values (Gee, 2000).

2.10.4.2 Social identity

Social identities are those characteristics, traits and goals that are placed on individuals to link them to groups in society (Ashforth & Mael, 1989; Fearon, 1999; Deaux, 2001; Aaker & Akutsu, 2009). They are usually descriptive of a role, such as "father" or "environmentalist", or in the case of this research "volunteer" or "citizen", and represent a chosen status, i.e. it helps with self-respect and self-definition or can be a wider classification like "female", or ethnic like "coloured", which is attributed to an individual at birth (Ashforth & Mael, 1989; Fearon, 1999; Deaux, 2001; Snow, 2001). Being classified as male or female for instance regulates human behaviour through social norms (Cerulo, 1997) and each individual is linked to several of these social identities.

Deaux (2001) splits social identity into five categories, namely *political affiliation*, *ethnicity and religion*, *relationships*, *stigmatised identities* and *vocations and avocation*. These are classifications that place individuals in groups and can be a determining factor in how an individual would act towards another (Deaux, 2001;

Snow, 2001). Certain identities can experience prejudice and therefore people tend to hide certain identities (Sherry, 2008). One individual can fulfil many of these roles (Deaux 2001) and can be seen as a past, current or future member of a social group (Aaker & Akutsu, 2009).

An individual will also share some of these characteristics with others but would not necessarily interact with or even like any of the other role players (Deaux, 2001). They would however identify with certain issues that relate to their social identity (Deaux, 2001). In the example of the water pollution problem in Baynespruit one of the stakeholder groupings was classified as Zulu small-scale agriculturalists. Through engagement they were made part of a collective identity of stakeholders (consisting of themselves, NGOs and industry) that stood for safer water. One might say that their identity has now change to Zulu small-agriculturalists who are concerned with their environment as well (environmentalists) (Neysmith & Dent, 2010). This would also empower a previously disadvantaged group to learn to stand up for their morals and basic values and to be heard (Anderies *et al., 2*004). But to be defined as a collective identity, collective action needs to follow.

2.10.4.3 Collective identity

Collective identity is a sense of "we-ness", real or imagined, coupled with collective action (Snow, 2001; Klandermans *et al., 2*002; Hardy *et al., 2*005). A collective identity is not the combination of various personal identities but rather a constant narrative interaction of those personal identities (Cerulo, 1997; Polletta & Jasper, 2001; Sherry, 2008). This means that collective identity is not homogenous but often has a contradictory and complex nature (Cerulo, 1997). But through discursive discussions a collective identity can construct their problems, their solution and themselves (Hardy *et al., 2*005).

Within the various different collective identities there are variations of personal or societal identities (women/men, white/black, retired/working) (Cerulo, 1997; Snow, 2001; Klandermans *et al.,* 2002). Unlike an ideological commitment where you identify with its goals but don't necessarily identify with the other supporters, in a collective identity you share certain attributes with the other members (Polletta & Jasper, 2001). This identity can also be fluid and can evolve over time as experiences and actions are shared within a group of different stakeholders (Polletta & Jasper, 2001; Snow, 2001).

Collective identity can be seated in either a real or imagined community (Polletta & Jasper, 2001; Snow, 2001) and is a group that the individual chooses to join (Cerulo, 1997; Gee, 2000; Klandermans *et al,.* 2002). By joining a group the individual responsibility can be shared (Cerulo, 1997; Kollock, 1998). Collective identities consciously coordinate action. The members of a collective identity consciously insulate, mark, develop offenses and defences, compete and cooperate, coerce and persuade (Cerulo, 1997; Kollock, 1998; Snow, 2001). A collective identity usually defines itself through slogans and symbols (Cerulo, 1997; Polletta & Jasper, 2001; Snow, 2001; Nkhata *et al,.* 2011). As the members feel that they act in a moral space they define their existence as good and right (Cerulo, 1997; Polletta & Jasper, 2001).

This discourse can also end up being seen as the truth, e.g. the different views on the 'healthy' state of the estuaries (Cerulo, 1997).

An example of a collective identity that encourages responsibility and action is LeadSA, the social awareness campaign started by Primedia. They are constantly developing new competitive means to encourage their members to take part in their various activities. Also by being associated with LeadSA it indicates that what is happening in society is of importance and that individuals have the power to change their reality (LeadSA, 2012).

Discourse can both sustain and form the collective identity, social arrangements and power hierarchy (Cerulo, 1997; Kollock, 1998; Hardy *et al.,* 2005; Sherry, 2008). The boundaries of the collective identity are determined by the members and only those that are shared amongst the most members will be strong enough to add to the collective identity (Cerulo, 1997; Snow, 2001; Sherry, 2008).

Long term social consequences of collective identities can sometimes, due to narrowly focused goals become incapable of cross-boundary exchange (Cerulo, 1997). Through continuous discursive construction, cooperation towards collective action can be facilitated (Hardy *et al.,* 2005) Collective action, in turn, encourages collective identity (figure 10) (Klandermans *et al.,* 2002). Klandermans et al. (2002) also found that being part of a collective identity is very important for self-definition and self-image.

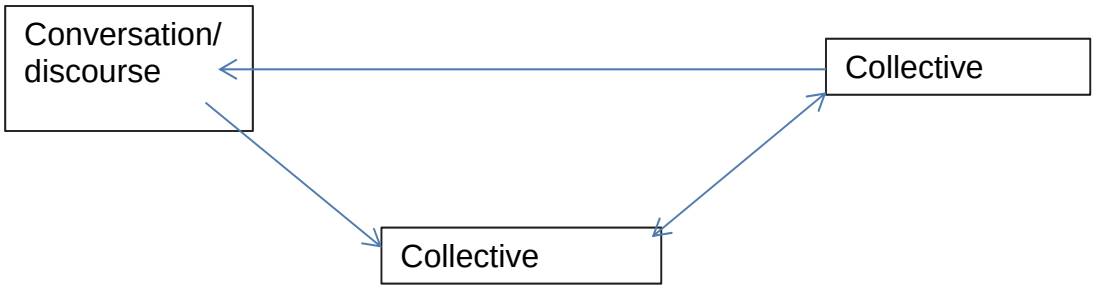

Figure 10: A graphical representation of the circle created through discursive construction

For the natural resource manager running a conservation area it is important to understand which collective identities they are dealing with in order to ensure that the issues pertaining to that group are focused on during discussions and meetings. In the example of benefit sharing in the water sector it was deemed important to understand the collective identities needs in order to ensure active sharing of benefits and building of trust between the different groups (Reed *et al.,* 2009; Nkhata *et al.,* 2011).

Whether or not people get actively involved depends on three principles according to Aaker & Akutsu (2009): 1) identities are malleable as well as context sensitive, 2) it influences what actions you are prepared to take and 3) you use your identity as a frame of reference to make sense of the world through mental models (Jones *et al.,* 2011). A big reason for getting involved in voluntary action seems to hinge on identity

and more specifically identities associated with that of family groups, community groups personal identity (Aaker & Akutsu, 2009).

2.10.4.4 System identity

To be able to define the identity of a resilient and changing system, the natural properties of the system over space and time have to be determined (Cumming & Collier, 2005; Bunch *et al., 2*011). The boundaries of the system have to be determined. An ecosystem is defined in terms of biotic and abiotic characteristics and their interactions. Cumming & Collier (2005) state that to define a system the dynamic relationships between the parts of the system have to be identified. The challenge is to find these relations that bind the system together on a large scale and not only at a localized level. They would obviously differ from system to system but should always play a role in the functioning of the system (Cumming & Collier, 2005). An example of using a different relationship is the calculation of working trophic levels that were determined by using the strength of connectedness of organism and ecosystem functions in estuaries (Cumming & Collier, 2005). Cumming & Collier (2005) propose an addition to the current definitions of ecosystems of 'recognizing that system identity resides in the continued presence, in both space and time, of key components and key relationships'.

According to Cumming & Collier (2005) there are two types of system identity. The system that maintains its identity over time and the other that develops into a new system and takes on a completely new identity (Cumming & Collier, 2005). Anderies *et al.* (2004) pose the question that if an ecological system collapses. But the social system continuous. Would it retain its identity? He answers it by stating that both systems have to collapse before being classified as a new identity. The difficult question to answer is which of these components/relationships are relevant to system identity (Cumming & Collier, 2005).

2.10.5 Identity and natural resource management

The understanding of identity for natural resource management is important in order to be able to influence the various mental models that can be found in a social-ecological system. The following are important natural resource terminologies and their link with the concept of identity:

2.10.5.1 Identity and benefit sharing

Wetlands provide a myriad of 'free' ecosystem services that all stakeholders share. Benefits range from carbon sequestration, recreation, water purification, disease mitigation, water recharge, healthy upstream habitat mitigating floods and green corridors for the free movement of seeds and pollinators (Booth *et al*., 2010; Erntston *et al.*, 2010; Bunch *et al*., 2011).

When considering the sharing of benefits derived from natural resources it is important to take into consideration the needs, wants and obstacles faced by the various stakeholder groups/collective identities (Booth *et al., 2*010). Schreiner *et al.* (2011) believe that there should also be a more integrated approach to benefit sharing and believe that there should be more intra-state collaboration.

It is important to involve stakeholders from all walks of life as each represented group brings a different set of values and interests to the table (Dietz *et al., 2*003). Nkhata *et al.* (2011) state that the collective identity of a natural resource is where various collective identities agree on the levels of benefit sharing, keeping in mind the need to maintain a healthy ecosystem.

Different ethnic groups have different needs and expectations from the natural resources that surround them (Booth *et al*., 2010) and these can create social dilemmas that need to be taken into consideration (Kollock, 1998; Schreiner *et al.,* 2011). In research done by Booth *et al.* (2010) they found that the recreational benefit of natural resources in England was shared disproportionally, with the more privileged segment of society drawing more benefit. This highlighted the fact that there is a disconnect between conservation and various collective identities (Booth *et al.,* 2010). Another example is Equatorial Guinea on Bioko Island where ethnicity also determined the preference for bushmeat as a source of food (Booth *et al.,* 2010).

Human health is also linked to our natural environment and engaging with all the various collective identities in the proper management of the resource is of the utmost importance (Booth *et al*., 2010; Bunch *et al*., 2011). To be able to avert social dilemmas, effective communication and trust (Dietz *et al*., 2003) between the identities should be fostered in order to create positive engagement. Various collective identities in Madagascar, governmental as well as non-governmental, recognise this link between biodiversity and health. This has led to smaller families which promote the dual goals of rural development and biodiversity conservation, two apparently opposing collective identities (Bunch *et al., 2*011).

In many cases that involve a shared resource, the users are tempted by the immediate benefit (Kollock, 1998). As stated in the tragedy of the commons, an individual may feel that they are better off in the short term utilizing a common resource without contributing to it or taking into consideration what the long-term effects would be of their actions (Hardin, 1968; Kollock, 1998; Booth *et al.,* 2010). The possible negative consequences will be shared amongst the collective (Kollock, 1998). If this is the attitude of all stakeholders the cumulative effect can have extremely negative impact on ecological processes (Kollock, 1998), which in turn will impact the social systems.

To achieve success and buy-in of the communities/collective identities living on the border of an area, individuals need to understand that their actions influence the long-term benefits of the system (Booth *et al*., 2010), and that over-utilisation of the resource could lead to a collective disaster (Kollock, 1998). For individuals to make a change, the ‘how’ and ‘how much’ of the benefit is received by others seem to carry a lot of weight (Kollock, 1998).

By measuring the needs and usage of the different identities conflicts can be resolved in the best interest of not only these identities but also the ecological needs of the natural resource (Booth *et al*., 2010). Through engagement agreement could be reached to zone the resource in order to ensure that all stakeholders can benefit.

This should be an equitable process to ensure that all can share, in not only the responsibility, but also in the benefits (Booth *et al*., 2010). Through these interactions the different identities begin to build trust and respect which lessens the chances of 'free-riding' and abuse (Kollock, 1998; Dietz *et al.,* 2003; Nkhata *et al.,* 2011). Members of the various collective identities can influence each other's behaviours to be able to advance a common interest (Nkhata *et al., 2*011). The ties binding the various members of the collective would determine how and how much of a common resource is used (Nkhata *et al., 2*011). Cooperation increases when individuals realise that there are others that also depend on the system (Kollock, 1998). This changes the relationships to the system and helps with the creation and definition of a meta-collective identity, with a common goal, around an aquatic environment (Kollock, 1998; Nkhata *et al.,* 2011).

As SANParks is the main governmental body that manages both the Swartvlei and Wilderness systems, they need to understand the "makeup" of the various collective identities around these systems to ensure that they effectively relate to the various value sets in their quest to achieve fair distribution of benefits and equity amongst all stakeholders (SANParks, 2011).

2.10.5.2 Identity and engagement

Engagement in natural resource management is interdisciplinary, trans boundary and inter-sectoral (Bunch *et al., 2*011). Even when the relevant mechanisms are in place it cannot be taken for granted that engagement will happen (Neysmith & Dent, 2010). The creation of a platform to manage a given natural resource normally would not fit with any existing management bodies. It usually takes the bringing together of stakeholders, with often conflicting identities (Mlazi River Catchment Management Programme Farmer Support Group 2011).

Different political, physical as well as social characteristics would determine the type of engagement and no two engagements would be the same (Schreiner *et al., 2*011). South African policy and water legislation encourages stakeholder engagement (Schreiner *et al., 2*011). Ramsar, an international agreement, also encourages the engagement of stakeholders in the management and protection of wetlands and the protection of aquatic biodiversity (Schreiner *et al., 2*011).

The reason for engagement will determine which stakeholders will be most important (Schreiner *et al., 2*011) and which collective identities have the power to influence decisions (Reed *et al., 2*009; Mlazi River Catchment Management Programme Farmer Support Group 2011). It is therefore important to define the issue, in order to identify the affected identities as well as the influential identities (Reed *et al., 2*009).

Identification of the relevant stakeholders for any type of engagement is of the utmost importance and yet the selection is often made on an ad-hoc basis (Reed *et al., 2*009). This can lead to groups that may be one of the biggest users of the natural resource being marginalised (Reed *et al., 2*009; Mlazi River Catchment Management Programme Farmer Support Group 2011). The excluded stakeholders would usually not agree to decisions made if they were excluded due to barriers that they could not overcome (Neysmith & Dent, 2010). Up to now in natural resource management

engagement has been about inclusivity and, if not managed properly, a strong voice can marginalise them even more (Reed *et al., 2*009). There are various barriers, which may be social (status level), material (have no access to certain services), ideological (gratification or satisfaction) or developmental (obtaining responsibilities) (Neysmith & Dent, 2010).

Engagement in natural resource management should also be on-going and follow through all the stages (Reed *et al., 2*009). The needs and values can then be monitored and facilitated throughout the process (Reed *et al., 2*009). Engagement is a way of allowing stakeholders to feel a sense of ownership through the decision-making process. This could also lead to a higher level of trust and cooperation (Reed *et al., 2*009). If stakeholders know and understand the identity of others, engagement is more likely to happen (Kollock, 1998; Aaker & Akutsu, 2009).

A good example where the creation of an identity through engagement fostered better cooperation is in the Mlazi River Catchment. Through the interaction with schools, local groups and the launch of a newspaper a catchment identity was fostered where the various collective identities could work towards a common goal that benefitted them all (Mlazi River Catchment Management Programme Farmer Support Group 2011).

2.10.5.3 Identity and social learning

There are usually a variety of expectations of a natural resource and many people are moving away from the hard system thinking and are approaching the problem with a softer solution, namely learning together as a group and arriving at collective solutions (Reed *et al., 2*009). Social learning aims to facilitate a process where people move beyond their current values, social norms, and traditional ways of thinking about problems in order to better deal with complex social-ecological problems (Cundill, 2010).

By understanding the various mental models and encouraging discourse through social learning, sustainable management can be promoted (Reed *et al., 2*009). Change also occurs through learning and this is important for adaptive management of complex natural systems (Roux *et al., 2*009b).

Roux *et al.* (2009b) state that, although embedded at an individual level, learning is socially mediated. Collective identities are therefore important and active participation during social learning events should be encouraged (Roux *et al., 2*009b). A company that is involved with the management of a natural resource should have as a prerequisite a competency in facilitating social learning. They should encourage the multi-directional flow of knowledge (Roux *et al., 2*009b).

2.10.5.4 Identity and complex social-ecological systems

A complex system consists of various interconnected variables (Cilliers, 2010; Bunch *et al., 2*011; Doyle *et al.* n.d.). The more interconnected and the more variables that exist, the more complex the system (Doyle *et al.* n.d.). The challenge of a social-ecological system is that it incorporates social as well as ecological components.

Both these systems have “agents” that interact independently with subsystems, while also interacting across the two systems (Anderies *et al., 2*004; Bunch *et al., 2*011). These complex systems are inherently challenging to manage, control or design (Anderies *et al., 2*004; Doyle *et al.* n.d.). Most of the components are self-organizing and the uncertainty of how they react to stimulus is high (Anderies *et al., 2*004). This makes it even more difficult to predict how the coupled social-ecological systems will react (Anderies *et al., 2*004; Steffen *et al., 2*011).

Very little attention has been given to identity in the analyses of social-ecological systems in the literature. The focus has been more on harvesting decisions or policies (Anderies *et al., 2*004). As it is extremely difficult to focus on individual identities, natural resource managers are mostly focusing on collective identities (Anderies *et al., 2*004). A framework of engagement therefore should take into consideration the maintenance of collective action and cooperation to be able to adapt to the rapidly changing ecological system (Anderies *et al., 2*004). Making decisions for the good of the ecosystem sometimes goes against certain individual and collective values (Dietz *et al., 2*003) but to manage a social-ecological system successfully one overlapping similarity should be identified to bind them (Cilliers, 2010).

Engaging with other collective identities allows for rich and diverse identities to emerge. Changes to these identities can occur through feedback loops and other outside influences and stimuli (Cilliers, 2010). If these social identities get locked in (through no interaction with other systems or ignorance) then it could lead to the collapse of the system (Cilliers, 2010).

An unfortunate reality is that if a local ecological system collapses, an adaptable social system will find ways to exploit other ecological systems (Anderies *et al., 2*004) and cause the pattern to potentially repeat itself. These local footprints are getting larger and a local collapse rapidly becomes a global collapse (Dietz *et al., 2*003). Societies collapse when core values become dysfunctional and the society becomes unable to recognise emerging problems (Steffen *et al., 2*011). It should be accepted that there will always be some uncertainty within a social-ecological system (Dietz *et al., 2*003).

2.10.5.5 Identity and mental models

Jones *et al.* (2011) quote that a mental model within the natural resource management field is a cognitive structure that comprises of “representations of objects, their relationships and dynamics as well as the attributes or characteristics of these and the person’s valence (cognitive and emotional) to the objects, relationships, and dynamics”. The definition as proposed by Doyle *et al.* (n.d.) for mental models in complex systems is “a relatively enduring and accessible, but limited, internal conceptual representation of an external system whose structure maintains the perceived structure of that system.”

Research also shows that identities, individual as well as collective, struggle, through the use of their own mental models, to predict side-effects or long-term impacts of their actions or stimulus on the systems. There also seems to be a lot of error and

bias situated within these mental models (Roux *et al., 2*009a; Jones *et al., 2*011; Doyle *et al.* n.d.). Doyle *et al.* (n.d.) also found that the mental model representation of their complex system usually lacked important issues like feedback mechanisms, time delays and nonlinear relationships. This lack of understanding usually results in negative consequences for the ecological system (Doyle *et al.* n.d.).

Nordlund & Garvill (2002) found that there are discrepancies between mental models and actions for natural resource management. An individual claiming to be an environmentalist, a certain mental model that they prescribe to, might drive rather than walk or taking a bus. They concluded that, for that individual, the perceived personal gain (ease of travel) outweighs that of the perceived collective loss (adding to the carbon footprint).

Collective action can be supported when the similarities and differences of individual mental models are understood. There are several reasons why mental models can assist with the managing of Natural Resources. These are:

- In an effort to improve communication between stakeholders managers need to understand the differences and similarities in understanding of an issue (Roux *et al., 2*009a; Jones *et al., 2*011; Doyle *et al.* n.d.);
- To be able to improve and integrate overall understanding of the various different perspectives, from both local as well as expert knowledge (sense-making) (Roux *et al., 2*009a; Jones *et al., 2*011; Doyle *et al.* n.d.);
- The creation of a collective representation of the system could improve decision making processes (Jones *et al., 2*011);
- To improve social learning (Jones *et al., 2*011);
- To be able to overcome and identify any knowledge misconceptions and limitations associated with the natural resource (Jones *et al., 2*011);
- To be able to assist in negotiating support for any unstructured challenges in a multifunctional, complex system (Jones *et al., 2*011).

It is important to understand that these different identities do not work independently but that they overlap considerably and interact with each other constantly (Cerulo, 1997; Deaux, 2001; Snow, 2001; Sherry, 2008). Individuals have the power to create groups, networks and organisations and this in turn affects the personal identity in its shared meanings and language that enables a person to grow and reflect and understand diverse viewpoints (Stets & Burke, 2003). Individuals do internalise collective identities but it mixes with a unique set of other individual and collective identities, creating a foundation for the collective self (Cerulo, 1997; Hardy *et al.,* 2005). A collective identity also fosters empathy towards the other members of the group (Brickson, 2005).

2.11 Identity and Benefit sharing

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3 Methodology

This chapter focuses on describing the research design followed by a description of the data collection, capturing and analysis methods. This is followed by a section on the ethical considerations that were taken into consideration during the research process.

3.1 Principles and philosophical approaches

3.1.1 Complex adaptive systems & challenges

A fundamental assumption and starting point of this research was that the researchers were dealing with a social ecological system that is complex and adaptive in nature. According to Cilliers (2000), complex systems consist of many independent elements, which may not be complex by themselves. There are rich, non-linear interactions between these elements, with many direct or indirect feedback loops. These systems are open, i.e. they exchange energy or information with their environment, are influenced by external perturbations (Gunderson, 2010) and operate far from equilibrium. These systems have memory that is distributed throughout the system that profoundly influences how the system behaves. The behaviour of the system depends more on the interactions between the elements than the nature of the elements themselves. Deterministic forms of prediction cannot predict the behaviour patterns that emerge through these non-linear, rich interactions. Self-organisation is a common phenomenon in complex systems and they adapt internally without the need for external intervention.

Human societies or communities and ecosystems can both be categorised as complex adaptive systems. These systems are comprised of structures and processes that function at specific spatial-temporal scale ranges, which are defined by certain boundaries (Gunderson, 2010). Within these boundaries are components that interact and change in simple and complex ways at various scales (Brand, 1994). Both systems are vulnerable to outside influences and perturbations such as natural disasters. These cross-scale interactions, which are typical of complex adaptive systems, make them notoriously difficult to analyse and understand. Instead, they are categorised according to emergent properties, self-organisation, historical patterns of abrupt non-linear change and unpredictable dynamics (Costanza *et al*., 1993, Holling, 2001, Liu *et al.,* 2007).

One often finds unexpected behaviour at scales that are different to the observation or study due to emergent properties of land-water interactions (e.g. Gordon *et al.,* 2008). Fresh water systems such as rivers and estuaries find themselves on the boundary where complex social systems and complex ecological systems meet. This gives rise to unexpected emergent behaviour that is difficult to predict or manage.

Integrated resource management is defined as a purposeful activity with the goal to maintain and improve the state of an environmental resource affected by human activities (Pahl-Wostl, 2007). This often involves balancing conflicting goals and

managing trade-offs. For example, in the estuaries that this study focused on there are many human needs such as (among others) recreation, protection of property against damage or loss caused by natural events and the nutritional needs of poor communities that border the estuaries. As both of these systems are open and therefore vulnerable to external forces, another trade-off that managers need to consider is preparing to adapt to short-term, common events versus larger disturbances that occur over longer time horizons. Many of these disturbances and their associated impacts cannot be foreseen or predicted; new vulnerabilities may also emerge as unexpected consequences of previous actions (Holling, 2001). Hence managers of social-ecological systems need to be aware that they are dealing with complex systems in order to be prepared to deal with never-before-experienced events and their impacts.

This study dealt with two complex social-ecological systems. As such, it must be understood that the complex dynamics that exist within these systems can never fully be understood (Cilliers, 2000). Another key principle is that every action that is undertaken in the system will influence the system and may potentially have consequences that are non-linear and unpredictable. It is also not possible to study the system in a reductionist fashion, however, a requisite simplicity can be found (Stirzaker *et al.,* 2010).

Folke *et al*. (2003) identify and expand on four critical factors in complex social-ecological systems that interact across temporal and spatial scales and that seem to be required for dealing with ecosystem dynamics during periods of change and reorganisation: learning to live with change and uncertainty, nurturing diversity for reorganisation and renewal, combining different types of knowledge for learning, and creating opportunities for self-organisation toward social-ecological sustainability.

3.1.2 Pre-hypothesis & Grounded Theory

The formation of the hypothesis underpinning this research study was of particular interest to the researchers. Traditional research methods emphasise the centrality of initial hypothesis formation, where data is then gathered in order to prove or disprove the hypothesis. The researchers have found it useful to utilise a hypothesis formation approach such as Pre-Hypothesis Research (PHR) and Grounded Theory, which are both useful in uncovering the deeper dynamics of social complexity, and ideal for exploring integral social relationships and the behaviour of groups where there has been little exploration of the contextual factors that affect individual's lives (Crooks, 2001). Based on this, and the results generated from Blignaut & Choles (2011) who employed the same approach, PHR and Grounded Theory have been influential in this research.

The PHR approach draws on research in the fields of Cognitive Sciences and Knowledge Management (Kurtz & Snowden, 2003). According to Ward & Wright (2009), PHR broadly comprises the following aspects:

- Open discovery using narrative extracted from a variety of stakeholders (in the form of anecdotes and experiences) and other secondary sources;
- Consulting a diverse range of stakeholders in order to view the research topic

from multiple perspectives. This is important to the process so as to mitigate against the biases introduced by stratified stakeholder samples; and
- The focus of the data collection is on the retelling of experiences rather than statements or opinions.

Hypotheses were therefore formed utilising patterns found by analysing the narrative obtained from participating stakeholders, not up-front as with hypothesis-led research techniques.

Grounded Theory is a systematic research methodology which is complementary to PHR and stems from the social sciences involving the generation of theory from data (Martin & Turner, 1986). Most utilised within qualitative research, it has found applicability within quantitative approaches to research (Glaser, 1967). Grounded Theory may be defined as: "the discovery of theory from data systematically obtained from social research" (Glaser & Strauss, 1967:2).

In a sense PHR and Grounded Theory operate in a reverse fashion from traditional research methods and may appear to be in contradiction to the scientific method. Whereas traditional research begins with a hypothesis, PHR and Grounded Theory place preference on the data first as the guiding principle for the research. The first step is data collection, through a variety of methods (see section 3.3 on narrative collection methods). Once the data has been collected, categories are formed, which are then the basis for the creation of a theory, or a reverse engineered hypothesis. In contrast, the traditional model of research has the researcher first choosing a theoretical framework which is then applied to the phenomenon to be studied (Allan, 2003).

Ward & Wright (2009) outline the potential benefits of utilising PHR and Grounded Theory:

- it is consistent with the natural rules for knowledge sharing by humans – we impart knowledge through storytelling;
- it seeks to avoid cognitive bias – pre-conceived hypotheses may blind one to new insights;
- it seeks to reduce research bias by focusing on what the interviewee thinks is important, not the researcher;
- context is key – lessons learned in narrative form provide a meaningful context for any data collected; and
- it seeks to address some of the limitations of hypothesis-led research by posing questions that both avoid responses being gamed or gifted by the interviewee and by minimising the researcher's influence.

3.1.3 Illusion of the broken system

Researchers are interested in dysfunction. That which is dysfunctional does not operate optimally. This is especially true in human systems. Understanding what is dysfunctional opens up opportunities for intervention and the possibility of resolving the dysfunction for the sake of human progress. Dysfunction is a natural

phenomenon within human systems and the researchers were interested in the role it plays within the chosen study sites. Heifetz, Linksy & Grashow (2009) posit a warning about the assumption that a human system is dysfunctional. They argue that any social system functions the way it does because the agents within the system (at least those people and factions with the most leverage) desire it to be that way, either consciously or not. From this perspective, the seemingly dysfunctional system is working fine. The argument is that the dysfunction is an illusion. Rather, the system is perfectly aligned to achieve the results it currently gets.

The study sites chosen for this study each had their own respective and relative levels of dysfunction. The approach by the researchers has been to critically assess the social systems at play at the sites and to understand the dynamics and interactions that 'create' the supposed dysfunction, while also investigating what keeps that level of dysfunction present, i.e. what agents, or interactions, depend on the dysfunction to maintain the status quo?

3.1.4 Narrative analysis

Because of the emergent nature of the methods used, it was very difficult for participants to influence the outcome to any pre-contrived benefit. Complex facilitation and disruption techniques reduced the opportunities for any dominant personalities to influence the results. The social construction aspect of the process made it difficult for those engaged to deny the results and at the same time, difficult for executives to challenge, as they emerged from the environment itself, not from an external consultant or expert.

The approach adopted by this study in analysing the narrative material gathered from the interviews and anecdote circles was that of analysis of narrative. Polkinghorne (1995) outlines two modes in which narratives can be analysed: 'analysis of narrative' which proceeds in the scientific mode and attempts to identify common themes across a series of narratives, and 'narrative analysis' which analyses the narrative on its own terms. In this project, research analysts utilised the first mode of finding common themes across a series of narratives by using a method called Thematic Analysis.

Thematic Analysis is one of the most common forms of analysis in qualitative research. A Thematic Analysis seeks to pinpoint, examine and record patterns and themes found within the data. The themes identified become the categories for analysis. There is a clear link between this type of analysis and Grounded Theory, as the latter lays out a framework for carrying out this type of code-related analysis (Gibson, 2006).

According to the University of Auckland, this method is not for, or about, psychology as the title suggests, but has actually been widely used across the social, behavioural and more applied (clinical, health, educational, etc.) sciences (The University of Auckland, New Zealand, Braun & Clarke, 2006).

3.2 Research Design

A qualitative research approach was used as the main objective of this research was to determine how stakeholder engagement impacts on the use and sharing of ecosystem service benefits derived from large lake systems. Qualitative research explores issues and answers questions that try to understand occurrences (Bogdan & Biklen, 2007; Given, 2008; Creswell, 2009; QSR International Pty Ltd., 2012). Qualitative methods allow for the complexities of social interaction to be described. The opinions of all people, irrelevant of their level of power, are of equal importance. This research approach is used to discover the 'why' of human actions. Through qualitative research you can determine the feelings and thoughts of citizens and interpret their meanings (Given, 2008). The data are descriptive and are substantiated with quotes that are full of explanations and conclusions (Bogdan & Biklen, 2007). A bottom up approach where the collected data informs the result rather than trying to prove or disapprove a statement (inductive approach) was used (Bogdan & Biklen, 2007). This research used empirical data (Bogdan & Biklen, 2007; Flick, 2009) and the design was adapted as more information was gathered (Bogdan & Biklen, 2007).

Qualitative research is influenced by various worldviews or paradigm. Ontology (the type of reality that is to be studied), epistemology (the type of knowledge that is to be studied) and methodology define the interrelated thinking and practices that are used by researchers to identify a paradigm (Creswell 2009; Terre Blanche & Durrheim, 2010).

This research was based on the belief that truth or knowledge is constructed through social interaction and depends on social and historical perspectives. As all people believe that they have the correct set of facts (ontology), a suspicious and observer constructed epistemological stance was adopted with an inductive approach and a textual analysis methodology approach. This lead to the adoption of a constructionist paradigm approach (Creswell, 2009; Terre Blanche & Durrheim, 2010).

Within this paradigm the research was also approached within a social-ecological systems theoretical framework. Ecosystem services, benefit sharing, engagement and identity (collective identity) were the key concepts used to inform the research objectives (see Figure 11).

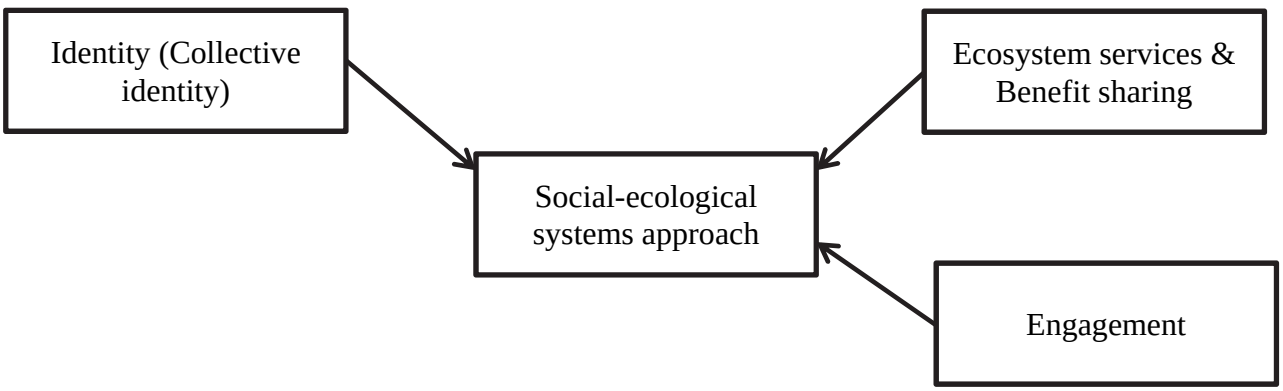


Figure 11: Theoretical framework of research

3.3 Process followed/Methods

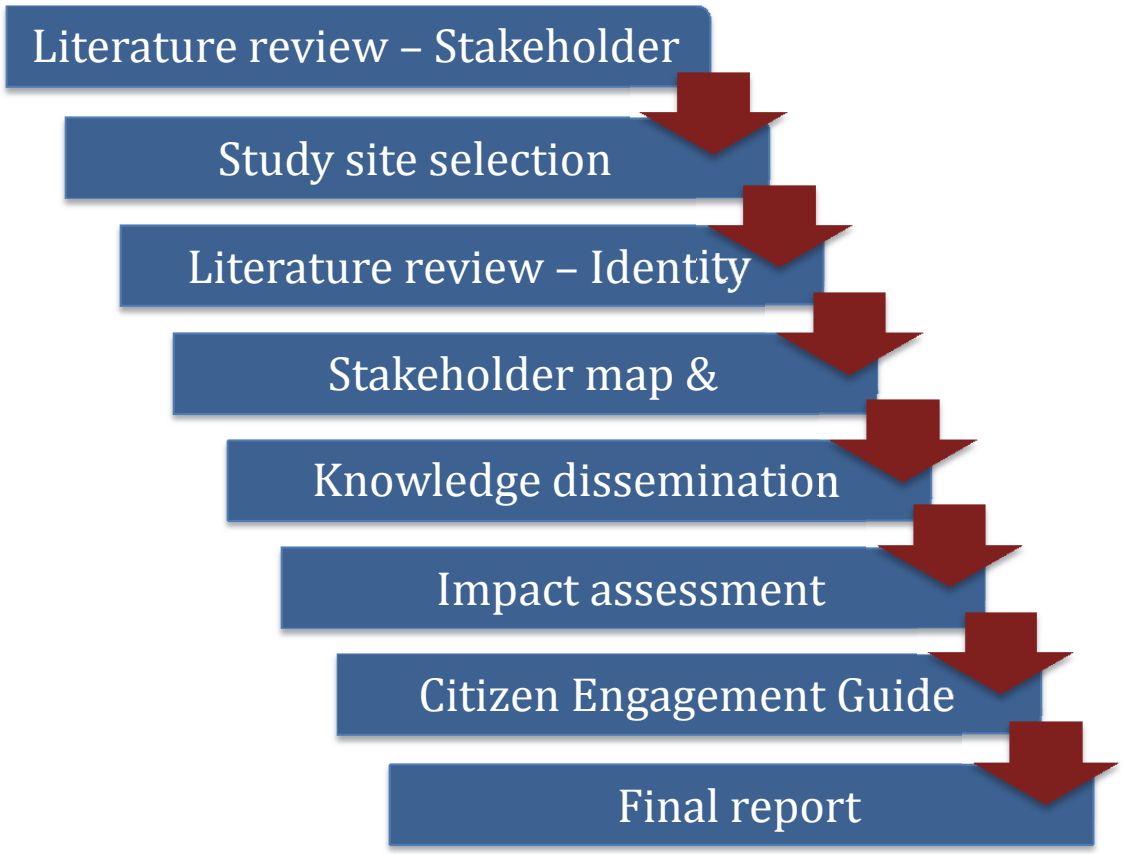


Figure 12: Project process

3.3.1 Interviews

An interview is defined as a purposeful conversation that is conducted between two or more people in order to get certain information (Bogdan & Biklen, 2007). An interview guide was drawn up in order to ensure comparable data from this method. An interview guide, unlike a questionnaire, allows participants to answer the questions freely and by changing questions around, as needed, it allows for the free emergence of knowledge as well as an opportunity for unexpected responses (Bogdan & Biklen, 2007; Flick, 2009).

Once the interview guide was finalised participants had to be identified. Initially newspapers were consulted to determine who the current key stakeholders were. The management agency (SANParks) of the natural resource was also approached for an initial list of names of possible interviewees. Interviews were then conducted and all the interviews were recorded using an audio-recorder and then transcribed and coded (Creswell, 2009).

From the initial interviews, a snowball sampling method was followed to expand the list of potential participants. Initially random sampling was done with the names

collected through the snowballing method but as the research continued, and gaps were noticed through the analysis, a purposive sampling method was adopted (Bogdan & Biklen, 2007; Creswell, 2009). Participants were then chosen relative to what they could add to the data set rather than representativeness (Bogdan & Biklen, 2007; Flick, 2009).

One-on-one interviews as well as group interviews with the identified individuals of collective identities were conducted to identify and explore their views and opinions on the issues surrounding the lakes (Bogdan & Biklen, 2007). It was very important, especially within the previously disadvantaged section of the communities to build trust and ensure that the participants were relaxed and at ease. This was accomplished by conducting group interviews which offered even more anonymity; which was the main reason for choosing both strategies to collect the data. Group interviews served as a tool to build relationships and to foster conversation between participants. As one of the dangers is that you might lose the quality of the data the focus groups were followed up by one-on-one interviews with some of the participants from the groups. The interviews and any correspondence were, as much as possible, conducted in the participant's language of choice. All interviews were conducted at the venue of the participant's choice in order to put the participant more at ease. It was also important to ensure that the person felt that their opinion mattered as with our racially divisive history there are some of the respondents that feel disempowered to make a contribution. In order to show the necessary level of respect to your participants it is also important to know and understand the various cultures and histories before the interviews (Bogdan & Biklen, 2007).

A semi-standardised interview method was employed using an interview guide with open-ended questions in order to ensure that there would be comparable data. It had some of the elements of a narrative interview especially when it came to investigating the timeline by asking generative narrative question (Flick, 2009). During these semi-standardised interviews the participants were asked to reflect on their own experiences on engagement and benefit sharing within the specific study areas.

Where possible a timeline-based process, called The Future Backwards, was also completed during the interview process. The participants were asked to construct a timeline, working back from the current date adding any data they deemed as important on the timeline. This was a visual exercise using an A2 sheet and 'sticky notes' to construct a timeline (Figure 13). During the interview process key words were written down that represented the perception of the participants on the current state of the SES (bright yellow sticky notes), the events that led up to this state (light yellow sticky notes), a 'perfect world' state (pink sticky notes) and a worst case scenario state (green sticky notes). Participants were then asked to share stories around these identified events (Cognitive Edge Network, 2013).

Figure 13: An example of a Future Backwards visual timeline

During interviews active listening were also used where the verbal as well as the non-verbal communication were noted. This entailed non-judgement of any of the data from the participants as well as the paraphrasing, interpreting, reflecting and checking of perceptions of the participants (Ayres, 2008).

3.3.2 Documents

Various documents were used in order to compliment and triangulate the data collected through the interviews (Bogdan & Biklen, 2007; Creswell, 2009; Flick, 2009). Newspapers as well as historical photographs were accessed through the George Museum and the relevant data was captured in the timeline. Internal monitoring reports from SANParks, like the report on the state of the mouth of the estuaries, were used to add data to the timeline. Minutes of forum meetings were also utilised to confirm dates in the timeline as well as to highlight the importance of events. These were accessed through the George Museum or the secretary of the particular forum.

3.3.3 Observations/meetings

Another strategy employed was to attend and observe various forum meetings which offered an opportunity to observe participants within an environment where they are involved in an everyday activity (Bogdan & Biklen, 2007; Creswell, 2009; Flick, 2009). It also offered the opportunity to gain more insight into the various issues discussed as well as to build relationships with participants. This seemed to put people more at

ease during one-on-one interviews. Due to the fact that people were continually reminded of the research participants started volunteering information (Bogdan & Biklen, 2007).

3.3.4 Stakeholder mapping

A stakeholder map is a document that shows either all possible stakeholders or limited stakeholders within a specified boundary. Possible stakeholders are usually identified using methods like focus groups, brainstorming sessions, snowball sampling and interviews. It is imperative to start off with a list of stakeholders that is as comprehensive as possible (Reed *et al., 2*009). It must be understood that such a stakeholder map is a point in time perspective of the people or groups that would be affected or that are involved with a natural resource management issue currently and that it should be a document that is continually updated as the dynamics of the issue shift over time (Reed *et al., 2*009).

An important reason to have a well-researched and inclusive stakeholder map is to ensure that marginalised groups are included in order to give them a voice and to ensure that they have influence equal to that of other more powerful and prominent stakeholders such as well-connected, powerful businessmen, especially when it comes to benefits derived from natural resources (Reed *et al., 2*009). Typically a stakeholder map does not define the roles, rights and responsibilities of the stakeholders, however the various different opinions, agendas, interests and needs can be taken into consideration if required (Reed *et al., 2*009).

The equitable sharing of the benefits and natural processes that are derived from our two case studies seem to form the central point of engagement in the study sites. So in this case the lakes also form an entity, which in turn makes them stakeholders in the system (Lotz-Sisitka & Burt, 2006). The requirements of the lakes would in turn have an effect on the users as the available benefits might be less due to the systems' own requirements. The viewpoint of the managing entity is therefore also important in an effort to balance stakeholder interests and to incorporate the interests of the natural resource itself (Hardy *et al., 2*005).

Once the definition of a stakeholder has been clarified, the next step in the mapping process is to identify the stakeholders in the relevant areas and determine which of those stakeholders are relevant and should be included in engagement or participation initiatives. For research purposes the question asked and the method used usually determines who is included and who is left out (Reed *et al., 2*009). There is always a risk of omitting important stakeholders but for the sake of practicality the analyst must draw a boundary that is informed through well-developed criteria. This can be either geographical or biographical depending on the focus of the analysis (Reed *et al., 2*009). Defining such a boundary, although necessary is a limiting step that serves to reduce the complexity that the researchers have to deal with. This is problematic but necessary in that it becomes a mechanism that determines who is included and who is excluded, however for pragmatic purposes such a boundary is required. The researchers believe this to be especially important in South Africa where the personal experiences of the researchers in dealing with

South African stakeholders suggests that inclusion is a fundamental value and concern prevalent in our society at the moment.

Initially it was decided that a geographical boundary around the lake systems would serve to delineate the research area and all citizens within that boundary should be seen as the stakeholders (Figure 1). However, this led to the exclusion of various individuals and groups like tourists or anglers that also have a major impact on the system and depend on the systems for their well-being. On a weekly basis anglers, from as far as Mossel bay and Knysna, access the lakes (Figure 1). Local tourists book their holiday at the same spot every year for generations and the Ebb & Flow rest camp receives visitors from as far as Australia, Belgium, Canada, Germany, France, Holland, Italy, Netherlands, Sweden, Switzerland, United Kingdom and United States (South African National Parks, 2011). It was then decided to use the ecosystem services and the benefits derived from the resource as criteria for establishing a pragmatic boundary.

3.3.4.1 Advantages and benefits of a stakeholder map

A stakeholder map offers various advantages:

- It identifies the various stakeholders that might be impacted or influenced by any action in a SES, for example management decisions (Reed *et al., 2*009).
- It can be used as a tool to identify any stakeholders that might need special or extra attention to enable their participation, for example transport to a meeting. In facilitated participation processes, the facilitator should however be aware that this information should not be used as a tool to empower or marginalise any groupings. It should be used as a tool to ensure fair and equitable engagement (Reed *et al., 2*009).
- It can be used to identify stakeholders that can assist with the achievement of goals through engagement, in this case a resilient social-ecological system (Microsoft 2009).
- The stakeholder map can also be used for the identification of possible conflicting or complementary interests or needs (Reed *et al., 2*009).
- A stakeholder map enables proper stakeholder analysis, which can assist with the identification of relationships that still need to be established, it can identify the key blockers or high potential opportunities and it can relate power and interest (Clarke, 2012).

Compiling a stakeholder map is not an objective exercise, and depending on who is doing the mapping and the boundaries they selected, the map may reflect different information and therefore have different uses. In the case of a management agency defining the map, it might highlight only those stakeholders who are directly influenced by decisions made on the management of the natural resource. The map can then assist with the stakeholder analysis and help ensure that the management agency and forums can understand the impact they have on not only society but also on the ecology of the area (Reed *et al., 2*009; Clarke, 2012). Through this analysis any new management strategy can be discussed with the various stakeholders that are involved the common goals and visions can be advanced (Clarke, 2012)

From the perspective of a management agency, it is important for the stakeholders to understand why certain processes need to be protected and this can only happen if there is engagement with the affected stakeholders (Booth *et al., 2*010). If the needs of each affected stakeholder group are understood, the correct stakeholders can be included in decision-making processes (Reed *et al., 2*009).

In developing the stakeholder map, the process to finalise it was done in the form of a workshop with various stakeholders. The workshop started off by randomly dividing the whole group into smaller groups with a maximum of 8 people each. The random splitting of the group ensured that individuals did not remain within the stakeholder groupings they either arrived with or chose to sit with. A further objective of the randomisation was to provide stakeholders with an experience of engaging with stakeholders they may not usually have an opportunity to spend time with, or get given the opportunity to do so. A facilitator then joined each group to support and guide the conversations.

A large colour print-out of the stakeholder map was placed on the table for each group. The groups were given five minutes to look at the map and the facilitator also used this time to describe the map and explain the layout reasoning. The groups were then required to answer pre-determined questions on the stakeholder map. These answers were captured through voice recording the conversations as well as making notes on the map itself. The questions were:

1. Who is not on the map that should be?
2. How do the various groups communicate/relate to one another?
3. What do each of these stakeholders care about/value?
4. Which of these stakeholders has the biggest impact on engagement levels?

3.3.5 Timeline – Historical Analysis

The research project utilised a process of snowball sampling, where each of the interviewed participants were asked to provide names of others they felt needed to be part of this study. 18 Interviews were conducted with a variety of key stakeholders. During these semi-structured narrative interviews, participants were asked to speak about their own engagement as well as their perspectives on which issues were important regarding the Social-Ecological System (SES) currently.

This process entailed two steps:
1. The participant was asked to reflect on the current state of engagement around social-ecological issues
2. The participant was asked to construct a timeline, working backwards from the current state, including key historic events that they felt had an impact on engagement levels

The constructed timeline was then utilised as a narrative elicitation device, where people were asked to share stories around key events on the timeline.

A timeline was created to assist with the analysis of historical engagement. Two aspects of the layout of the timeline are noteworthy. Firstly, the timelines for Swartvlei and Wilderness are represented alongside each other. This was done for two reasons, namely so that we could provide a visual comparison of the engagement histories of the study sites and to then also highlight which events were common to both sites. Secondly, the information was divided into Global, Level 1 and Level 2 events in order to represent a range of types of events that distinguish, on one end, wide and far-reaching types of events that the study sites were subjected to from more localised types of events that may pertain exclusively to the study sites at the end of the spectrum.

The researchers defined 'Global' events as occurrences that are wide, far-reaching, national and possibly global in their nature and have thus affected both of study sites. Level 1 events are more local in their impact and national in nature. Grey literature was consulted as sources for Level 1 events. Level 2 events are those as reported by the stakeholders interviewed in the study.

An attempt to align the stakeholder mapping with the historical analysis is captured in the legend provided on the timeline figure where the researchers have highlighted, through colour coding, which stakeholder groupings identified particular Level 2 events or issues in their interviews. Our hope is that by providing such a legend it would be possible to learn something about how certain stakeholder groupings see the engagement history of their site.

3.3.6 Knowledge Dissemination Workshops

Two workshops were conducted with local stakeholders from the two study sites: Wilderness and Swartvlei. The objective of these workshops was to empower the participants by sharing the knowledge gained through the research project to-date in relation to the identification of the relevant stakeholders and the timeline of important events that have influenced stakeholder engagement historically. The workshops were facilitated in such a way as to also offer an opportunity for the stakeholders to provide feedback on these results.

The workshops brought together representatives from various forums, associations, sport clubs, governmental departments, spiritual groups and businesses that were identified as stakeholders at the two study sites. The workshop invites, logistics and process design are attached as Appendix 1.

3.3.7 Social-ecological systems and stakeholder roles

It is important to understand that not everyone will be able to have an equal share of the benefits of any natural system, but by involving all relevant stakeholders hopefully an equitable sharing of benefits can be facilitated. According to the conceptual model suggested by Anderies *et al.* (2004) stakeholders in a resilient social-

ecological system (SES) fulfil four roles, namely the resource itself, resource users, public infrastructure providers and public infrastructure (Figure 14).

The resource is defined as the natural environment supplying the benefits, which in this case is either the Wilderness Lakes or Swartvlei. Resource users are those stakeholders that utilise any of the available benefits (Anderies *et al., 2*004). For this research all of the groupings with the exception of most of the governmental departments would be classified as resource users. The governmental departments that would fall under this classification would be the local municipalities who have rights to extract water from the rivers that feed into the lakes (Figure 14).

Public infrastructure is defined as the infrastructure, both social and physical, that supports the SES. The social public infrastructure would include the rules and regulations placed on the SES by the citizens. The physical public infrastructure would be all the engineered works including the roads, pipes, etc. (Anderies *et al., 2*004).

The public infrastructure providers are defined as the stakeholders that would develop and/or enforce the public infrastructure (Anderies *et al., 2*004). For study site 1 and 2 the governmental departments would be the main providers of the physical as well as social infrastructure while the rest of the groupings, with the exception of the individuals, would be instrumental in the provision of socially accepted rules and behaviours.

The way in which the four roles discussed above engage and interact with each other would determine the resilience and success of an SES (Anderies *et al., 2*004). This engagement is important as resource users and infrastructure providers have access to and utilise different sets of information. Without understanding the ground level consequences infrastructure providers might end up making senseless rules and regulations (Anderies *et al., 2*004).

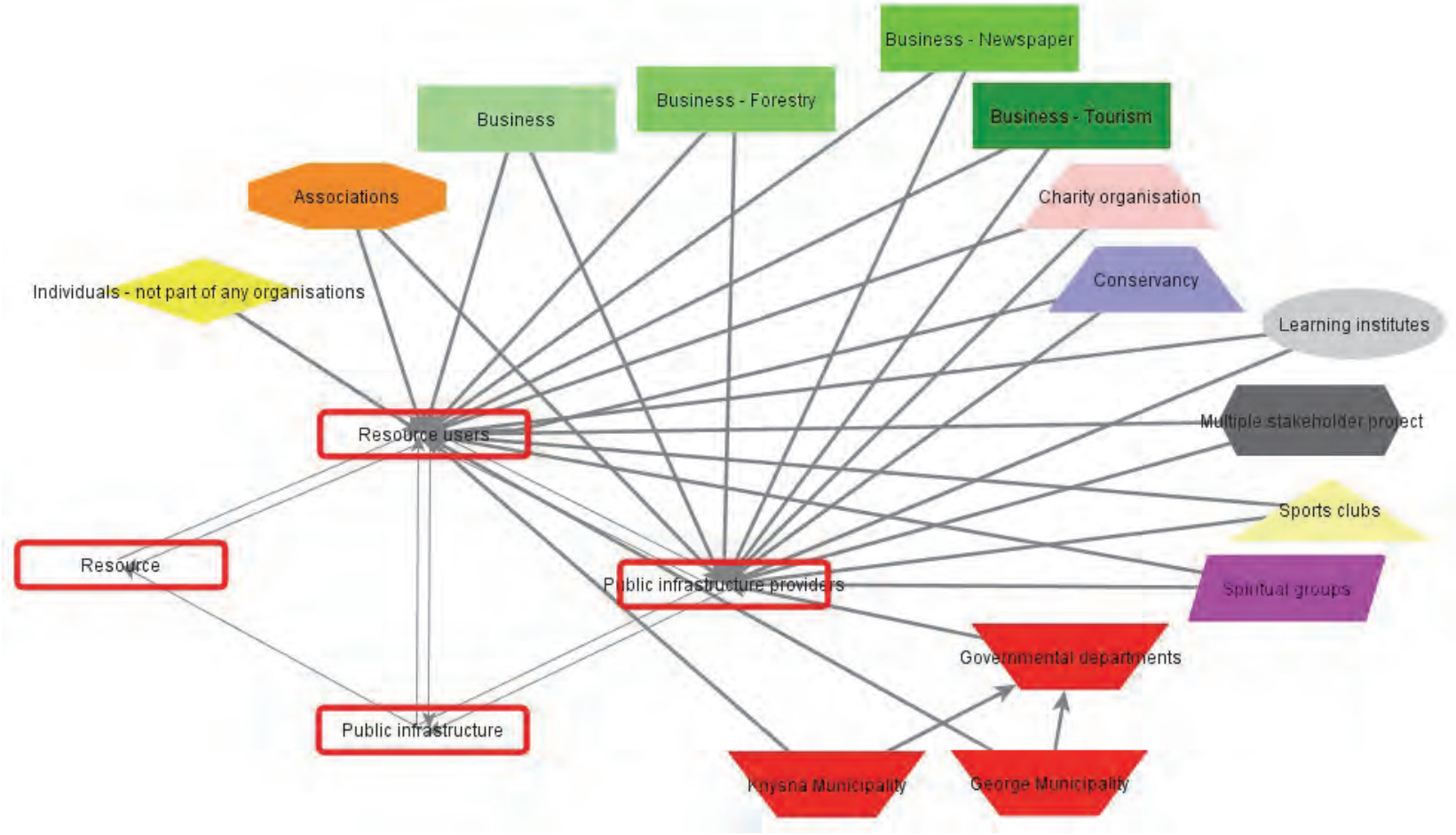
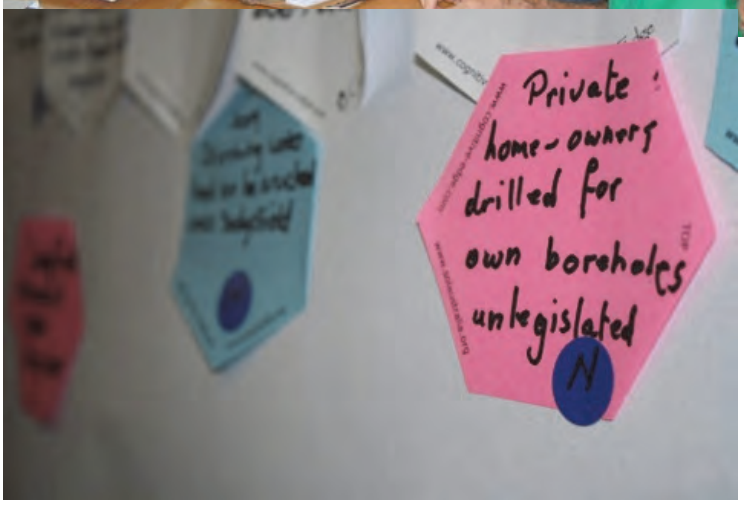


Figure 14: Social-ecological model (Adapted from Anderies *et al*. (2004))

3.3.8 Timeline review and update

The timelines that were created for Swartvlei and Wilderness were represented on the walls of the room and the events were indicated by various coloured hexagonal-shaped post-it notes (hexies). The global events were represented by white hexies, Wilderness events by orange hexies and Swartvlei events by blue hexies. Those that were identified through grey literature were labelled with a '1' and those that were highlighted through interviews were labelled as '2'.



The participants were then given an hour to have a 'walk-through' of the timeline in their small groups as a means of giving the participants exposure to the timeline. We invited the participants to make sure that identified events were correctly identified, positioned and articulated as well as to add any new events we had not identified by writing and sticking up pink hexies.

An additional activity we invited the participants to perform was to add a sticky dot to any events that they felt had a significant effect on engagement levels in the past. For Swartvlei the dots were blue and for Wilderness the dots were red. Participants were also asked to indicate if the event they highlighted had a positive or a negative effect on engagement levels at the particular study site. The facilitators then attempted to record the stories behind those new events.

3.3.9 Review of current research themes

The final step in the dissemination process was to expose the participants to the 'engagement themes' we had begun to identify from the analysis of the stakeholder maps and timelines that emerged from the interviews. Each theme was rendered on a powerpoint slide and presented to the group by the lead facilitator. A whole group discussion was then facilitated in order to ascertain how the participants felt about and responded to the themes. New information or stories were voice recorded. In

particular, the facilitator focused on how accurate the themes were from the perspective of the participants and attempted to stimulate discussion on how the themes play out in ‘sparking or inhibiting engagement’ at the study sites.

3.3.10 Impact assessment

Socio-ecological systems are adaptive in nature and it is for this reason that it is important for the researchers to sense any changes in the socio-ecological dynamics at the study sites that this research has been investigating. The impact assessment focused on the influence (if any) that these two feedback workshops had on the participants since being conducted, while also ascertaining what other shifts may have taken place. To establish a direct causal link is very difficult but it was important to document any change that had occurred since the workshops, for whatever reason.

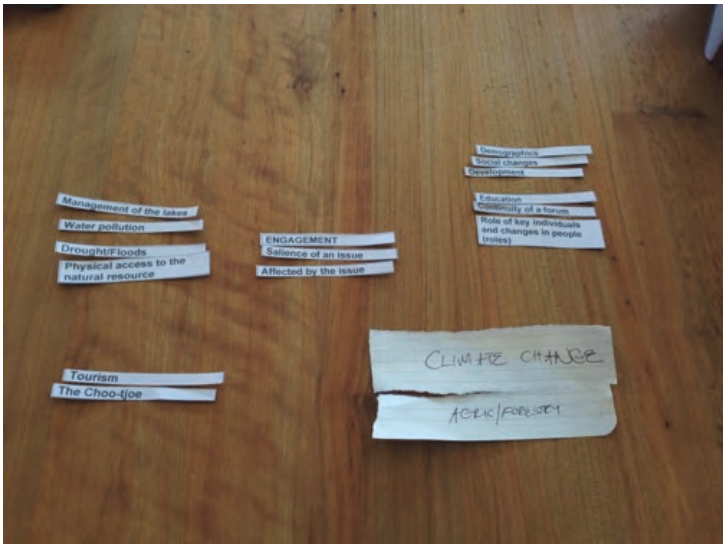
On 25 and 26 April 2013, a selection of participants was interviewed in order to understand their experience and possible impact of the workshops held in February 2013. The interviews followed a semi-structured approach, in which guiding questions were asked of interviewees. These guiding questions were as follows:

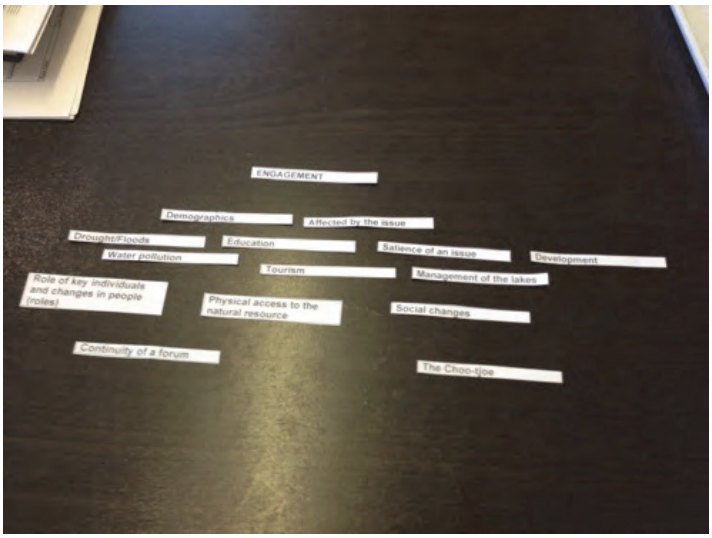
- Tell us about what you experienced at the workshop, what worked for you and what did not work for you?
- What did you find interesting?
- What question/s (if any) did you walk out with?
- Has the workshops had any impact on the way you thought about stakeholders in the area?
- What usefulness, if any, has there been from the workshops?
- What other events or occurrences have taken place that we should be aware of? Has anything changed with regards to the water related issues in your area?

Where necessary, responses were then probed for more detail. Lastly, an exercise was also conducted to try and determine how the participants saw the relationship between engagement and the identified themes.

3.3.10.1 Theme and engagement exercise:

Once the discussion was completed in the interview, an exercise was conducted with each interviewee. In this exercise, the Themes were each written on a small card, as well as the word “Engagement”. The interviewers then placed the Engagement card in the middle of the table with the Theme cards surrounding it in a circle. Each interviewee was given a refresher on what each theme meant (as discussed at the feedback workshops), and then asked to rearrange the theme cards closer or further away from the Engagement card, depending on the level of influence they felt each theme had on engagement. The proximity of each theme indicated, in their opinion, how much influence that theme had on engagement.





3.3.11 Engagement guide for citizens

A large focus by the WRC is often on disseminating knowledge and findings of projects to as wide an audience as possible. With this in mind, the researchers developed a user friendly Engagement Guide for citizens and agencies, which packaged the journey any citizen could take if they wanted to understand engagement on a water resource challenge in their community.

The ultimate aim of the guide was to democratise the process of understanding engagement in an area with a water resource challenge. The guide equips average citizens with the techniques and methods used in this research project so that they are able to conduct their own processes independently in fostering an understanding of the dynamics of stakeholder engagement in their area.

In developing the guide, various stakeholders in the study sites were asked to provide their feedback on the guide, in terms of content, language used, applicability

and usefulness. The feedback received from these stakeholders was extremely positive, with minor suggestions to content and language changes.

A cartoonist, who developed a character that could be used throughout the guide to illustrate the content in an engaging and interactive manner, assisted the project team. A graphic designer, who created the current layout and format of the guide, also assisted the project team.

Potential uses of the engagement guide:

The guide is currently in English, and in an A3 size 4-page format. The following are suggestions by the project team on potential avenues that this guide can be distributed, at the study sites, but also nationally.

- A newspaper insert in The Edge newspaper (based in Sedgefield)
- Distributed to relevant agencies, e.g. SANParks, Catchment Management Agencies, etc.
- Available as a resource on the WRC website
- Translated into other South African languages if distributed nationally

4 FINDINGS

4.1 Historical analysis

Both these sites have long stakeholder engagement histories and there is evidence of engagement about land use and ownership dating as far back as the early 1800s. Anecdotal evidence suggests that the two sites are in significantly different phases of engagement at the moment, with high levels of engagement in the Swartvlei (Sedgefield) area, and less engagement in the Wilderness area. One of the key questions in the study is to investigate this difference and to understand why two systems in such close proximity and with similar demographics and water-related issues have such different engagement patterns.

The stakeholder mapping process yielded a sufficient, albeit provisional, understanding of the stakeholder map at the Wilderness and Swartvlei study sites. Attention now needs to be applied to what could be learnt about the nature and dynamics of engagement at the sites. The remainder of this deliverable will be dedicated to conducting a historical analysis of the events, scenarios, circumstances and issues that pertain to stakeholder engagement.

By way of reminder, the conceptualisation of engagement utilised in the Literature Review of this study is *the manner in which stakeholders 'harness' and 'decouple' themselves from active involvement in addressing a water challenge.*
As with the stakeholder mapping exercise, the historical analysis was an emergent, subjective and inferential assessment of the history of engagement at the study sites as described through the perspectives of stakeholders interviewed for this study. The researchers also acknowledge the incompleteness of this assessment in that additional rounds of interviews and cross-referencing are required in order to validate the historical accuracy of events as reported in the interviews.

Interestingly, the researchers discovered that time and history are relative concepts to the stakeholders in that the reporting of events in the interviews was at times vague. The specific timing of events, as dependent on memory, was at times general and non-specific.

One of the key questions the researchers approached this particular deliverable with was: what are the high potential events, as evidenced in the history of the study sites, that marked substantive changes in the engagement levels of stakeholders in relation to water resource management issues? A secondary question was: what can be learned from those changes in terms of the possible cyclical nature of engagement?
The researchers discovered that the above questions were too narrowly focused on events and how they influence engagement levels. In the process of assessing the history of the study sites, as evidenced in objective sources as well as the self-reported events in stakeholder interviews, the notion of an 'event' was limiting in that sets of circumstances, scenarios and sets of issues or themes were also pertinent in the fluctuating levels of engagement at the study sites.

It is also important to note that codifying history is a precarious task. Too often history is reported from a particular vantage point, through a particular perspective and

accompanying a particular agenda. As with the stakeholder mapping, the researchers acknowledge that this is a view of history from our own vantage point.
The historical analysis is comprised of two sections where we first provide a synopsis of the key events, scenarios and issues that seem to emerge as important from a stakeholder engagement perspective in the history of the two study sites. The researchers then provide a meta-analysis of the issues that surface from the analysis and highlight key events that have influenced engagement and propose some questions that should be addressed in further steps of the study.

There may not be visible 'engagement cycles' at this stage of the study but what may be evident at this stage of the research is that stakeholders from certain groupings respond differently to events, scenarios and circumstances that change their levels and form of engagement. And so we may not be able to identify cycles at this stage but we may be able to 'sense' some patterns in stakeholder engagement when looking at the types of issues/circumstances that arise.

One difficulty experienced by the researchers is the question of 'gaps' in the living memory of the stakeholders. As mentioned, the initial history is sparsely populated with events spoken of by the stakeholders, and as can be expected, the recent past has more detailed recollection. However, amongst this dynamic we find gaps in the timeline, sometime spanning a whole decade. The researchers believe there may be significance in this in that there seem to be key Global and Level 1 events that would have no doubt had significant impacts on engagement at the sites, but seem to have been forgotten. Again, it would be useful to re-engage with the stakeholders with the combined timeline as a focal point and prompt for any additional events that they may remember.

4.1.1 From 1865 to the 1960s: the first century

As can be expected from an exercise that 'taps' into the living memory of events amongst stakeholders, the initial segments of the combined timeline are sparsely populated with events. The combined timeline begins in 1865 due to limited accessibility of literature pertaining to events that occurred prior to that time. The first segment of the combined timeline begins in 1865 with a Level 1 event regarding the piece of land that Wilderness site is now situated on and how it was swapped for a piece of land in George.

As such, the story of the first century at the Wilderness and Swartvlei sites is of the origins of the sites. Themes of land ownership changes, naming conventions, forestry, droughts, cattle illness, gold prospecting, commerce and the influence of key individuals populate the initial history of the two sites.

Interestingly, the first Level 2 event, i.e. reported by a stakeholder, that of families moving into the area at Swartvlei in 1914, is highlighted by stakeholders from the spiritual organisation and business tourism stakeholder groupings. The first Wilderness Level 2 event highlighted in the interviews by a tourism stakeholder is that of the railway bridge blocks sagging in 1930 due to a flood. These events are significant in that they tell us something about the living memory amongst the

stakeholders at the study sites. The Swartvlei living memory spans 98 years, while that of Wilderness spans 82 years. Seeing that the initial stages of our study engaged with relatively few stakeholders at the sites, it is likely that a broader engagement with stakeholders would yield significantly more 'living memory' in possible future studies that could deepen the engagement story told by the history of the study sites.

In 1927 the railway bridge was built across Swartvlei. Prior to this event, the area was virtually unoccupied, there were a few farmers and some people would visit the area for holidays, but it was very difficult to get into the area because access was difficult. From 1930 events pertaining to the social-ecological system at Wilderness begin to emerge, most notably with the 1930 flood, where a Global and Level 2 event align for the first time in the timeline, and then subsequently the 1944 breaching of the Touw River mouth by the National Road Board and how this caused the first documented (in our study) closing of the estuary mouth. The estuary water was also then affected which in turn impacted on farming operations. These events mark the beginning of a significant theme at both Wilderness and Swartvlei regarding the progressive infrastructure development and the impact of such developments on the social-ecological system as reported in the combined timeline, but also in how infrastructure development may be a 'high potential' theme that influences engagement levels (more on this point will be discussed under the Development heading later in the document).

The first instance of alignment between Level 1 and 2 events on the timeline was the completion of the N2 road bridge in 1946. As a Level 2 event, the impact the road bridge had on the environment (i.e. reducing water levels at Wilderness) was reported in nostalgic and personal terms by a religious grouping stakeholder. Prior to the building of the road bridge community members could reportedly jump off the railway bridge and land safely in deep water, whereas this was not possible subsequent to the building of the N2 road bridge as the water had become significantly shallower.

The recreational impact of environmental change is of note at this point. It may be possible that engagement with an environmental change could be spurned on by changes to the way community members are able to enjoy the interplay and relationship between infrastructure and the environment. Engagement in this instance is very personal and seems to have increased, albeit psychologically, when recreation patterns were forced to change. If recreation is a service provided by the water resource (see services section earlier in the document) there seems to be an interesting 'coupling' of the service and the resource in the minds of the stakeholder, especially when it comes to the benefits of recreation.

Up until 1951 the engagement history of Wilderness and Swartvlei is different, but it is the completion of the N2 freeway that creates the first shared Level 2 event at both sites. Reported by members from spiritual groups, associations, government departments and business (tourism), the completion of the N2 project is reported as a 'shame'. In many ways, this is the start of the engagement history at Wilderness and Swartvlei as the community members began to 'harness' themselves in active

involvement in addressing a water challenge. Stakeholders also attribute significant causal linkages between the N2 and social-ecological issues being faced currently at the study sites.

We noted in the literature review that family and friends are often the paths by which people come to volunteer or be engaged. In light of this, it is interesting to note that the story of the first century of engagement at Wilderness (and especially) Swartvlei is marked by the notion of family and how families came to be represented in the areas. For Swartvlei the family in the context of the church was important, while for Wilderness the key event was the arrival of the Leggatt family in 1948. The linkages to spiritual groups and church are also important here, in that the way this stakeholder grouping comes to describe their engagement with the water resource challenge in the study sites is through the concept of family. It is also possible that the 'founders story' aspect of stakeholder groupings is alive in the spiritual stakeholder group and that these early stories of how 'we came to be here' and what the context at that time are told even today.

The researchers have also wondered what the possible linkages of the above phenomenon may be to identity theory and formation as outlined in the Literature Review. If the recollection of history is done in such personal and nostalgic terms, we wonder what that tells us about the identity of family and how stakeholders root their engagement in the notion of family.

The stakeholders when describing how, in 1960, the coloured community in Swartvlei were moved from Hoekwil to Touwsranten, first highlight the painful past of South Africa. Of note is how this community was spoken of as 'bywoners' (a poor tenant farmer who labours for the owner and does some farming of his own), which implies that white and coloured people used to live in close proximity, neighbours farming the same land, even though it was owned by the white farmers. The inference from this event is how the removals broke the 'neighbourly' dynamic amongst white and coloured community members.

The Wilderness beach was zoned for white use exclusively in 1968 and it was at this point, along with the removal of the coloured community from Swartvlei, that a new fragmentation was introduced into the communities around the study sites at the hands of new South African racial policy being introduced by the government. One independent stakeholder, a coloured gentleman, remembers having to sit under a bridge waiting for his white friends to return from the beach because he was no longer allowed on the beach himself. For him, his story of 'dis-engagement' begins at this point and his recounting of history since then is marked with difficult relationships with the authorities.

It is important to note that the memories of these events persist in the minds of stakeholders almost 45 years later. This perhaps speaks of the depth of pain that the early 1960s fostered in the study sites that still lingers in the hearts and minds of stakeholders and no doubt still influences if and how they engage and participate in the water challenges.

1968 also marks the first year of detailed records regarding climatic events at the study sites (Global and Level 1 events) where that year was marked by low rainfall, water restrictions, an earthquake and one of the worst tidal waves in history, which tore open the Wilderness mouth. It was also in 1968 that the lakes were placed under government protection. None of the stakeholders interviewed mentioned this event, so it would perhaps be important to get some reflections from additional stakeholders about this event and the possible impact on engagement thereof. In 1968, the CSIR conducted a hydrological research study into the system and the impact of the railway bridge to address concerns of residents, farmers and the Sedgefield owners Association who reported “vast changes to the system” including unprecedented flooding.

The end of the 1960 was marked by several opening and closings of the river mouth at Swartvlei, while several people fell ill with stomach complaints after swimming in the lakes at Wilderness. The issue of pollution at Wilderness is a theme that crops up again a few times as the timeline progresses and will also be spoken of in more detail later.

4.1.2 The 1970s

In general the 1970s seem to have been a ‘forgotten’ decade in the minds of the stakeholders interviewed, as there were no Level 2 events spoken of. Again, the sample of stakeholders may need to be widened in order to gain a more accurate view of what engagement related events took place. Nevertheless, when looking at Global and Level 1 events that occurred in the 1970s it’s clear that it was a decade of significant policy development regarding fauna and flora that the Wilderness Lakes and Swartvlei would have been subject to.

One particular Level 2 event is of interest to the study and worthy of further exploration to understand how it influenced engagement dynamics at Wilderness. Up until 1975 the Duiweriver farmers opened the river mouth. They did this themselves when their lands flooded. The opening was also done in collaboration with a caravan park owner in the area. The researchers would like to understand the dynamics around this time as citizens managed the opening and closing of the mouth themselves and what brought about the change and how it impacted the stakeholders.

4.1.3 The 1980s

The 1980s are marked by detailed information regarding the opening and closing of the river mouths at both Wilderness and Swartvlei.

Despite warnings, development began on the island at Swartvlei in 1980. There is limited information at this stage about the quality and source of the warnings, but the researchers wonder about the process of issuing warnings as a possible indicator of stakeholder engagement.

Significantly, in 1983, the National Parks Board took over the management of the Wilderness Lakes from the Lake Areas Development Board. A business stakeholder commented on how this shifted the proactive nature in which the eco-system was managed. Under the Lake Areas Board the stakeholder believes that the Wilderness Lakes were management proactively in the form of dredging, but that once the Parks Board took over there was 'disengagement' and the Lakes management was less proactive. It was at the same time that the management of the Swartvlei lakes was formalised, which in turn resulted in Swartvlei being declared a National Lake Area in 1986, thus also falling under the management of the National Parks Board.

1987 saw the proclamation of the Wilderness Lakes area as the Wilderness National Park, which, according to an individual stakeholder, again had people, moved to different locations.

In 1989, PW Botha who had been an important leadership personality in the life of the Wilderness and Swartvlei areas due his national government role, retired in Wilderness.

Again, like the 1970s, the 1980s seem to be relatively 'quiet' in the memory of the stakeholders we interviewed when it comes to engagement. There are no doubt significant events that took place when one considers the Global and Level 1 events the research team uncovered, yet they seem to have faded from memory in terms of their impact on engagement at the study sites.

4.1.4 The 1990s

One of the key events in the 1990s was the continuation of the issue stakeholders perceived around the less proactive manner in which the authorities managed the sites. The National Parks Board gained more control of areas around Swartvlei and stakeholders saw the continuation of less proactive methods in managing the environment by the Board.

Stakeholders started the Wilderness Eco-Tourism Association (WETA) in 1993, but no one has spoken about this and why it was started. The researchers believe that this is a key engagement event that requires further investigation as it appears to be the first formal association created by citizens. It was also reported that the Wildlife and Environment Society of SA (WESSA) was very active in Sedgefield at the time. This also requires deeper investigation.

A hydrological report on effects of the railway bridge was released in 1995. No one mentioned it in the interviews, but we now know subsequently that the story of Richard Batson manually removing rocks from the bridge to influence the hydrology has its roots in this event.

There were some events during the course of 1996 that are of interest. Firstly, the Enviro-Garden was started in Sedgefield under the auspices of WESSA. WESSA itself had a new chairman elected (which was of significance to the stakeholder), the

Sedgefield WESSA then integrated with WESSA George and a pillar of Freesia Rock Railway bridge collapses in a flood.

A second hand story was captured from an independent stakeholder of a SANPArks official who, in 1998, feared for his life because of questions he asked of head office. The researchers, through conducting the interviews, encountered numerous rumours that aligned to this story, of how SANParks employees are fearful of the stakeholders at the study sites due to the anger citizens have expressed at their alleged mismanagement of the estuaries. One particular rumour was of a SANParks employee refusing to drive around in a SANParks branded vehicle.

1998 also saw a multitude of new acts become law, pertaining to marine, water, forestry and the Environmental Management Act.

4.1.5 The 2000s

In March of 2003 the growing theme of pollution came to the fore again as the e-coli levels in the Touw River were published in the Wild News due to concerns being raised about the health effects if the water. In October of 2003 an article appeared in the Wild News regarding concerns raised about pollution levels in the Klein Wolwe River at Swartvlei study site (Level 1). In June 2005 residents at Wilderness wrote to the editor of Wild News to complain about the quality of drinking water at Wilderness and Touwsranten (Level 1).

In April of 2003 fifty people, representing the Wilderness Residents and Ratepayers Organisation (WRRA), organised to clean up the beach at the river mouth and took away driftwood. Then in May, various people wrote in and complained to the editor of Wild News about the clearing of the driftwood off of the beaches. These were all Level 1 events, not raised in interviews with stakeholders.

In February 2006, an article appears in the Wild News that has citizens requesting that the river mouth be opened at Wilderness because of the perceived pollution levels (Level 1). However, the water level is not at maximum and SANParks chose not to open the mouth manually. The mouth was then breached in April 2006. Despite reports of contamination the e-coli reading in the Touw River is acceptable in May.

In September 2006, floods damage the infrastructure network that supplies drinking water to Wilderness (Level 1). Interestingly, there is no Level 2 response raised in the interviews, which compared to how a government stakeholder spoke of a more recent issue that affected the colour of the drinking water, citizens get very agitated when this happens. Residents report very heavy rains in 2006 that forced the closing of Kaaimans Cutting because the bank gave way. The railway line was also closed and the side of the road had to be rebuilt. Surely there would have been a response to the 2006 damage and what that response can teach us about stakeholder engagement.

In 2003 and 2007 Sedgefield experienced floods where many houses were flooded. In 2007, residents report a severe storm and flooding in Sedgefield where the whole of the lake was overtopping the railway. Residents report that after the 2003 flood, SANParks approached the chairman of the Swartvlei flood committee and an agreement was reached to collaborate although nothing seems to have come from this agreement.

After the 2007 flood, and in reaction to the perceived non-action by SANParks, a local retired engineer took matters into his own hands and hired a crew of workmen to remove rocks from beneath the railway bridge over Swartvlei and dig channels through the embankment in the belief that this will improve the flow of water and mitigate future flooding events (Level 2). SANParks later took legal action against this individual.

The act of writing a complaint for publication in local media is a significant indicator of stakeholder engagement. Through the late 1990s and the 2000s the Wild News was used as a nexus for stakeholder-initiated communication regarding the issues at the study sites. It is a marker of stakeholders wanting to be heard and finding a voice.

The property boom in the Wilderness area during 2004 through to 2006 saw active involvement by the Wilderness Catchment Management Forum (Level 2), as development moved away from caravan parks to houses.

In March 2004 an engagement process started regarding the development of the Lakes Eco and Golf Resort (Level 1). This development was to be one of the most significant high potential events captured in the combined timeline. The developer was reportedly quite surprised at the level of expertise displayed by the local landowners and the developer had to ‘polish his act’ as the engagement process continued (Level 2).

In late 2004 a rally was held in the Swartvlei area to protest against the Lakes development and the recent completion of the land claims for the development. The negative reaction to the development then spilled over into early 2005 with a proposed moratorium being placed of golf developments in the area and more negative reactions being published in local media (Level 1).

In April 2007 an application to the George Municipality for a march against the Eco Lakes development is turned down (Level 1).

In general, the public response to the proposed development was very negative. Reports of fighting and bribery also surfaced at this time. Ultimately the development of the resort was halted and many stakeholders attribute this to the cohesive response by the public acting upon their negative reactions, stakeholders mentioned this broadly, representing spiritual groups, business, and associations and sports clubs.

The Outeniqua Choo-tjoe, passenger tourism trains service, derailed in March 2004 at the Rondevlei Crossing due to the subsidence of track after recent heavy rains

(Level 1). Business stakeholders were not happy as no action was taken to reinstate the service and thus it negative effects on tourism (Level 2). Governmental department stakeholders also raise the negative impacts that this had on tourism in the area.

Then, at the end of 2006 PW Botha passed away and the train tracks between George and Knysna were closed indefinitely (Level 1).

In 2008, a tourism stakeholder reports that the highest water level ever was recorded at Eden Adventures due to debris that got stuck under the Pirate's Creek Bridge.

Early 2009 saw the imposition of water restrictions at both Wilderness and Swartvlei due to the drought, and in October a suggestion was tabled at Council that George be declared a disaster area due to the drought. An application for R156m is made for relief funding. Weekly articles appear about the level of the dam and everyday actions/tips that can be taken to save water are published. People were extremely vigilant and reported any offenders. From a governmental management point of view the drought was a nightmare but valuable lessons were learned (Level 2).

Drinking water had to be trucked into Sedgefield (Level 1). Various steps were taken to ensure that the public bought into the actions that were being taken. Punitive charges were levied, and a desalination plant was investigated as well as the recycling of wastewater. Prayer meetings were held and at one prayer meeting George rugby stadium was filled to capacity. Then in November, George, Mossel Bay and Knysna were declared as disaster areas. The filling of a rugby stadium in response to a crisis is a significant indicator of engagement by the community and warrants further investigation.

Interestingly, in October 2009 a new Eco-estate was launched on the current Fairy Knowe property. Given the heated response to the Lakes Eco Estate development, the researchers are fascinated by the fact that this new development was not mentioned in stakeholder interviews.

4.1.6 The 2010s to date (2012)

Some of the most recent events on the combined timeline are telling in the context of the study.

In Sedgefield, the desalination plant finally begins operating in April 2010 (Level 1), but according to an independent stakeholder the plant only started working once the drought was over and it is used for a very short time. The feeling is that the plant is damaging the beach as well.

In January 2010 a Sedgefield resident is taken to court by SANParks after digging a trench in a protected area, in an attempt to improve on flow restrictions allegedly caused by the bridge. This was a significant event in that SANParks chose to prosecute a citizen and it has created quite a stir amongst the stakeholders in these

areas, but it also seems to have created increased feelings of contempt towards SANParks.

There were floods in June 2011 and the Wilderness Rest camp had to evacuate. It was the highest flood ever recorded and houses on the edge of Touw River were flooded and several canoes were lost. The George Yacht club storerooms were also flooded.

In July 2011 an interesting development occurred in that residents began engaging on the issue of noise generated by the N2 freeway.

Then, in 2012 the Yacht club helped SANParks in the fight against illegal fishing (Level 2). Given the disengagement this stakeholder grouping have displayed towards SANParks, this event needs to be investigated further as it could represent a 'turning of the tide' as a stakeholder group chooses to work alongside SANParks.

4.1.7 Reflections on the impact of the timelines

Any narrative process has to pay special attention to the history of problem stories. This is true in personal and communal spheres. The timeline exercise was ultimately a diagnostic exercise intended to ground the project team's analysis in the history and context of the study sites. At the knowledge dissemination workshops the timelines were presented with a view to establishing their accuracy and for gathering additional events that were missed by the project team. While this was achieved, there was also an unintended results in that the participants found the experience of immersing themselves in the history of their localities an enjoyable one.

History is a subjective phenomenon where it is impossible for one citizen to have a grasp of their entire and comprehensive history of a geographic location. The timeline method was designed to compile different perspectives on the history of the study sites and as such became a narrative composite that the stakeholders engaged with. Many participants learned things they had not previously known about the history of the area. Some had differing interpretation of the what the events meant in the narrative of the area and of the water resource challenges that were being experience. Either way, the timelines generated a distinct energy in the room as people read the events on the wall and many conversations were sparked as people shared and retold stories of events that were significant.

Many participants requested copies of the timelines. One participant commented on the fact that through the timeline they now have a better understanding of why certain issues are more important to certain individuals. The timeline seemed to have provided an opportunity for people that are not locals ("inkommers") to understand the mindset/mental models of the people that have been living and engaging in the area for long periods, as reported by a relatively new resident of the area.

The experience of engaging with the timeline seems to have created a sense of rootedness in the minds of the individuals, i.e. they now understand the importance

of events to others and how their actions are contextualised in the history of the water-related issues at Wilderness and Swartvlei.

4.1.8 Discussion notes and researcher comments

The timeline process was very well received and it was seen by the stakeholders as the most positive experience of the workshop as they learned something new and useful. We believe that due to the informal nature of the process the less empowered stakeholders (the 'lost voices') also felt comfortable enough to add new events and stories and besides the introduction this was the only time that they seemed to actively engage. Even though they still did not engage with any of the other groupings they discussed the events between themselves and also added events to the timeline.

Different sub-group dynamics were also observed during the two days. During day two the participants ended up mingling and chatting and no set groupings were observed. During day one the groups immediately gravitated back to the original groups they were in when they arrived.

4.2 Stakeholder map

4.2.1 The Wilderness and Swartvlei stakeholder maps

Figure 15 and Figure 16 show the stakeholders identified by the researchers at the Wilderness Lakes and Swartvlei study sites. Because of their geographic proximity to each other, there is some overlap of stakeholder groupings between the two systems (indicated by a *) especially with the governmental departments. In the cases of the overlapping association groups, although they claim to cover both systems, anecdotal evidence from our interviews suggests that they are either predominantly focusing on the Wilderness Lakes or Swartvlei in their activities.

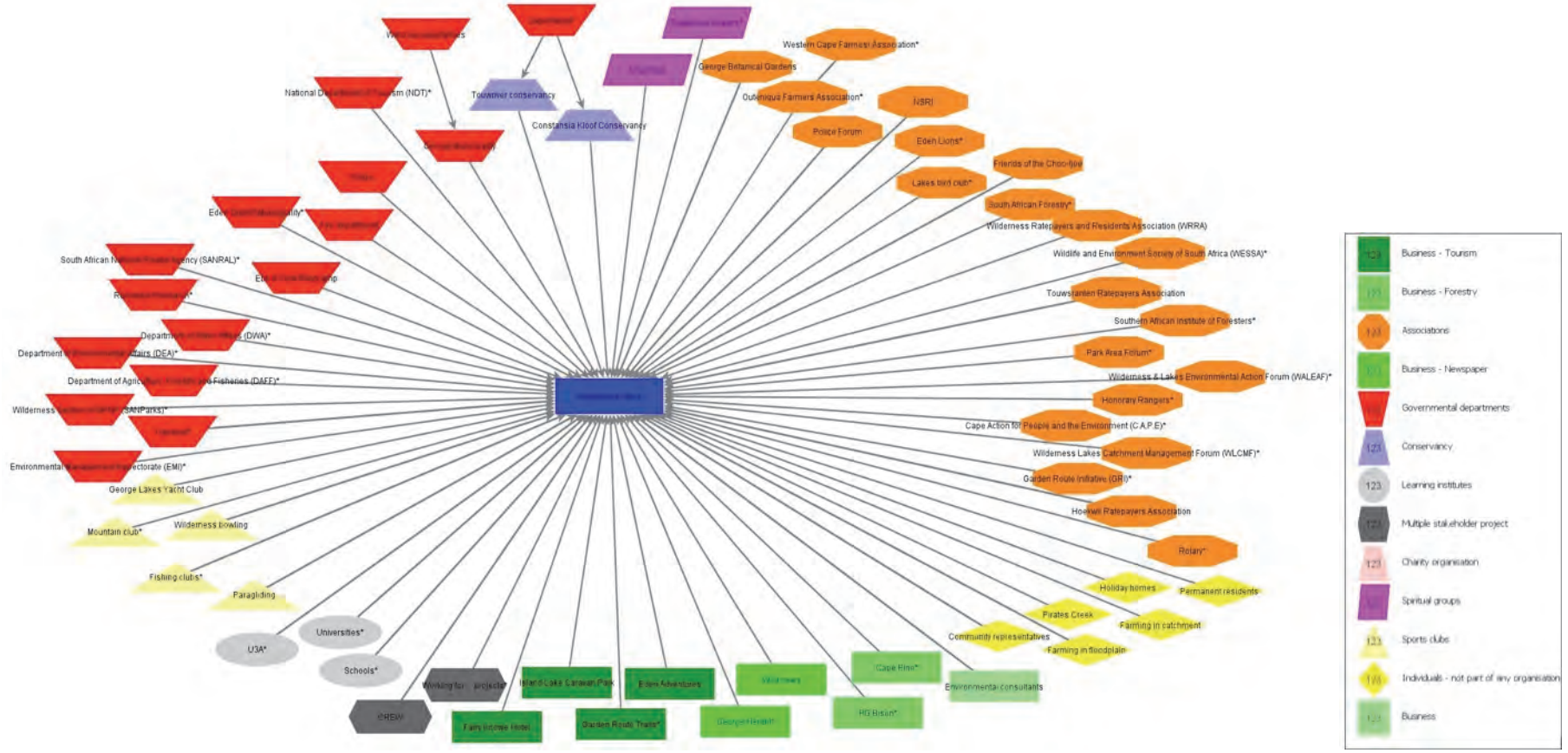


Figure 15: Comprehensive Wilderness lakes stakeholder map

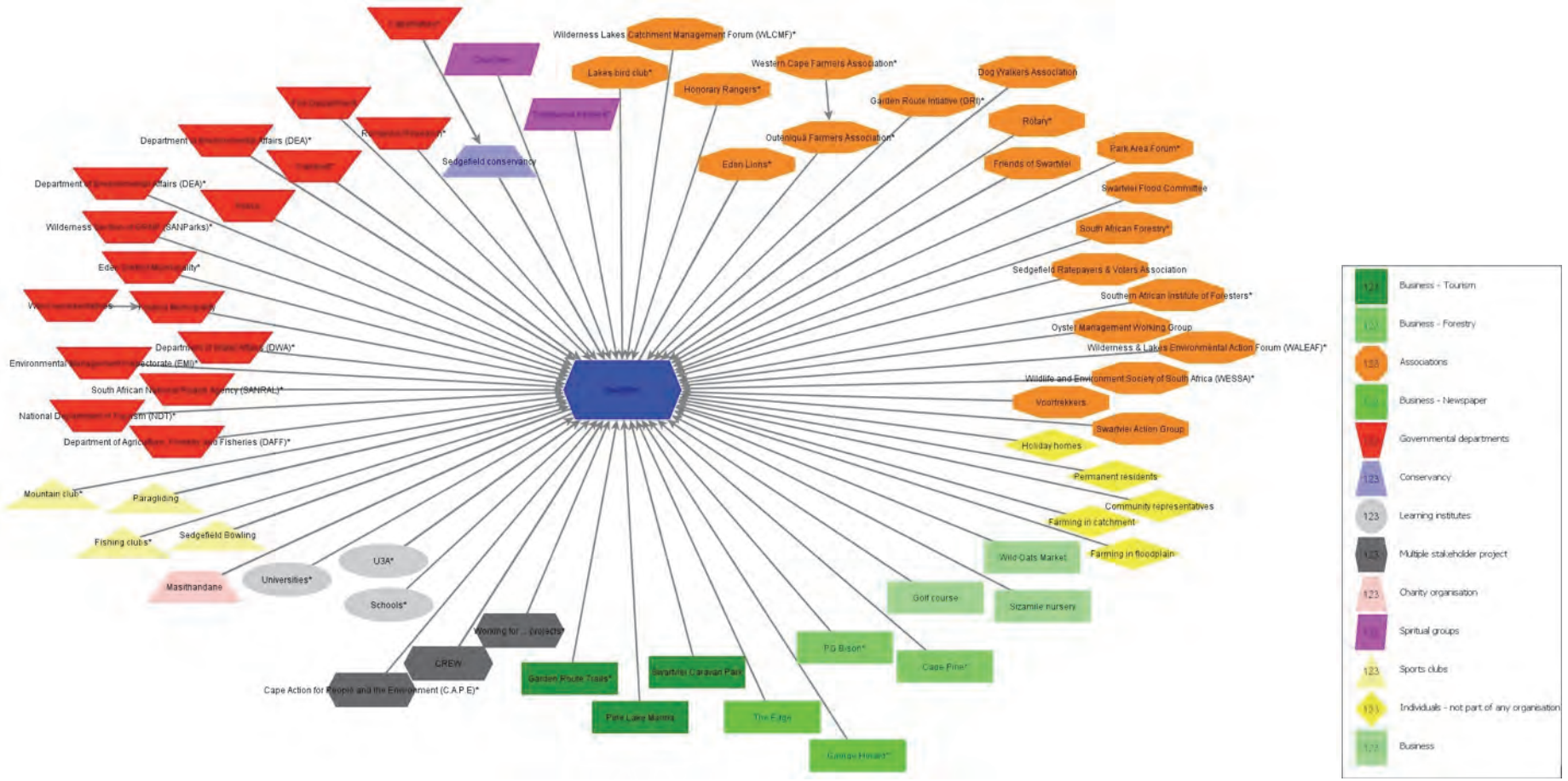


Figure 16: Comprehensive Swartvlei stakeholder map

4.2.2 Benefit sharing

The current benefits derived from the ecosystem services for the two study sites (Figure 17) can be divided into the four ecosystem services categories as stipulated in Millennium Ecosystem Assessment (2005), namely provisioning services, cultural services, regulating services and supporting services.

Provisioning services are the products provided by the natural system. Examples are fuel wood, fresh water, food, fibre, biochemical/natural medicines, ornamental resources and genetic resources. Regulating services include climate regulations, air quality maintenance, erosion control, water regulation, regulation of diseases (especially human), water purification and waste treatment, pollination, biological control and storm protection. These are all benefits that are obtained from the regulation of the ecosystem processes. Under cultural services (non-material benefits) there are spiritual or religious benefits, cultural diversity, educational values, knowledge systems, aesthetic value, inspiration, sense of place, social relations, cultural heritage values and recreation and ecotourism. Lastly, there are supporting services, which are nutrient cycling, soil formation and primary production. These supporting services differ from the other three in that they either have an indirect effect or the effect only becomes apparent over a long time-period (Millennium Ecosystem Assessment 2005).

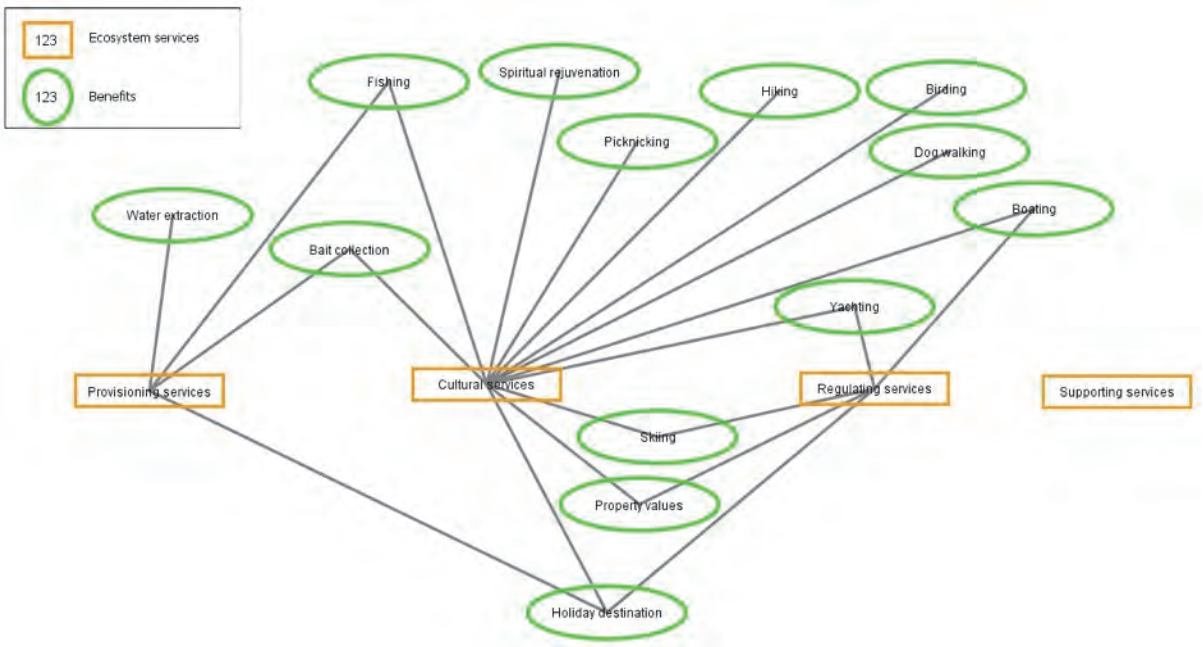


Figure 17: Influence of activities on ecosystem services

In our study sites the current activities that draw from these ecosystem services have been identified through observations and interviews and can be seen broken down into the four ecosystem categories in Figure 10. Some of the activities influence more than one of the ecosystem services categories. For example, fishing and bait collection fulfils both a demand for food as well as a cultural service. Many people

however fish only for recreational purposes. The fact that this area is a favourite holiday destination places more pressure on the provisioning services, as more fresh water is needed over the holiday periods. As most of the choice holiday and other homes have been built in the floodplain they also have an effect on the regulating services as the mouth has to be opened once the water reaches a certain point to avoid flooding. The cultural services benefit plays an important role within the case study areas with birding, hiking, eco-tourism, picnicking and water sport being enjoyed on and around the lakes systems.

In order to ensure that all stakeholders enjoy the wide variety of benefits the management body of the lakes (SANParks) has zoned the lakes into various zones (Figure 18). These reflect the current benefits that are enjoyed by the various stakeholders. Note that even though there is yachting allowed on Swartvlei, it is not currently utilised as there is no access available to this part of the system. Historically it was utilised as such.

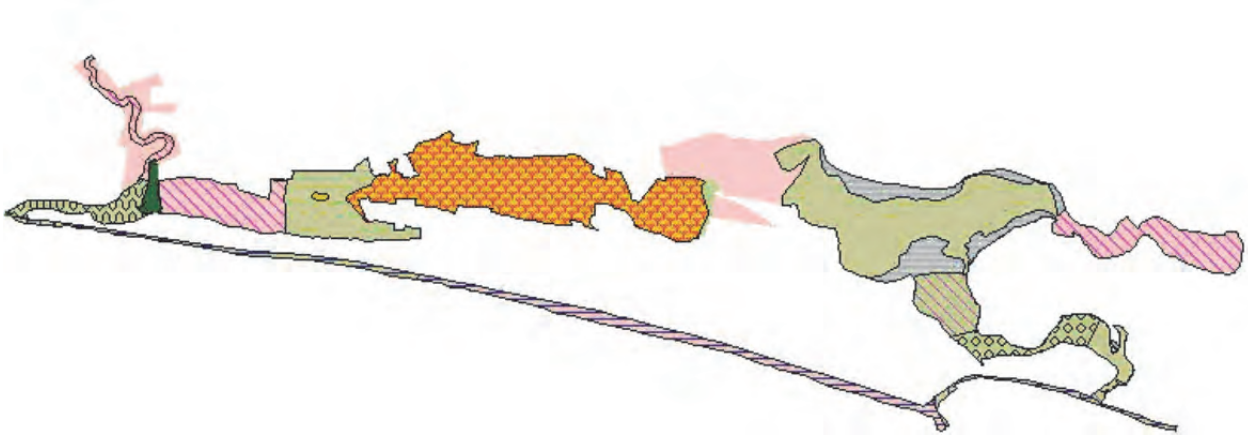


Figure 18: Zoning of lakes (Russell *et al., 2*010)

4.2.3 Stakeholder groupings

Taking into consideration the use of these benefits as well as the role of the stakeholders within the SES the various identified stakeholders were further divided into three levels of stakeholder involvement. *Primary stakeholders* are those groups or individuals that are directly influenced by the management decisions that are made; *secondary stakeholders* are those that are involved with the implementation or management authority and lastly the *external stakeholders* are those that have influence but do not impact directly (Barr & Hashagen, 2000).

4.2.3.1 Associations

Associations include all the non-governmental organisations (NGOs), forums, clubs that are facilitated by civil society as well as those associations that are facilitated through governmental departments as part of their mandate. The Garden Route Initiative (GRI), Police forum, Park Area Forum, Honorary rangers and the Oyster-management working group are examples of government-facilitated associations.

These associations include resource users as well as social public infrastructure providers. The stakeholders included in this grouping of associations utilise the whole suite of benefits and can be classified as primary stakeholders (George Yacht club), secondary stakeholders (GRI) as well as external stakeholders (Park Area Forum). Some of these associations also fulfil the role of a watchdog, in the case of WRRA and WALEAF, they comment on development in the area and engage with the relevant governmental departments about the following of correct procedures in the management of the lakes.

4.2.3.2 Business

This grouping has been subdivided into general business and newspapers and then those that have a direct effect on the resource, i.e. tourism and forestry. Tourism includes caravan parks, hotels, guided walks, canoeing and birding.

Tourism and forestry would be resource users of a larger selection of benefits than what the general business grouping would use. Tourism and forestry would be primary stakeholders while general business and newspapers would be external stakeholders.

4.2.3.3 Charity organisations

Masithandane is the only identified charity at this stage. They are situated in Smutsville and have run several upliftment projects (job creation, food for the elderly, crèche, etc.). A large proportion of this community depends on the lakes for subsistence fishing. Masithandane can be utilised as an entry point to engage with the ‘silent voices’.

The organisation itself is a social public infrastructure provider and can be classified as an external stakeholder. Their participants on the other hand are resource users and can be classified as primary stakeholders.

4.2.3.4 Conservancies

Conservancies are landowners that sign a formal agreement with CapeNature to manage their properties in an eco-friendly way. Except for The Island conservancy the other two conservancies are located in the catchment area and therefore the activities practiced on those properties would have an indirect effect on the lakes. As bad agricultural practices are one of the main culprits for the downstream deterioration of the estuaries it is important to understand what is happening in the catchment areas and to engage with these stakeholders.

The conservancies would be resource users as well as social public infrastructure providers. They would also be primary stakeholders, as they would be affected directly by any management changes.

4.2.3.5 Governmental departments

Unlike other parks there are no fences in these sections of the GRNP and the residential areas are located right on the park boundaries. The provincial municipalities of George and Knysna and their departments, e.g. police service and fire brigade manage the towns of Wilderness and Sedgefield respectively.

The road network that crosses and re-crosses the systems are managed either by Eden District Municipalities or South African Roads Agency Limited (SANRAL). There is also a train track that runs through the park that is managed by Transnet. SANParks is the managing authority but EMI, DWA and DAFF also have jurisdiction over compliance regarding fishing, agriculture and forestry.

All of these departments would be considered to be public infrastructure providers both social and physical. As they have a major influence but not a direct effect on the system they would be classified as external stakeholders.

4.2.3.6 Individuals – not part of any organisation

There are many individuals that do not get involved with any of the associations, clubs or religious groupings previously mentioned. These would be homeowners, holiday homeowners and the various farmers either in the floodplain or the catchment area. This grouping also includes people living in informal settlements and poorer communities. These individuals may or may not be landowners, and many of them depend on the lakes for food. These individuals are very difficult to engage, as they are often hard to reach and lack the resources to attend meetings. They represent the “silent voices” that are often severely impacted by decisions regarding the management of the lakes, but seldom have the opportunity to influence those decisions. The researchers are aware that this group of individuals may warrant a stakeholder grouping of their own, but the fragmentation and variance in these communities makes it difficult to group them in a single grouping.

In the case of the farmers they would be resource users as they extract water from the rivers while the homeowners would generally use the cultural resources. These individuals would be primary stakeholders and they are very difficult to influence, as they do not attend any of the structured associations. In the case of individuals living within the floodplain they will have a direct effect as they are directly affected by flooding and therefore often demand that SANPARKS breach the estuary mouth.

4.2.3.7 Learning institutions

Various learning institutions use the lakes systems either for research in the case of universities, environmental education for schools and a place of special interest. These are all resource users and external stakeholders as their research and activities can influence future decision-making.

4.2.3.8 Multiple stakeholder projects

There are also projects that are managed by more than one government department. Good examples are the Working for Water/Wetland projects that are successfully managed and funded by various stakeholders. These would be primary stakeholders as their activities have a direct and big effect on the estuaries.

4.2.3.9 Spiritual groups

Within the spiritual grouping a few churches and traditional healers have been identified so far. The churches are external stakeholders while the traditional healers are primary stakeholders. If these traditional healers use unsustainable harvesting methods the negative effect on the environment can be quite severe. These spiritual groups, especially the churches could be a very strong public infrastructure provider

as they exert a strong influence on the behaviour and beliefs of their followers or constituents.

4.2.3.10 Sports clubs

Some of the clubs receive a direct benefit, for example the George Yacht Club. These clubs are important, as their members are typically already engaged and can therefore have a significant influence if properly informed on environmental issues. They can therefore be considered to be external stakeholders although a large proportion would be a primary stakeholder in their private capacity.

4.2.4 Context: the impact of visibility and history

One of the main activities at the feedback workshops was the presentation of the draft stakeholder maps and timelines of events pertaining to engagement at the study sites. Participants at the workshops reported how useful they perceived the stakeholder maps to be. The main usefulness was in how the stakeholder maps seemed to broaden their own views of who the stakeholders actually were at the study sites. Many participants commented on their surprise at the sheer number of stakeholder groupings, some of which they were aware of, but many of which they were not. Their day-to-day engagements and activities as locals in the area seemed to expose them to a relatively small number of the actual stakeholders at the study sites. Through this awareness the first step to an understanding of the bigger picture was raised and how everybody fits into that picture. In some ways, the participants seemed to find the process a humbling exercise. The conceptual broadening that took place encompassed a new line of reflection that had the participants re-calibrating their answers to questions of who I am as a citizen and where I am placed in this community?

The other impact of presenting a comprehensive stakeholder map to citizens is that it codifies their relationships different stakeholders have and how they are linked to each other through the shared resource. It is ultimately the natural resource that binds stakeholders to each other. Besides the humbling experience of seeing that you are not proverbially such a big fish in a small pond, citizens also get to see their connectedness to fellow citizens. Whichever stakeholder group you are a part of you are linked to every other stakeholder through the benefit sharing of the natural resource.

Again, individual citizens and groups seem to have limited perspectives of who occupies the stakeholder landscape. From a complex adaptive systems perspective, this is indeed true as the theory of complex social systems holds that no one agent in a system can have ultimate visibility of the entire system. Agents can only have visibility of their localities, at best. This is indeed why stakeholder mapping and the subsequent presentation of the maps to stakeholders is useful in social-ecological research – it caters for the inherent complexity of social systems and it provides a mechanism for citizens to be lifted out of their locality and see a bird's eye view of the social system, it's structure and interrelatedness. It is useful to remember that stakeholder maps are not perfect and true representations of the social system. Rather, as methods applied by researchers they are partially subjective representations of the stakeholder landscape and should be used with this in mind.

In addition to the usefulness of the maps at the feedback workshops, their usefulness seems to have persisted at the study sites since then.

One example of the usefulness of the stakeholder map was highlighted through the fact that it was requested by a participant after the workshops as it assisted with the duties of that particular participant (an employee of SANParks). The participant identified herself as a bridging agent and needed the map as a guide on who to engage with in her role as a regional ecologist. Incidentally, the map was pinned to the participant's wall (one of very few items up on the wall) and she mentioned that there are often questions from visitors about the map. One could infer that this deliverable, even without the timeline and themes, already had some impact.

4.2.5 Discussion notes and researcher comments

In general the stakeholder maps were well received by the participants at both workshops. There was a sense of genuine interest in understanding the maps and that there was learning taking place. One of the most common comments made about this process was how large the stakeholder maps were compared to the participants' own views of how many stakeholders need to engage around the lakes.

It was commented that the map shows the complexity of stakeholders involved and that it seems very influenced by the government section. SANParks as the management body, was pointed out to be the stakeholder with the biggest impact on engagement and it is believed that they should be playing the leadership role with engagement in the study area. Unfortunately it is also the stakeholder that was pointed out as the stakeholder with the worst communication (e-mails, meetings and cross-communication) and engagement record as perceived by the participants and that there is insufficient direct conversations with stakeholders. The point was raised that there is an individual element to engagement as it is great to put a face to a name.

The Garden Route Initiative (GRI) was also pointed out as being very influential as far as engagement goes. GRI is a very good platform for communication and various participants from the associations indicated that they go there to learn what is happening in the area. They believe that the GRI is vital to bringing various stakeholders together.

Participants felt that the associations usually initiate the engagement with the government departments and the feeling is that there should be communication and continuity from the governmental departments. The participants believe that this can be achieved through the participation of the various departments in the various forum meetings.

It was commented that there is definitely different levels of engagement between Knysna Municipality and the communities in Knysna and Sedgefield. During a general discussion it was mentioned that with being incorporated into Knysna Municipality there is now very little communication. This influence raises the issue of 'ownership' and authorities should be held accountable for disasters and the misunderstanding of legislation.

Another point that was raised is that there is no formal liaison between associations and the only way that information is shared is due to the fact that various individuals attend various associations. They also feel that there must be some excellent research around on the area but that that information is not filtered down to the man on the street.

Another concern that was raised during the stakeholder process is the concern about development and development 'creep'. It is also believed that only with engagement would it be possible to ensure that any future development will be environmentally friendly. There seems to be a feeling that, if ignored for long enough, development would go away.

There was also a very strong feeling that SANParks inhibits engagement by various stakeholders due to a perceived unilateral decision making approach to managing the lakes.

4.3 Themes and issues pertaining to engagement

4.3.1 The role of key individuals and changes in people

One of the most significant results that emerged from the narrative analysis revolves around the role of key individuals in forums and communities, especially those in formal leadership positions, have a significant bearing on the way in which citizens engage with a water challenge. For example, throughout the Swartvlei timeline, the chairman of WESSA is mentioned numerous times as well as leadership changes in the association. There seems to be something about the personality, charisma and connectedness of these individuals that spurs on increased levels of engagement.

> *I have been here 20 odd years and we have always had public involvement in what we do, we just tend to find that the place that it is happening or the issues that are being discussed change over time. So there has always been involvement it is just different people over different times and different things. A lot of those issues have now, I wouldn't say disappeared, the people have disappeared, a lot of them have actually died* (I6:49).

There was however some debate amongst Swartvlei and Wilderness residents on this point at the knowledge dissemination workshop. While the majority of residents and stakeholders acknowledge the influence of a leader of a forum/association on engagement levels, there was debate as to the extent of this influence and whether an individual's choice to become engaged is perhaps more linked to the nature of the water challenge or their physical proximity to the challenge. In simple terms, some believe that someone chooses to get engaged because their houses are being flooded, not because there is an influential and charismatic leader. From this perspective, the issue drives engagement not an individual influence. These people may galvanise the community and compound engagement levels, but without as issue engagement is unlikely.

Rather, what may be true is that there are primary and secondary influences or rationales for choosing to engage with a water challenge, and that depending on the

individuals in frame, they may be influenced by the water challenge itself, while others may be more influenced by individuals and social networks.

The relative power and influence of an individual in leadership emerged as a significant factor. The role that PW Botha had on the study sites is the stuff of legend in the minds of the stakeholders. Anecdotes abound about how he insisted on the opening of the mouth whenever his rose bushes were in danger of being flooded. He had a significant influence on events in the area and regularly placed communications in the local newspapers in the 1970s. In the 1970 message, for example, he mentions the development of water supply and a central airport. The airport was subsequently built in 1977.

Botha's "top-down" influence and way of getting things done through his formal power is then contrasted to individuals who worked in a more democratic, "bottom-up" manner. Jack Rubin is mentioned in this respect as someone who preferred to increase engagement levels through bringing in fringe and marginalised groupings of people.

An unsaid that came through this conversation was the role of the humility of the leader. Besides their charisma and the good communication skills, these individuals seem to succeed in bringing about engagement. They also said that these leaders can subvert their personal agenda in the favour of the group's agenda, so they carry the group's agenda not just their own.

While an influential leader of a forum or association may yield beneficial results in sparking higher levels of engagement, there is a concern regarding dependency levels. A stakeholder remarked that in is his experience, it takes 8 years for a network to be sustainable independent of the leader.

The continuity of key and influential individuals is a critical perspective to bear in mind when wanting to ascertain the current dynamics of engagement in study sites. Stakeholders at Swartvlei reflect on the numerous changes to municipal and SANParks personnel in recent times. Previously, with stronger relationships in place, stakeholders were able to connect and influence decision-makers positively. However, in more recent times the social capital and strength of relationship does not exist to the same degree and thus reduces the likelihood of establishing influential relationships and connections.

4.3.2 Why people choose to engage and the continuity of a forum

Stakeholders seem to have quite different reasons for becoming and staying involved. From a forum perspective, the need to be informed and available when called upon for public opinion seems to be an important motivation.

> *But then you must keep the forum going so that you are involved, that you are in the know, that things are not surprised upon you and you must be available, be it the DWA or the municipality wants to get a public opinion. That is a means of a public opinion not just going to get it from the loudest guy on the street corner.* (I3)

Despite some successes, there seems to be a perception that forums aren't really able to exert significant influence.

> *I also attend the Knysna catchment forum meetings. I was the Wilderness rep onto it and there did more of a core as people who got a genuine interest so it is not like a public. You would have Prof X that is a retired freshwater scientist, you have the parks board officials, you have the municipal officials, you have the agricultural officials, you have the estuary prevention people that would attend. So there core that has been kept going for five years there is a core that has been going on. Here the core has come and gone. One of the reasons is that the forum has not really been effective in steering DWA policies and DWA actions. It was not involved at all whether the desalination plant should be bought or not, it wasn't at all involved in the drought relief so the forum here has been pretty well kind of just on the outskirts. A lot of talk on the forum is it should convert to a water users association. However if it is reverted to a water users association it would have a legal standing which would have so called teeth that would stop farmers over pumping or people pollution and so forth but as a forum it is pretty it is peripheral. They can, the chairman can write articles in the paper. But it doesn't mean people would listen to it.* (I3)

> *The forum has never been represented of the poorer community. It is every now and again people would hook into some... People, be black be coloured and people would come along. And a lot of other people would come and go. Maybe they will be there for two or three meetings and they would realise what are they doing here, they are not changing anything and there would be transport issues and so forth*. (I3)

Individuals have different reasons for joining forums and getting involved, some do it for practical reasons, for example when their houses get flooded, others join because of a strong belief in the principles of democracy.

> *Every single aspect of government in any sort right from national, provincial government, local government they supposed to be participation by ordinary people in the land in the planning and the implementation. So what happened is I got involved. Why I joined the forum. (I2)*

Another reason is a need to protect something that is of value to them. For example, one resident expressed a profound sense of place, ownership and a personal relationship with the Swartvlei estuary.

> *As you see where I live, and obviously the estuary to us is very important. It becomes part of your life. That water changes all the time. (I2)*

> *Let's be honest that estuary does not belong to SANParks it belongs to the people, the government is entrusted in taking care of this and they have delegated it to SANParks. It's not SANParks it is ours. (I2)*

> *For my wife, coming here was a healing process.* (I2)

Some participants reported that they choose to engage and get involved in water challenges because they "believe in something … we want to leave a (environmental) legacy for our children". Environmental preservation and conservation is thus a factor for increasing engagement linked to the very basic human desire of providing something of worth and value to future generations.

Participants felt that the role of forums have changed due to the role that the media and social media plays in helping people to stay informed on topical issues. Attending forums are no longer the only way to stay informed and because society has changed and people are getting busier and busier, very few people have the time to physically attend forum meetings.

Stakeholders at the study sites outlined some high level reasons why they choose not to be involved. For some, their non-involvement has a historical grounding in that they were once involved and highly engaged but due to a negative experience they decided to stop their involvement. Some common reasons that emerged were interpersonal conflicts on forums and becoming frustrated at a lack of progress on issues that they were passionate about.

For others, the proliferation of electronic communication and dissemination has removed the need to participate in the forum to stay informed. The outcomes of meetings and progress are often communicated electronically. Thus, if the main activity of the forum is dissemination of information and news, some people choose not to attend because they have easier ways of staying informed.

An over reliance on using electronic communication mediums to connect with forum and association members also acts as an inhibitor of active involvement in that citizens begin to feel like they are not connecting with real human beings. Maintaining a healthy level of face-to-face contact is an important factor for sustaining the continuity of a forum.

The age demographics of a forum are a significant issue in the Swartvlei and Wilderness study sites. With a high level of retired individuals, who have time to be involved, one finds that the most loyal members are retired folk. Contrasting to this is the lack of active involvement by young people, who due to their stage of life (career

development, young families) are not as free to invest as much time into forum/association activities.

There exists a perception that the age demographics at the study sites are skewed – that there are a lot of retired people that tend to get overly excited about small issues. These people also have the time and energy to 'stir up a hornets nest'. It seems having more available time brings freedom to engage more meaningfully on water issues.

The changes society has undergone in the last few decades was also a point for discussion on how and when people choose to engage with a water issue. Lifestyles in this day and age means people are generally very busy and don't necessarily have time to engage. Young people with a lot to contribute have different priorities. They need to make money and care for family. Only once these things have been fulfilled will they get involved. People may have interest, but they simply don't have the time. So they seem to default responsibility to older people who do have the time.

4.3.3 Access to natural resource

The Wilderness section of the GRNP is one of the most integrated social-ecological conservation areas in South Africa and both of the lake systems are zoned for low intensity leisure. One would therefore assume that access to the lakes would not be a challenge. However, land owned by private individuals that surrounds the lakes restricts access to numerous stakeholders. For example, Swartvlei offers one of the best sailing spots in the area, but it cannot be utilised as such because private landowners who are prohibiting access surround it. Incidentally, many private properties are owned by people who do not permanently reside at the study sites.

Historically this lake was used for international yacht races and is zoned accordingly. No mention of the lack of access has so far been found in any of the grey literature even though it seems to be of great importance to the interviewees (I3; I9; I12; I17; I18).

> *It is mainly to do with the opening and closing of the mouth. The other big issue is that public don't have access to Swartvlei* (I3:15).

> *You see it on Swartvlei for example where access to the lake is difficult. And it is a shame because it has a lot of potential that lake. But it is hard to get onto it. There is no simple access to the lake* (I12:71).

The only access point available is not adequate for launching a boat, and has a sad history as deaths have occurred at the launching spot (I1; I18). A potential solution is currently being negotiated where the George Yacht club might be able to gain access through a private property (I1; I12; I18).

These restrictions, although not formal, do however negatively impact on tourism in the area as holidaymakers are not able to access the leisure points.

4.3.4 Tourism: a possible mobiliser

The stakeholder mapping reveals that the tourism industry is a significant stakeholder grouping at the two study sites and drives the George, Wilderness and Sedgefield economies. A big event, and one that boosted the development of the area, was the completion of the N2 through the lakes areas. Currently the bridges that form part of the N2 are being blamed for the floods that occur when the estuary mouths are closed. This combined with the appointment of PW Botha, who used Wilderness as his holiday destination, boosted the development of this area as a tourist destination.

Subsequently, the length of holidays during peak seasons has an impact on the social-ecological system. In the 1970s people only left to go home at the end of their holiday after the 10th of January every year. In years gone by the holiday goers would enjoy a very long holiday, approximately 4 weeks. Because of recent global and local economic shifts, people are taking shorter holidays with the average holiday now only two weeks in length. The reduction of holiday time in the area means that the economic reliance on the holiday income is problematic.

Tourism is also mentioned in relation to droughts, with drought conditions not leading to a reduction in tourism, and the influx of additional water users over holiday seasons causing an additional strain on the system.

The annual influx of holidaymakers also brings with it a set of mind-sets that are not contextualised to the sensitive water situation in the area. The local residents have, through the various droughts and water saving initiatives, solidified a water saving mentality. Tourists, however, do not share this mentality and do not use water sparingly during drought periods.

4.3.5 The Choo-Tjoe

In 2004 the Choo-tjoe, a steam train that used to run between Mossel Bay and Knysna, derailed at the Rondevlei station due to the subsidence of the track. Since then the train, when it has been operational, only ran between George and Mossel Bay as the track between George and Knysna now has deteriorated further due to landslides brought on by heavy rains. The tourism stakeholder groupings and Friends of the Choo-tjoe would like to keep it running but Transnet is reportedly not prepared to carry the cost of fixing and maintaining the track.

> *My personal view is that, I think it would be nice to get the railway line going again. I can understand the cost implication of getting it going and is it really going to be feasible, I am sure there is a way that it could be made feasible. I also think there is a lot of volunteers, Friends of the Choo-tjoe, who are as excited about getting it going again as they say they are then they would probably volunteer with wheelbarrows and spades to clear some of the track which might cost you R100 000 to clear with a digger loaders or something like that you know. There is ways to do things* (I12:59).

The Choo-tjoe was a deep issue at the Swartvlei knowledge dissemination workshop as there were stakeholders present who either wanted the remaining bridge demolished to improve the natural flow of water through the lakes and others who represented Friends of the Choo-tjoe. The Friend's agenda is to get the train operational again as a tourist attraction. Individuals highlighted these agendas right in the beginning of the day during the introductions and a tension remained throughout the day between these individuals.

There are alternative suggestions for the use of the tracks but up to now no decisions have been made, to the frustration of the stakeholders in the tourism section.

> *Some guy who has influence is not doing his job. You know Choo-tjoe it's been 5 or 6 years or something, why can they not make a decision. You know it does influence tourism in this area; it's surprising that nothing has happened here.* (I12:85)

Stakeholders, especially tourism, seem to have a definite interest and investment in the operational capability of the Choo-Tjoe. This is evidence of an engagement 'harnessing', when considering our conceptualisation of engagement, but it is being limited as power to operationalise the train lies outside of the stakeholders who want to benefit from it.

4.3.6 Development

> *I think why the catchment forum was very active in around 2004 to 2006 was that there was a property boom going on and a lot of people here were saying that I want to come and live in Sedgefield.* (I3:21)

Property development has a significant impact on engagement levels and therefore could be described as a high potential scenario for mobilising engagement. Wilderness experienced a boom in the 1950s with the completion of the railway, while Sedgefield on the other hand experienced a boom in the 1980s. A major development (the Lakes Eco Estate) in Sedgefield was prevented from going ahead due to strong engagement from stakeholders that manifested as resistance from the Sedgefield community in 2004/2005.

> *Look, I think the reason why it didn't go through is because there was such an outcry from the community. At the end of the day it was a few people who put in really hard work with very little money to fight a big corporate and they managed to galvanise enough people. It was obviously a big enough thing that enough people were kind of willing to get involved. But it was down to a hand full of people really who put in the time in with no reward. It is not like they were getting paid. It was very difficult, you know, one of the major problems I think with people trying to protect the system is lack of funds because it is difficult to fight a fight against developers with big financial backing and big lawyers and things when you mostly have retired people or people with jobs who are doing everything for free. With that particular development there were pages and pages of documents to wade through and*

you know it was diligently done by a few people who had the expertise and time, question if they had the time, but they managed.(I12:81)

One forum in particular focuses on the fight against development and tries to comment on the various development plans. They are a small group with one strong individual driving the process of opposing new developments. The feeling among stakeholders is that this developer initially thought that the public participation aspect of the development would be easy as he would be working with local people who were ignorant nor prepared for the process. As we have seen in the timeline, the developer was surprised to be working with people with such deep expertise and had to adjust his perceptions of the people he was dealing with. Some stakeholders believe they were lied to by the developer, with overinflated promises of how the development would create local employment and the extent to which it would benefit the local community, how the opportunity was exaggerated and subsequently bred false hope in the community.. When this dishonesty was exposed through the way in which stakeholders participated in public meetings, the community responded vociferously.

Throughout the process there were high levels of engagement against the development from the public, with around 60% against the project and 40% for the project (I17). Initially government officials also supported the development but after they saw the strong opposition they also pulled their support (I17).

Opposition to the development was based, in part, on the thorough local investigations and questioning of the developers promises by the competent (and often retired) engineers in the community. An addition to the this, the local stakeholders acted on a belief that the ecology would be harmed, thus destroying the ‘treasure’ and wanting to preserve the environment, something which they viewed as finite and easily destructible by such proposed developments.

Another dynamic in the development theme is how it puts pressure on the ecological system. Here’s an extract of narrative that outlines the causal linkages that a stakeholder sees between the silting up of the river and the development expansion further upstream.

The one guy that lives there when he first moved there many years ago, he could not walk from the one side to the other side of Ruigtevlei and now he can walk across it because it is silting up and it is through farming methods upstream of Pine Plantations that is silting up the river. So now the same volume of water now fills to a higher level when there is a flood. It is not like the floods are necessary bigger it is just that the bottom of the lake is shallower. And I think that is what causes the problems at Swartvlei for the railway line. You know if you’re gonna get a huge volume of water you've got to have a place where it can flow out. So your bridges can't be standing too close together you need bigger spans across river systems and things like that. There are a lot of weeds that grows in the river and at the moment, which I don't remember as a young boy, I think that is possibly due to more phosphates in the river from, you know we have building developments up

top, I mean I don't know what the current situation is with the Touwsranten extension or Hoekwil getting bigger and things like that. What happens to all their sewerage. As far as I know I don't think there is a sewerage plant for that whole community. There is a lot of houses on the sand dune. They are the most expensive houses in the Wilderness and they are huge houses and they are on big plots and so people think let's make a guesthouse. So they are guesthouses and they are full every single night. And many of them have french drains that go through the sand dune and onto the beach and when they are full, I have been along that beach before where their sewerage is running out their french drains onto the beach. You know they have to keep up with the development otherwise environmental issues are going to become bigger and bigger." (I12)

In a moment of self-reflection at the Swartvlei knowledge dissemination workshop, one stakeholder noted how human nature is generally in support of development as it means, "I will get a house." It is then once you have that house that it becomes a lot easier to oppose development because of the impacts it may have on the environment. There is an inherent double standard in such a psychological process.

For developers, the Swartvlei and Wilderness stakeholders recommend that engagement channels should be less reliant on electronic medium so that more people can actively participate in processes. As development is a trigger point for strong, and sometime oppositional engagement, developers should be able to spot when a trigger is about to go off and be able to create processes that allow stakeholder to channel their potent engagement constructively.

One of the learning for the stakeholders in George, who engaged on the development of Eco Lakes, was that if enough people are mobilised in the face of a large development, the community has a powerful voice to influence that development.

What made the George response to Eco Lakes unique however was the depth of technical expertise prevalent in the community. Again, with a large retired population, comprising of many engineers, the community benefited from having their expertise underpin the resistance they put up to the development. Sufficient technical knowledge thus seems to strengthen the community's voice and power in such instances.

4.3.7 Proposed route for the new N2

Since 1970 there have been plans tabled for rerouting the N2 and at this stage there is opposition against it and was from the start as land had to be expropriated and the proposed route cuts through the lakes.

Every time that the N2 plans were published the public stands up against it.

You know we are sitting with the problem at the moment with the supposed future road hanging over our head, where Sanral or whoever the powers that

be are , it is land that has been expropriated or whatever for a plan future route. Which is, the route is unlikely to happen but they aren't releasing that land or whatever so it influences property prices around that land, you know if you look at Knysna for example, it is outside your area, but it's the whole informal settlement behind Knysna is on land that was set aside for that road. Now that road is not going to happen there because they cannot move all those people so they gonna have to look at putting it further back, which you know has been mooted that idea. But it is the same here would it not be better to look at land and some estate land further up the mountain. But again there is a huge cost involved in purchasing land and things like that. I mean currently the land that is earmarked for that road goes across this basically where the railway bridge is at Ebb and Flow it comes down from Wilderness heights there and slowly descend where it is serpentine across, diagonally across the Serpentine and then on the south side of Island lake and then across where the national road is and then along the front of the sand dune. You know, will it happen. Will it go straight across SANParks, Ramsar site you know, international wetland site and all that kind of stuff? You know some decision makers got to say and it is the same on the railway. Why so no decision been made on the railway or on the national road. (I12)

4.3.8 Droughts and floods

The prevalence of droughts and floods through the historical analysis of Swartvlei and Wilderness makes them a very important factor to consider in the engagement story at the study sites. Some stakeholders are of the opinion that the role that droughts and floods play in fostering engagement is perhaps the most important theme to be considered. This is due to the pervasiveness of the effects of droughts and floods. Such climatic events affect every single stakeholder at the study sites. The events associated with the other engagement themes are limited in their pervasiveness, but droughts and floods impact everyone in the area.

The role of droughts and floods on influencing engagement has a double quality. Firstly, when a flood or drought event occurs, engagement levels increase remarkably as stakeholders respond to urgent needs and fight for survival. Secondly, the threat of floods and droughts is also an important driver of engagement. Having experienced one of the events, stakeholders seem to remain engaged and involved over time. This form of engagement does seem to wane over time, which shall be discussed.

Flooding

Ag there is a lot of floods, and I think we have had in the last 10 years we had five 1 in 50-year floods or something like that. You know, so all those have a big influence from the point of view, like I said, of silt and changing the shape of the river and all that kind of stuff. (I12)

The role of flooding has been significant in how it has influenced engagement at the two study sites over the years. On the surface, the issues of houses being flooded on the Sedgefield island mark the Swartvlei engagement history. From a deeper

perspective, flooding seems to have become a bigger issue because of development in the area.

> *So that has been a major change in the way the area will respond to the flooding. But of course over the last 30 years people have been develop on the floodplain and in a report by Whitfield way back in the mid-80s. They said that look if you guys are going to develop below the 5 m contour level that will result in increased public pressure to open the mouth earlier and that was written and already when that was written the Island was developed there were areas there below the 3 m line which were, houses were being built on. But Island village, which was, that development was about 80 houses, that was not built, that was extensively flooded in 2007. And Montage village, which was also extensively flooded in 2007, was also built since then. The area of Montage village and of Island village that was zoned agricultural and Montage village was zoned as for sports fields and so those are perfect things to be flooded. As like a farmland that gets flooded gets. It is not a fast flood that, the water does not flow very fast in the flood areas almost backs up in the flooded areas and backs away, so the damage is not done by the velocity of the water it is caused by the water being there. So things aren't being washed over. So the farmland where Island village is would have been fine to be flooded. Then where Montage village is, are sports fields. They are also fine to get flooded. There is a little bit debris cleaning that you would have to do but the damage is not extensive so they are perfect things to be in floodplains. And so anyway so with this socio- science study certain people come up with fairly weird and wonderful ways of the place not being flooded. And because people are almost desperate they will believe anything and they will kind of support these fairly weird and wonderful ideas. Which aren't really going to solve the flooding anyway*. (I3)

The resilience of the developments is brought into question when considering the theme of flooding.

> *The railway bridge here at Pirate's Creek is an example where the feet are too close together they are big cement blocks and if you look at them when it was originally put in that bridge when the first flood had come I think in the 1920s a couple of the blocks actually sagged and fell away from the railway line so they put on tops to them. Okay, there is one foot there that is completely new because one of the floods in the 1980s the whole leg disappeared. What happens is that they are too close together so wood gets caught across them and makes a dam, with water gets through causes turbulence behind, digs a big hole undermines the foundation of that the thing fell in and it got covered up and they had to build a new one. You know the answer would be a greater span so that wood doesn't get caught on it and it can float through. The river mouth is not so easy you do have the same problem of the legs being too close together I think that it might have been better with the river coming in from the east that it has to be at the right angle to go out so a straight due south it might have been better to face those legs going south west so that the river can come and go at an angle. See,*

> *originally if you look back historically I believe the river opened anywhere from the NSRI to Leentjiesklip. Because it could move up and down there wasn't any restrictions and now it just has to go out between these cement things. So, I mean a lot of the old railway line bridges just have their legs too close together I think, their span.* (I12)

The direct impact that flooding has on the lives and property of individuals seems to galvanise action and engagement

> *Now in 2003 we had our first important floods. In that it flooded large areas of Sedgefield. And a flood committee was formed, I was not originally part of that flood committee but I volunteered to go onto the committee because of my technical background in civil engineering which obviously includes things like hydrology and because I'm a water man anyway out of always been involved with water. And what happened is that I in fact took over the technical aspects of the flooding. And I wrote a quite a long report.* (I2)

Droughts

- During drought – the visible feedback measure (boards put up around town with daily water usage stats) became a topic of conversation – lifts engagement

Despite the many floods that occur in this area, it is also prone to severe droughts. The geography of the area, being wedged between the sea and the mountains, leads to fast-flowing rivers and very little fresh water retention. Several big droughts were mentioned, as well as a seven-year drought cycle (I10). Mention was made about several "first in the lifetime" droughts, specifically in 1970 & 2009. During these droughts it seems knowledge sharing and raising awareness about water conservation were top priorities. More than one article and water-saving advertisement on "our scarce resource" were placed in the local newspaper during this time. Residents also voiced a distrust in the efficiency of the government (27 Jan 1970) and that the water restrictions were implemented much too late.

The collective response to the droughts in the areas seem to have solidified into sustainable water conservation mindsets, behaviours and practices in the respective communities. However, as time moves on without a new drought, there are instances of this solidification 'eroding'. For example, while most people sustain the new behaviours to conserve water in households, new houses are not being built with gutters in order to catch rainwater run-off.

The 2009 drought

During December 2009 it was reported that, even though there were severe water restrictions, it did not discourage tourists from visiting the area, especially not in the Caravan parks. There was no bathing allowed and showers were restricted to 3 minutes. A local municipality official remembers:

> *Ja, 2009/10 is ons deur n verskriklike droogte. Dit word geskat uit hierdie spesialiste dat dit 'n een-uit-130 jaar droogte was. Ons het baie lesse geleer*

uit daai droogte uit. Daar is 'n klomp goed wat inderhaas in plek gestel moes word. Kontak met die publiek, bewusmakingsveldtogte, al daai goed. Uit n bestuursoogpunt was dit 'n nagmerrie gewees (I1)

He also recounted the pro-active response of the local municipality and how well the public cooperated with water conservation initiatives. In fact, people responded with such enthusiasm, that some of their lifestyle choices have led to the municipality experiencing a reduction in income after the drought.

Die samewerking van die publiek se kant af was baie goed. Onse gemiddelde daaglikse aanvraag was in die orde van 35 megaliter per dag voor die droogte. En ons het daai aanvraag afgebring, man seker binne die bestek van 4/5 maande het ons dit afgebring na tussen 20 en 25 megaliter 'n dag. Dis n groot ding daai. Waterwese se voorskrif was dat die beperking wat hulle ingestel het was n 40% reduction in water consumption. Ons s'n was meer as dit gewees. Die bewusmakingsveldtog het baie gedoen daarvoor. Ons het na die skole toe gegaan, ons het praatjies gehou, in die plaaslike koerant dinge gepubliseer elke week. Die reaksie van die publiek was uitstekend gewees. Ons moes ook maar natuurlik ons strong arm tactics bietjie opskerp. Ons het beperkings ingestel, en ons het die wetstoepassing bietjie beter gedoen, opgeskerp. Ons het ons tariewe aangepas. Want as 'n ou meer water wou gebruik het. Tariewe aangepas, so 'n ou het meer betaal as jy nou meer water gebruik. 'n Ou wat nou buitensporig baie gebruik het. Ag, ons het daagliks mense geskakel, ons het die waterverbruiker, die individuele waterverbruiker, lyn vir lyn deurgegaan. Ons het die uitskieter uitgehaal en ons het hulle gebel. Gese meneer/mevrou daar is n probleem met jou perseel, jy gebruik hopeloos te veel water. Julle moet kyk is daar nie 'n lekkasie nie of pas julle waterverbruikgewoontes aan. Jy kan nie ses keer per dag bad nie. Jy sal nie glo nie né, 'n gemiddelde huisgesin gebruik seker onder normale omstandighede, dan praat ons nou nie net in gemiddeld in grootte nie maar ook gemiddeld in lewenstandaard ook. Gebruik seker so 15 kiloliter water per maand. Dan lei jy nou bietjie hoër as 'n gemiddelde lewenstandaard. En ons het huishoudings gekry wat tot 150 kiloliter water per maand gebruik. Nou, wat daai mense met die water maak, weet net hulle.

En ons het op ontsaglike klomp lekkasies afgekom. 'n Mens raak gou gewoond aan 'n geluid. As ek in 'n ou se huis instap en sy toilet cistern lek. Ek hoor dit onmiddelik as ek in die huis instap. Terwyl dit vir daai ou 'n normale geluid is. Dit pla hom nie. Daai sssssss. As ek instap by 'n plek en ek hoor daai geluid, dan sê ek vir jou, jou cistern lek. En daai ding vat 'n helse klomp water. Een toilet wat lek, fyn lek. Ek het dit by my huis ervaar. Mense se gebruike, elke ou het maar sy eie styl hoe hy goed doen wat vir hom goed is. En werklikwaar ons het groot samewerking gekry van mense wat hulle lewenstyle aangepas het. Mense het geshower met n emmer in die shower dan het hulle daai water wat daar spat in die emmer laat ingaan wat hulle weer gebruik om die toilet cistern te spoel. Hou daai water om die toilet cistern te spoel. Gebruik daai water om tuin nat te maak. Sulke goed jy weet. Rerig mense het groot aanpassings gemaak. Baie mense het tenke

geinstalleer wat reënwater opvang. Party mense het heel overboard gegaan. Tenke ingebou, pomp installasies en dan bel hulle my met groot bravado. Meneer nou gebruik ek nie jou water nie. Ek het nou vir my 'n tenk ingesit met hierdie wonderlike pompstelsel en alles. Ek gebruik nou net reënwater. En ons kon dit sien. Dit was rerig, ons ly nou daar onder. Die droogte is verby en ons is nie terug na daai hoë waterverbruike nie. So ons het 'n verlies in inkomste gehad.

It also seems that experiencing these droughts have led to a permanent change in perspective and lifestyle for some individuals.

So daar is n klomp mense dit bly daar. Daar is baie mense met wie ek praat, wat sê nee wat sedert ons deur hierdie ding is, ons het nou agtergekom hoe baie water het ons vermors. Ons doen dit nie meer nie. Dit is nou klaar.

4.3.9 Management of lakes: SANParks and the community of stakeholders

In the preliminary interviews, participants were asked to describe the main issues that were of concern to them with regards to the lakes and around which engagement may be occurring. The issues that emerged included eroding banks, illegal fishing, illegal prawn harvesting (for bait) as well as the flooding of properties. Stakeholders mostly attribute these issues to incorrect management of the lakes by the management agency, SANParks. Various forums are tackling these issues and there seems to be evidence of the fluctuating properties of engagement.

Direct perspectives on SANPARKS:

- Escalating chasm between community and management agency
- Lack of clearly defined responsibility – buck passing
- Government departments and agencies don't talk to each other – no co-ordination or interfaces
- Process is faulty – amorphous mass of systems
- Disaster prevention act allows preventative action – other acts don't allow for this. SANParks has to wait for something to happen before they can act.
- Disaster management can only advise SANParks – they can veto the decision – disaster mgmt. doesn't seem to have the final say
- SANParks doesn't play a leadership role; they are the authority over here. There should be a better public-governmental relationship there.
- SANParks have to run the parks as more of a business, which makes it hard for them to make decisions by including everyone. Their hands are tied, because they do not have the budget to do things.

The facilitation team at the Knowledge Dissemination Workshops observed that the SANParks representatives in the workshops chose to engage in the process differently to the other stakeholders. In the Swartvlei workshop one of the representatives got agitated by some of the conversation around the stakeholder maps. An open point of conflict arose between this representative and another stakeholder regarding the communication levels after an event they both attended. In general though, SANParks representatives were very quiet and did not actively

engage in the discussions despite it being clearly evident that these were topical discussions and that the workshops provided a prime opportunity to converse with their stakeholders.

A conversation held with one of the representatives at the end of the workshop suggested that the kind of conversations we were having were very relevant for internal SANParks issues because of the tension within SANParks between scientific services and operations.

The above response may be understood in the context of what emerged in the workshops as a strong blame culture towards SANParks on behalf of the other stakeholders in the room, very much kind of detaching from any accountability on their own part.

An important event in the history of this area was when SANParks, the then Parks Board, took over the management of the lakes from Lakes Area Management. The various management agencies had different approaches with different levels of success with one of the most contentious issues being the opening and closing of the river mouths and the related flooding issues. The opening of the mouths to mitigate flooding is one of the major issues raised by all the stakeholders. It seems to be a major point of contention between SANParks and the community, often leading to conflict.

> *There is the river mouth at the Touw river system is managed by humans where the mouth used to move up and down in a range of a few hundred meters it has to go out now between some bridges there is essentially three bridges. A railway line and two road bridges next to each other. And it has to go out on a certain angle they could have built the pillars at an angle that suited the river flow but they, there is issues there. (*I12:45;46)

> *And then there is of cause the flooding issue in Sedgefield, there is a major socio thing because people blamed SANParks for not opening the mouth in time. That is what caused the flooding. To some extent they might be right. And then since, what SANParks have done – their rules have been before that they can only open the mouth in case of emergencies. And environmental law says that an emergency is when damage is happening. Before that, it is not an emergency. So, they had an EIA done 2 years ago and that EIA came up with the fact that SANParks can open the mouth at Touw River and Swartvlei in anticipation of flooding and to alleviate flood damage. (I3)*

Every flood leads to immediate engagement in the Swartvlei area as the stakeholder's properties are in danger. This problem is directly linked to the previous issue around development, as it was caused by allowing development in the floodplain area against the advice of various parties concerned (I1;I17; I18).

There are widely differing perspectives on the current management of the lakes, and how they should be managed. Some stakeholders remember the days when the

lakes were dredged and the management body then had a very hands-on approach to the management of the lakes. Currently, the sentiment toward SANParks seems to be very negative, which is evidenced by the lack of positive reporting in the local newspapers around their activities. It seems SANParks is only mentioned in newspaper reports when they are being blamed for bad management of the mouth, even when they do manage to open it in time to prevent flooding (2012). There are recorded openings, specifically the 2003/4 floods, that weren't mentioned by any of the interviewees, and seems to have faded from memory. There also seems to be very little engagement on the reasons for the way in which SANParks manages the areas.

> *What happened is after 2003 floods because it was agreed that we would work with SANParks it actually meant nothing got done, because it means really that SANParks leads and you follow. But since SANParks don't do anything nothing is done at all. We flooded again in 2007. Now the reason why we flooded is that SANParks have made a rule. And the rule in simple terms is that the mouth is not opened, until the water level has reached +2 m above mean sea level. The reason why they made that +2 m above mean sea level if you read what they say they say because that was the recommendation made by the people that carried out the hydrology research, which is flawed**" (I2)*

** this reference refers to a research report conducted by the CSIR in 1968, which stakeholders believe was fundamentally flawed and is based on outdated theory.

There exists a distinct gap between the management agency, SANParks, as a stakeholder and the rest of the stakeholders. One of the areas where this gap manifests most is in the ability of either party to empathise with each other's actions and the possible rationale behind such actions.

From our interaction with the stakeholders within SANParks it seems like there has been a definite disengagement and waning of interest in engaging effectively with the community stakeholders. Since 1975 the relationship between the community and the agencies responsible for the management of the lakes has been fraught with difficulty, blame and anger. It is possible that the current disengagement on behalf of SANParks is a reaction to this legacy. One stakeholder remembers a brief time when SANParks seemed to welcome participation, but according to them, it didn't last long.

> *These delegates from SANParks, local delegates went to the conference in Canada, and as I say the Canadians are very advanced in terms of allowing and welcoming public participation. Actual participation in the management. And there was a paper given by two or three Canadians about management and about the extent to which the public should be allowed to be involved. And this was very much acclaimed by the whole of the audience and they all decided unanimously that they would endorse this. Every single delegate from every single country endorsed this as the way forward. So SANParks here and in completely against their own plans, by allowing, by signing a*

piece of paper which allows us to have all sorts of say in how they run parks. They then wrote a framework based upon those principles. A little bit later they rewrote it, they kept exactly the same title but completely rewrote it. They did not refer to the old version; the title has remained exactly the same, but they, the input of the ordinary people into that is now 100th of what it was. It was internal matters. There was a group in SANParks who welcomed the idea of democracy, because it is a democracy.

… Immediately after this conference in Canada it swapped over. Where they started to welcome, those delegates came back and they started spreading this word. I can actually show you where they wrote in terms of this, whether openly talked about the conference and the decisions being made and how we going to work. And then they suddenly change. Pulled the covers down, close the gate. (I2)

From the stakeholders perspective though, they believe that SANParks sees them as unimportant in the task of managing the lakes, that they cross reasonable boundaries in what a citizen should or shouldn't do, that they are unknowledgeable and that their arguments against the way SANParks manages the lakes are unscientific.

People can't understand why there is certain parts of the water bodies that are we don't permit access to in terms of water body and boating and things like that, why we zone certain areas as low utilization others as high. They want to utilise the whole system. You know so that is an ongoing issue as well. Roads that get wet, we get blamed for the road, the safety of the road. Not that it is really our responsibility. You name it we will get blamed for it. (I6 – Sanparks)

Because a lot of suggestions people make are doable and might not necessarily have long-term consequences but you can't please all the people all the time, you cannot always manage by committee. Because not everybody is going to agree and things like that so we have to hear people and hear their opinions and consider them and when we aren't in the position to make a sensible judgment on their decision we go and ask advice from somebody who is. Some expert who is but we have to make a decision about the way things are going to be and if it is contrary to somebody's viewpoint then the decision is unpopular. And so every decision that you make is going to be popular with some and unpopular with others. (I6 – Sanparks)

It depends on who is more vocal and things like that. You know I there's a huge body of people out there, I believe the silent majority who are quiet enjoy what gets done here. There is a study done by the UCT and they went out and did a study on public opinions about the future status of the system and what people wanted in their lives in the future and it was overwhelmingly in favour of conservation. And they wanted it to be either the same or managed more strictly in conserving the environment because that is what they came and lived here for. They came to live here because they wanted to come and live in this environment. But those are not the people that jump up

and make the noise about 'gee wow you are doing such a great job and things are wonderful' it is so you know the people who disagree are always appear more abundant because they are the ones that are making the noise. The silent majority is silent. So you need to go and find some of that silent majority.(I6 – Sanparks)

I tend to just deal with the negative. I am just the foil they put up in public meetings to sit and get whipped. (I6 – Sanparks)

It was a residents committee, it was the Swartvlei flood committee in that is what it was called those dates. It was led by a doctor and we had three attorneys on the team. But really no other technical people. We wrote a long report that went out to SANParks. it was quite critical of SANParks. They came back and one of the things they said which I felt was completely justified this that my emphasis I wrote it on the behalf of the committee and was co-signed by the chairman. It was on the flooding not in the ecology and they criticise the report because of that and I think that was a very fair response. So from then on I said right, I will learn more about the ecology of system. Not about estuaries is all over the world necessarily but about this system and how it fits in, I spend 100 hours, because the nice thing I am still am sort of semi-retired but if I decide to do something I do it properly. And I wrote another report bringing now the ecological aspects because I now go a little bit aside and talk about SANParks management of Swartvlei estuary. (I2)

Some of the interviewees seemed to think that SANParks is too autocratic bureaucracy that acts as though they "own" these lake systems. One stakeholder referred to them as a "fiefdom" and felt strongly that their role should be that of a steward. He also expressed a strong belief that these lakes belong to all people, that it is part of living in a democratic country.

I am biased, please take that into account, I don't think that SANParks naturally attracts the most adventurous of the environmental people. They are not the brightest, but they are not the brightest let's be honest, brightest people start their own company. I owned my own company so I'm biased as all hell. And you try to learn, and it's not entirely their fault and it certainly has nothing to do with blacks because this started a long, long time ago and SANParks established a fiefdom, this was my kingdom, this is what we do in our kingdom this is how we run it, this is ours and we ran that as we like and we don't let anybody interfere. And this is actually what happened at the Kruger National Park. And they cleared the blacks out and one of the reasons why, when the protected areas act came in it was a reversal of the trend where ordinary people including the blacks, so we got enormous rights to counteract the over possessive and controlling nature of SANParks. (I2)

The relationship between SANParks and some of the Forums was also raised. What is important to note from the extract below, and should be investigated further, is how the 'public' are quiet about tackling SANParks and their own standards.

The relationship between the forum and the SANParks is better because they speak.... and share notes. Knysna members are more professional. The people involved are more scientists and so forth so they speak more on the same intellectual level. So they are much closer to the forum and SANParks. As far as between the community and the SANPArks. There is more the involvement that I know of being a member of the yacht club is more why are they charging us so much to use the lagoon. Then another thing is that SANParks bought a big building right on Thesen's jetty. Now, they seem to have got away with it but I mean if people were doing an environmental impact assessment for an office complex there is no way that anybody else would get away with building an office complex at Thesen's Jetty. Not in a country mile. Yet SANParks gave permission to themselves to build this office block on Thesen's Jetty. You can have your own comment on whether. I mean SANParks is supposed to almost have a management creed to move stuff further away from the estuary. I am surprised on how quiet the community is on that one. (I3 – Forum)

This next extract, from a SANParks stakeholder, captures the tension and difficulty experienced within the organisation when it comes to management decisions.

In Swartvlei at the moment. The issue with Swartvlei is that with time more and more people have developed closer and closer to the water-body. The management approach has been taken, it has never changed so it has remained constant through time that we have been here and, I don't know if you know the whole issue with water heights and breaching and that we have certain triggers at which we certainly would go and breach systems and we try and meet sort of multiple objectives by them but you know we have just gone through a period where we've had hugely above rainfall in very short periods of time and those sort of floods happen. It also so happens that a lot of people are affected. Those sort of floods are unmanageable you can't predict them you can't prevent them. To speak to the hydrologist that we are employing and things like that and no matter what one does or doesn't do those types of flood events are going to have consequences for people who are living on the floodplain. I mean that is why it is called a floodplain. And, so people have been affected by them and it just so happens that we had two such instances and one in particularly in a row. Peoples sort of way of life was a bit jolted so and I think you know a lot of the sort of immediate reaction to those sort of things is people want to say who can I blame, and how can I stop it from happening again. And you can't stop it from happening again and that is where a lot the conflict comes in with where we currently have or the different viewpoints with the people. They want to look for a guarantee that disasters won't ever happen in their lives and they want somebody else to ensure that those disasters won't ever happen and our point of view is well, disaster will happen. We can't tell you when they are going to happen you know, it is and we can't stop them from happening so it is not just about managing/breaching of the estuary mouth at a specific height. There has been a lot of other issues raised by people that are trying to say that is part of the problem somebody else go and deal with it. Whether it is a perception that

the rail bridge on the Swartvlei is the cause of everybody's ills you know there is a whole body of thought out there that says it is the part of the problem. There is a whole body of thought out there that says you can be damn grateful for the railway bridge cause it hold back waters to the point so it prevents the flooding unless you get a magnitude flood that we had in 2007 or wherever that was. That just overtops the whole thing and then it becomes a bit of a disaster. You know looking at other little channels and sit and say that is going to alter water but you that might be sort of attractive for some people because you divert it away from your house but you are going to divert it close to somebody else's house. It is not always a solution. It is an opinion. There are a hundred of those sort of opinions that are around that ought to be done which aren't necessarily founded in sound information. They are just simply people responding to a concern about what is happening in their particular immediate environment. And ya, its you know it is very difficult in a way of trying to take information that we have and say this is the reason why we make certain decisions because people have already made up their minds and want you to make a different decision. It is not about making the best decision it is about making the best decision for them what they think is the best decision for them. So it is complicated. It becomes much more than an information conveyance process it is about them trying to sit and understand why we do things in a certain way and us trying to understand their concerns. (I6 – SANParks)

I will give you an example. The same processes goes on in the Touw. Whether one argues about management or Swartvlei the issues are the same. It is just so happens that flooding is less prominent in Touw now more problems in Swartvlei before it used to be different. It is simply because decisions have been made about developing properties on lower and lower levels in Swartvlei so more and more people are becoming susceptible to this. It is the only reason. We have floods, far more frequently in the Touw system than what we have in Swartvlei simply by the nature of the catchment. I mean we had 50/60 mm the other day that caused a flood. (I6)

4.3.10 Perspectives on SANParks: Overfishing/bait extraction

There have been various complaints from the stakeholders on the issue of overfishing and bait extraction, but very little of that has turned into direct engagement and participation (I1; I2; I8; I17; I18). What these issues also highlight are perspectives that stakeholders have on the way SANParks manages the resources at the lakes.

Nee dit het gespoel dit het fisies uitgespoel. Maar ook voorheen het dit uit gespoel maar jy kan prawn gaan pomp soveel soos wat jy wil daar is nie meer nie. Ek weet nie of die effek van die water ook, slegte water ook n effek op hulle gaan he nie. En wat die storie is. Uit 'n menslike oogpunt uit, jislaaik ek weet nie of daai water gesond is vir jou om eers in te swem nie. Ek swem nie, ek sal nie daar swem nie my kinders ook nie. So dit is net maar dis ek

dink ..... ons bestuur net die goed behoorlik nie. Dit is net dit. En sê nou net dat SANParke bestuur net die goed behoorlik nie. There is too many Indians and no chiefs. Of is dit too many chiefs and no Indians. (I8)

What happened after the 2003 storm is that our chairman was approached by SANParks, and SANParks said don't fight as we will work together you work with us and we will sort these things out. And he on our behalf said yes. And SANParks do nothing. They literally do nothing. It is something that we have to talk about. If you can look on those reports the 1970 report basically, you find that they analysed this whole of the Swartvlei system from an ecological point of view, very, very thoroughly. They sorted out the fish they sorted out the levels, they sorted out the weeds, and they sorted out the crustaceans. All the various levels of life that is essential. All the detail written down, since then SANParks took over in 68 only, since then nothing has been done. It is one of my big gripes because you know we are signatories of biodiversity convention, and what we are South African scientists say that we are going to improve the biodiversity of all the systems which include things like estuaries. And because this is a protected estuary it is assumed that the, the goal of increasing the biodiversity is being done. Is being looked after. For that reason we get a good rating on our estuary like this but the truth of the matter is that SANParks do zero, when I say zero I mean zero, they actually don't do anything. They don't come round, they don't check. For example, one of the big problems we have here is over-extraction of bait, the prawns the sand prawns, I mean here just on this section here in summer every few minutes there's a new group that comes along and pumps, take certain areas, they don't realise that other people has already pumped it dry, etc. They don't do that, they don't control the boats that come up and down to fast, they don't control fishing, they don't control the netting. (I2)

The participant also retold a story about the fisherman that are concerned about the decline in fish numbers in the lakes but yet they are the cause of that decline. (I14)

Ja, daar is te veel vis. As dit nou windstil is dan kan jy sien hoe werk daai vis in daai area. Die, wat is die garnaal, prawn beds, waar ons in die verlede bitter baie prawn gekry het en gepomp het daar is daar omtrent nie prawn oor nie. Dit is bitter min prawn. Dit is hulle wat fisies van .... Maar nou moet jy weer onthou die visse wat hulle daar vang en fisies huis toe vat is ondermaat. So hierdie ouens is in elk geval in die verbreking van wetgewing so wat doen jy. Jy sit nou tussen twee los jy die goed vrek hulle. Die ou wat die kos in elk geval wat huis toe gaan vanaand en waar sit jy nou op die ou einde van die dag. Dis hierdie goed, beweeg nie in of uit, see toe en wat die storie en hoe werk dit. Hulle vang dit, ek sal dit nie eet nie. Definitief nie. Daai water, die visse is maer ook, daar is nie genoeg kos vir hulle nie. Jy kan dit sommer sien die see visse lyk baie beter as daai visse. En dit is net n kwessie van dat die mond toe is, dis waaroor dit gaan. Ek vind as dit die mond was nog oop gewees die kabeljou wat daar inkom is groot. Maar die mond is oop so hulle kon heen en weer gegaan het. Maar hulle is uit. Grunters, ja die mond was toe gewees, n jaar of wat voor hy toe was het ons baie grunters gevang daar,

nou op hierdie staduim was, daar word 'n minimum van gruinters gevang. Lyk nogal daar is 'n afname in hulle ook is. Dit is tog hulle area. Is dit as gevolg van daar is te min van die prawns omdat hulle gevoed het op die prawns of hoe werk dit. So ek kan nie vir jou se nie. Dit is net vir my ek sien net waaroor dit gaan. Ek dink net weens ons inmenging het dit nou bietjie ver gegaan soos wat hy nou lyk het hy die laaste 5 jaar wat ek daar bly nie gelyk nie. Even toe ons hier aangekom het in die droogste tye in ons droogste tye het die meer nie gelyk soos hy nou lyk nie, regtig. Dis eintlik, ons is oppad na n disaster as jy my vra.(I8)

4.3.11 Water Pollution

As evidenced in the combined timeline, e-coli has been an ongoing issue in the Touw River for many years. The engagement and the way people are mobilised by the problem seem to be periodic and the most recent activity has been driven by the WRRA. By and large, the engagement from stakeholders seems to be reactive, for example when residents write complaints about people getting sick after swimming in the water.

Look I think there is a thing recently where the e-coli in the river was quite high and the water is monitored for that kind of thing it is whether they at the time there is now in question do you notify people if you know the e-coli is too high? Does the municipality or SANParks? Is it up to them to notify people that it could be dangerous to go swimming in the rivers, Is it a health risk or not. You know that is kind of questions. If someone gets sick and they knew that at the time you could get sick from it are they responsible for not telling people? I12

Besides the e-coli concerns, stakeholders have also reported concerns about the murkiness of the water, how the Island Lake is polluted with salt and brak and how at Touwsranten you can smell sewerage in the Touw River.

This engagement theme begins to sounds familiar to an emerging national engagement theme around service delivery and the protests that erupt periodically. Participants at the Knowledge Dissemination workshops likened the growing pollution issues at the lakes, and SANParks's inability to control the problem, with service delivery issues. There is a criticism levied against the authorities regarding what seems to be their unwillingness to take appropriate action in this regard.

4.3.12 Understanding starting point & big picture

It also emerged that your identity determines how and if you would start an engagement process and also what sources you would examine to inform your mental model. It is clear that each stakeholder that is choosing to get engaged with the water management issues at Swartvlei and Wilderness has a starting position that informs how they act.

It seems that how common and shared a set of facts is, would determine how variable and successful the engagement is. The stakeholder map is now a common and shared item of knowledge and is therefore a good tool to start engagement.

Our interactions with the participants suggests strongly that the extent to which he or she has an appreciation of what the 'bigger picture' of the socio-ecological dynamics are is an influencing factor in determining the quality of their engagement with other stakeholders. And so stakeholders need to be aware of the big picture and how their actions might influence another grouping. Unfortunately, the experience of the researchers is that most people seem to believe that their knowledge of the 'problem' at the study sites is the only true knowledge and that they are engaging from a factual base. So depending on the set of facts that is informing the mental model, the approach to engagement would be influenced, either positively or negatively. This positioning of who is right and who is wrong seems to be one of the key forces that has kept stakeholders divided on the water issues at the study sites.

As an example, some scientists believe that their set of facts is the only true and reliable facts but they don't seem to take the social impacts into consideration. So even these scientists seem not to see or appreciate the 'bigger picture'.

Participants also realised that there are no simple solutions to the problems and especially as a chairman of a forum, the big picture should be taken into consideration when engaging. People in leadership roles should also be extra sensitive not to make their interests the only topic of discussion and that all views should be considered.

Also, from the viewpoint of the managing entity, making decisions when trying to save monetary costs, should not mean that the trade-off is a detrimental social cost. For example, being less visible might save money on petrol but stakeholders might lose some trust as they could feel that less visibility implies that less work being is done.

The starting point and set of facts used have a huge effect on how the engagement needs to be facilitated. People with a near fanatical interest on a topic can engage with their peers and convince them of a set of facts, even if the facts might be outdated or an incorrect source was used to collect the facts. This would influence relationships as disagreements would influence the time it takes to engage over a topic.

To add to the complexity it was also highlighted that the facts which are provided to stakeholders from governmental departments seem to be different, adding to the confusion about which set of facts is correct.

4.3.13 Worrying and relaxing – dynamics of engagement

One of the participants described the cyclical nature of engagement by stating that people worry about a topic/event at a point of time (when the salience is high) and as the immediate effect of the event starts wearing off they start 'relaxing'. The term 'relaxing' may be a helpful descriptor of the dynamics of emotional and psychological engagement over time where the perceived threat of a water resource challenge diminishes over time, yet doesn't ultimately disappear. The result of this may be a persistent low-level form of engagement, which may be interpreted as disengagement by others. The analogy we used in the project team was that of a pilot flame on a gas burner – the pilot flame is always alight and can be amplified into full flame to cook or heat water on a needs basis.

When asked how relaxing is different from forgetting, participants noted that "relaxing is more due to the fact that precautions have been taken and you are ready, kitting yourself out for if the event ever happens again, it is more of an active relaxing". Forgetting on the other hand symbolises complacency. For example, the forgetful form of disengagement lulls people into believing that we now have enough water so we don't need to make arrangements for future events.

Due to this relaxing there is a 'downgrading' of engagement levels but due to the active nature of this relaxing the "down" is not so pronounced as there is still some level of engagement happening. People are kitting themselves out emotionally and physically for when the need might arise again.

4.3.14 Fanaticism

One of the key characteristics of stakeholder engagement that could be used to describe engagement at the study sites is how there is a small group of people who are fanatical about the water resource challenges and the management thereof.

These individuals happen to be predominantly retired folk who are able to channel their fanaticism into active engagement and participation due to the additional time they have on their hands.

Interestingly, when engaging with some of these 'fanatics' in one-on-one settings they will often display certain contempt for other individuals who are also classified as fanatics by the rest of the community. This is a key issue at the study sites – the fanatics themselves are divided and find it difficult to put up a united front when engaging with the authorities on water challenges.

Nevertheless, there were participants who spoke of these fanatics in terms of endearment. They are characterised in people's mind as vocal, passionate and courageous. People admire these fanatics but are also confused by how they are able to dedicate themselves to the water challenges to such high degrees.

One of the stark benefits of having a small group of fanatics at the study sites is that, through their vocal engagement on the water challenges, they keep the rest of the community mindful of the threats that these water challenges pose. In the context of the 'relaxing' dynamic that we have already addressed, fanatics play a crucial role in

keeping the average citizen's engagement levels up to such a degree that these levels are relaxed, but not forgotten.

4.3.15 Citizen leaders

To be an efficient citizen leader, the participants believe that your mindset as a leader should be correct, i.e. you should be aware of the complexities involved with the managing and decision-making around a natural resource; you should be aware of the history of the topic as well as the history on the engagement on the topic and that no idea should be shot down as a bad idea. The belief is that if you as a citizen leader keeps that in mind, then you would be successful.

Although there was some guidance on what the outcome should look like, each participant placed the various themes in a pattern of how they make sense of the world around them on these particular topics. These different renderings highlights the fact that everyone looks at it from a different vantage point. This ties in with the different definitions identified from the workshop on engagement.

4.4 Participant sensemaking of engagement themes

In a series of follow-up interviews the project team met with a selection of the participants who attended the knowledge dissemination workshops to understand the impact that the timelines, stakeholder maps and engagement themes had had in their thinking or engagement. The focus of the interview revolved around the individual participant's sensemaking of the engagement themes in an exercise where the individual themes were printed out, cut into small labels and given to the participant to position on a flat surface in relation to each other. The idea was to allow the participant to identity any links, connections or relationships amongst the themes from their perspective.

4.4.1 Issues and modifiers

One participant laid the engagement them labels out into two distinct categories, namely issues and modifiers. For him, some of the themes that have emerged from the narrative analysis were water resource issues that sparked and drove engagement levels. The other category was notions and things that modified engagement levels. This is also a point that came up in the workshops, which is that you can't engage unless there is an issue to engage on. The participant defined an issue as a topic that people engage on and a modifier the way and to what extent that people would engage.

The issue themes identified by this participant were:

- Management of the lakes
- Water pollution
- Droughts and floods
- Tourism/Choo-tjoe

The modifier themes were:

- Demographics

- Social changes
- Development
- Education
- Continuity of a forum
- Role of key individuals and changes in people (roles)

A reflection on the themes discussion earlier in this report in the context of this issue-modifier categorisation raised some points about how individual stakeholders view engagement. For example, this participant considered development to be an issue that modifies engagement but does not create the platform for it. The story of the Eco Lakes development presents a different picture one feels. It is also interesting to note that the issues were ranked, where Management of the Lakes is prioritised as an issue. This is probably due to the individual participants' feelings around SANPark's shortcomings in this regard.

While this theme categorisation is representative of only one participant's perspective, and the themes that occupy each category may vary from one participant to the next, it is a useful categorisation framework to consider in the context of considering the themes in a multi-dimensional manner. Some themes are the cause and originator of engagement in citizens while others modify engagement levels.

4.4.2 Hands of the clock

A second participant constructed the themes in an array where all the themes were mitigated by the extent to which an individual is 'affected by the issue' and what the 'salience of an issue' is at that point in time. The resultant representation resembled the hands on a clock. The participant noted that these 'hands' of the clock extend to which you're affected by an issue and the salience of it move around and influence engagement on the various topics.

The value of this sensemaking in the context of the research is to understand how an individual's level of engagement is moderated amongst the other engagement themes. The limitation however is that it doesn't help us understand how stakeholder groupings respond to engagement issues through these two lenses.

4.4.3 Newly identified themes

New information also surfaced through the latter interviews and two new themes were identified, namely the issues of climate change and agriculture/forestry.

In the case of climate change it seems that it is becoming more salient within the study area but there were no links made to how climate change would personally affect an individual. Some of the effects of drought/floods were however blamed on man-made actions/inaction.

5 Observations

Through the course of the study the project team reflected on observations that emerged. This section outlines some of the key observations that should be considered in the context of the findings of the study. They are not complete in terms of analysis but could be utilised in the formation of further research questions or discussion amongst readers of this report.

5.1 Engagement is not seen as an 'issue'

Some of the participants in the knowledge dissemination workshops wrestled with the objective of the discussions. A few requests were received throughout the process about when "we will actually start to talk about water, the main issue at hand." What was quite interesting was that some participants didn't see a lack of engagement at the study sites or an understanding of engagement as a key issue. They saw pollution or the opening and closing of the mouth as an issue, but they didn't see engagement as a legitimate issue to do research about. The danger of this mind-set is that it relegates stakeholder engagement in the notion of socio-ecological systems. For these participants, the social aspect of water is either not important as 'water is about water', or non-existent. This mind-set also has serious ramifications for the co-management of natural resources, where the 'social aspect' of water is a precursor to effective co-management.

5.2 Identity dynamics

The project team were curious about the way in which participants in the study introduced themselves in one-on-one engagements, but specifically how they did so in communal settings. For example, there was an interesting difference in how the participants introduced themselves at the knowledge dissemination workshops. On the first day, almost all of the participants introduced themselves in relation to what they used to do, for example, "I'm a retired engineer". On the second day most of the participants were retired people, but they introduced themselves by who they are affiliated to, for example, "I'm this, or I am the chairman of this". The identity dynamics seemed to be different. It's as if they came with a different identity. They didn't come with the 'I'm the expert retired engineer' approach, although some of them might have been, but they came with the "I'm a representative of this action group" identity.

Now, it may be worth noting that there are identity power dynamics at play in group settings where the way in which people introduce themselves is modelled on the way in which the first respondent does. This may set the tone and manner in which people should introduce themselves and it is then up to the rest to model that introduction.

5.3 Socio-Economic Status

The sample of participants in this study spanned socio-economic divides. The two-study site, Swartvlei and Wilderness, are typical of the rest of South Africa in terms of the gaps between rich and poor. There are some very wealthy people and some very poor people at the study sites. The project team had a latent observation brewing before the knowledge dissemination workshops that the value placed on the lakes systems differed according to socio-economic status, that the rationale for

conservation for poorer people was rooted in issues around subsistence and security of supply of food, while for wealthy people the value was mainly in the conservation of the aesthetic value of the lakes.

The latent observation was confirmed to some degree by a reflection offered by a participant at the workshops, who questions how one's quality of life effects how one engages with issues pertaining to the lakes. For this participant, quality of life means different things to different people and benefits from the resource are different for different stakeholders.

"If you have no food, you won't care about alien plants. Where your next meal comes from or getting firewood trumps saving the trees. There is a wealth gap – for some it's about survival."

This perspective reminds one of Maslow's Hierarchy of Needs that suggests that subsistence and security needs prevail over higher order needs like self-actualisation. While this may be relevant, in part, to the study, the project team experienced a values divide in mind-sets revolving around the lakes, but yet also found commonality. Even the poorest people are very aware of the environment, often from a spiritual perspective. They use it for practical and aesthetic purposes. The environment is often very important from a spiritual perspective regardless of where you are positioned in a socio-economic sense.

5.4 Understanding of stakeholder groupings that are different to your own

The individual interviews conducted in the study were focused mostly on the stakeholder present, but it was when we invited the stakeholders to share in conversation amongst each other at the knowledge dissemination workshops that the project team noticed how difficult it was for many individuals to 'step outside' of their own stakeholder groupings and understand that the 'other' was different to them.

The ability to be aware of your own stakeholder grouping and its associated agenda in relation to the nature and agenda of another grouping is critical for self-awareness to be healthy in engagement processes. The inability to put aside your own agenda or concerns in order to focus on creating an understanding of another stakeholder and how they are different to you affects the legitimacy you ascribe to their complaints and agenda.

5.5 Who shouts the loudest

The experience of sampling in this project raised an important reflection on assessing the state of engagement in a socio-ecological system. It was relatively easy in the initial stages of the project to find stakeholders to interview because they were publically known to be vocal on issues pertaining to the issues at the lakes. This was one of the first indicators of engagement, i.e. how vocal stakeholders are being, either in social settings or through communications media such as letters ot newspapers.

It seems from the discussions at the workshops that engagement needs a 'voice' in order to be really effective. Not only does it need voice but also it needs a mechanism to broadcast the voice. And if there isn't a mechanism to broadcast the voice of engagement, it seems to get forgotten about. It's interesting that the

technology mechanisms that help to communicate en masse really help in some regards, but with that comes with power, and that power has the ability to side-line voices that don't use those channels (those media or mechanisms)

And so the person who shouts the loudest seems to get all the attention. the project team's reflection on this dynamic is that there is a danger in assessing or measuring engagement by who is shouting the loudest. It is not an accurate measure, because people may be very engaged but they just don't have the voice.

5.6 Deferring your responsibility to someone who is engaging

A reflection that arose in the workshops was that young people might tend to defer their responsibility onto older retired people because of the assumption that retired folk have the time to engage on the water issues.

The retired folk in the room spoke of this 'deferment' as "quite a burden" because it means that they need to carry this cause alone. In return, the retired people at the workshop expressed a concern about what is going to happen when they're not there anymore and whether the next generation are going to take over at some stage or let everything fall apart. There's definitely a sentiment on the one hand that the older generation are the wiser participants in this engagement arena. "You have to know what you're doing to be able to handle this", one older participant noted.

5.7 Economic consequences

Economic consequences or the threat thereof seems to trigger engagement at the study sites. One participant observed that "if it affects their pockets, e.g. a conservancy meeting gathers few people, but a meeting about potholes that damages cars gathers many." In addition to this, it was said that some people don't realize when the threat of consequences have subsided. For example, many people still think they can get fined for over use of water even though the fines have not been enforced since the droughts.

5.8 Roles and responsibilities

5.8.1 Media

The media has a responsibility for ethical journalism as their opinion can have a large effect on public opinion. One participant saw the job of a journalist to be able to broadcast the news with a conscience.

The local newspaper, The Edge, was a perfect case study as they are trying to raise engagement on a low-salience issue, i.e. social engagement around poverty in the area. This is also becoming a more salient issue due to mixed schools and changes within neighbourhoods.

5.8.2 Role of Water Research Commission & stakeholders

There seems to be too much one directional blaming with very little responsibility being taken for their actions from the stakeholders. How they engage with individuals from the governmental departments has an effect on the willingness of the individuals working for these departments to engage. Most of the stakeholders engage because

they want to, and they are starting to realise that this is not necessarily the case with the governmental departments.

Stakeholders believe that the WRC needs to play a more active role, i.e. not just conducting research, but also turning it into action research. Stakeholders perceive that there is no accountability in governmental departments, and this is a key role that the WRC could play, which is applying pressure to inspire action and accountability.

Even though there seems to be a perception amongst various stakeholders that nothing is being done, as far as estuary management is concerned, the research seems to be highlighting that it is the lack of engagement and communication that is rather the issue, as there is an incredible amount of work done from all parties.

The stakeholders that engage because they want to also do this with a lot of enthusiasm and heart, which they feel is lacking with the mandated engagement processes. This mismatch also has an influence on the willingness to help with the engagement process.

The lack of 'correct' skills or 'high' enough education of the individuals that has been mandated to run the engagement process also has a negative effect on engagement.

5.9 Power dynamics at study sites

The literature review conducted for this project identified the possible role of power dynamics as an influence on engagement levels. While this study did not conduct a dedicated power dynamics analysis, some observations can be made about power dynamics at the study sites and how they affect stakeholder engagement.

Specifically, the researchers were interested in the types of power at play and whether invisible power dynamics exclude certain groups and individuals from effective and sustainable engagement.

5.9.1 Knowledge and expertise

One of the ways in which power dynamics affect engagement levels at the study sites resides in the fact that there is a host of retired engineering expertise who are actively engaged in the water issues and battles with SANParks. The nature of the water issues in George have taken on a very scientific and engineering-based flavour that seems to exclude other citizens who do not possess such knowledge and expertise. The retired engineers see the issue mainly through a technical lense and some have spent extraordinary amounts of time investigating and researching the technical aspects of estuary management to lobby against SANParks.

While this is not an intentional power dynamic at the hand of the retired engineers, it certainly plays a role in limiting the extent to which a broader base of stakeholders feel they can participate in an even power base.

5.9.2 SANParks mandate & Citizenry

As the legal entity that has the official mandate to manage the lake systems in George, SANParks participates in a power dynamic that seems to hinder active and equal engagement in the community. While the mandate is valid and official, this does not necessarily preclude SANParks from engaging in co-management initiatives. There is however reluctance displayed by certain SANParks officials to really engage the community and keep the decision-making process close to home in this regard.

On the one hand, this is understandable due to the particularly combative approach taken by some citizen stakeholders in engaging with SANParks officials on certain lakes management issues. The combative approach has degraded into emotional outburst, name-calling and serious attacks on character. One can understand how SANParks officials have chosen to withdraw from public engagement in the interest of self-preservation. However, on the flip side, certain SANParks officials have a certain disdain for the knowledge and expertise of retired folk in the communities. They do not believe that these actively engaged stakeholders actually know what they are talking about, and thus exclude them from decision-making processes.

5.9.3 Socio-economic divides

The socio-economic divides prevalent in the two study sites result in power dynamics that keep people from interacting with each other. The knowledge dissemination workshops were one of the first instances for participants where they had the opportunity to engage with stakeholders from other stakeholder groupings across the socioeconomic divides. The workshops challenged these divides and broke down the power dynamics between the social divides.

5.9.4 Reasons for volunteering

Firstly it is the helping cause – in this case the main concern is being of assistance and giving back to the community. Second is social contact – building social capital by associating with new diverse individuals and establishing a network. The third motivation is personal development, such as acquiring new skills, experience and building self-esteem. The final motivation is personal interest, which is when people are motivated to volunteer to suit their own interest; for instance: protecting their property or living conditions, developing a greater understanding of an issue or discovering new insight from the field of volunteering entered into (Hwang et al., 2005; Sydney et al., 1999; Rehberg, 2005 in Measham & Barnett, 2007).

6 REFLECTIONS

6.1 On methods used in the study

It needs to be noted up-front that the process of mapping the relevant stakeholders in our two study areas was an extremely complex task. The researchers were unable to find any best practices to draw on in terms of how to create such a map and found the entire process to be emergent, organic and provisional in nature. The researchers also had to recognise that we are also stakeholders in the system, and therefore cannot claim any objectivity in the mapping process. The decision-making process of assessing which stakeholders to include and which to exclude is therefore a complex and largely subjective exercise.

The timeline mapping of the two study sites was subject to the same concerns and constraints although to a lesser degree. The researchers relied on the subjective process of stakeholders identifying moments in history that were important in influencing engagement levels at the study sites. This process is heavily reliant on memory and the stakeholder grouping a person belongs to influences how they perceive history. The researchers were however able to conduct the analysis by utilising objective historical events to counter balance these tensions.

6.1.1 Reflections on stakeholder mapping

One of the biggest challenges faced by the researchers in developing this tool was finding information, particularly on stakeholder mapping processes. Stakeholder mapping seems to be an intuitively simple process, but our experience was far from that. It also seems to be a theory and practice that is well developed in the business arena but not well used within the natural resources environment.

The complexity of the fair distribution of a common pool resource ‘demands’ a mapping tool that can be utilised and developed across issues to ensure that nobody is marginalised or that an opportunity of participation is not missed due to the lack of knowledge of the landscape or the lack of time in doing a proper search for stakeholders that might be affected.

There also seems to be various software tools available for mapping but they are either very complicated, falling back on language that needs a lot of research (time consuming for the man on the street) or they take a lot of time to rearrange when adding nodes but are much more user friendly.

It is dangerous to assume that the researcher knows what the expectations are of each stakeholder. By having a list of stakeholders it is an easy task to invite all of them to a meeting and those that feel that they would like to have an input could then attend. It is very important then to ensure transparency in the process so that none of the stakeholders feel left out. There is also a general feeling that if a stakeholder doesn’t agree with a viewpoint and upsets meetings that they should be excluded. Here facilitation skills become more important (see notes on facilitation earlier in the document).

Through this whole experience the primary researcher tried to stay as open minded as possible in order to ensure that all relevant stakeholders were identified. This initial stakeholder map is as comprehensive as possible but the expectation is that it will grow throughout the research. When engaging with the stakeholders the idea is to then focus on those stakeholders that are influenced by that particular action. It was therefore deemed important to understand the need or benefit that the particular stakeholder group can get from the natural resource.

These stakeholder maps offer a current perspective of the various stakeholder groupings that impact on and/or are impacted by the two lake systems in the case study areas. Due to the complexity of these social-ecological systems, we acknowledge that these maps are probably not complete, and that a mapping conducted from a different perspective may produce very different results. These stakeholder groupings do however represent the main agents in the region from the perspective of the interviewees. We recommend that in future projects these maps are revisited so that they become living documents that are continuously updated.

6.2 On shifts in engagement and disengagement

It does not seem like the engagement levels have increased at the study sites in recent times as the salience of water issues seems to be fading in people's memories, but the interaction between SANParks and the people is still as topical and heated. For example, one resident is reported to have moved back into his house that was flooded after having publicly vowed to never move back in due to the risk of floods.

There however seems to be a positive shift from SANParks with the recruiting of a new Regional Ecologist and Area manager. A participant stated however that any agency that is engaging is 'missing a trick' by not involving all walks of life and utilising their knowledge of the area.

There seemed to have been a visible change recently at the study sites as there are more SANParks representatives present at the Park Area Forum than in previous meetings. There also seemed to be more discussions but this could also be due to the fact that the new Area Manager has settled in. Participants highlighted the fact that the Area Manager plays a pivotal role in engagement. Even though SANParks are adopting a social strategy, a challenge might be to be able to convince employees, especially scientists, to reach out to communities as this was not part of their job descriptions when they were initially employed.

There also seems to be a shift in the way people think about issues and each other, which the participants have attributed to the workshops. There seems to be a realisation that there is a bigger picture out there that needs to be taken into consideration as well as the fact that there is no simple solutions to these complex problems. Because of this, there is a member of the community that was very actively involved, who was then 'forced' by his peers to disengage. This particular individual is known for a combative approach in engagement and his peers have seen how destructive it is in fostering healthy interactions between stakeholders.

7 RECOMMENDATIONS

7.1 Stakeholder mapping

The stakeholder-mapping component of this study's methodology was a significant learning activity for both the project team and the participants of the research. The project team, having not found much in the social-ecological research literature about how to conduct a stakeholder mapping exercise, learned many key lessons about the process. The participants in the study found the resultant maps particularly useful. The stakeholder maps broadened their conception of who the stakeholders actually were in their localities. In addition to this, a participant who works for the managing agency has continued to use the maps as part of her job in the area.

The success of the stakeholder maps in this project suggests that the use of such a method should be considered as a useful component of social-ecological research in future Water Research Commission studies. Stakeholders, as agents in a social system, can only have a limited perception of the stakeholder landscape in a locality. The results of the stakeholder mapping exercise in this study suggest that citizens need a mechanism for broadening their view of who occupies the social landscape as a fellow citizen. Who we regard as a fellow citizen is also influenced and limited by who we choose to interact with on a daily basis. Engaging with a comprehensive stakeholder map facilitates a cognitive broadening in the minds of citizens that opens up the possibility for considering the needs and desires of fellow citizens, especially those citizens who we had previously disregarded, intentionally or unintentionally.

The project team is also eager to establish how the method can be used in different research contexts and be expanded upon as a method, both in implementation and use thereafter. The current project used the method as a diagnostic in order to characterise and represent the stakeholder landscape. As is true in social science research, the diagnostic is also an intervention. This is evidenced in how the stakeholder maps were utilised and incorporated into vocational practice by a SANParks employee at the study sites. The research team is interested in how stakeholder maps can be utilised more intentionally at intervention tools, beyond simply being a diagnostic. How might the maps be used in practice as researchers and citizens embark on activities to shift social dynamics?

It would also be interesting to establish how best to keep a stakeholder map alive. Social systems are not static, but a stakeholder map is a point-in-time representation of that social system. We recommend that the method be applied in such way as to find methods of turning the maps into living documents that cater for living systems.

7.2 Further investigation into engagement dynamics

One of the key findings of this research study is that engagement levels may indeed not be cyclical, but that they wax and wane over time for various reasons. The variability of these dynamics is something we recommend that should be investigated further. Our project highlighted the individual nature of shifts in engagement dynamics but could not ascertain significant patterns that allowed us to make authoritative comments about the broader dynamics of engagement. M

One interesting dynamic that we believe should be investigated further is the notion of engagement in the form of ‘relaxing’. This dynamic was evident at the study sites in that, at the time of the study, there were not significant ecological issues (e.g. no estuary mouth opening and closing issues) and we discovered that what looks liked disengagement from the water problems was potentially a relaxing of engagement.

We recommend that further research be conducted into the notion of engagement relaxation and how it manifests in the lives of ordinary citizens.

One of the limitations of the study was that, despite initial intentions, it was not practically possible with the data at hand to represent engagement as a graph over time. It was too complex a task to render and represent key engagement events in such a manner. Our recommendation is that further research be done in investigating ways of characterising engagement levels graphically. It may be worth considering modelling the cycles and pattern of engagement over time using systems dynamics modelling.

7.3 Engagement theme categorisations

Engaging participants over multiple interviews allowed the project team and the participants themselves to evolve their sensemaking of the engagement themes that emerged from the narrative analysis. The theme categorisations that emerged from the round of impact interviews was only possible, it seems, once the participants has journeyed a little with the idea of engagement and how it could be understood. The current research project did not have the scope to delve deeper into the sensemaking outputs from the latter interviews sufficiently to satisfy the research team. We recommend that further research be conducted on the ways in which engagement themes may be categorised for richer understanding and sensemaking in particular contexts.

8 Appendices

8.1 Appendix 1 – Knowledge Dissemination Workshops

Invites, logistics and design

Invites and logistics

Invites were sent out to identified participants. These were either participants that had already been interviewed as part of the research or were on the list as prospective participants for future interviews. An invite was e-mailed to each participant after a telephonic conversation to inform them about the workshop. In the case where individuals had no internet access the invite was hand-delivered after the initial telephonic conversation. After the invites were sent some requests were received from individuals not originally on the list who expressed interest in joining the workshops.

A reminder was sent out to participants in the week of the workshop along with a map of the exact location of the workshop. Participants who did not have transport to the workshop were collected by the project team in their own vehicles.

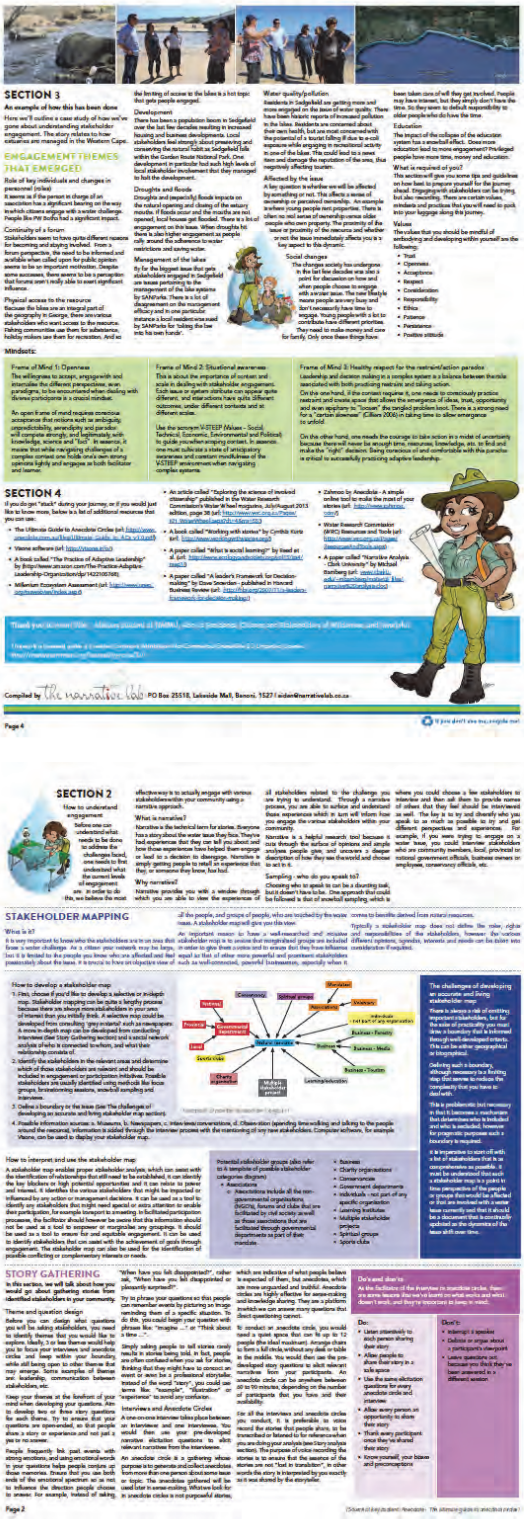
Workshop design

The workshop process design was as follows:

30 mins	Welcome, Introduction and Scene setting	Welcome and introduction Scene Setting Objectives of the research and the workshop Study definitions Questions Divide large group into smaller groups
30 mins	Stakeholder Map Review and Update	Show the group what we have so far Large printouts of the stakeholder maps Scribe to capture new information Gather more narratives via voice recorders
90 mins	Timeline Review and Update	Show the group what we have so far Large timeline printouts on walls Different colour 'hexies' to indicate Level 1 (global) events, SV events, Wilderness events and new events Group input and feedback Correct any wrong timeline events Add new events Give participants sticky dots to mark events they feel are most important from engagement perspective Gauge the magnitude of the impact (positive or negative – increased or decreased the most) the events had on engagement at the two sites. Why/an example is also an opportunity to capture the story. Capture all new events on audio recorder.

30 mins	Tea	
90 mins	Review of Current Research Themes	Put up a slide per theme we've identified to feed back what we've found Large group conversation to review and give input
30 mins	Wrap-up and debrief	Debrief to manage expectations Get people to share their experiences of the day What did they learn/what surprised them?

8.2 Appendix 2 – Citizen Engagement Guide



8.3 Appendix 3 – Capacity Building Report

During the two years of study (2012-2013), Ms Aneri Vlok attended various workshops, learning courses and training sessions. Most of the courses focused on qualitative techniques and analysis. The reason for this was due to the fact that Ms Vlok was trained purely in quantitative techniques. The workshops, learning courses and training sessions were:

- Workshop in qualitative analysis using Atlas.ti, NMMU (PE), August 2012
- Workshop on content analysis, NMMU (George), October 2012
- Workshop on conversation analysis, NMMU (PE), September 2012
- Attended the Sustainable technology seminar, NMMU (George), October 2012
- Proposal development workshop, NMMU (George), May 2012
- Estuary management plan review workshop, Cape Town, May 2012
- Short learning course on the management of estuaries, Velddrif, November 2012
- Endnote workshop, NMMU (George), June 2012
- Advanced Atlas.ti training (George, webinar), July 2013

Ms Vlok also attended three conferences. She presented part of this research study at two:

- Insaka, Namibia, June 2012
- SASAqS, June 2013

The SAPECS (April, 2013) symposium was only attended.

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