INFLUENCE OF SOCIO-ECONOMIC STATUS ON PEOPLE'S PERCEPTION OF THE HEALTH CONDITION OF THE ELSIESKRAAL RIVER, CAPE TOWN, SOUTH AFRICA

By

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DECLARATION

I, Carolyn Margaret Wilmot, declare that the contents of this thesis represent my own unaided work, and that the thesis has not previously been submitted for academic examination towards any qualification. Furthermore, it represents my own opinions and not necessarily those of the Cape Peninsula University of Technology.

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Signed **Date**

ABSTRACT

Rivers, lakes and streams are the only way people encounter water sources in urban areas. Human endeavours have consequently deteriorated the environmental quality provided by river systems thus rivers are supporting a fraction of their original biodiversity and abundance. Urban streams are highly valuable and sensitive systems which, can be assessed by means of impacts of urban catchment and pathway influences. Many of the problems associated with environmental quality and management of urban watercourses are as a result of poor public perception. Advances in river assessment and management has come about through the recognition that water resource problems involve biological, physical and chemical components and more recently the addition of social and economic aspects. Social public participation is therefore achieved by studying and acting on people's values, behaviours and perceptions of environmental quality.

The main aim of this research was to identify whether a difference in socio-economic status is an influential factor in people's perception of environmental quality. The objectives of the research were to determine whether the Elsieskraal River has a perceived low environmental relevance and quality (health and aesthetics), to determine what sensitizes people about issues relating to the natural environment and to identify people's uses and perceptions of the Elsieskraal River corridor and its importance to the enjoyment as a recreational space. The study used a qualitative approach to obtain the data using the focus group technique. The purposive sample of participants from Pinelands and Thornton were the population that this study sought to investigate. Two focus group discussions; one in each study area was conducted. The results of this study found both similarities and differences in people's perceptions of the Elsieskraal River between the two different socio-economic urban communities. The perceived observation that the Elsieskraal River was a canal and not a river set the foundation for the envisaged low environmental quality the river so acquired. The majority overall environmental quality scores for the attributes of aquatic life, vegetation and water quality were found to be lower than they were scientifically found to be. Two clear avenues concerning environmental information sourcing and sensitization to the public was found. Politicians and government officials were unreliable to relay environmental information of a trustworthy nature. Community newspapers were a useful tool to present the

evidence of information concerning the status of the natural environment especially at a local level. Three themes namely safety, maintenance and facilities and community attachment emerged on the importance of the Elsieskraal River as a recreational space. It is recommended that further studies should examine the perceptions of other similar rivers in the urban environment, both natural and canalised within Cape Town and the greater South Africa. The findings can assist environmental managers, planners and educators identify the gaps between the scientific environmental conditions and what people's perceived awareness and knowledge about environmental quality are (factual versus perceived). It is also recommended that emphasis and support from local authorities must be given to non-governmental organisations (NGO's) and adjacent property owners to aid in mobilising people into "ownership of rivers" within their communities to enhance their value and utilisation.

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To God, who has blessed me with an opportunity to study further and for his enduring strength during the many long days of frustration and persistence till the end.

DEDICATION

I dedicate this thesis to my beloved pet Boxer dog, Bianca. She was a constant companion sitting by my side for the many long hours writing this thesis and shared numerous walks with me along the Elsieskraal River for which this research is inspired. She sadly passed away before I completed the thesis.

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ABBREVIATIONS, ACRONYMS AND DEFINITIONS

Abbreviations and acronyms

NGO's	Non-Governmental Organisations
PFG	Pinelands Focus Group
RHP	River Health Programme
TFG	Thornton Focus Group
SES	Socio-Economic Status

Definitions

Environmental concern: the awareness or insight of individuals that the natural state of the environment is threatened through resource overuse and pollution by humans (Dunlap and Jones, 2002).

Riparian zone: Riparian land is any land next to or which directly influences a body of water. It includes the land immediately alongside small creeks, river, gullies and dips that sometimes run with surface water, areas surrounding lakes and wetlands on river floodplains which interact with the river in times of flood. It often has water dependent vegetation. Riparian land is the interface between the catchment and in-stream area of a river or stream (Riethmuller, n.d.).

River management: is not a technical task but is fundamentally a socio-economic and cultural issue that reflects the societal values with regard to ecological concerns of a river (Higgs, 2003).

Perception: social perception is thus concerned with the impression one has of a social stimulus or set of stimuli, as the impression is modified by the perceiver's past experience and that of the individual's state at the moment he is viewing the stimulus of interest. It also concerns the function of the value of the stimulus of interest (Schiff, 1970).

Pollution: the degradation of the natural systems by the addition of harmful substances which may also be termed "ecological accumulators" which are not easily broken down by animal digestive systems, plants or microbial enzymes (Chenje and Johnson, 1996).

Public: not a simple, homogeneous group but is highly differentiated: the term is used as shorthand to refer to those people of diverse interests who are not part of a clearly defined group with recognised representation (House and Fordham, 1997).

River health: this may include the physical, chemical, biological, social and economic variables of a river system (Norris and Thoms, 1999).

CHAPTER ONE

INTRODUCTION

This chapter enlightens the status of the environmental quality of river systems from a global, South African and Cape Town perspective with further emphasis on the Elsieskraal River in Cape Town, South Africa. The Elsieskraal River's history, environmental quality and health from a scientific viewpoint are specified. The two study areas of Pinelands and Thornton are described lending a foundation to their character and socio-economic status. The statement of the research problem, aims and objectives and the significance of the research are identified.

1.1 BACKGROUND AND CONTEXT

1.1.1 Worldwide Rivers

It is evident that over many centuries humans have altered and exploited rivers and river corridors worldwide mainly as a result of rapid urbanisation (Booth and Jackson, 1997; Asakawa et al., 2004; Brierley, 2008). The degradation of rivers initiated by urbanisation is not a single problem but a multidimensional one that culminates the effect of a variety of human activities on urban basins (Booth et al., 2004; Walsh et al., 2005). In emphasising this statement, these water bodies, each unique in their own way are no longer able to effectively cleanse themselves and thus are found to be environmentally degraded to varying degrees (Gobster and Westphal, 2004; Walsh et al., 2005; Brown and Magoba, 2009). Walsh et al. (2005) terms this phenomenon as "the urban stream syndrome".

Gregory (2006) pointed out that evidence of changing river channels have been recognised with excessive increases or decreases represented in over 200 worldwide studies. These changes have been identified mainly through channel cross-sections where changes in size, shape and composition have been recognised. It is further highlighted that even though the scope of alterations has been established to some extent, challenges arise in projecting what might happen in the future in a specific setting because of the complexity of responses of modified river channels (Gregory, 2006). Undoubtedly, human endeavours have consequently deteriorated the environmental quality provided by river systems (Asakawa et al.,

2004) thus the rivers are only supporting a fraction of their original biodiversity and abundance (Nienhuis and Leuven, 2001). What was once found to be the world's greatest rivers of complex aquatic systems by means of meandering, plaited channels and floodplains have now been modernized into single channels of limited diversity (Gore and Shields, 1995). These modifications of river systems may include among others, actions of over-engineering, pollution, over-abstraction of resources and ineffective management (Nienhuis and Leuven, 2001).

1.1.2 South African Rivers

Among South Africa's natural resources, freshwater concerns arise from the country's natural climatic conditions considered to be a semi-arid region coupled with the steeply rising human demand of population growth (Schlacher and Wooldridge, 1996; CSIR, 2010). River systems sensitivity to this is no exception, in the recognition of its water scarcity, water resource depletion and water degradation (Brooks, 1995).

Most of South Africa's metropolitan areas are located along the watersheds of river catchments, which are found to be seasonal and highly variable (CSIR, 2010). These watersheds thus have a double burden of supplying water and carrying waste material (urban runoff) (River Health Programme, 2005; CSIR, 2010). As such, many of these rivers have been modified to form canals and in addition structural gabions, weirs or levees have been used, especially within urban areas. These rivers have served to alleviate the burdens as well as the risk of flooding in these densely populated areas (River Health Programme, 2005).

1.1.3 Cape Town Rivers

The major disturbances on river systems within the greater Cape Town area are identified as pressures from urban development, storm water quality impairment, inter-basin transfers, alien fish and vegetation infestations, extensive channel and flow modification, loss of riparian zones, mismanaged informal settlement uses, agricultural use, return flow turbidity and nutrient loading (DEADP, 2013). As a result the combination of all the River health indices in the Western Cape Province have reflected the following in terms of the state of surface water resource health for the

province where only 6% of rivers are in a natural condition, 30% are in a good condition, 48% are in a fair condition and 14% are in a poor condition (River Health Programme, 2005; DEAP, 2013).

The inappropriate transformation of some streams does not lessen the value of the urban streams in a general manner as receiving waters and the assessment of urban impacts (Walsh, 2000). The proximity to the source of disturbances however, allows urban streams, which are highly valuable and sensitive systems to be assessed by means of impacts of urban catchment and pathway influences (Walsh, 2000).

1.1.4 Elsieskraal River

The Elsieskraal River rises in the Tygerberg Hills on the farm Altydgedacht from three springs located on the farm. This river however, obtains the majority of its flow from the winter rainfall on the Tygerberg mountain range. The river has a long, meandering pathway through a series of diverse and densely populated suburban areas within the Cape Town metropolitan. As a result the river experiences varying degrees of pollution and urban run-off from the adjacent suburbs. The river spans an approximate total distance of 30 kilometres in length (River Health Programme, 2005). The river and its tributaries channel through the areas of Durbanville, Tygervalley, Parow, Bellville, Goodwood, Elsiesriver, Thornton, Pinelands and Langa until it joins up with the larger Black River and finally makes its way into the Atlantic Ocean (Brown and Magoba, 2009).

1.1.4.1 Brief history of the Elsieskraal River

The Elsieskraal River was once a rural stream up until the end of the 19th century (Brown and Magoba, 2009). The Elsieskraal River has a natural tendency to flood, especially in winter, thus affecting low-lying land of residential developments alongside its banks inflicting flood damage. The Elsieskraal River forms part of the Salt River Catchment within the geographic location of the Cape Flats. During the rainy seasons this catchment can be found to be under water due to the high water table (DiMP, 2005). The intensity of rain during these winter periods greater than 3-4 hour durations have exceeded the 100-year return period in some areas (DiMP,

2005). Human activities, particularly those related to urban development, modify the natural hydrological system of drainage catchments. The hardening of surfaces in developed areas has resulted in increased surface runoff volumes and peak flow rates (DiMP, 2005). Due to the rapid urbanisation and the catchment areas of Cape Town becoming more developed it encroached on the natural activities of the Elsieskraal River (Brown and Magoba, 2009).

Construction to canalise the natural river began in 1945 with the final stages being completed in Pinelands in 1976 (Brown and Magoba, 2009). The aim of the canalisation was to reduce the flood impact and damages especially on residing residents along this perennial channel. To date 65% of the Elsieskraal River has been canalised (River Health Programme, 2005). The canalisation of the Elsieskraal River has contributed to the degradation of its water quality in the river, as the gradient of this river canal is insufficient to “flush” the system. This “flush” often only takes place during high flows, which mainly occur in the rainy, winter season. Furthermore, the aquatic life and vegetation found in and along the riparian edges have been jeopardised immensely (River Health Programme, 2005).

The town council of Pinelands at the time under the Garden City status, decided to spend additional funds on urban amenities such as that of the Elsieskraal River, which was one of the first efforts of its nature in Cape Town. The river had pathways built and trees and shrubs planted alongside its banks. For many years this amenity has served the residents of Pinelands for recreational purposes, yet in recent years the usage has however diminished due to security issues (Brown and Magoba, 2009).

1.1.4.2 Scientific Representation of the Elsieskraal River

According to the River Health Programme (2005) State of Rivers Report, rivers are graded against five simplified data indicators, which represent the larger ecosystem and are feasible to measure. These indicators include the Index of Habitat Integrity (IHI), Water Quality (WQ), South African Scoring System (SASS), Riparian Vegetation Index (RVI) and the Fish Index (FI). The score range arises from a “natural” to “good”, “fair”, “poor” and an “unacceptable” condition.

Highlighting the Elsieskraal River, four of the five river health data indicators all revealed a river health category of "fair" however, the South African Scoring System (SASS) indicator revealed a river health category of "poor". The Elsieskraal River's overall present river health has been allocated within the category of "fair" (River Health Programme, 2005). From an ecological perspective, the categorical indicator of "fair" translates that sensitive species may be lost and that tolerant or opportunistic species dominate the Elsieskraal River. From a management perspective this translates that multiple disturbances associated with the need for socio-economic development occur within the Elsieskraal River. The prospective desired river health remained to be considered "fair". Notably, the recreational and domestic suitability of the Elsieskraal River has been characterized as being a high-risk amenity (River Health Programme, 2005)[1].

1.1.5 Description of the study areas

1.1.5.1 Suburb of Pinelands

The suburb of Pinelands is situated at a geographical location of 33° 55′ 54″ S, 18° 30′ 46″ E and expands a surface area of 5.8 km^2 (Table 1.1 for suburban census overview). The suburb of Pinelands is an area situated in the southern suburbs of Cape Town. The suburb is mainly a residential area boasting a few small business premises. The residential characteristic comprises of flats, townhouse complexes, freestanding houses and old-age facilities. The area also contains two small sized shopping centres, churches and many sport and recreational facilities. The area of Pinelands boasts numerous primary and high schools of both within a governmental and private capacity. The suburb is centrally located and easily accessible to the main routes of the N1 and N2 highways.

Pinelands obtained its name from the row of trees found in the Uitvlugt Forest Reserve. It was the first area to be considered a Garden City in South Africa in February 1922, making it the third Garden City in the world. It was then that the Chairman of Cape Town's Chamber of Commerce, Richard Stuttaford, proposed that a Garden City be established. To date the Garden City of Pinelands has celebrated

[1] The River Health Programme 2005 was the most recent information pertaining to the Elsieskraal River's health and environmental quality by means of data index assessment.

90 years of existence (Watkyns, 2012). The Garden City concept was founded by Ebenezer Howard in 1907 with the idea of each garden city to be a “self-contained town” affording every citizen an opportunity for healthy living and industry (Fifty years of housing, 1972). Pinelands thus had an array of necessary amenities sufficient for its residents; even its own municipality established in 1948. This area thus attracted people from a higher social class. The area of Pinelands evidently merged into the City of Cape Town’s municipality in 1996 (Brown and Magoba, 2009).

1.1.5.2 Suburb of Thornton

The suburb of Thornton is situated at a geographical location of 33° 55′ 25″ S, 18° 32′ 7″ E and expands a surface area of 2.12km^2 (Table 1.1 for suburban census overview). Thornton is a suburban area found in the northern suburbs of Cape Town adjacent to the suburb of Pinelands. Thornton does not have a rich history unlike that of the Garden City of Pinelands. Thornton is a lot smaller with fewer amenities such as shops, schools, churches and recreational facilities. The suburb borders the Jewish cemeteries and incorporates the derelict and unoccupied Conradie Hospital. It has however, easy accessibility to the city centre, railway lines and major road routes and thus a draw card for many residents.

Table 1.1: Composite table of the Pinelands and Thornton suburban census overview compiled from the 2011 census data (Suburban Profiles, 2013).

Suburban Census Overview - 2011	Pinelands	Thornton
Population size	14 198	5 862
Number of households	4 917	1 845
Average household size	2.89	3.18
Predominant ethnicity of population	White (62%)	Coloured (49%), Black African (26%)
Persons 20 years and older who have completed Grade 12 or higher	88%	76%
Labour force (aged 15 to 64) who is employed	96%	94%
Households with a monthly income of R3 200 or less	10%	16%
Households who live in formal dwellings	99.5%	99.6%
Households who have access to piped water in their dwelling or inside their yard	99.8%	99.9%
Households who have access to a flush toilet connected to the public sewer system	99.9%	99%
Households who have their refuse removed at least once a week	99.7%	97%
Households who use electricity for lighting in their dwelling	99.6%	99.7%

1.1.5.3 Socio-economic status (SES) of Pinelands and Thornton

Pinelands and Thornton found within the Cape Metropolitan are found to be in two differing socio-economic status (SES) index categories (City of Cape Town, 2006). Socio-economic status is an important concept to measure the quality of life. To measure the socio-economic status the City of Cape Town municipal areas based on the census data of 2001 on the following indicators were used (City of Cape Town, 2006):

1) Percentage of households earning less than R19, 200 per annum.
2) Percentage of adults (20+) with the highest educational level less than matric.
3) Percentage of the economically active population that was unemployed.
4) Percentage of the labour force employed in elementary/unskilled occupations.

These indicators were combined into a composite indicator by calculating the arithmetical average of the four indicators. The suburb of Pinelands was found to be in the highest category with a SES index of 8.45, whilst Thornton was found to be in the second highest category with a SES index of 15.62 (City of Cape Town, 2006). From the examination of the five SES categories, Pinelands and Thornton were positioned in the top two SES categories respectively. This observation idyllically emphasised that there is a difference in SES of the two areas (City of Cape Town, 2006) [2].

For the purpose of this study, the Elsieskraal River is the common natural resource that meanders through both the suburban areas of Pinelands and Thornton. In addition the portion of the river under investigation in both study areas is canalised. The river lends itself to follow a path in close proximity with the northern and western suburban border of Thornton. The river on the other hand very nearly bisects the suburb of Pinelands from a northeast to a southwest position (Figure 1.1).

[2] The SES index uses 2001 census data and the suburban census overviews use the 2011 census data. The SES index of 2011 census data was not available at the time of this research.

Figure 1.1: Google photograph of Pinelands, Thornton and the Elsieskraal River (Google Maps ©, 2012).

1.2 Statement of the research problem

Rivers, lakes and streams are the only way humans encounter water sources in urban areas, which serve in many instances to remove the metabolic products of the terrestrial ecosystems (Chenje and Johnson, 1996). The significant deterioration of environmental quality of river systems is mainly as a result of an increase in urban activity. Fundamentally environmental problems are in fact social problems and are a result of social behaviour. Social behaviour is affected by amongst other, social, demographic and economic factors (Hunter et al., 2010). Environmental issues are observed as problematic because of their impact on humans as well as other species. The solution to this thus requires a societal effort (Dunlap and Marshall, 2007). Many of the problems associated with environmental quality and management of urban watercourses are as a result of poor public perception (House and Sangster, 1991). It is essential to obtain detailed information on the character and correctness of local environmental perceptions in order to better understand how the public view environmental quality (Pendleton et al., 2001). The findings of this study will help to

improve and shape the local environmental management of rivers and river corridors in a sustainable manner and thus improving the overall river health.

1.3 Research question

Does a difference in socio-economic status of people influence their perception of the health condition of the Elsieskraal River?

1.4 Aim and objectives

Aim

The main aim was:

- To identify whether a difference in socio-economic status is an influential factor in people's perception of environmental quality.

Objectives

The objectives of the research were:

- To determine whether the Elsieskraal River has a perceived low environmental relevance and quality (health and aesthetics).
- To determine what sensitizes people about issues relating to the natural environment.
- To identify people's uses and perceptions of the Elsieskraal River corridor and its importance to the enjoyment as a recreational space.

1.5 Significance of the research

The recognition and significance of river systems in urban areas and the role they play in providing humans with water essential for their livelihoods is necessary. However humans have exploited these water bodies to varying degrees from over engineering, pollution, resource abstraction and ineffective management to satisfy their needs. These endeavours have resulted in the degradation of environmental quality these valued ecosystems provide. Attempts to manage the issues of environmental degradation, through channels of protection, rehabilitation and

restoration, the acknowledgement that social and economic components to better understand environmental quality are needed. The social component is achieved through public participation of individuals and communities. Public participation is therefore achieved by studying and acting on people's values, behaviours and perceptions of environmental quality of river systems.

The expected outcomes of the research were to gain a more in-depth understanding of how people's perceptions affect the wellbeing of a river system, with emphasis on the socio-economic status of people. This study of environmental quality perceptions can assist environmental managers, planners and educators identify the gaps between the scientific environmental conditions and what people's perceived awareness and knowledge about environmental quality are (factual versus perceived). The findings of this research has aided in a better understanding of people's perceptions about their environmental quality and also offered important guidance for developing appropriate and effective environmental intervention strategies. Through this the conservation value and health of rivers and river corridors are better restored. The final thesis and its findings shall be made available to the City of Cape Town Environmental Management Department for their use.

CHAPTER TWO

LITERATURE REVIEW

This chapter is designed to focus around two main sections namely, environmental perception and river systems. The first section concerning environmental perception inherently expands itself to the factors that are identified to contribute to a person's perception with emphasis on water resources. The second section highlights the importance, influences, implications and management challenges faced concerning river systems. Discussion however, also extends to describe the current freshwater ecosystem health and fitness for use by means of indicator assessments. Concluding each main section, environmental perception and water source systems are perceived from within a South African context.

2.1 Environmental perception

Interest of perception of the environment is not in the neurological and physical aspects of perception but in what is called social perception (Schiff, 1970). Environmental problems can be seen as social problems and are a result of social behaviour. Environmental issues are observed as problematic because of their impact on humans as well as other species. The solution to this thus requires a societal effort (Dunlap and Marshall, 2007). Although the public may not possess the necessary formal knowledge about relevant environmental issues, they have a strong preference to certain environmental features which may be different to those considered by councillors and environmental organisations that represent them at a more formal consultation level (House and Fordham, 1990). In order to improve societal knowledge, perception and awareness are key aspects in establishing an in-depth understanding of these human-environment relationships (Pendleton et al., 2001; Dunlap and Marshall, 2007).

As Schultz et al. (2005) stated, "The way in which an individual observes and/or assesses environmental issues is environmental perception, whereas the affect or reaction associated with the environmental problems such as the resource availability, accessibility, and/or environmental quality refers to environmental concern". Therefore environmental concern is a significant part of the larger concept of environmental perception (Hunter et al., 2010). Issues relating to environmental

concern around the world are not consistent, highlighting the need to better understand the local perceptions and priorities of people into better shaping programmes dedicated to alleviating local environmental concerns (Hunter, 2006). Local environmental concern revolves around livelihoods, socio-economics and the individual experience, whilst extensive international concern reveals the globalisation of human concerns (Hunter et al., 2010).

The public has the ability to directly affect the quality of the natural environment through their behaviours, which may depend on people's perception of the environment (Pendleton et al., 2001). After all it is the public that live beside, use or benefit from the products of local environmental resources (House and Fordham, 1997). What is more, efforts to seek a better understanding of how individuals form their perceptions about environmental quality and how accurate these perceptions are in reality are essential (Pendleton et al., 2001). Ultimately, "the notion of environmental perception captures multiple processes which take place at that point where objective reality, individual personality, and household, community and societal levels collide" (Izazola, 1998).

There are a number of variables involved in developing individual perceptions. Factors influencing perceptions thus vary from study to study, to a large extent because different studies have considered different variables based upon their original hypotheses (de Franca Doria, 2010).

2.1.1 Factors that are identified to contribute to an individual's perception

2.1.1.1 Ethnicity

Conventional understanding has been that concern for the environment is largely a "white" issue (Mohai and Bryant, 1998). They also observed that while there seemed to be racial differences when the issue was about environmental conditions in neighbourhoods, these dissimilarities appear to be related to the greater likelihood of African-Americans living in poorer environmental conditions than to "whites" (Mohai and Bryant, 1998). Anderson et al. (2010) also established these distinctions between Blacks and Whites, Asians and Coloureds. The concern of environmental quality was higher for Whites, Asians and Coloureds, which may be attributed to their higher socio-economic living conditions (Anderson et al., 2010).

2.1.1.2 Gender

Females are sometimes found to be more concerned about environmental issues than males (Dunlap and Marshall, 2007). House and Sangster (1991) observed distinct differences especially with mothers with young children, predominantly from a safety perspective with regards to environmental concern. This observation is further emphasized that women are nurturers and caretakers whereas men are socialized to be breadwinners and provide economic stability for the family (Mohai, 1997). Females too however, were more likely to make the effort to attend public meetings or hearing about the environment than their male counterparts (Theodori and Luloff, 2002). White and Hunter (2005) on the other hand discovered that men were more likely to express priority for environmental preservation.

2.1.1.3 Misperceptions

Misperceptions arise around the environmental quality of water, stemming from the fact that most people do not view water quality as an important issue. Respondents more than often ranked water quality behind crime, education and air pollution as issues of environmental concern in a study of ocean water quality (Pendleton et al., 2001). The authors found that 66.75% of respondents rated air pollution as a more important issue than that of ocean water quality. In another study Anderson et al. (2010) also found issues related to social aspects (crime, poverty and inequality) take preference over issues relating to the environmental concern of resources. The choice of indicators however, selected to form judgements and how they are ranked, have both been found to vary with access to the problem, personal use of the resource and socio-economic factors (Faulkner et al., 2001). This is because these factors are likely to condition misperception of the science underpinning the problem, affecting the accuracy of perception (Faulkner et al., 2001).

2.1.1.4 Past experiences

Prior personal experience provides the basis for the interpretation of new information and can have a strong effect on perceptions pertaining to environmental quality, among many other variables. Furthermore, personal experience is not always

positive and neutral and adverse experiences can also influence perception, leading to an increase in risk judgement (de Franca Doria, 2010). Direct experiences have a stronger influence on people's behaviour than indirect experiences (Kollmuss and Agyeman, 2002). A study in risk perception has demonstrated that people who are familiarised with harmful substances or activities related to environmental degradation perceive them to be less risky (Slovic, 2000).

2.1.1.5 Users of resources

The demand that an individual places on a resource may affect their perception. This may be attributed to the fact that people's relation to water is different (permanent or occasional users, residents or mere observers) (Moser, 1984). Studies have found that user group perceptions regarding the use of a river (leisure and recreation) varied dependent on the individual needs (Ditton and Goodale, 1973; Moser, 1984; House and Sangster, 1991). These may be classified as contact (canoeists and swimmers), non-contact (anglers and rowers) and remote contact (walkers and picnickers) user groups (Ditton and Goodale, 1973; House and Sangster, 1991). Evidently, the remote contact users displayed perceived quality scores as clean compared to that of the non-contact group users as polluted and dirty (Ditton and Goodale, 1973; House and Sangster, 1991). In a study conducted by Asakawa et al. (2004) relating to the perception of rehabilitated urban stream corridors in Japan, it was found too that different groups perceived the resource differently. The authors categorized the user groups as the passive group, recreation interested group and the participation-orientated group.

2.1.1.6 Knowledge and trust of information

Exposure and access of information about environmental issues and the quality thereof are understood to contribute to the difference in perception of individuals (Pendleton et al., 2001). Respondents reveal that media coverage (via numerous sources) is found to generate information and societal attention regarding environmental issues, especially concerns connected to geographically broader environmental issues (Pendleton et al., 2001; White and Hunter, 2005; Dunlap and Marshall, 2007; Lepesteur, 2008) It has been found that across an overall range of

environmental issues of varying density; university scientists are the most trusted followed by non-governmental organisations (NGO's), medical doctors, consumer organisations and neighbours and family members in relaying relevant and accurate environmental information. The least trusted sources of environmental information however were found to be tabloid newspapers followed by governments and their ministries (Johnson and Scicchitano, 2000; Slovic, 2000; Sjöeberg, 2000; Ropeik, 2002).

2.1.1.7 Habituation

Individuals can become so habituated to the given set of circumstances in which they live, that they are unable to perceive their shortcomings in their local settings (Anderson et al., 2007). Additionally, the repeated presentation of the stimuli leads to a decrease or disappearance of the response originally made (Schiff, 1970). In a study by White and Hunter (2005) it was found that lifetime community residents do however perceive local environmental quality as poor. This may be attributed to the fact that observations of improvements "good" or "bad" of environmental quality have been viewed over a longer period therefore raising their sensitivity (Langlois, 2012). Challenging this, as suggested, for people to admit they live in a less than wholesome neighbourhood challenges their self-image which may pressurize their long standing relationships within their immediate surroundings and how they perceive them (Anderson et al., 2007; Guedes et al., 2013).

This may be further emphasised with regards to an individual's proximity (local or distal) to the environmental issue under question within a community setting and their views thereof (White and Hunter, 2005; Hunter et al., 2010; Langlois, 2012). In a study conducted on respondents in Green Bay, Lake Michigan it revealed that proximity was found to affect the responses concerning the quality of water in the bay (Ditton and Goodale, 1973).

2.1.1.8 Access

Faulkner et al. (2001) observed that locational and access indicators including visitation frequency affected perception of individuals. Furthermore, the authors

found that those individuals were found to be the most reliable reporters of the degree and extent of the issue as well as the success of any management efforts. In another study issues relating to the access of waterways included aspects of convenience, visual-physical access, public land ownership, equal access among groups and access into and out of the water affected the perceptions of individuals (Gobster and Westphal, 1998).

2.1.1.9 Attachment

The idea of attachment emerging in the context of residence and belonging (Brehm et al., 2009) reveal that new in-migrants generally exhibit lower levels of attachment to an amenity, predominantly for their shorter tenure within the community (Kitayama and Markus, 1994). However, the new in-migrants may have relocated to the area and are drawn to the natural amenity settings thus their perceived quality of life are found to be similar to those experienced by residents who have resided in the area for a longer period (Brehm et al., 2009). This may alter the views of environmental quality within an area. Low-income in-migrant households concerns with land and home ownership (urban setting) obscure any other environmental perceptions, whilst long-term, low-income respondents tend to perceive that migrants are the cause of negative environmental change (Izazola et al., 1998). A study conducted by Izazola et al. (1998) raised the important question of what determines whether individuals may migrate out of, or remain in, urban areas in the face of urban environmental deterioration.

In a study by Hay (1998) he observed that respondents with the strongest sense of place held generational, social and cultural ties to the land and the community, whereas tourists and transients with limited residency were less inclined to report strong and emotional ties. People develop a type of attachment to some places on public land that constitutes a unique “sense of place” that involves emotional connections and intense caring for these landscapes (Burmill et al., 1999; Eisenhauer et al., 2000). These emotional attachments to places are important for ecosystem management strategies (Eisenhauer et al., 2000).

2.1.1.10 Sensory information (organoleptics)

Although visual and odorous characteristics provide a limited viewing platform in relation to actual physicochemical or biological quality, House (1996), Gobster and Westphal (2004); Nare et al. (2013) found them to be important factors in the perception of water quality and its suitability for use. Sensorial factors (water clarity, colour, movement and odour as well as the absence or presence of floating debris and aquatic plants) within a river setting were found singularly or cumulatively to contribute to the water quality perception of individuals (Moser, 1984; House and Sangster, 1991; Gobster and Westphal, 1998; Stedman and Hammer, 2006; Nare et al., 2013). Of these factors, Moser (1984) points out that odour and the presence or absence of floating debris are found to be the most sensitive criteria used when water quality is estimated, whilst colour and movement were found to be of lesser importance.

Studies conducted by way of fish identification found in river systems revealed a strong perceived water quality of good (very clean and less polluted) than those where fewer or dead fish were found (Moser, 1984; House and Sangster, 1991). The identification of fish reassures the idea of a healthier river even though it may be polluted (Gobster and Westphal, 1998). Even in a case of particularly polluted water, where the reproduction of fish was endangered, 83% of the individuals mentioned the presence of fish (Moser, 1984). Summaries of interviews show clearly that the presence of fish reduces the harshness of negative judgments (Moser, 1984).

2.1.1.11 Aesthetics

Water in the landscape has been found to have beneficial psychological and physiological effects in providing important aesthetical and restorative health needs to people (Chenje and Johnson, 1996; Burmill et al., 1999). Water also provides in some accounts from a recreational perspective places with information, clues, prospects and promises of excitement and involvement (Burmill et al., 1999). Gobster and Westphal (2004) observed aspects of peace and solitude and the contrast to the built-up urban background from participants concerning the river environment. These authors continue that it was especially important for restorative opportunities in a busy urban lifestyle.

Vegetation found near waterways has been observed primarily to aid in creating an aesthetic component to the area followed by more ecological benefits (reducing erosion, flood control and pollution filtration) and the creation of a wildlife habitat (Kenwick et al., 2009). In a study by Gobster and Westphal (2004) comments from participants referred to the natural environment with vegetation and wildlife particularly adding to the experience of the river. These authors continue that in the more urban areas "tended nature" of landscaped trees, grass, flowers and other greenery was a valued feature.

2.1.1.12 Development

Developments of water bodies (lakes, rivers and oceans) are strongly associated with human perceptions of decreased water quality (Stedman and Hammer, 2006). The authors continue to add that people tend to express high levels of concern about development and the impacts of this type of growth, yet the concept of the development is often suppressed in the desire to 'protect the environment'.

2.1.1.13 Connectedness to nature

The perceived separation of humans and nature may tend to cloud people's perceptions of nature. Adding to this, the value a person places on the environment may affect their views, especially when dealing with what constitutes natural and unnatural environments (Vining et al., 2008). In a study conducted by Vining et al. (2008), it revealed that the majority of people might consider themselves part of nature; however the natural environment was largely described as a place with minimal human interference. It is further emphasised that the connection an individual feels with nature cannot possibly be altered, but perhaps making people more aware of their views would possibly lead to conscious thought on the issue at hand (Schultz et al., 2004).

2.1.1.14 Political views

People with liberal political ideologies were more likely than their opposition to maintain proactive positions on environmental issues (Theodori and Luloff, 2002; Dunlap and Marshall, 2007). Furthermore, the authors add that the politically liberal people are more likely to contribute money towards environmental endeavours than their counterparts.

2.1.1.15 Socio-economic status (SES)

A main characteristic far reaching in peoples' perception is that of their socio-economic status, hereafter referred to as SES, a challenging and rather debatable issue to conceptualize (Theodori and Luloff, 2002; Gelissen, 2007; Franzen and Meyer, 2010; Guedes et al., 2013). Clarifying this, the examination of SES has been surrounding two hypotheses for over 20 years having started in the early 1990's and to date not yet resolved (Guedes et al., 2013). These two hypotheses support their positions in their own right, based upon cross-national comparisons. The first theory by Inglehart (1995) centred upon Maslow's hierarchy of needs (food, shelter and safety) argues that the poor whose basic daily needs are not fulfilled fail to be concerned about the environment and its protection. As members of society become more affluent they strive for better economic goals, termed to be "post-materialist" values that may include political freedom, individual self-fulfilment and environmental protection (Inglehart, 1995). Others have built on this post-materialist hypothesis in that environmental quality is seen as an amenity good for which high SES individuals can more readily afford than those individuals with a lower SES (Franzen and Meyer, 2010).

The conflicting theory by Dunlap and Mertig (1995; 1997) argues that environmentalism is independent of SES and that both the wealthy and poor exhibit high levels of concerns for the environment. Brenchin and Kempton (1994) and lately Gelissen (2007) support this argument stressing that high levels of environmental concern among poorer countries challenge the conventional understanding that individuals in developing countries lack environmental values. Even though the poor are less likely to favour environmental choices over environment-economic trade-offs they are prepared to volunteer time for the improvement of the environment

compared to those of their wealthier counterparts (Brenchin and Kempton, 1994). Furthermore, the authors argue that the observed reluctance to pay for protection by disadvantaged individuals is not a lack of environmental concern but a lack of monetary resources (Brenchin and Kempton, 1994).

Recently, the notion on a global scale of the observable environmental degradation by both developed and undeveloped countries realises that it is no longer a phenomenon limited to wealth but one encompassing all nations around the world. This enlightenment has been termed the global environmentalism hypothesis (GE) (Dunlap and York, 2008).

2.1.1.15.1 Age

Younger individuals are more proactive with regards to concerns involving environmental issues (Theodori and Luloff, 2002; Dunlap and Marshall, 2007) and who tend to expand their concern on a broader geographical scale (White and Hunter, 2005). On the other hand older individuals tend to be concerned about issues mainly found locally and within their community surroundings (White and Hunter, 2005).

2.1.1.15.2 Income level

People with a higher income tend to be more environmentally proactive with regards to environmental issues (Theodori and Luloff, 2002; Guedes et al., 2013). Furthermore, people with higher incomes are more likely to contribute money or time to an environmental or wildlife conservation group (Theodori and Luloff, 2002).

2.1.1.15.3 Education level

People who are more educated disclose to be more concerned about environmental issues and the forming of perceptions of the presence or absence of environmental contamination (Kollmuss and Agyeman, 2002; Theodor and Luloff, 2002; White and Hunter, 2005; Anderson et al., 2007; Dunlap and Marshall, 2007). Education for the environment relating to the sensitivity and concerns regarding the improvement and

maintenance of environmental quality is necessary in developing lifestyle promotions that are compatible with the sustainable and equitable use of resources (Fien, 1992). This evidently is achieved through channels of environmental education especially at school level (Emmons, 1997, de Franca Doria, 2010). Educated individuals tend to offer concern not only for their local issues but also tend to offer opinion on issues on a larger geographical scale (White and Hunter, 2005). As Kollmuss and Agyeman (2002) highlights, the longer the education, the more extensive is the knowledge about environmental issues. More education as these authors continue to add does not necessarily mean increased pro-environmental behaviour.

These income generating activities (age, income and education) conversely shape household reliance on local resources and the engagement within the formal labour market. Since wages earned in the formal market often allow the purchase of substitutes the concept of environmental shortages may be less of a concern (Hunter et al., 2010).

2.1.1.16 Environmental perception in South Africa

According to Anderson et al. (2007) there does not seem to be high levels of awareness about environmental concern regarding a variety of issues in South Africa. These concerns may include land degradation, water and air pollution and deforestation, to name but a few, even though emphasis is given to these concerns in the constitution and by the present government of South Africa (Anderson et al., 2007). In the South African context, the population is more concerned with issues relating to unemployment, HIV/AIDS, high crime rates, poverty in rural areas and growing inequality. These may be possible reasons for a low percentage of households who perceive environmental concerns as a community problem (Anderson et al., 2010). The authors go on to say that, with regards to the South African population, it does not differ significantly with that of other regions around the world.

South African regulation acknowledges the need for stakeholder participation (through channels of awareness, behaviour and perceptions) in future planning. With emphasis on The White Paper on Environmental Management Policy of South Africa (1998:80) it publicizes that “government must give high priority to environmental

concerns at all levels of decision making. Government must provide adequate opportunity for participation in environmental governance. Promoting environmental understanding will increase the capacity of people to participate effectively in environmental decision-making".

Research conducted in South Africa have studied perceptions of people mostly residing in informal settings such as Mamelodi in Pretoria (Darkey et al., 2000); Mizamoyethu in Cape Town (Ballantyne and Oelofse, 1999) and a study area in the far northeast of South Africa (Hunter et al., 2010). Four main themes emerged in a case study where perceptions of environmental quality may be improved in Mizamoyethu, Cape Town. These improvements included aspects of the natural environment; services and facilities; personal and community security; and employment opportunities (Ballantyne and Oelofse, 1999).

This study will however explore the perceptions of affluent urbanised areas within the city of Cape Town, South Africa. Individuals residing in urban areas are found to be more engaging and politically active compared to those people living in more informal and rural areas (Dunlap and Marshall, 2007). The knowledge gained about the state of environmental issues among politically active groups is of high relevance to trigger countrywide social change (Guedes et al., 2013). On the other hand according to White and Hunter (2005) urban residents were less likely to prioritize resource-based livelihoods (farming, fishing, forestry) and may therefore see fewer adverse environmental consequences of economic growth.

Even though concerns about the environment are worldwide, South Africa offers a special setting to examine public perceptions regarding environmental quality. This may be attributed to the history of the country and the restructuring on a political, economic and social front (Lumby, 2005; Anderson et al., 2007; Anderson et al., 2010).

2.2 River systems

Global concerns relating to environmental issues have been emphasized in recent decades as a result of an increase in industrialisation and urbanisation (Moser, 1984; Chenje and Johnson, 1996). The rapid growth in human populations as well as economic growth has led to the over exploitation of natural resources and in

particular added a new dimension to the demand and availability of water (Chenje and Johnson, 1996). Rivers, lakes, dams and streams are at large are the only way humans, especially those living in urban areas encounter water sources (Chenje and Johnson, 1996). These water bodies are tightly linked to their surroundings as nearly all major cities have been built along river corridors (Baschak and Brown, 1994; Chenje and Johnson, 1996). Evidently, in many instances these water sources are a cheap and convenient way to remove the metabolic products of terrestrial ecosystems and atmospheric pollutants (Chenje and Johnson, 1996) and thus are good indicators of cumulative impacts (Hunsaker and Levine, 1995). This may be more apparent where these water bodies cross heavily populated areas (Chenje and Johnson, 1996).

2.2.1 Importance of river systems

Freshwater habitats are vital in supplying water for homes, towns, farming and industrial communities and are a major asset for recreational, tourism and spiritual activities (Nieinhuis and Leuven, 2001; River Health Programme, 2005; Dunlap and Marshall, 2007; Riethmuller, n.d.). For many individuals, rivers have a special place in their memories and form a deep reminder of a ‘sense of place’ and ‘belonging’ within a community setting (Burmill et al., 1999; Eisenhauer et al., 2000; Riethmuller, n.d.). According to Constanza et al. (1997) much greater value is placed on freshwater aquatic habitats than those of the terrestrial kind. Notably, these authors recognised that the total goods and services estimated by a variety of ecosystems, revealed a proportionally high value pertaining to freshwater habitats (wetlands, lakes, rivers etc.). These freshwater ecosystems despite their relatively small occupancy of surface area were compared to those of other ecosystems (oceans, forests, deserts etc.) (Constanza et al.,1997).

2.2.2 Canalisation of rivers

Canalisation of rivers has been a core component of engineering endeavours to alter river courses for the purpose of human needs. The complex river ecosystems were therefore fragmented and floodplain land was reclaimed for urban and industrial purposes (Nienhuis and Leuven, 2001). The main purpose was for navigation,

regulated by weirs and sluices in order to control water resources (damming and extraction) and create flood defences (consequential to soil compaction and high volumes of runoff from urban and industrial development) (Booth and Jackson, 1997; Walsh, 2000; Nienhuis and Leuven, 2001; River Health Programme, 2005; Brierley, 2008). Canal modifications of rivers in these urban and industrial areas have led them to be observed as open gutters carrying waste and storm water drainage away from the urban environment (Walsh, 2000; River Health Programme, 2005). The perception of urban streams as open drains may explain their lack of attraction as a subject to study and have been problematic because of the perceived obscure distinction between their status as receiving waters or as part of the urban drainage system (Heaney and Huber, 1984; Walsh, 2000).

2.2.2.1 Implications of river canalisation

The implications of river canalisation have shown to be unsustainable mainly due to the fact that no consideration has been given to ecosystem values. It shows no harmonious relationship with humans and nature, but more of a "command and control tactic" displaying a sense of dominance of human endeavours over natural systems (Holling and Meffe, 1996; Hillman and Brierley, 2005).

Canal modification not only encroaches on the river itself but also the river corridor affecting a number of natural systems. This may firstly, include the increase in delivery of water and sediments through the widening and change in gradient of rivers. Secondly, the clearing and depletion of in-stream and along-stream vegetation that is necessary for the stabilization, purification, temperature control and nutrition of the water. Thirdly, the river fauna and their habitats having been fragmented and their availability and functionality hindered within the modified river corridors (Booth and Jackson, 1997; Walsh, 2000; May, 2006; Brierley, 2008). According to Nienhuis and Leuven (2001), man's most dramatic impact on fluvial systems is canalisation and that 75% of rehabilitation projects are dedicated to channel morphology. Furthermore, the maintenance costs associated with canalisation developments greatly exceed the initial costs of implementation that have brought about unnecessary environmental damage (Brierley, 2008).

2.2.3 Water pollution

Waste is generated from all species in differing volumes; humans specifically however, produce a far greater quantity and variety (Dunlap and Marshall, 2007). This may include components of waste generated from agricultural, industrial and household activities (sewage, heavy metals, litter, pesticides, fertilizers and oils) (Chenje and Johnson, 1996). The environment in which we live serves to absorb and recycle the waste generated into less harmful substances, yet the increasing production exceeds the environments capacity to absorb them resulting in pollution (Dunlap and Marshall, 2007). In highlighting the issue of water pollution, pollution thus enters water bodies therefore impacting negatively on the productive capacity of the natural water source essential for the consumption of people and their livelihoods (Chenje and Johnson, 1996). Water pollution thus arises through the behaviour of members of society and is influenced by socio-economic factors (Moses, 2006).

Pollution entering water bodies can be released through surface and underground water storage by land overflow, seepage, percolation and leaching, hence making it difficult to identify (Le Moigne et al., 1994; Chenje and Johnson, 1996). The pollution entering these systems may also be released in varying forms, namely that of a gaseous, liquid or solid state (Chenje and Johnson, 1996; Tanyanyiwa and Mutungamiri, 2011). Water pollution can be classified as, point source and non-point source pollution.

2.2.3.1 Point source pollution

Point source pollution refers to pollution that is found to be discharged from an exact, often discrete, identifiable location (Chenje and Johnson, 1996). This type of pollution mainly arises from industrial, mining and municipal activities. The control of point source pollution before discharge, through on-site treatment is easier to control than that of non-point source pollution (Le Moigne et al., 1994; Chenje and Johnson, 1996).

2.2.3.2 Non-point source pollution

Non-point source pollution refers to pollution being discharged from unidentified scattered sources (intentional or unintentional) (Chenje and Johnson, 1996). This type of pollution comprises mainly of run-off from urban and agricultural activities. Non-point source pollution is inevitably harder to control thus zoning regulation has been used for controlling non-point sources from land use activity in urban areas (Le Moigne et al., 1994; Chenje and Johnson, 1996).

2.2.3.3 Implications of water pollution

Water pollution may affect the quality of water entering river systems to varying degrees. Some possible contaminants, which may affect the water quality these vital water systems provide, are firstly, heated water (nuclear and industrial plants) may increase the temperature entering the system, scientifically reducing the dissolved oxygen content and promoting faster growth of organisms. Secondly, sedimentation (erosion of urban, mining and agricultural activities), suspended sand and silt carrying absorbed pollutants (pesticides, fertilisers, heavy metals and toxic matter) contributing to variations in the turbidity and pH level of the system. Thirdly, the increase of nutrients (fertilizers, industrial production and sewage) namely nitrogen, phosphorus and ammonia stimulating the increase in plant production resulting in high levels of eutrophication. Fourthly, pathogens (urban runoff, inadequate sanitation infrastructure, livestock grazing and waste disposal) posing numerous health risks (e.g. diarrhoea, cholera, typhoid, worms and respiratory and skin problems) and the well-being of the users. Lastly, the profusion of litter (refuse bin spill overs, dumping grounds and a lack of sanitation facilities) which is not easily biodegradable affecting the aesthetical aspects and ecological productivity offered by these water sources (Le Moigne et al., 1994; Chenje and Johnson, 1996; Booth and Jackson, 1997; Booth et al., 2004; River Health Programme, 2005; Moses, 2006; CSIR, 2010; Tanyanyiwa and Mutungamiri, 2011).

The enormity and conceptualization of the impacts resulting from water pollution are vast. Societal commitment and action are essential in attempting to remedy the problem, if the global realisation of the necessity of water as a vital resource for

economic growth and livelihoods are to be attained (Le Moigne et al., 1994; Chenje and Johnson, 1996; River Health Programme, 2005).

2.2.4 River management challenges

The acknowledgement in recent decades that there is a definite need for public participation in sustaining the effective management and rehabilitation processes of rivers and river corridors has been found (House and Fordham, 1997; Asakawa et al., 2004; Brierley, 2008). Many problems associated with the management of watercourses in particular are the product of poor public perception e.g. with regard to dumping (House and Sangster, 1991). Pendleton et al. (2001) found that people do not view storm water, sewage, or biological contamination as the primary sources of water pollution. It is for this reason that Karr (1991) points out, that the advances in river assessment and management has come about through the recognition that water resource problems involve biological, physical and chemical components and more recently the addition of social and economic aspects. The interdependence between river health and quality and humans reveals that water policy, legislation and management of rivers require an effective balance between using the rivers and sustaining their environmental condition and protection (Riethmuller, n.d.; River Health Programme, 2005; Moses, 2006). It is for this reason that individual and community understanding of the potential impacts of their actions on river conditions is vital in order to aid in rectifying the problem (Riethmuller, n.d.).

To rehabilitate, restore and protect rivers is globally an immense challenge (Booth et al, 2004). Rehabilitation is possible; however it can be a lengthy process requiring significant financial input and commitment from stakeholders (River Health Programme, 2005). Most management projects set out to endorse these changes are often small-scaled, local or regional initiatives (Nienhuis and Leuven, 2001). Considering this, genuine societal commitment is needed to achieve management goals and the shaping of programmes at a local level, seeking the need for public participation (Hunter, 2006).

In the past public engagement involved consultation with formal interest groups and local politicians, on the assumption that their sentiments are the same and representative of the population at large. This however suggests that such

representation has the affinity to concentrate on issues of high public profile and those that they are personally concerned with, whilst the views of the 'ordinary person' tend to be ignored (Smith, 1994; House and Fordham, 1997; Booth et al., 2004). Brierley (2008) emphasises this logic, whilst top-down, politically driven viewpoints may set the agenda, bottom-up, participatory practices and understanding are essential to the implementation of sustainable practices.

Public participation is necessary for successful improvement and has been recognised in various parts of the globe. According to a case study conducted in Australia the involvement of communities has been vital to the success of regional river health programmes to date (Riethmuller, n.d.). The majority facilitated by regional catchment authorities through channels of media, field and training workshops and demonstrations on property-owners properties. The centre of which evidently arises from the partnership agreements with property-owners (Riethmuller, n.d.). In another study conducted on the urban greenway system of Sappora, Japan, five important factors of stream corridor perceptions emerged. These factors were identified as "recreational use", "participation", "nature and scenery", "sanitary maintenance" and "water safety" as part of improvement technologies (Asakawa at al., 2004). Gobster and Westphal (2004) found similar perception dimensions of "cleanliness", "naturalness", "aesthetics", "safety", "access" and "appropriateness to development" in a study conducted along a river in Chicago.

Designs of piecemeal and fragmented actions will not achieve sustainable success in management goals (Booth et al., 2004; Brierley, 2008). Not only must biologists of various sub disciplines interact with scientists such as hydrologists, ecologists and geo-morphologists, but social science knowledge about human values, perceptions, behaviours and institutional culture also need to be integrated into the science that guides river management (Naiman et al., 2002; Brierley, 2008). In the not too distant future, urban growth will force many more areas to address these participatory questions, hopefully with better tools at their disposal (Booth, 1991; Naiman et al., 2002).

2.2.5 River health

The need for evaluating river quality has been brought about by the observable decline in environmental quality of rivers in efforts to rehabilitate, protect and restore (Booth et al., 2004) their functionality and productivity (Chenje and Johnson 1996). 'River health' is the overall condition of the river (River Health Programme, 2005). The term can be comparable to the health of a person or an economy (River Health Programme, 2005). As Karr (1999) points out "health' is grounded in science yet it speaks to citizens. As the author continues, applying this concept of health to rivers is the logical outgrowth of scientific principles, legal mandates and changing societal values.

The health of rivers are assessed by a type of index scoring system selected to measure selected ecological indicator groups that represent the environmental condition of the larger ecosystem within these water bodies. The data collected is simplified and represented as indices that are scored accordingly into categories (River Health Programme, 2005). The objective of this assessment is necessary to monitor the changes in environmental quality of river systems, especially the unacceptable ecological deterioration. Furthermore, it aims to reflect the effectiveness of existing river management policies, strategies and actions (River Health Programme, 2005; Burger, 2010). This form of assessment serves as a comparison of many sites thought to be similar, compared to a threshold considered to be 'normal' otherwise known as a reference condition or a 'control' (Norris and Thoms, 1999; River Health Programme, 2005). Although ecosystems need not be pristine, few are now a day, due to large-scale changes (acid rain, global pollution and the hole in the ozone), yet they may still be judged as healthy with regards to certain ecological criteria (Chapman, 1992).

2.2.5.1 Benefits of using the river health index assessment

The river health index assessment approach offers a reduction in costs compared to previous methods used (Norris and Thoms, 1999). There is also a prompt turn-around and summary of results collected from the on-site surveys. These results are objectively and scientifically presented into an index scoring system and categorized (Norris and Thoms, 1999). This information has been beneficial in managing to

communicate complicated scientific findings into a broadly understandable manner, for the benefit of specialists and non-specialists a-like (Norris and Thoms, 1999; River Health Programme, 2005). Other countries around the world, in particular Australia, United Kingdom and the United States have implemented various index scoring system assessments to identify changes in the environmental condition of river systems with success (Norris and Thoms, 1999).

The River Health Programme (2005) State of Rivers Report explains the simplified indices as follows:

Index of Habitat Integrity (IHI)

The IHI assesses the impact of human disturbance on the riparian and in-stream habitats of the aquatic biota. The availability and diversity of habitats are major determinants of aquatic biota that are present in a system.

Water Quality (WQ)

Water quality indicates the suitability of water for aquatic ecosystems. This assessment is based on the total phosphate, nitrogen, ammonia and dissolved oxygen measured in water samples taken from each sampling site.

South African Scoring System (SASS)

SASS is a relatively simple index, based on different invertebrate families found at a site. Aquatic invertebrates (e.g. insects) require specific aquatic habitats and water quality conditions. They are good indicators of current localised conditions in a river.

Riparian Vegetation Index (RVI)

The RVI is a measure of modification of riparian vegetation from its natural state. Healthy riparian zones help to maintain the form of river channels and serve as filters for sediment, nutrients and light. Plant material from the riparian zone is an important source of food for aquatic fauna.

Fish Index (FI)

Fish are good indicators of long-term influences on general habitat conditions within a range. The FI is a benchmark to which a fish assemblage differs from its undisturbed condition.

Domestic and recreational use

The water quality fitness and suitability for domestic and recreational use and the risks posed are assessed. Faecal coliforms or *Escherichia coli* are used to assess the suitability.

These indices are then categorised according to acceptability from a “natural condition” to a “good condition”, “fair condition”, “poor condition” and finally to an “unacceptable condition” (River Health Programme, 2005).

2.2.6 Perspective of water sources in South Africa

The main factors contributing to the deterioration of water quality in South Africa’s freshwater systems are municipal sewage effluent, salinization, eutrophication, disease-causing micro-organisms, mine drainage acidification, toxic organic pollutants, agricultural chemicals, water abstraction, litter, storm water run-off and invasive alien plants (Burger, 2010; CSIR, 2010). Furthermore, the driving force of river system degradation are the dense rural populations and extensive urban informal housing developments governing land use patterns which don’t have access to effective sanitation systems (River Health Programme, 2005; CSIR, 2010). Evidently only the upper reaches of these systems within the mountain ranges have been spared these impacts, whilst the lower regions effects are intensified as they make their way to the ocean (River Health Programme, 2005). The historical legacy has served to amplify the total effects of water quality degradation on the water resources in South Africa by previous political systems. These are attributed to occurrences such as negative labour practices, unemployment, migration, housing, poor education and sanitation services (Moses, 2006, CSIR, 2010).

South Africa’s legislation (the Water Services Act No. 108 of 1997, the National Water Act No. 36 of 1998 and the National Environmental Management Act of 1998) provides an excellent legal framework for managing the country’s water resources and providing adequate water of suitable quality at a reasonable price to meet human needs. It is clear however, that the shortage of skills and funds, institutional ineffectiveness at many levels, and a lack of specific water treatment technologies, have made it particularly difficult to resolve all of the problems and accomplish the

goals and applications to which the legislation aspires (River Health Programme, 2005; CSIR, 2010).

The National Aquatic Ecosystem Health Monitoring Programme (NAEHMP) and in particular the River Health Programme (RHP) is regarded as the “flagship” for water monitoring in South Africa (Burger, 2010). The objective thereof is to develop a national perspective and an information base to report the ecological health status of aquatic systems in South Africa. A variety of organisations within each province implement the River Health Programme at a local level (River Health Programme, 2005). Products of the RHP have attracted wide attention and recognition, and provide strategic water resource-management information and training material for use in schools and universities as well as awareness creation (Burger, 2010). Moreover, it has supported management approaches of aquatic ecosystems exposed to sustainable use and those experiencing ecological deterioration (Burger, 2010).

The core to this controversial paradigm of South Africa’s freshwater resources has emphasized the need to forge new partnerships between scientists and other stakeholders (at various levels) where shared ecological goals and consensus river visions are developed (Poff et al., 2003). Furthermore, for new experimental approaches in order to advance the cumulative understanding at the levels significant to the management of the whole river are needed (Poff et al., 2003). In addition improvements through the better use of legislation, incentives, disincentives, advocacy and research through compliance monitoring and enforcement are essential (Burger, 2010). With the knowledge of South Africa’s climatic conditions and escalating population (Schlacher and Wooldridge, 1996), advancement of approaches will provide better tools at their disposal for these future realistic anxieties (Booth, 1991; Poff et al., 2003). Realistically, South Africans cannot continue to exploit these freshwater resources which may be unattainable by the year 2030, or even sooner (CSIR, 2010).

The limitation of freshwater resources is a key issue in developing South Africa’s socio-economic development and providing water security (Burger, 2010). Therefore, it is necessary for the adoption of a new “water ethic”, where the true value of water is appreciated (CSIR, 2010).

CHAPTER THREE

METHODOLOGY

This chapter presents the methodology that was used to carry out this research. It will mention the study areas and explore the research design methods, sampling, study population, ethical consideration, data collection tools and procedure and data analysis used in this research.

3.1 Study areas

The study areas for the purpose of this research were the suburban areas of Pinelands and Thornton found within the City of Cape Town. These two study areas are detailed in Chapter 1.

3.2 Research design and data collection - questionnaire technique

Firstly, a quantitative research approach was set out in the form of a face-to-face interview questionnaire to collect the data. A structured questionnaire consisting of seventeen open and closed ended questions was constructed. The formation of the questions was based upon previous literature and the research objectives. The questionnaire was piloted to rectify any ambiguity and errors. The questionnaire was sent to the Cape Peninsula University of Technology's ethical committee for approval and permission was granted to pursue with the implementation. Permission from the local ward councillor was also granted to pursue with the implementation of the questionnaire in the two study areas. (Appendix A) The final questionnaire was then duplicated for distribution. Ten interviewers were trained to standardise the sampling procedure and the handling of the questionnaire. For the sample to be reflective of the target populations in order to achieve a confidence level of 95% and a confidence interval of 10 a selected sample of n=120 respondents from each study area was chosen. This totalled n=240 respondents in both study areas. The self-administered implementation of the questionnaire was set out by targeting the respondents of free standing households in the two study areas by means of a random, systematic sampling technique.

On two consecutive weekday evenings in September 2013 in a total duration time of six hours, five pairs of trained interviewers were used to collect the relevant data. The interviewers conducted face-to-face interviews with the respondents while simultaneously completing the questionnaires. The interview process was conducted in English. The response received by each respondent took no longer than 10 minutes to complete.

The data collection process proved unsuccessful as the number of successful responses obtained from the questionnaires totalled 19 in the duration of six hours. The interviewers identified that the respondents were not engaging during the visitations at their place of residence. Moreover, respondents declined with numerous reasons such as “we are not the owners”, “we are busy right now” and “sorry we are not interested in what you have to say”. Due to these unforeseen circumstances a low percentage of successful responses of the questionnaire were obtained. This unstated to be the encroachment on residents safety and guarding of personal space.

3.3 Research design - focus group method

A second data collection technique in the form of a qualitative approach was then undertaken to obtain the data using the focus group technique. The focus group technique used open-ended questions within a group environment to allow participants to interact with one another, eliciting a range of responses surrounding the uses, perceptions and thoughts on the environmental quality and health of the Elsieskraal River running through their respective neighbourhood (Krueger and Casey, 2000).

During the focus group sessions it became clear that the focus group setting provided a natural environment rather than conducting an individual interview, because participants are influencing and are influenced by others just as they are in life, as the group setting encouraged free flowing comments within a permissive environment and obtained enriching, in-depth information. It also provided opportunity for the trained facilitator to probe, allowing flexibility to explore unanticipated issues (Krueger and Casey, 2000). This would not have been otherwise obtainable from the questionnaires that were received during the prior face-to-face interviews (Krueger and Casey, 2000).

3.4 Sampling

A purposive sample was used to identify the participants of the focus groups. The participants were purposefully sampled based on specific inclusion criteria. The inclusion criteria required that participants needed to be property owners of free standing households residing in different locations (zones) within each of the selected study areas (Figure 3.1). The participants had to have resided in the study areas no less than a minimum of five years.

Figure 3.1: Demarcation zones of Pinelands and Thornton for participant identification (Google Maps ©, 2012).

3.5 Study population

As independent variables the participants of Pinelands and Thornton were the population that this study sought to investigate. Two focus groups; one in each study area was used. The two groups were namely the Pinelands Focus Group and the Thornton Focus Group, hereafter referred to as the PFG and the TFG. The PFG had four male and four female participants and the TFG had three male and four female participants, totalling eight and seven respectively. The participants were all found to be between 30 and 75 years of age.

3.6 Ethical consideration

An informed consent form was presented to each focus group participant (Appendix B). The consent form emphasised that the information received would be treated confidentially and that participants were able to withdraw their involvement at any stage if they wished to do so. It emphasised that no negative consequences were to be expected due to the investigation and there was no attempt to formally compensate the participants for their involvement. It further emphasised that the outcomes of this study would be communicated to the municipality and any other interested party within the communities on completion.

3.7 Data collection tools used in collecting the data

3.7.1 Focus group discussion questions

The Focus group discussion questions (discussion map) were reconfigured from the questions designed for the quantitative questionnaire. The questions comprised of sixteen open-ended questions of which some had sub-questions attached (Appendix C). The questions were designed to elicit the participants' perceptions and thoughts of the environmental quality and health in and along the Elsieskraal River within their neighbourhood as set out by the research objectives. Five of the questions involved the use of the Schutte Scale as a means to rate the perceptions of certain river attributes. The focus group discussion questions (discussion map) were pre-tested in order to rectify any errors and ambiguity and to evaluate consistency and timing prior to the focus group discussion sessions.

3.7.2 Schutte Scale instrument

The Schutte Scale is a visual scaling instrument that can be used in a paper ballot or wooden format. The Schutte Scale can be comparable to using the nine-point hedonic scale and the nine-point category scale in obtaining similar results (Webb, 2001).

It is designed that the one side with numeric calibrations faces the interviewer and the other side that is dotted faces the participants (Figure 3.2). Respondents using

this instrument are therefore not limited to certain identified categories for example “strongly agree” to “strongly disagree” where preferences can be made. The respondents hold the Schutte Scale in such a way that the dotted side faces them and the numerical side faces the interviewer when questions are being asked. The more the level of satisfaction or high priority something is, the indicator is moved towards the darker-filled dots on the instrument. The less satisfied and low priority something is, the indicator is moved towards the lighter-filled dots (Muzeza, 2013). The interviewer records the numbers indicated on the side that is facing him or her. It is a simple instrument with minimal training required (Muzeza, 2013). The Schutte Scale instrument allows stimulated interaction and involvement of participants within the focus group discussions as opposed to merely talking. As summarized the Schutte Scale is a suitable instrument to quantify the attitudes and perceptions of people in a minimal time frame within a group setting and it offers opinion not only for themselves but also on behalf of other people within their community (Muzeza, 2013).

The wooden scaling instrument was used in five of the focus group questions where perception ratings of certain river attributes were required.

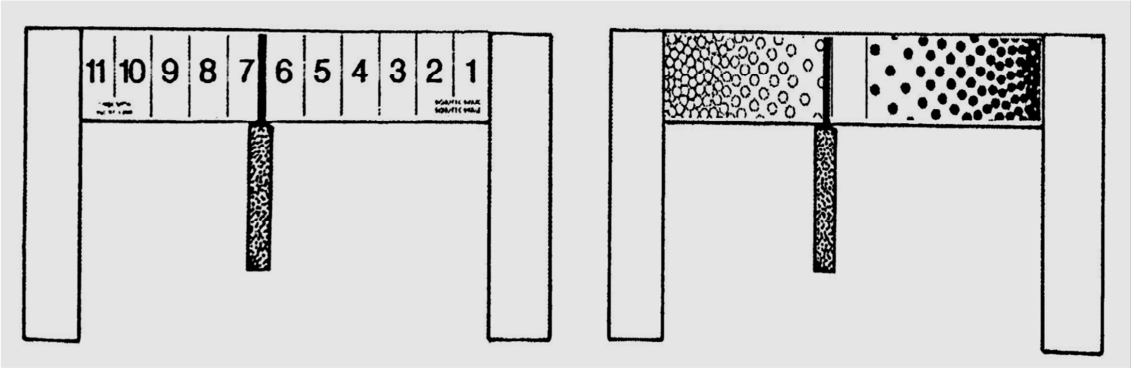

Figure 3.2: The Schutte Scale Instrument (Muzeza, 2013).

3.8 Data collection procedure

The focus group discussions took place on two different weekday evenings, namely the 27 May 2014 and the 5 June 2014. The focus group sessions were held in two different locations, a house of one of the participants of each group. Prior to the commencement of the first question of each focus group, a welcoming introduction, an overview of the topic, ground rules, participation consent and brief training on how

the participants would use the Schutte Scale were explained. Light refreshments and snacks were provided throughout the duration of the discussion sessions.

A trained facilitator and assistant (the researcher) were both present at each focus group. The trained facilitator listened and directed the discussion using the discussion questions (discussion map) and kept the discussion flowing to elicit as much information as possible from the group participants. The assistant (researcher) wrote down comprehensive notes and observations of the interaction and body language of the participants found during the sessions. The participants seating positions were noted and numbered accordingly from 1-8 as seated to the left of the facilitator. The focus group discussions were conducted in English and recorded as such to enable verbatim transcription for in-depth analysis purposes. The duration of each focus group session took approximately 1 hour and 15 minutes to complete.

3.9 Data analysis

The discussions from both focus groups namely the PFG and the TFG were recorded and transcribed verbatim (Appendix D and Appendix E). In the transcriptions, the facilitator's questions were underlined and indicated as "F" and the participant's responses were indicated by "P1-8" as they were found seated to the left of the facilitator. The Long-table Approach was used to analyse the data identifying themes and categorizing the results accordingly (Krueger and Casey, 2000). The categorisation of data into themes helped to determine the principal perceptions. The manner in which it was conducted was as follows:

Firstly, two copies of each focus groups transcription were made. They were then line numbered and colour coded in blue and yellow for easy identification. One copy of each transcript remained as the original transcription (intact) whilst the other was used as the working copy (intended to be cut up).

Secondly, before the cutting process began, the original copy of each transcription was read over numerous times over a period of time to familiarise the scope and entirety of the transcriptions. Emerging themes surrounding the questions were identified from this analysis.

Thirdly, large newsprint pages were placed out with the respective theme headings identified. The working copies of each transcription were then cut up and the relevant responses were placed on the appropriate themed newsprints.

Fourthly, a descriptive, textual summary of each focus groups discussion responses within each identified theme was used to describe the findings and where necessary quotes from participants were used to substantiate these findings.

The frequency, specificity, emotion and effectiveness of responses were noted in describing the findings (Krueger and Casey, 2000). The recordings were kept with the original transcriptions, so that the researcher could listen to them to determine meaning and clarification where necessary in compiling the descriptive summaries. A comparative written discussion of the similarities and differences identified within each theme together with relevant supporting literature and the researcher's interpretations was done.

The process of data collection, data handling and data analysis enabled procedures of disciplined enquiry that were done in a systematic and verifiable manner. It did not seek to control and predict information but rather seek understanding and insight surrounding the topic of discussion (Krueger and Casey, 2000).

3.9.1 River health quality indices used in data analysis

In order to assess the correctness of participants' perceptions about the health and environmental quality of the Elsieskraal River, historical, scientific indicators from prior research was used as a comparison. The scientific indicators of the Elsieskraal River are detailed in Chapter 1.

CHAPTER FOUR

FINDINGS AND DISCUSSION

This chapter presents the findings and discussion assimilated together according to the themes that emerged through the analysis of the focus group discussions and transcriptions. A descriptive form of writing is used. Each theme presents the findings of the Pinelands Focus Group (PFG) and Thornton Focus Group (TFG) respectively, comparatively eliciting their similarities and differences. Quotes from the participants in each focus group are used to substantiate the findings. Thereafter the findings are discussed using relevant supporting literature and the researcher's interpretation.

4.1 Canal versus river

The information from all the PFG participants emphasised that the Elsieskraal River running through Pinelands was indeed a canal and not a river. The canal however, even though as stated to be a developed construction of concrete it was designed in a manner to mimic the natural pathways to which a natural river aspires. This may be emphasised by the following participants' comments:

> Because the river is not a river, because it is not, I mean before tonight I never thought of it as a river it is a canal. (Appendix D, participant 1, line 405 and 406).

> It does not have the same kind of romantic association as a river does you know like Weeping willows or little banks (Appendix D, participant 1, line 408 and 409).

> The canal always the canal (Appendix D, participant 8, line 13).

> Although I can say that when you still see the concrete and you go for walks and you stand on one of the foot bridges, for me the beauty is the gentle meander the way it was built it is very beautiful, not just a straight canal (Appendix D, participant 2, line 116-118).

A few participants recalled that it was definitely a river in days gone by before it was canalised in the mid 1940's, but since the canalisation of the river it was now considered to be the canal. These participants evoked events of activities surrounding the river and the river life that occurred there and that indeed it was a very real river. This may be expressed by the following comments:

> No, when I was a kid it was the river, you would go down and you would play in the Elsieskraal River. And it was a fun place because I was a boy scout and a cub and a

> lot of our activities used to be making things at the river and making canoes, making bridges and the things boy scouts do besides chase girl guides *(*Appendix D, participant 4, line 27, 28 and 53-55).

> My father told me stories about going to play in the bulrushes (Appendix D, participant 8, line 38).

The PFG participants were very forthcoming and knowledgeable about locations and reference points along the canal in their area. A few of the participants were uncertain about the history surrounding the canalisation of the Elsieskraal River and where it had originated.

An ideal river on the other hand as described by the PFG participants in a captivating manner was a place found to be situated in the mountainous areas, consisted of a large volume of water surrounded by an abundance of trees and as half of the participants stated where the water was clean and pristine. An ideal river as also mentioned, needed to be life supporting and interaction with the surrounding nature was necessary. Typical comments included:

> Babbling brooks over stones and water, Bainskloof (Appendix D, participant 6, line 896).

> I have played in many rivers with pebbles….Nature drawing from it (Appendix D, participant 8, line 337 and 905).

> …at the Jonkershoek River in the Jonkershoek Mountains you can see a huge bowl of catchment area and you can see it is pristine (Appendix D, participant 7, line 910-913).

As the majority of PFG participants acknowledged the presence of the canal and that it did not typify an ideal river, one participant expressed that it was a seemingly suitable solution for the urban environment considering the pressing issues we have in our country and city alike. This may be epitomized by the following comments:

> Well there are three things that could have been done, it could be left as a babbling brook in which case it would be horrendously polluted and people would not want to go near it, alternatively the other extreme is it's a big pipe underground and no one knows about and then you just have development on top of it, roads and houses and there is no open space and what you have got to my mind is some sort of practical urban solution (Appendix D, participant 7, line 580-584).

> …at least being canalised it moves quickly, if it wasn't canalised it would be a cess pool of litter (Appendix D, participant 7, line 309 and 310).

As found in the PFG, all the TFG participants remarked that the Elsieskraal River was a canal and not a river. For one participant it was clear that canalisation was a human endeavour to alter a river without ecosystem consideration and own personal gain. These can be observed by the following statements:

> …it has been canalised in that they have put cement, they have made cement walls and a cement bottom so it can't go anywhere else in that bit. It is a proper built canal (Appendix E, participant 2, line 16 and 17).

> I have never come across anybody that refers to it as a river even if it is in flood they still say it is a canal (Appendix E, participant 1, line 767 and 768).

> … if that thing was allowed to flow without cement or concrete cast there then the water would have what a scientist would call silt, we would have it meandering and right now nothing is happening. We humans are channelling that thing where we wanted it to go so we could build and reclaim land to do whatever we wanted to do so we can't exactly blame the river and so what is happening man decided that it does not need plants inside there, so the water that is coming through can't be filtrated and the dirt inside can't be purified, filtrated and whatever needs to be done. So we have actually messed around with how that river is supposed to be flowing from point x to point whatever (Appendix E, participant 4, line 248-256).

The TFG participants momentarily mentioned that it was a river in the past but it was not discussed at length. As was found by some of the PFG, some of the TFG participants were unsure of where the Elsieskraal River had originated and why it had been developed into a canal. The participants' positive setting and awareness of locational points of reference within their suburb was witnessed.

The TFG participants cited a wide range of characteristics that described that of an ideal river. An ideal river as mentioned was found to be the ones seen in movies, has an abundance and variety of aquatic, tree and plant life, an availability of water sports, hydrology and aspects of flooding. The participants neglected to neither address nor characterize the typified water quality of an ideal river situation.

The perception that the Elsieskraal River was viewed as a canal rather than a river is eminent in both focus groups. As such the concrete edges and minimal interaction with the surrounding ecosystem elicited their observation that it was a canal rather than a river. The positive recognition that the canal was found to be meandering mimicking the natural river flow was perceived. This is similar to that found by Kenwick et al. (2009) who found higher preference of meandering waterways than those found to be straight in shape. There was a diverse perception from both focus

groups as to what constituted an ideal river. The perceived idealistic rivers were those found in areas with little human contact as found by Vining et al. (2008). The current study found that ideal rivers were the ones located in mountainous areas, with large volumes of water, had a provision for water sports and where water was found to be clean. More importantly and most significantly, a river was considered a natural ecosystem whereby a mutualistic relationship of attributes namely aquatic life, vegetation and water could co-exist together and not separately as was observed in the developed canal of the Elsieskraal River. Human use and development are facts of life in the urban environment. The fundamental point however is to inspire appropriate development "connectivity" and use so that both ecosystems and experiences for which they are valued can be sustained (Gobster and Westphal, 2004; May, 2006).

The current study found that residents were aware of the river in their neighbourhood and could identify exact locations of interest within their community and along the river, whilst for some the history surrounding its canalisation and the ecosystem pathway was unclear. This may be consistent with that found by Gobster and Westphal (1998) in that nearby residents were generally aware of the river but did not recognise it as a whole system.

4.2 The health condition and environmental quality of the canal

4.2.1 Aquatic life

Organisms and aquatic life recalled by participants of the PFG in and along the Elsieskraal River seemed rather dismal both in quantity and variety. This was evident in the PFG participant quality score that revealed it to be of a "poor" status. The aquatic life observed was found to be different bird species and a few tadpoles and fish. The noticeable fish however was that found closer to the entry point of the Black River into which the final stretch of the Elsieskraal River in Pinelands enters, so was not really part of the canal as such. The PFG participants noted that the Black River supported a lot more aquatic life than the Elsieskraal River did. From the other identified aquatic life mentioned a participant recalled that it was more the life surrounding the canal than in the water itself. This was evidenced by the following comments:

> Well I suppose no one has ever really seen any life in the water because it moves quickly… (Appendix D, participant 7, line 333 and 334).

> Isn't there Bass near Clyde Pinelands? I know some people see them jumping there (Appendix D, participant 2, line 286 and 288).

> There are a lot of Jake banks and a lot of the kids go and catch fish there. Their mother's don't let them cook them or eat them; it is more little boy fishing. Where it joins the Black River, they more Black River fish, but anyway (Appendix D, participant 4, line 283,285 and 289.)

> I am thinking not so much about the water itself but the life surrounding it… (Appendix D, participant 2, line 330).

A few PFG participants recalled that in the past there was a lot more life when it was a river and that more young children would catch tadpoles and guppies and it was a popular activity interest for kids.

The observation from the TFG participants concerning the aquatic life found in and along the Elsieskraal River was similar to that found in the PFG in terms of quantity yet the variety of species mentioned was found to be a lot more. The TFG participants pointed out the fact that the aquatic life was often seasonal due to the water levels in the canal and comprised of tadpoles, bird species, crabs, frogs, cockroaches and mosquitos. The majority of TFG participants even when prompted found observations and possible sightings of fish to be non-existent. This was contrary to what was observed by the PFG of fish activity found towards the end of the Elsieskraal River. These observations may be echoed by the following comments:

> …so anything like fish is seasonal if you have got it at all (Appendix E, participant 2, line 193 and 194).

> I mean summer time it is haven for cockroaches not the ones that walk on two legs the real ones (Appendix E, participant 1, line 728 and 729).

The TFG revealed a quality score of "unacceptable" for the aquatic life identified in and along the Elsieskraal River.

4.2.2 Vegetation

The PFG participants when asked "what type of vegetation do you find in and along the Elsieskraal River?" the recollection of vegetation predominantly consisted of that

which was found along, as one participant stated “the river reserve” (Appendix D, participant 4, line 89). Hardly any mention of the vegetation found within the river was echoed and as emphasised was not linked to the canal itself. The familiar vegetation provided a green belt along the riparian edges and was found to be the grass embankments, Poplar trees along the pathways and weeds. The maintaining of the vegetation (mowing, weeding and cutting back) was not mentioned by any of the PFG participants. This can be evidenced by the following quotes:

> I mean the reality is most of the vegetation has got nothing to do with the river because it is actually separated from the river because it is canalised, so it is not like you got Weeping Willow trees that draw their water from the river… only in flood times does it go onto the grass bank but 99.9% of the time it is in the channel (Appendix D, participant 7, line, 388-392).

> It’s the greenery, trees and the view as you say (Appendix D, participant 6, line 1071).

A few of the PFG participants acknowledged two indigenous gardens alongside the river which were planted by adjacent residents with to the participants knowledge, no assistance from municipality and was merely an initiative on the residents own part. These gardens as observed by the participants interaction was something different and was found to be aesthetically pleasing for passers-by. The participants were clearly aware of the locations these gardens were situated. This may be evidenced by the following comments:

> I have noticed that people have actually planted indigenous gardens on the east and the west side of the river. Couple of residents, I think they live in the actual border and it has grown really well (Appendix D, participant 6, line 366,367 and 374).

> It has grown really well and it looks quite nice. It looks quite pretty (Appendix D, participant 5, line 381 and 492).

The vegetation found on the banks of the Elsieskraal River was understood to restore a sense of aesthetic value for the residents. The PFG participant quality score of “good” was evidently found in response to the observable vegetation found within the river and along the riparian zones.

The TFG when prompted to recall the vegetation found to be growing in and along the canal was similar to the PFG in that it was pertaining to the riparian edges as opposed to in the canal itself. The vegetation observed by the TFG participants was disappointing and consisted of the grass embankments and the vegetation which

grew there naturally, such as the wild flowers along the riparian edges observed during spring time. The poor observations as a participant echoed and confirmed by others specifically within the canal itself was as a result of the built, concrete canal. No trees or built gardens were acknowledged. Participants repeated that they would have liked to see more of a variety of vegetation in the area, especially trees. The maintenance of vegetation (mowing, weeding and cutting back) was not mentioned by any of the TFG participants. These can be observed by the following comments:

> Sort of kweek grass and on the banks those sort of white daisies come out in Spring (Appendix E, participant 2, line 238).

> The way it was meant to be and then we would have more maybe natural type of not only vegetation but animal life, so the fauna and flora would be totally different in that specific area (Appendix E, participant 5, line 274-276).

The quality of vegetation found in and along the Elsieskraal River as evidenced by the TFG participants was found to have a quality score of “poor”.

4.2.3 Water quality

Regarding the Elsieskraal River’s water quality and status, the PFG participants evoked a lot of thought surrounding this specific attribute. Firstly, the participants identified that the water was found to be seasonal in nature and that the winter season was the most preferred time as opposed to the summer season. The observed reaction of enthusiasm by most of the PFG participants was noted when discussing the river in the winter. Their obvious reason was found to be that the river had higher water levels and at times was found to be in flood and that the river at this time was “alive”. The recollection from some participants, when the river was in flood, even for a brief moment in time, the canal resembled a river. These observations may be expressed by the following comments:

> In the sort of winter months, when it is sort of raging it is quite spectacular, I mean you just often go done there to look at it in flood, you know (Appendix D, participant 1, line 92 and 93).

> … in general in looks I joke like a gutter this concrete square thing that the water runs down but when it is wetter it looks like a river then (Appendix D, participant 1, line 95 and 96).

> As soon as it breaks the sides, you can't see the concrete anymore (Appendix D, participant 8, line 101).

> Well I must say in winter time I get a good feeling and you go over one of the bridges and it turns into a river and it flows (Appendix D, participant 6, line 515 and 516).

In saying this, summer had the opposite outcome; it was viewed as a seasonal period of no accomplishment. As mentioned by the PFG participants the water levels during these periods were very low, green in colour and slow moving, somewhat seemingly stagnant. This may be understood by the following comments:

> With the canal it is when the water is toxic green, it looks like superman's kryptonite urine, it glows in the dark (Appendix D, participant 4, line 153 and 154).

> … It's slimy, green at the bottom (Appendix D, participant 8, line 341).

Secondly, in relation to the seasonal attraction of the river, the flow of the water was highlighted by participants in revealing a healthier outlook. The constant use of the word "flow" or "flowing" was emphasised as the most appropriate trait of a healthy status. The PFG participants continued to add that the heavy flow flushed the canal clean and it moved the waste away. This can be reflected by the following comments:

> Good feeling of washing it clean (Appendix D, participant 6, line 520).

> The initial flood brings a lot of the rubbish down but after a day or two of good rain and then the rubbish is in the Black River then it looks like fast, flowing, healthy water (Appendix D, participant 4, line 529 and 530).

In addition, most of the PFG participants expressed the aesthetical value for which the water in the canal provided. This can be reiterated by the following comments:

> I think the water it gives some sort of excuse, cos if that canal was not there and you just had a big piece of open land going all the way down… (Appendix D, participant 2, line 590-591).

> …you don't ever want to drink the water, paddle in the water let alone drink it at least it looks quite nice (Appendix D, participant 7, line 586-588).

Thirdly, the river's water quality was deemed undesirable and most of the PFG participants were undoubtedly aware that it was polluted to varying degrees. The types of pollution mentioned from the participants as perceived in the discussion session was more visual in nature and thus constituted observations of litter, rubbish and storm water run-off. In this instance, the PFG participants mentioned that the

canal served as a channel to remove this waste matter from the adjacent, urban environment. Furthermore, participants recalled on numerous occasions that they were aware of where the pollution of the Elsieskraal River ended up, namely the Black River and found it to be an eyesore. This may be expressed by the following comments:

> … but including it comes from your storm water drains and it is all the litter and dog land mines and that you know, it is a city… (Appendix D, participant 7, line, 345-346).
>
> My other pollution one is when the canal gets full and beautiful; it carries with it the flotsam and jetsam of adjacent suburbs (Appendix D, participant 4, line 165-166).
>
> It is an urban waste water system (Appendix D, participant 1, line 506).
>
> Given the current values people in South Africa because littering is a huge problem in South Africa and people like picking up dog faeces is a huge problem and if it was a proper river that's fine if you are living in a country where everyone respects everyone else but if you not the last thing you want is the equivalent of the Black River running through your suburb and it being a complete cess pool of litter (Appendix D, participant 7, line 427-431).

Fourthly, due to the observed degradation of water quality as a result of the pollution, all the PFG participants mentioned that it was unfit for consumption in any form. Participants and their family members were hesitant to use it in any way and it was not desirable for pets either. This can be observed by the following troubled comments:

> I would actually not be happy to have my children actually play in the canal, in that water I do not have positive thoughts about the quality of the water… youngsters going to put their little hands in No, No! (Appendix D, participant 5, line 300-301 and 303).
>
> I mean as a dog owner you try keep your dog out of the water cos it's not the quality, the perception of the quality is not good… (Appendix D, participant 7, line 307-308).

Lastly, the impression from the PFG participants indicated that the Elsieskraal River's water degradation came from further upstream from where they resided and was therefore already degraded by the time it reached Pinelands. This was made apparent as participants recalled that the lower socio-economic areas along the river further upstream were responsible for the poor quality the river so acquired. This can be articulated by the following comments:

> Better in Pinelands than if you go further up… (Appendix D, participant 8, line 507-508).

> …because you know it's just the type of life we have today, informal settlements you know where the river comes from it is not safe enough… (Appendix D, participant 5, line 301-302).

> In my mind it is a socio-economic thing as well, the other day I walked the Kirstenbosch, Liesbeek Parkway and Starke Ayres, a bit of it is canalised a bit of it is natural stream and I think it has preserved some of its integrity because it goes through an affluent area from source to Black River it is going through leafy suburbs, so it is probably getting run off water and all that stuff. Whereas the Elsieskraal River I think from source pristine and going through a low socio-economic area and that is where the real pollution is (Appendix D, participant 4, line 922-925 and 932-933).

From these complex characteristics of the water quality found in the Elsieskraal River, the PFG participant quality score found it to be "poor".

The aspect of water quality was the more prevailing characteristic discussed by the TFG participants as was found in the PFG. A variety of aspects relating to the water quality emerged. Firstly, the TFG observed the water quality to be seasonal in nature, with winter evoking a sense of achievement than that observed during the summer season. This was similarly found in the PFG. This can be observed by the following comment:

> Now the water quality is a bit, quite a lot better because the water is continuously flowing and with the heavy rains there is a continuous flow of water, the minute the summer comes or the rainy season stops the water subsides and it is just a stagnant pool (Appendix E, participant 1, line 292-294).

Secondly, the observation relating to the winter season was that the water in the river was found to be at a higher level and moving. TFG participants used words like "moving" and "flow" to describe this phenomenon epitomising a viewpoint of a healthier river and that the movement removed the stagnating matter away. This can be observed by the following comments:

> …I mean this time of year it flows (Appendix E, participant 7, line 420).

> I must be honest I wait for the heavy rains to come because it washes them all out from under the bridge. (Appendix E, participant 1, line 744 and 745).

Thirdly, the TFG participants were in no denial to the ingenious quality of the water with respect to the level of pollution that was found in the Elsieskraal River and it was mentioned to be unfit for use. The pollution, which was recalled, was of a visual

nature and comprised of litter (plastic and papers) and human waste. The visual component of the pollution was also evident as in the PFG. This may be evident in the following comments:

> I was not going to walk in there in that nuclear reactive waste that is flowing there (Appendix E, participant 1, line 719 and 720).
>
> It is foul (Appendix E, participant 2, line 224).
>
> People that let their dogs go in there they have to take them home and go and bath them (Appendix E, participant 1, line 211 and 212).

Fourthly, the TFG participants revealed that the water although acknowledging its degraded quality, provided a sense of aesthetic value that attracted people. This was also found in the PFG. This may be evident by the following comments:

> Flowing water does attract people it does soothe you sometimes, especially now (Appendix E, participant 1, line 139 and 140).
>
> I think it is the water element the fact that there is water. It is a water thing they (children) can throw stones (Appendix E, participant 5, line 96 and 98).

Lastly, the TFG participants felt that the pollution had accumulated from further upstream from where they were residing. The participants too however, also recalled that pollutants were being dumped into the river within their residing area. This was not found in the PFG. This as they mentioned were from the horse and cart people and vagrants living under the bridges, cemetery and vacant Conradie Hospital all of which border onto the river. Furthermore, the participants observed that the vagrants used the river as a sanitary facility. The TFG participants also noted that this type of activity was seemingly out of their control. This can be epitomised by the following comments:

> I would think that there would be pollutants in the water from further up where it has come from and that is why there is very little living life left in it by the time it gets here. The river has come a long way before it reaches Thornton (Appendix E, participant 6, line 202-204).
>
> There are vagrants there you know they just dump things and they already stolen all on that side of Conradie Hospital I don't think there is anything left there really. That is also one of the reasons why the canal looks the way it does (Appendix E, participant 7, line 431-433).

> I think what we haven't mentioned is that under the bridge at the station there are very often people living there underneath the bridge and that is their toilet and their wash water and everything (Appendix E, participant 6, line 732-734).

> Probably a lot of *ecoli*, stuff from people living on the banks higher up. I suppose we know it is beyond our control (Appendix E, participant 2, line 205 and 538).

From these observations the TFG participants' water quality score for the Elsieskraal River was found to be "poor".

From the quality ratings of the attributes of aquatic life, vegetation and water quality in and along the Elsieskraal River, the majority of scores were found to be lower than the factual scientific scores indicated by the River Health Programme (2005). The scores for each attribute were also found to be dissimilar between the two focus groups besides the commonality found with respect to the water quality. The PFG scored the attribute of vegetation higher than it was actually found to be. The quality scores ranged from "natural" to "good", "fair", "poor" and lastly an "unacceptable" condition (River Health Programme, 2005). The perceived quality scores for each attribute as this current study found for the PFG and the TFG respectively, and the actual quality scores from the River Health Programme (2005) can be observed as follows: the aquatic life was found to be "poor" and "unacceptable" with an actual scientific score of "fair". The vegetation was found to be "good" and "poor" with an actual scientific score of "fair". The water quality was found to be "poor" and "poor" with an actual scientific score of "fair". Evidently in both focus groups, the aquatic life and vegetation perceived had little to do with the river itself but rather the riparian edges. The perceived water quality was within the river itself and found to have little interaction with the edges, only briefly when the river was found to be in flood.

From this study's findings, the perception that the Elsieskraal River was not a river and rather a developed canal with little ecosystem interaction was possibly a significant reason coupled with more minor aspects for the lower quality score ratings indicated by the PFG and TFG. This finding of a developed canal may be similar with that from Stedman and Hammer (2006) who found that increased development had a strong association of human perceptions of decreased environmental quality. This present study's findings is also similar to that found by Pendleton et al. (2001) and Lepesteur et al. (2008) in studies to assess the accuracy (perceived versus factual) of respondent's perceptions about water quality. These authors found that the majority of respondent's views of the quality of water were found to be lower than it

was scientifically found to be. The findings of the current study are although inconsistent with that found by Faulkner et al. (2001), whose perception correctness of actual versus perceived water quality was found to be the same as one another. As further evidenced in the present study's findings and consistent with Heaney and Huber (1984) and Walsh (2000), a built canal was found to be part of the urban drainage system rather than receiving waters. Misperceptions surrounding these differences may impact the way resources are viewed and what status they are actually given (Pendleton et al., 2001). It is only when assumptions and values are made clear that people are able to adjust their perceptions and generate a mutual expression of what they regard as useful and appropriate information for contributing to a common goal in natural-resource management (Van Wyk et al., 2008).

Aquatic life for both focus groups were found to be dismal in both quantity and variety and if any were found that it had nothing to do with the river itself and rather the riparian edges. As witnessed by the participants in both focus groups the observations of fish activity and the lack thereof alters their perceptions of a healthy ecosystem. This is consistent with the findings of Moser (1984), House and Sangster (1991) and Gobster and Westphal (1998), who observed fish identification to be of significant importance in lowering the negative judgments and that the observation of fish signifies that life is possible in the river.

Vegetation is an integral attribute as mentioned by both focus groups and that it enhanced the open space within the urban landscape environment. Yet again, like the aquatic life it was more an aspect relating to the "river reserve" than that found in the river itself. It provided an aesthetical value to the open space. The vegetation mentioned was the grass embankments, trees and indigenous gardens, the greenery that the vegetation provided. This was also found by Kenwick et al., (2009) who found the main driver of vegetation along waterways to be aesthetic in nature. These authors continue that of all vegetation types recalled, tree buffers were the most desirable for residents. This study's findings of the large, open, green space suggests that it is the contrast to the built environment within urban city that is attractive. This finding is similar to that found by Gobster and Westphal (1998; 2004) who found the vegetation to be an attraction to residents and that it enhanced the experiences of the river within the urban landscape.

Asakawa et al. (2004) stated that a number of plant species may increase the "feeling of nature" in stream corridors. The present study also found that a better variety of vegetation species, maintenance and especially the planting of indigenous gardens more favourably enhanced the riparian edges. The maintenance relating aspect was similar to that found by Gobster and Westphal (2004) and Kenwick et al. (2009), that the observed vegetation in urban environments was required to be maintained and landscaped. Often aesthetic experiences of riparian landscapes reflect health therefore we must recognise them as landscapes that evolve over time and are influenced by our feelings of responsibility to them and our interest in them (Décamps, 2001).

Water quality covered numerous aspects. As the findings of this study suggest, water served as an aesthetical and recreational resource. A few natural movements are as attractive to humans as that of water (Hetherington et al., 1993). The motion and sound of water have shown to have important effects on human perceptions and evaluations of scenic river landscapes (Hetherington et al., 1993). What is more, water movement takes many forms and it has a strong contrast to the still elements that are found along its edges (Burmil et al., 1999).

Water quality was considered healthier when the water was in flow as found in both focus groups. This is similar to that found by Burmil et al. (1999) whereby an increase of beauty and health was observed as the in-stream river flow increased and too was found to be seasonal. As these authors continue, it is the current that carries the refuse away and leaves behind a sense of cleanliness, purity, renewed energy and health. The present study's findings of the green colour of the water had negative connotations to the health of the river. As Moser (1984) found movement and colour to be of lesser importance in the observation of water quality perception as opposed to odour and floating debris, this study's findings found water movement and colour to be of primary importance.

As found in both focus groups the ingenious water quality was perceived as being out of the residents control and originated further up-stream from where they resided and that it ended up in the Black River. These observations revealed that for some part they were not responsible for the degradation in water quality. While source control is an important part of urban catchment management, management of pathways is perhaps the most effective action because of the difficulty in managing many urban

sources of pollution (Walsh, 2000). The findings of both focus groups' participants that the pollution in the water was a serious problem found within their community settings and up-stream from their location, the sources of pollution mentioned were in most cases similar in terms of quality and yet varied in terms of variety. The sources of pollution comprised of sanitary and sewerage from lower socio-economic areas up-stream, storm water and visual debris mainly consisting of litter. This is consistent with that found by Gobster and Westphal (1998), Faulkner et al. (2001) and Pendleton et al. (2001), as observable sources of pollution. The findings in both focus groups concerning the water usage were found to be unquestionably unsuitable in any form mainly as a result of the visible pollution. As Gobster and Westphal (1998) found, although good water quality is important for direct and indirect usage, people were willing to accept less than pristine quality as long as the odours and debris observed were not offensive.

The observations from both focus groups acknowledged that participants are fully aware of the presence and absence of environmental contamination and that it was unsuitable for domestic and recreational use. This was consistent with that found by the River Health Programme (2005) in that it was scientifically found to be a high risk amenity. This is consistent with evidence that people who are more educated are more concerned about environmental issues and contamination (Kollmuss and Agyeman, 2002; Theodori and Luloff, 2002; White and Hunter, 2005; Anderson et al., 2007; Dunlap and Marshall, 2007).

4.3 Sources of environmental information

Upon the question relating to "how participants find out about information concerning the status of the natural environment around them?" half of the PFG participants mentioned community newspapers. In terms of environmental issues within their immediate surroundings, community newspapers and magazines, such as The Tatler and The Muse were identified as the best sources of environmental information. Of the identified newspaper sources a notable point was made that not all newspapers were useful and therefore categorized accordingly. This can be observed in the following comment:

> I don't spend a lot of time finding out about these things, so the local paper is about all I read, it is not to say I trust them, but I would trust The Muse more than I would trust the Cape Times (Appendix D, participant 8, line 817 and 818).

On a broader stance, other sources of information mentioned but not emphasised were that of the Internet such as Google, social media pages such as Facebook and regular emails from the ward councillor of the area.

From the sources of information mentioned, the question relating to "who participants would trust to sensitize this information to the public?" there was a strong viewpoint from the majority of the PFG participants that any politicians or government officials were totally unreliable. Seconding this but not as prominently mentioned were multi-nationals and oil companies. On the opposite side of the spectrum however, a participant mentioned they were more likely to trust information coming from non-governmental organisations (NGO's) and partnerships. This can be presented by the following comment:

> I distrust any officials, so I go for anything like the Liesbeek Society and NGO's. I would more likely believe their stuff than a City of Cape Town release (Appendix D, participant 4, line 812 and 815).

A few of the other PFG participants mentioned television programmes such as the local 50/50 environmental programme and on a global scale news media such as BBC, CNN, Aljazeera and various environmental documentaries to trustfully inform them. Yet again, the participants categorized the respective television media in that some were unfavourable, observably that of the local SABC News which was found to be pitiful.

The majority of TFG participants specified that when pursued to find information regarding the status of the natural environment around them, local newspapers, the Internet and specifically Google were mentioned. This was similar to that mentioned in the PFG. The local newspapers referred to the community ones namely, The Tygerburger and Die Tygertalk. In addition, and with no mention at all by the PFG, the TFG considered information from neighbours and friends (word of mouth), particularly the older people especially within their community area to be of high importance in relaying the status of the environment. This information was more highly regarded than that gained from the newspapers. For some participants they

could even recall a specific person in Thornton whose information was highly valued but had since passed away. These can be observed by the following comments:

> Yes, yes our local newspapers, The Tygerburger and the Die Tygertalk, we get quite a lot of information from there (Appendix E, participant 2, line 594 and 596).

> The neighbours are the best (Appendix E, participant 2, line 604).

> Yes, most definitely the residents of Thornton. Eric would also have been a great help (Appendix E, participant 7, line 583 and 585).

> We had a man live up at the top of the road, Eric, he was like the mayor of Thornton, you wanted to know anything or what was going on… he would be the one to go talk to the municipality, everybody went to him and he has died (Appendix E, participant 6, line 854-856).

Following the question regarding information about the natural environment, and "who they would trust to relay this type of information?" the TFG participants continued to emphasise neighbours and friends. The majority of TFG participants however, were hesitant to trust information from politicians and government officials and found them to be untrustworthy. The distrust of politicians and officials was consistent with that found in the PFG. This may be epitomised by the following comments:

> Ooh no!!! (politicians) we won't waste our time, thank you very much (Appendix E, participant 7, line 589).

> Yes, the politicians and the City of Cape Town (Appendix E, participant 5, line 607).

A clear opinion from the participants in both focus groups to the diversity and coherence with regards to sensitizing information to the public about environmental matters was observed. Two aspects stand out clearly with regards to information in both focus groups. Firstly, the local community newspapers were a useful tool in conveying environmental information especially within a local setting. This is similar to that found by Lindström et al. (2005) who indicated that the majority of residents found information regarding the natural environment in daily newspapers. Lepesteur et al. (2008) also observed local newspapers to communicate information but the information was only published when the water quality was found to be degraded. These authors also stated that public perception was that no news is good news and therefore an indication of good water quality (Lepesteur et al., 2008).

Secondly, politicians and government officials from both focus groups participants' perspective negatively associated with informing the public about concerns of the natural environment. This is similar to that found by Johnson and Scicchitano (2000), Slovic (2000), Sjöeberg (2000) and Ropeik (2002). If the public do not trust government, they are likely to be more uncertain about environmental quality. Public certainty of environmental quality is important because it will ultimately affect the extent to which the public will take action to support public policies designed to improve the quality of the environment (Johnson and Scicchitano, 2000).

Other avenues considered to elicit trustworthy information were found to be neighbours and friends viewpoints as well as non-governmental organisations (NGO'S). These avenues are similar to that found by Slovic (2000), Sjöeberg (2000) and Ropeik (2002). Local experience is highly valued and social exchange has demonstrated to influence perceptions of the public (Lepesteur et al., 2008). Therefore, emphasis and initiative must be given to these, especially partnerships and non-governmental organisation (NGO's) that are better recognised in relaying trustful information to the public and also utilizing community papers to publish this information.

4.4 Concerns and values regarding the Elsieskraal River

4.4.1 Maintenance and facilities

The mention from most of the PFG participants regarding the maintenance and facilities found along the Elsieskraal River became apparent throughout the discussion. Although no specific question focused on these conditions, continuous, subtle mention in some respect was directed towards these circumstances. Emphasis stated surrounding these circumstances focused more on the riparian edges of the river than that of the river itself. The participants evoked a sense of loss of maintenance from the city council in maintaining the "river reserve" as well as the current facilities provided for enjoyment of the recreational space. These facilities included aspects of unmaintained concrete foot pathways, broken wooden benches replaced with poorly designed steel ones, non-functional lighting and faded signage. Some participants observed a slow deterioration of facilities and maintenance and consequently a decrease in appeal to use it and therefore it was due for an upgrade.

This was also evident by a few participants' direct observations that city council workers who were found to be visibly maintaining the riparian zones were sluggish. This may be made apparent by the following comments:

> I think it is going to get worse because there is progressive in the lure of, foot paths are breaking up and I don't think the city council is going to allocate money on maintenance in this suburb against the pressing needs of adjacent suburbs, so I can see a deterioration of the foot paths, the lighting is a bit suspect at the moment and the water system does not work anymore… (Appendix D, participant 4, line 558-562).

> …my family we often try and take a cycle, we got kids as well so with the bicycle it is a little, there are certain parts where it is kind of (the pathways) crumbled, part of physical dangers of cycling… Well there are no signs, they are kind of faded, people don't seem to recognise… (Appendix D, participant 1, line 262,263 and 268).

> …whether they would have any kind of funding to do that is another thing and how long it would take until they feel the need to redo the pathway and things like that. It is more likely that they would just keep patching it as they go along (Appendix D, participant 8, line 651-654).

> There is an extended public works programme going on at the canal right now so if you walk along the canal you will find 10-15 people drinking tea (Appendix D, participant 4, line 658 and 659).

> I also see them (council workers) laying around (Appendix D, participant 3, line 660).

The remarks concerning aspects of maintenance and facilities in the TFG although not directly asked were made apparent throughout the discussion. The participants emphasised factors concerning facilities a lot more. The TFG participants stated that they believed that the area along the Elsieskraal River was lacking and if at all absent of facilities for recreational purposes within their area. Furthermore, they felt that if the river and its edges were to be utilized more and aid in curbing criminal activity, facilities would be necessary. The facilities mentioned were especially pathways and benches followed by lighting and play equipment for the children. This can be displayed by the following comments:

> I would say that I would like some cycling tracks on it, it would be more utilised and there would be a lot more people and will be used less by criminals because of all the activity of people walking their dogs and cycling there (Appendix E, participant 1, line 71-73).

> Now as in Pinelands, they have got beautiful brick paths on both sides, they have got trees; they have got lighting and benches. We have got nothing (Appendix E, participant 2, line 152,153, 156 and 158).

Maintenance was not discussed at length by the TFG but was envisaged by the fact that no mention of council workers was observed. As one participant emphasised, that an arm chair was found in the river and what he observed the arm chair had stood there for weeks before the council made any effort to remove it. The participant continued to add that the arm chair eventually dislodged and got washed further downstream during a heavy rainstorm. Regular maintenance of the riparian areas around the canal was discouraging and it only occurred when the area was found to be overgrowing and rundown. A valid point was made by a participant and approved by the majority of the other participants that council workers should clean up the area as the residents of Thornton paid rates. This can be observed by the following comments:

> You see the chair I wasn't going in that dirty water. No ways I would not walk in there and there it is I do agree with you we wait for the city council to come and clean the canal cos as far as I am concerned we pay rates (Appendix E, participant 1, line 723 and 724).

> …it was just tidier then (Appendix E, participant 1, line 373).

The continuous mention concerning maintenance and facilities in and along the river in both focus groups was observed. Evidently in this study the clear observation with regards to facilities, the facilities as observed by the PFG were facilities that they already acquired but needed to be improved whereas the TFG stated that these facilities were absent and therefore necessary. The maintenance of areas was a topical issue in both focus groups stating that the council and workers alike were slacking in areas in maintaining the river and its reserve on a regular basis. These findings are similar to that found by Gobster and Westphal (1998) who found both maintenance and facilities (old and new) a necessary ingredient for the greater use of a river for recreation. Concerns surrounding the maintenance and up-keep of river ecosystems were also recognised in other studies (Ballantyne and Oelofse, 1999; Asakawa et al., 2004; Kenwick et al., 2009). It simply means that residents are looking at keeping the reserve practically free from litter and debris and keeping the built facilities in a good condition and free from vandalism and graffiti (Gobster and Westphal, 1998).

Participants stated that the payment of monthly rates were to be utilized to maintain areas within the community. It is for this reason that urban residents considered

government responsible for financing and managing at all levels to protect the environment (Kenwick et al., 2009; Hu, 2011). This further reiterates this aspect into proper social interventions such as laws, regulations, and requests for monitoring and enforcement agencies (Burger, 2010; CSIR, 2010; Hu, 2011). As observed in the findings in both focus groups the perceived lack of proper government responsibility has resulted in poor aspects of maintenance and facilities being done and are wanted by community residents.

4.4.2 Safety

Most of the participants of the PFG revealed an aspect towards the idea of safety in and along the Elsieskraal River at some point within the discussion. Although yet again, not prompted to discuss safety as such, constant comments surrounding this situation was made apparent. Safety with respect to crime was more prevalent than that of water safety along the river. Water safety as mentioned by a few of the participants was not much of a concern. The aspect of water safety was as a result of the death of a young boy who drowned in a suburb further upstream a few years back as a consequence of falling into the river whilst it was in flood. Due to this incident, awareness in the PFG surrounding water safety was highlighted.

Safety with regards to crime was also stressed a lot more by the PFG participants. Participants engaged in conversation that it was not safe to walk along the river alone. The knowledge of muggings and suspicious people navigating the area left participants feeling nervous to fully utilize the experiences the river environment provided. This was further indicated as a reason why the river environment along the Elsieskraal River was not used to its full potential. A few apprehensive observations can be found by the following comments:

> Sometimes security would be nice for bicycles (Appendix D, participant 1, line 742).
>
> Talking about muggings, go out on your own or without pepper spray. You would have to take a taser with you (Appendix D, participant 2, line 699 and 1032).
>
> In certain times of the day you mustn't walk there, in the evening and the night time, you must think of your own safety (Appendix D, participant 6, line1072 and 1073)

> I mean it is not unsafe (the river) by any means; it is the people that are unsafe. Walking there and walking down the slope it is not the rivers fault (Appendix D, participant 8, line 1087 and 1091).

Furthermore, as a few of the PFG participants stated, the area surrounding the "river reserve" had become secluded from adjacent properties by means of the establishment of high walls and security features decreasing direct viewing access of the river, whereas in the past the river was a visible extension of the adjacent residents' back yards. The seclusion also provided ample space for criminals to navigate easily. This is highlighted by the following comment:

> There are two houses that open up onto what could be a beautiful space. … First the garden city had low fences and then there were vibacrete walls with gates in and now they have blocked up the gates, so there is very little direct access from the homes onto what could be a beautiful space (Appendix D, participant 4, line 638 and 641-643).

As found in the PFG, participants of the TFG although not prompted by a specific pre-determined question relating to safety of the Elsieskraal River it was mentioned frequently throughout the discussion. Safety comprised of both water safety and crime, of which the latter, was discussed more often and for the majority of participants was the more significant aspect as observed in the PFG. Water safety was highlighted in the TFG discussion as a result of a young child who accidently drowned in the Thornton canal according to participants three years ago. Two of the participants present at the discussion were involved in the search for him at the time of the incident. This was the same incident that was mentioned by the PFG participants. This encounter was the only water safety related aspect mentioned by the TFG participants and in so indicated as an unfortunate incident but not of significant concern as observed by the PFG.

The crime aspect associated with the canal for the majority of TFG participants was discouraging. It was supported by the fact that the canal was a more isolated open space for easy getaway routes for criminals. The isolation of the canal was combined with the fact dissimilar to that of the PFG, of the desolate areas of the cemetery and vacant Conradie Hospital located alongside its pathway. This may be observed by the following comments:

> I mean the high banks people tend to hide or they break in and they go there and they run down either way you don't or you can't follow which way they are going (Appendix E, participant 1, line 65 and 66).
> Secluded and obviously there is a cemetery opposite which also can, the criminals hide there (Appendix E, participant 5, line 85).

> …it is daunting as you run along because then suddenly you see someone is just coming from nowhere… that you find the elements hanging around (Appendix E, participant 4, line 88-90).

The decrease of visual access of the canal was limited from the adjacent residential properties as was found in the PFG. Participants indicated that they felt anxious and were constantly observant when in the vicinity of the canal. The idea of criminal activity as mentioned by the TFG participants was a limiting factor inhibiting the full utilization of the Elsieskraal River as was also found by the PFG. This can be echoed by the following concerned comments:

> Because it is at the back of the houses so if one is walking there previously there would be open fences or low walls people in the houses could see you, you just felt part of the community whereas now you feel shut off if you walk down a large section of it (Appendix E, participant 6, line 48-50).

> You do feel like you are walking in a canyon, I must be honest (Appendix E, participant 1, line 52).

The concern of safety as observed by both focus groups emphasised two spheres, namely crime and water safety. The aspect of crime as opposed to water safety was more prevalent though.

The indication from the participants in both focus groups concerning water safety and that it was highlighted but not heavily emphasised is noteworthy. As Slovic (2000) suggests people who are familiarised with harmful activities perceive them to be less risky. The findings of the present study may be similar to that found by Gobster and Westphal (1998; 2004) who found issues relating to both physical (water safety) and personal safety (crime) to be problematic and a concern for residents. The findings of the current study elevated a sense of withdrawal and hesitance by residents to utilize the canal environment to its full potential. By possibly making places more attractive to socially desirable uses it can in turn create the influx of active and concerned individuals to the area and therefore aid in deterring the unwanted uses (Kuo and Sullivan, 2001).

The current study found adjacent properties in both areas over time had visually separated themselves from the river corridor in the form of high walls and fences. This is different to what has been found in literature, whereby house prices and property value increases where premium visual access of waterways is observed (Gobster and Westphal, 2004; Restore, 2013). The difference found in the present study may be as a result of crime and the protection of personal safety of those properties adjacently located along the river corridor. Observably, it is the safe accessibility that is more important than the visual access for adjacent residents.

4.4.3 Community attachment to the Elsieskraal River

Throughout the discussion with the PFG participants a sense of attachment and value to the Elsieskraal River and its surroundings was observed. It was identified to be an integral part of the community, even though it was not used to its full potential, as they would have liked it to be.

Firstly, the Elsieskraal River, as described by the PFG participants served as a recreational feature for many residents in the community. The participants recalled more activities surrounding the river as opposed to those occurring in the river itself. Activities mentioned were primarily exercise related namely, walking, running and cycling with and without pets and as an area for children to play coupled with activities of various schools in the vicinity.

Secondly, participants revealed that The Elsieskraal River provided a unique large open space in the community to enjoy activities, which were found to be different to those, found in the local parks or suburban street verges. A sense of greater value was placed on the river as a result of the water element found there. Emphasising this value, it was the beauty the canal and its water ecosystem created. This can be conveyed by the following comments:

> I am at the top end where the Clyde Pinelands field is and there is an uninterrupted view of the mountain you can literally stand on the last footbridge and you can lose yourself in one of the most stunning views of Cape Town (Appendix D, participant 4, line 79-81).

> …there is a pavement and you must walk amongst the houses, the houses are lovely BUT you walk outside and there is this beautiful canal. (Appendix D, participant 8, line 125 and 126).

> Well it's just the open space I think the pathway it is not just by a house (Appendix D, participant 8, line 128).

> An open pipe but it allows a public open space that no one can build on where you can walk your dogs and you can go for a run…. (Appendix D, participant 7, line 589-587).

> …the water almost gives the excuse to get out and enjoy nature with the canal as it were rather than just a grass verge (Appendix D, participant 2, line 591 and 592).

Thirdly, according to the majority of the PFG participants the Elsieskraal River was mainly utilized by residents who lived nearby within the restrictions of the eastern, suburban boundary and the main road. Yet, there was overlap in that although this was the case, those further away on the western side also embraced the river's unique environmental setting but not as much.

Fourthly, the PFG participants commented that the Elsieskraal River was a locational landmark for the community and indeed part of the Pinelands character. This may be observed by the following quotes:

> It is the Pinelands canal!! (Appendix D, participant 8, line 990).

> If you give directions to people where you live you know across the river and then you turn right or left (Appendix D, participant 5, line 994 and 995).

> At one stage it was almost a geographical boundary of Pinelands, so Pinelands was built on the mountain side of the river and after canalisation there was extensive expansion on the Ringwood Drive side, Somerset West side (Appendix D, participant 4, line 53-55).

Lastly, the majority of the PFG participants mentioned that it was a good starting point to address the needs for community enrichment and unity within Pinelands. Even though the river had progressing pressing issues it still provided a unique feature within Pinelands, which current and future generations would want to preserve and protect. This is evident in the PFG participant quality score of "good" when evaluating the overall environmental quality of the Elsieskraal River over a time period found at present, ten years ago and ten years into the future. The majority of participants also remarked that they would contribute financially to an environmental cause to retain the Elsieskraal River's integrity if needed. The perception from the PFG participants with regards to a financial commitment to the future preservation

and upkeep of the river was observed as attitudinal rather than a behavioural one. This can be explained by the following comments:

> We appreciate ours so much more. I see more younger people, families with young families think they would want to ... their children to use it (Appendix D, participant 3, line 509, 566 and 570).

> It's the friendships made with people walking, who walk every day at the same time and they getting to know each other and they may not necessarily visit afterwards but it is a little community that walks at a certain time (Appendix D, participant 6, line 131-133).

> I think future generations' will, I think the ethos of the place is keep it green keep the gardens and look after the canal and the adjacent I know it will (Appendix D, participant 6, line 623 and 624).
> …there seems to be two things about it, that there is a family atmosphere and particularly with nature and trees and things like that and the idea it is supposed to be secure and as a municipality I imagine in ten years' time those would be the two things they would focus on quite heavily is trying to keep Pinelands secure and if you were wanting to make it more beautiful and attractive the canal is kind of the first place you would start. (Appendix D, participant 8, line 246-247).

The observed impression from the TFG participants regarding the Elsieskraal River was that the river was merely a fixture that was evidently located within their community but not part of their community and most definitely not utilized to its full potential. This was different to that found by the PFG.

Firstly, the river was used as a recreational space for activities, predominantly for walking and walking of dogs. Other activities mentioned were a space for exercise running and a child's supervised play space. These activities were essentially associated with the riparian edges of the river and were most frequently used over weekends. This can be echoed by the following comment:

> Sundays tend to be a day when there is a lot of people walking their dogs actually there is quite a lot of people that do walk along the canal not necessarily with dogs. There used to be an old man who used to jog every single morning along the canal (Appendix E, participant 1, line 133-135).

Secondly, although acknowledging the status of the canal, the TFG participants mentioned that it did provide a unique open space where beauty was exemplified in the area. This was similar to that found in the PFG. This can be observed by the following comment:

> They must not close it (the canal) because it looks quite nice (Appendix E, participant 5, line 883).

Thirdly, the canal was utilized by residents in the community as a recreational space and a place for vagrants as a sanitary facility. It was evident from the participant comments that those living close by and more physically active utilized the river and its surrounds more frequently. The TFG participants went on to say that those residents found to be residing further away were non users and in some cases unaware of the existence of the river within the Thornton community. This was in some aspects similar to the PFG. This can be observed by the following comment:

> …it depends for a lot of people how far the river is from them and again we look at how many people walk, run or are physically involved in their own bodies. It might not make a difference to them because if you asked people to come here tonight and you asked which river or where and you say the canal then they know but if you say the names then they are not aware of the thing (Appendix E, participant 4, line 349-353).

Fourthly, and most significantly, due to a number of the TFG community's pressing issues regarding community unity among the residents of Thornton the participants indicated that the Elsieskraal River was not of high priority and significance to them. These pressing issues as the TFG participants recalled was found to be a lack of mobilisation of the rate payers association as well as an influx of foreign people and residents were found to be renting rather than purchasing property within the area. Furthermore, the participants mentioned that a number of necessary amenities had been closed down and inactive, resulting in some unoccupied facilities for vagrants to utilize. These amenities mentioned were the post office, high school and Conradie Hospital of which the latter was to be allocated for low cost housing. The allocation of low cost housing as the participants recalled would therefore increase the population in the area. This was not observed in the PFG. This can be exemplified by the following comments:

> …people should take ownership. Thornton used to be an area where most people owned the houses with all the foreigners that's in here and also those Communicare flats on the other side. These people don't own they don't stay in the area they don't care they just rent so they can just up and go. But you that is staying there you try your utmost to get things going (Appendix E, participant 1, line 706-708 and 711-714).

> They have got it earmarked for low cost housing, they just won't say. Well that is where it is going to be more polluted; more people (Appendix E, participant 2, line 446 and 449).

A decline was evidenced by the TFG participants' overall environmental quality score from a "good" status in the past to a "poor" status in the future when visualized over a period found at present, ten years ago and ten years into the future.

Lastly, although the evident and persistent needs were identified by the TFG participants, the majority of them observed the potential the Elsieskraal River had. Participants acknowledged that the river and its surroundings were a perfect place to enhance and uplift the area and more importantly it was a space to be utilized a lot more by the community and in eradicating inconspicuous behaviour. This was similarly found in the PFG. In addition and different to that found in the PFG, "if participants were willing to contribute financially to the river's preservation if needed?" the majority of the TFG participants were hesitant to comment. As stated by one participant and confirmed by other participants that if that were necessary they would want a decrease in residents' property rates. This can be expressed by the following comments:

> It is actually an opportunity for us to have a nice biodiversity park. …it is the ideal site where we can do something like that (Appendix E, participant 3, line 885, 888 and 889).

> An area that can be beautified (Appendix E, participant 6, line 34).

> They should reduce our rates (Appendix E, participant 1, line 396).

The observation of community attachment to the Elsieskraal River in both focus groups was found to be different. A main constituent emphasising this finding was the location and access to the amenity. As found in the Pinelands area the Elsieskraal River almost bisects the suburb providing adequate and often equal access from both directions. The Elsieskraal River in Thornton on the other hand is located on the north-western suburban boundary thus location and access is isolated from parts the community. The isolation of the Elsieskraal River in Thornton is also enhanced by the fact that desolate properties border the river. These observations of location and access are similar to that found by Faulkner et al. (2004) who observed location and access important factors in the use and knowledge of rivers. Gobster and Westphal (2004) point out that it is the visual access (scenery) and physical access (pathways,

bridges, getting into the water) that draws people in urban areas to enjoy these open spaces.

Another observation in the TFG, residents were more concerned with other social pressing issues than that involving the concerns of the river. This may be recognised as a reason for the seemingly low attachment of the Elsieskraal River in their community. This may be consistent with Anderson et al. (2010) who found that social aspects take preference over issues relating to environmental concern of resources. The concerns of other social pressing issues in Thornton therefore emphasises the possible decline in the environmental quality score over a time period found in the present, past and the future. This is similar to that of Langlois (2012) who stated that observations of improvements or decline of an environmental problem over a longer period of time raised residents' sensitivity.

As found in this study the recognition from both focus groups that the Elsieskraal River provides a unique open space within a community setting was observed. This may be similar to that found by Gobster and Westphal (2004) whereby residents' observed a river corridor as a principal provider of nature in their neighbourhood. It is therefore necessary to conceive sustainability on the urban rivers as a matter of making the city attractive and liveable to a wide range of residents (May, 2006). The avenue of urban rivers visually and conceptually links itself to the city in such a way that it reduces the need to drive out of the city to appreciate fresh air and recreation (May, 2006).

Water provides a special environmental meaning and tends to be highly desired by humans in creating a refuge space, "a sense of place" (Burmill et al., 1999; Riethmuller, n.d.) especially when the dimensions of leisure activity involvement by people are valued (Burmill et al., 1999; Eisenhauer et al., 2000; Kyle et al., 2004). Specific environmental features, a history of significant social interactions, and convenience factors associated with activities at a place suggest that local users may have a "sense of place" that is important for environmental managers to recognise and address (Eisenhauer et al., 2000). This suggests the obvious observed attachment of the PFG participants to the river as the environmental quality score over a time period in the past, present and future was maintained to be in a positively, stable position. As Lawson (1991) stated "for many white environmentally

conscious people a responsible attitude to the environment means preserving access to greenbelts and recreational areas for urban dwellers".

It is evident from this study that both focus groups demonstrated that the Elsieskraal River within their respective suburbs was an appropriate starting point to create community cohesion and involvement within their areas. This is similar to that found by Ballantyne and Oelofse (1999), Asakawa et al. (2004) and Gobster and Westphal (2004) who observed that there was a deep interest and care from surrounding residents to enhance the natural environment with emphasis on rivers. Additionally, it is necessary to recognise stewardship of residents especially those adjacent to the rivers to begin to maintain and rehabilitate the riparian zones (Booth et al., 2004). As Ballantyne and Oelofse (1999) observed, the present lack of support and capacity for those responsible for managing urban rivers was found and therefore it is vital for people to take charge, change and manage the environment within which they live. Although they cannot always do it alone, partnerships with communities and the local authority are encouraged. As the authors' continue it will aid in job creation, community cohesion and the reduction of violence (Ballantyne and Oelofse, 1999).

With this in mind, people with a higher income are more likely to contribute to environmental conservation (Theodori and Luloff, 2002). This study found different views from the two focus groups with regards to possible financial contributions from residents to a conservation endeavour for the Elsieskraal River. These were found to be more attitudinal rather than behavioural observations. The financial issue highlighted in both focus groups found that money was available for conservation efforts if needed by residents, but for the TFG participants they were hesitant to part with money unless residential property rates were reduced.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

This chapter presents the conclusions to the findings of the study and possible recommendations for further investigation and implementation.

5.1 Conclusion

This study found both similarities and differences in people's perceptions of the Elsieskraal River between the different socio-economic, urban communities of Pinelands and Thornton.

The perceived observation that the Elsieskraal River was a canal and not a river set the foundation for the envisaged low environmental quality the river so acquired. The attributes of aquatic life, vegetation and water quality were mostly observed as different from one another in each focus group. The majority overall quality scores for the attributes in both focus groups were found to be lower than they were scientifically found to be. The aquatic life and vegetation, was more pertaining to the riparian edges than within the canal itself and the water aspect was in the same way disconnected to the edges. The aquatic life was found to be pitiful in both quantity and variety. The observations of vegetation revealed more of an aspect of aesthetical value in providing a green corridor and enhancing the canal. The water quality was the most emphasised attribute and found to be unsuitable for use and poor in quality. The water during the winter season was the most desirable and at times the water in the canal served to alleviate the stressors of the urban environment as an urban drainage system. The visual aspect of the river's water was attractive for residents within both communities.

Both focus groups revealed two clear avenues concerning environmental information sourcing and sensitization to the public. Politicians and government officials were unreliable to relay environmental information of a trustworthy nature. Community newspapers were a useful tool to present the evidence of information concerning the status of the natural environment especially at a local level.

Three themes namely safety, maintenance and facilities and community attachment emerged on the importance of the Elsieskraal River as a recreational space. Both

focus groups had similar perceptions with regards to safety, with crime being the most significant. The observations from the focus group participants concerning the facilities found in the Pinelands area; these were facilities that they had already acquired but felt needed to be improved, whereas in the Thornton area these facilities were absent but necessary. The perceived maintenance of the river area in both communities was not adequate. The observation of community attachment revealed a difference in perception with participants of Pinelands valuing the Elsieskraal River's character and found the river to be an integral part within the community landscape. Participants of Thornton on the other hand observed it merely as a fixture located within their community. The difference in community attachment can be primarily attributed to the location and accessibility of the river found within each suburb. Both focus groups however revealed that the Elsieskraal River was an appropriate starting point to create community unity and involvement within their respective suburbs.

The evidence in this study has highlighted that residents value waterways in a variety of ways. Moreover, they have clear perceptions and standards of river attributes and the river's importance within the urban community. The findings indicate that even with a small sample that the perceived state of environmental quality of the Elsieskraal River is eminent. As Inglehart (1995) and Franzen and Meyer (2010) found that environmental quality is seen as an amenity good for which high SES individuals can more readily afford than those individuals with a lower SES. As evidenced in the literature this present study's findings are not new observations and are found all over the world. Although generalisations can be made, the criteria for which they are observed may be different, therefore the understanding of local areas and site-specific perceptions are necessary. After all it is the residents who live beside, use and benefit from these resources (House and Fordham, 1997).

It is therefore necessary that efforts need to be made to recognise the human-environment based values of the perception of water in the urban landscape and use these relationships in the useful implementation of environmental policy, management and intervention strategies. The perceived findings of the identified themes found in this study will assist in the implementation and aid in creating a positive viewpoint and true appreciation of water. It will also encourage people to better value the experiences, utilisation and responsibility of the river corridor and what it has to offer in a sustainable manner.

5.2 Recommendations

Further studies should examine the perceptions of the Elsieskraal River in its entirety; incorporate all the adjacent communities along its pathway from source to end point. This will aid in finding the similarities and differences within a wide range of socio-economically different suburban areas.

Further studies should examine the perceptions of other similar rivers in the urban environment, both natural and canalised within Cape Town and the greater South Africa. The findings can assist environmental managers, planners and educators identify the gaps between the scientific environmental conditions and what people's perceived awareness and knowledge about environmental quality are (factual versus perceived).

Further studies should examine the perceived perceptions and the scientific evaluations of rivers in South Africa using the River Health Programme's results. The findings will aid in determining the similarities and differences in the correctness of results in order to increase and fill in where possible gaps of information occur.

Further studies should examine the perceptions of suburban residents concerning the Elsieskraal River who are found to be renting property (house, flat or townhouse) and who have lived in the suburban areas for five years and less.

Further studies should examine people's perception of the Elsieskraal River during the times of different seasonal changes (spring, summer, autumn and winter) and how they are found to be different or similar.

This study has observed that communication via community papers is a valuable source of trustworthy information. Environmental planners and managers must utilise these already established sources more to continuously sensitize information concerning the natural environment within local communities.

Emphasis and support from local authorities must be given to non-governmental organisations (NGO's) and adjacent property owners to aid in mobilising people into the "ownership of rivers" within their communities to enhance their value and utilisation.

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Appendix A: Letter of permission from the ward councillor

ALDERMAN BRIAN WATKYNS

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TO WHOM IT MAY CONCERN

I am aware of, and fully support, Carolyn Wilmot gathering information for her Master of Technology thesis by randomly approaching Pinelands and Thornton residents for the purposes of completing a questionnaire .

The questionnaire is related to her study of the influence of socio-economic status on people's perception of the health condition of the Elsieskraal River .

Brian Watkyns

14th November 2012-11-15

Appendix B: Participant consent form

Cape Peninsula University of Technology

Faculty of Applied Sciences

PO Box 652

Cape Town 8000

May 2014

Supervisor: Prof. James Odendaal 021 460 3199 odendaalj@cput.ac.za

Researcher: Ms. Carolyn Wilmot 072 218 0970 wilmot@telkomsa.net

INFORMED CONSENT FOR RESEARCH:

PEOPLE'S PERCEPTION OF THE HEALTH CONDITION OFTHE ELSIESKRAAL RIVER

To whom it may concern:

Introduction

This project will contribute towards a Master's Degree qualification at the Cape Peninsula University of Technology. The objective of this research is to gain insight into people's perception of the environmental quality and health condition of the Elsieskraal River "The canal" within your community area.

Purpose of the study

It is important to obtain detailed information on public perceptions of the environment. It is the public that possess the ability to directly affect the quality of the local natural environment through individual behaviours, which will be dependent on lay people's perceptions of the environment. The information gathered from investigating the environmental perceptions of lay people will aid in improving and shaping the effective and sustainable environmental management and quality of rivers and river corridors. Through this the conservation value and health of rivers and river corridors will be better restored.

Description of the research

Data will be collected from participants by means of a focus group discussion. Your honest response will be beneficial in the success of this research. Your participation is entirely voluntary. There are also no right or wrong answers to your responses. The group discussion will be recorded for transcription purposes only. All data collected will be treated with the greatest measure of confidentiality.

Potential harm, injuries, discomforts and inconvenience

No negative consequences of any sort are expected.

Potential benefits

You will not benefit directly from participating in the study.

Confidentiality

Confidentiality will be respected and no information that discloses the identity of the participant will be released or published.

Participation

Participation in this research is voluntary. If you choose to participate in this study you may withdraw at any time.

Consent

By signing this form, I agree that:

1. The study was explained to me and all my questions answered.
2. I have the right to participate and the right to stop at any time without any consequences
3. I have been told that my personal information will be kept confidential.
4. There will be no likely harm/benefits to me by participating in this study.

I hereby consent to participate in this study:

Name of the participant: ……

…….. ……..

Signature Date

Name of investigator: ……..

…… ……..

Signature Date

Appendix C: Focus group discussion questions

Public Perception of the Health Condition of the Elsieskraal River "The canal"

1. The "Elsieskraal" is it a river or is it a canal?

……

……

2. What comes to mind when you think of the Elsieskraal River "The canal"?

……

……

……

3. What first comes to mind when you think of pollution in general?

……

……

……

4. Let us talk about what the **area in and along** the Elsieskraal River "The canal" is used for by the people in this community.

……

……

……

5a. What **Organisms, aquatic and other life** do the people in this community find **in and along** the Elsieskraal River "The canal"?

……

……

……

5b. Ranging from very good (Black dots) to unacceptable (White dots), how would you rate the general condition and state of the **Organisms, aquatic and other life** mentioned, **in and along** the Elsieskraal River "The canal"?

Aquatic and other life

Participant No:	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Schutte scale rating								

5c. Why have you given this rating?

……..

……..

……..

6a. What sort of **Vegetation** do the people in this community find **in and along** the Elsieskraal River "The canal"?

……..

……..

……..

6b. Ranging from very good (Black dots) to unacceptable (White dots), how would you rate the general condition and state of the **Vegetation** mentioned, **in and along** the Elsieskraal River "The canal"?

Vegetation

Participant No:	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Schutte scale rating								

6c. Why have you given this rating?

……..

……..

……..

7a. What is the **Water quality** like that people in this community find **in** the Elsieskraal River "The canal"?

……

……

……

7b. Ranging from very good (Black dots) to unacceptable (White dots), how would you rate general condition and state of the **Water quality** mentioned, **in** the Elsieskraal River "The canal"?

Water quality

Participant No:	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Schutte scale rating								

7c. Why have you given this rating?

……..

……..

……..

8. Ranging from <u>very</u> concerned (Black dots) to <u>not</u> concerned (White dots), how concerned are the people in this community about the environmental quality of the **area and city in which they live in?**

Participant No:	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Schutte scale rating								

9. Ranging from very good (Black dots) to unacceptable (White dots), how would you rate the **OVERALL** environmental quality of the Elsieskraal River "The canal"?

a. At present

Participant No:	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Schutte scale rating								

b. Ten years ago

Participant No:	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Schutte scale rating								

c. **Ten years into the future**

Participant No:	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Schutte scale rating								

d. What are the reasons for you different ratings over this timeline?

……..

……..

…….

10. What improvements, if any have the people of this community observed regarding the area **in and along** the Elsieskraal River "The canal".

……..

……..

……...

11. If you could change **ONE** thing about the Elsieskraal River "The canal" what would it be?

……

……

12. If you require/need to **GAIN INFORMATION** about what is happening in the natural environment **around you** where would you find it?

……

……

……

13. Who do the people in this community **TRUST** the **MOST** to give useful and accurate information regarding the natural environment around them and why?

……

……

……

14. Who do the people in this community **TRUST** the **LEAST** to give useful and accurate information regarding the natural environment around them and why?

……

……

……

15. What are the characteristics of an" **IDEAL"** river according to you?

……

……

……

16. Do the people of this community feel strongly enough that they would consider contributing MONEY **and/or** their TIME towards an environmental project regarding the Elsieskraal River "The canal"?

……

……

……

Appendix D: Pinelands Focus Group transcription

Pinelands Focus Group 1 -27th May 2014

 # F: Facilitator

 # P1-8: Participants 1-8 as seated to the left of facilitator

 # Assistant: Assistant to facilitator (researcher)

F: We talk about this river or the canal is that the correct pronunciation, just for interest sake before we start, what do you, remember that when I am talking about you I am not talking about you, you and you I am talking about you and the people of this community, so it is not any view it's not necessarily a personal view it could be I don't care but it should be of people like you, your friends. What do you call this, is it a river or a canal?

P6: Call it a canal

P8: Canal, always the canal

P4: Canal

P2: Always

P3: Canal

P6: Yes (affirmed)

F: Among the people out there, they call it a canal?

P6: Yes! (Confidently)

P4: Ya

P5: Ya

P2: Yes

F: Why not river?

P1: Because it looks more like a gutter (Laugh quietly – pause)

P8: Days of old was it (interrupted) was it always the canal

P5: I think it was canalised in the 1950's

P4: No, when I was a kid it was the river, you would go down and you would play in the Elsieskraal River but (interrupted)

F: Before it was canalised?

P4: Canalised

P6: Yes

P5: Yes

P4: Just after Noah's ark was discovered (Chuckle) we played in it, no and it was a river then, it was a very real river

F: And in the street it was called the river?

P4: The road I live in is called Riverside road because it was beside the river.

P6: That's right I lived there as well for years, ya.

P8: My father told me stories about going to play in the bulrushes.

P4: Ya

P5: Yes

P6: Yes

P8: Ya, things like that.

P5: My husband as well

F: It was definitely not a canal?

P4: No

P6: No it was not

P4: And it was a fun place because I was a boy scout and a cub and a lot of our activities used to be making things at the river and making canoes, making bridges and the things boy scouts would do besides chase girl guides (laugh quietly)

F: But it was not up, there were houses next to it at that stage already wasn't there?

P4: No

P6: Yes

P4: At one stage it was almost a geographical boundary of Pinelands, so Pinelands was built up on the mountain side of the river and after canalisation there was extensive expansion on the Ringwood Drive side, Somerset West side.

P6: Yes

P5: Yes

F: Right so thanks for that. What I want to know is a very broad question as an introduction, now is what would you say the people they hear the word this canal, what comes to mind. What is the first thing that jumps out?

P4: Muggings

F: Mugging, alright, what else?

P2: Exercise

P5: Walking the dogs

P6: Walking, walking

P3: To me it is more playing for the kids

F: Playing for the kids?

P3: We put sticks down the canal ya, I only know it as the canal, ya, we used to play

P1: Exercise

F: Walking so it is socio recreation?

P4: Oh yes

P6: Yes, recreation

P1: Yes

P4: And beauty at times

P5: Yes

P2 & P3: Ya and mm (in agreement)

P6: yes

F: Really! Tell me more about that, what's the beauty?

P4: I am at the top end where the Clyde Pinelands field is, and there is an uninterrupted view of the mountain, you can literally stand on the last footbridge and you can lose yourself in one of the most stunning views of Cape Town.

F: The beauty is not the river it is the open space?

P4: The environment

P5: Yes

F: It is the open space the canal creates?

P5: Yes

P6: Yes

P2: Yes

P4: And what they call the river reserve.

F: The reserve is the beauty, ok I am just trying to get to it is the canal nice for you beautiful, it is aesthetically?

P1: In this sort of winter months when it is sort of raging it is quite spectacular, I mean you just often go down there to look at it in flood, you know.

F: What is it the water flowing?

P1: The water flowing, ya I think I mean, in general it looks kind of I joke like a gutter, this concrete square thing that the water runs down, but when it is wetter it fills up it looks like a river then.

P6: When it fills up

P5: Looks like a river then (interrupted and over lapping)

P1: It looks like a river

P5: Yes, and it goes up the banks

P8: As soon as it breaks the sides, and you can't see the concrete anymore

P1 & P2 & P4: Ya, ya (Affirmed)

P6: Causes great excitement (enthusiastic response)

P4 & P5 & P1: Yes, Yes (Chitter chatter)

P6: Photographs!!!

P4: This green, slimy thing, it actually becomes a rite of passage for many of the teenagers in the community, where on the extreme, N2 side there is a weir and when it reaches it certain critical mass you get a stand up wave and you are only a real Pinelander male if you have surfed the stand-up wave. (Chuckle and quiet laughing)

P5; I didn't know that!

P4: You got to wait for a real flood.

F: It's true what you are saying; it becomes a river once the concrete is covered?

P6: covered (in agreement)

P5: Yes

P2: Mm (in agreement)

P2: Although I can say that when you still see the concrete and you do go for walks and you stand on one of the footbridges, for me the beauty is the gentle meander, the way it was built, it is very beautiful, not just a straight canal.

P4: Yes

F: Because it followed the river line, ok

P4 and P5: Mm (in agreement)

P2: To me that's beautiful

P8: We take it for granted a lot in fairness, but if you talk to other people who live nearby and they go for a walk, there is often a comment you know there is no canal for you to sort of walk, there is a pavement and you must walk amongst the houses, the houses are lovely BUT!! (Emphasis) and you walk outside and there is this beautiful canal.

F: Why the canal?

P8: Well it's just the open space, I think the pathway, and it's just not by house

P3: I think it draws you (interrupted response)

P5: It is nicely defined

P6: It's the friendships made with people walking, who walk every day at the same time, and they getting to know each other and they may not necessarily visit afterwards, but it's a little community that walks at certain times.

F: Social relaxation?

P6: Yes

P5: Yes that's right

P8: Ya

P4: There have been attempts over the years to integrate the community, so there is an exact 5km running track.

F: The beauty of the river we just mentioned, it seems to be, it is the open space, it creates some, we use it am I correct, we use it to walk there and not along the pavement on Forest road because?

P4: Ya, ya

F: Why not along Forest Road?

P8: Well it depends where you are going in fairness, but if you are just want to go for a walk, it's nice to be all just not someone's wall next to you, dogs barking at you, a little bit of freedom and the trees

P2 &P3: Mm (in agreement)

P6: Absolutely!

P4: No carbon monoxide

F: We have covered the river now

F: Let's move on to another concept, if you hear the concept of the word pollution, pollution in general, there is no specification now, what pops up? What is pollution for you, you hear the word pollution, what is the content of that?

P4: With the canal it is when the water is toxic green, it looks like superman's kryptonite urine, it glows in the dark (Chuckles and giggling)

P3: Littering

P6: Littering

P2 &P5: Yes (in agreement)

P2: Smog

F: Not necessarily the river, pollution?

P7: Are we talking about the canal or generally?

F: Generally?

P7: I would also talk about smog,

P8: From factories, (mm in agreement)

P1: Human waste

P4: My other pollution one is when the canal gets full and beautiful, it carries with it the flotsam and jetsam of adjacent suburbs, so the

F: Littering?

P3: Ya

P2: Yes the littering

P4: So the pollution on the water line, is unbelievable

P6: Mm (in agreement)

F: And that pollution is littering?

P4: Yes, ya

P6: Yes, litter

F: General other concepts linked to pollution?

P5: The smell from the sewerage farm

P6: Ya

P4 & P3 Mm (in agreement)

F: Ok, we trying to just extract from you, what is it that makes up our perception or concept of pollution?

P6: Fortunately we do not have the twin towers anymore but I have been here for 55 years, and when I first moved to that side of the river, that's another concept, that side or this side of the river, there was pollution, definitely!!! (Emphasis)

F: On that side?

P6: Yes

F: From?

P6: From the towers there,

P1: Cooling towers, ya

F: The cooling towers or from the chimneys'?

P6: The chimneys' sorry, the chimneys' and when the South Easter blew, oh (sigh)

P3: Another pollution thing for me is noise; there is a lot of traffic.

P4 and P2: Mm (in agreement)

P6: Absolutely!

F: Tell me more about that?

P3: I wish they would especially this road, Morningside, I wish it would just they would say no trucks down that road, it is just so noisy, and Forest Drive, people trying to get into work, you can't actually get out because of all the traffic.

P3: Noise pollution

P6: Yes, noise pollution

F: Just for interest sake noise pollution linked to the canal? not really?

P3: That is where the quiet is.

P2 & P6: Mm (in agreement)

F: Right let's talk about the area along this canal, in general it has been used for recreation, that's why they use it, other uses, walking, jogging?

P7: You walk you dogs there

P6: Mm (in agreement)

F: Dogs walk, jogging, what else?

PP: Play, children play.

P8: I think it is used for the occasional competition, well, cross country races, duck races

P3: Yes

P6: Oh yes, the duck races

P5: The pre-schools use it

P6: That is very popular

P8: Big walks things like that

P4: And then in bygone days you had a public gym on the banks of the river at Howard Centre, where people would go work out.

F: Would you really say that the community interact with this canal?

P6: Not as much as they could I suppose

F: Why not?

P6: I don't know maybe there is a perception that you are not safe on the river you got to, if you walking you know, that could be it too

P3: The kids used to go there a lot until a child fell in and (hesitation) died in the canal a couple of years ago. And now the schools don't allow the children to walk along the canal.

F: Ok, so the schools don't allow it?

P3: Don't allow it yes.

P8: You talking pre-schools or all schools

P3: Junior schools

P8: High schools we don't care about the kids (a lot of laughter)

P3: When my kids were in the junior schools they were told not to walk across the bridge, unless they with their parents

P6: Oh, I did not know that, that is sad

P7: I mean just speaking personally, my wife and I use it a hang of a lot, in terms of walking, walking the dogs, running along the canal, you know it's a (interrupted)

F: part of your social life, your socialisation?

P7: Not really with other people, there you go more to the oval where you meet the other dog owners and that sort of thing, a it's not really a place where you meet up with other dog owners cos you walking there.

F: Individual recreation?

P8: Actually there is nowhere to stop

P7: Yes there is nowhere to stop

P2 & P3: Ya (in agreement)

P8: What they actually need is a coffee shop (giggle) and then people can actually go to the canal to walk around there and the congregate there, it would be very sociable, unless you have a dog, I mean I don't have a dog, I have kids so we walk them (Laughter). But a lot of people I would imagine wouldn't bother to walk all the way from there house just to get to the canal and walk some more, unless they had a dog that needed that level of exercise or particularly wanted to run. It is not a community meeting place as much as it needs to be filled and that is a good place to fill it.

F: Do you see a lot of people walking there, without dogs? I mean

P6: Yes

P5: Yes we do

P7: I mean both

P2: Ya, it is both

P1: Ya

P3: Ya

F: So it is not necessarily reserved, I have a dog I must go there?

P6: No

P2 & P7 & P4: No (Multiple agreement)

P7: A lot of people run there

P6 & P2 & P5: Mm (in agreement)

P3: It gets used every day for running

P1 & P8 7 P2: Mm (in agreement)

P1: And just, my family we often try and take cycle, we got kids as well so with the bicycle, it is a little, there are certain parts where it has kind of crumbled, part of physical dangers of cycling (chuckle and laughter affirm dangerous). So it is not ideal but it would be great if one could cycle there. I think it is clearly separated. I think the one side you are allowed to cycle and the other walking

F: Is it clearly? Is it the gentleman's agreement?

P1: Well, no there are signs, they are kind of faded, people don't seem to recognise so they cycle wherever they are on or run on whichever side, it doesn't matter.

P8: Yes

P8: yes, it is with a general understanding, if you have kids you can cycle anywhere

P4: Ya

P1: I mean it is quite a nice place to cycle because it is off the roads, but it is not ideal

F: Let is turn to organisms, we are talking about living aquatic type of water life. What is it that you are aware of, people are aware of, is there any living aquatic type of organisms or other aquatic life?

P7: Well there are birds

P6: Mm (in agreement)

F: Birds? You are definitely aware of them?

P6: Yes there are

P7: Yes, and they are kind of congregate there as a result of the canal.

F: Anything else?

P7: You don't exactly see salmon swimming down the river (laughter)

P4: There are a lot of fish though, Jake banks and a lot of the kids go and catch fish there.

F: They do?

P4 Their mother's don't let them cook them or eat them, it is more little boy fishing

P2: Isn't there bass near Clyde Pinelands?

P4: Yes, up that end near the Black River

P2: I know some people see them jumping up there.

P4: Where it joins the Black River, they more Black River fish, but anyway.

F: And the proper canal this side?

P4: You get some guppies and stuff, so little boys,

P7: This is news to me.

P4: When it was a river there, you went and caught tadpoles there, there were always loads of tadpoles, much more life in the old days.

P6 & P5: Mm (in agreement)

F: You talking about history, and nowadays? Any aquatic life that sort of attracts people because of this canal?

P2: No

P3 & P4 & P6: Mm (in agreement)

P5: I would actually not be happy to have my children actually play in the canal, in that water, I do not have positive thoughts about the quality of the water because you know it's just the type of life we have today, informal settlements you know where the river comes from it is not safe enough, youngsters going to put there little hands in a no no.

P6: Yes

P2 &P1 & P7: Ya (in agreement)

F: So you would prefer the children not playing in the water?

P7: Yes, I mean you also as a dog owner you try and keep you dog out of the water cos it's not the quality, the perception of the quality is that it is not good By the same token, one's perception that it would be a lot worse if it wasn't canalised cos at least being canalised it moves quickly, if it wasn't canalised it would be a cess pool of litter

P5 & P2: ya, ya (in agreement).

P6: Ya

F: Interesting one that

P7: Now the cess pool of litter ends up in the Black River (All laugh)

P5 & P6 &P3 & P2: Yes, ya (in agreement)

F: Please take your instruments, we just want to measure this one the general quality, environmental state of this water life in this canal. Black dots would be very good and white dots very poor, how do you the people consider the quality of the life. Just going to read out the numbers to her. The current organisms that live in there, give it to me?

P7: In this river

P6: In the river

F: Yes, The canal

P6: Ok, in the canal

P7: Even the birds

P6: I think I am going to sit on the fence

F: All aquatic life of the river, you put a curve ball to me, Organisms in and around the river. Just show the numbers to my side. Black side good quality, white side is poor quality. There is a 1,8,4,1,2,6,3,3. Ok, the way the people rate it because of what, some rated it good some not so good. What is the reason for the differences?

P2: For me I am not thinking so much about the water itself but the life surrounding it, the trees, birds and stuff

F: Good call, any specific reason you can think?

P7: Well I suppose no one has ever really seen any life in the water because it moves quite quickly and also your judgement I guess is coloured by the fact that you know where the water ends up namely the Black River, which is complete cess pool

P6: Mm (in agreement)

P8: I have played in many rivers with lovely pebbles that you can look under and look what you will find.

P6: Yes

F: But surely, it is safe to play in this river if it is not in flood?

P8: You can't get into it without falling over; it is slimy, green at the bottom.

F: You are not Oscar Pistorius (immense laughter)

P8: I have fallen over there

P4: I think the other thing is (interrupted)

P7: I think obviously it comes from various places, but including it comes from your storm water drains and it is all the litter and dog land mines and that you know, it is a city so, it might have its origins in the sort of mountains above Parow I suppose if memory serves me correctly.

P5: Waste (comment quietly muttered during P7)

P5: Tygerberg

F: Durbanville

P7: So there will be (interrupted)

P7: Part of the water that comes down is pristine but a hang of lot of it is coming out of a storm water drains from the city one assumes from the Elsiesriver or you know and that's got all sorts of muck in it and you don't really want to allow your dog or your kids going in there

P6: Mm (in agreement)

P4: Ya

F: One would expect city, natural environment is obviously pristine that's true ya, I would just think that in a city environment, everything is channelled it should be more or less clean it is not, it is actually the opposite, because of whatever was pushed into it.

P6: Mm (in agreement)

P7: Ya

F: Let me just go to the vegetation, vegetation now, not the organisms in the water. What type of vegetation do you think of is in this area you are aware of, we talking about grass? What else?

P1: Trees

P2: Grass, yes

P5: I have noticed that people have actually planted indigenous gardens on the east and the west side of the river.

P6 & P1 & P2 & P4: Mm (in agreement)

F: What is indigenous for you?

P5: Aloes

P6: Fynbos

P8 & P1: Mm (in agreement)

F: Who planted that?

P5: Couple of residents, I think they live in the actual border and it has grown really well

P6& P2 & P3: Mm (in agreement)

F: Not the municipality or something?

P4: No

P3: No, the residents

P5: No

P4: It was some school projects as well

P5: It has grown really well and it looks very nice

P8: Ya, one looks like the Green School

P5: Some restio grasses

P3: Ya, it was the Green School project

P6: Ya, ok,

P8: Further down, near the high school.

P5; Yes, near the high school and it has done really well

P7: I mean the reality is most of the vegetation has got nothing to do with the river because it is obviously separated from the river because it is canalised, so it is not like you got Weeping Willow trees that draw their water from the river or whatever its basically just a strip of concrete that carries the water and in flood times it will go onto the grass bank but 99.9% of the time it is in the channel .

P6: Mm with weeds or anything (in agreement interrupting P7)

F: So the vegetation is not linked to the river?

P6: No

F: What we are saying is that it is aesthetic, indigenous?

P5: Yes, aesthetic value

P6: Ya

P2: Yes

P4: Yes year ago they actually articulated they have water lines on either side of the river and they had a very fancy watering sprinkler system for a couple of years that was vandalised and does not exist anymore, but they actually watered the river reserves.

F: Really! You had to water next to the river? (Giggle)

P5: Because it is was canalised

P1: Because the river is not a river, because the river is not, I mean before tonight I never thought of it as a river it is the canal

P6: Ya

P1: It does not have the same kind of romantic association as a river does you know like weeping willows or little banks.

F: That is part of our discussion on this thing, when is it called a canal and when is it called a river? And it is coming up. I think we are getting there; it is sort of as a canal.

P1: So it is more like a green space with like a channel of water flowing in the middle, it's not that you can like connect to it in anyway

P2 & P3 & P6: Mm (in agreement)

F: May I push it? Is a canal linked to storm water removal?

P1: Oh yea

P2 & P4 & P6: Mm (in agreement)

P5: Good point

F: Is that more less the association to it? I don't want to push it too hard. Do you agree it is a river when I see the banks, when I see the growth and life in the river it is a canal, it is a storm water removal system, and then I have a canal.

P5: Ya

P6: Yes, that's it

P7: Ya, I mean I would see it as; I would not like to see it any other way I mean I think it would be an absolute disaster if it was a (interrupted)

F: A river?

P7: Ya, (hesitates) given the current values of people in South Africa because littering is a huge problem in South Africa and people like picking up dog faeces is a huge problem and if it was a proper river that's fine if you living in country where everyone respects everyone else but if you not the last thing you want is the equivalent of the Black River flowing through your suburb and it being a complete cess pool of litter

P6: Mm (in agreement)

F: I just to get the comparison, the Black River is a river?

P1: Ya, it's a river

P6: Mm (in agreement)

P5: Yes

P6: The Liesbeek River is a river

F: You can't see the concrete ?(laugh and giggling)

P2: Ya

P1: Ya, you can't see the concrete, but it is also partially canalised

P2: It is also quite a bit larger

P8: Ya, that's right

P6: Ya

P8: Ya, the volume of water is a lot more (Interrupted)

F: Is the Black River polluted?

P6: Yes

P5 & P4 & P2 & P1: Yes (multiples yes answers all at once)

P5: It is not in a built up area

F: The pollution comes from here?

P3: Ya, not from us

F: Where?

P3: From further up I am sure (all laugh)

F: But then it goes into the Black River? (continue to laugh)

P3: It passes through us (still chuckling)

F: Then at a hell of a speed?

P7: But obviously it supports a lot more life, there are a lot more organisms

F: Where?

P7: The Black River

P6: Yes

F: Why?

P7: Because it is wide and there is a huge body of water (hesitates), I am not saying it is particularly pretty or anything I mean there is a big body of, there are flamingo's that come because it's almost like slow moving water and a lot of life can quite happily survive

P5 & P6: Mm (in agreement)

F: There would be more life?

P6: Ya,

P2: Yes

P8: Yes, as you say it is slow moving (interrupted)

P6: It's deeper (interrupted)

P7: Slow moving, there are fish, I mean there are people that fish there in the Black River (muttering all round) there are flamingos that come every year

P8: The canal on average in summer is only about that deep (shows with hand gestures) -+ 15cm

P6: Yes, that's all

P2: Ya (muttering)

P4: Sounds like the Black River funnily enough

P8: Ya, in some part,

F: Is it fast running

P4: No, no

P5: No

P8: Well quite fast (muttering)

P7: Reeds and weeds and things that grow in it

F: I have got the idea from you that the vegetation is not linked to the canal, it is adjacent to, even need to be watered sometimes in the past it is aesthetic stuff

P5: Yes, that is right

P2 & P6: Mm (in agreement)

P4: Ya

F: Restore some sort of aesthetic value for the people?

P5 & P6 & P2: Ya, mm (in agreement)

F: Give me a rating on the quality of the vegetation along this canal

P6: As relating to a river?

F: As relating the canal, just an evaluation, very good, very bad or poor. I have a 10,9,10,6, 9,7,8,7.

P5: It actually looks pretty (muttering while scores are been taken)

P6: It looks alright (muttering while scores been taken)

F: Right that is the quality of the vegetation, again ranging from good again. Good black side, white side bad, how would you rate water condition, the water quality in this part of the canal? Again measure to me? How good or bad is the quality of the water according to your perception, not necessarily been tested right or wrong? Well not really drink it. Really good or really bad. Drink it most probably, my animals would drink it (laugh) my dogs would drink it. Quality of the river I read 1,2,3,2,2,4,3,3. Right thank you for that. Any specific reason why you rated like that?. Anything, you not so comfortable with the quality of the water, is it the litter is it?

P6: Well I wouldn't drink it (muttering)

P6: Litter (emphasis)

P2 & P3 & P8: Ya and mm (in agreement)

P5: You do not know what goes into it

F: Like she said you do not know what goes into it?

P1: It is an urban waste water system

P8: Better in Pinelands than if you go further up (interrupted) where it is canalised you can see all the litter stuck to the sides. (Muttering)

P3: We appreciate ours so much more (interrupting P8)

P2 & P6: Mm (in agreement)

P5: Yes

P7: Plus it is the storm water off the roads, there is obviously oil in that

P6: Mm (in agreement)

F: For sure, for sure yes, you would have that.

P5: Well I must say in winter time I get a good feeling and you go over one of the bridges and it turns into a river and it flows (emphasis)

P6: Yes it is brilliant

P6: A lovely feeling

P5: It looks cleaner

P6: Good feeling of washing it clean

P2 & P3 & P1 & P4: Mm (continuous muttering of enthusiasm in agreement)

F: Just help me with this one, are you saying it is cleaner when it is flood than when it is slow moving in summer time?

P5: It is moving the waste (interrupted)

P6: The perception is there

P5: The perception, right

P2: Yes

F: The perception is there, thank you for that

P4: The initial flood brings a lot of the rubbish down but after a day or two of good rain and then the rubbish is in the Black River then it looks like fast, flowing, and healthy water.

P2 & P6: Yes, mm (in agreement)

P5: That's it

F: How concerned do you think are the people in this community, the rest of the people, you might have close link to it, but you and the rest of the people, how concerned are the people of this phenomenon of this canal here? Are the people concerned about it?

P8: Concerned that we have it or the quality of it

F: The environmental quality of it, are the people really concerned or not or sort of oblivious in this community.

P5: I don't think so

P2: No

P3: No

P6: No, no, no it is just there (emphasis with muttering in background)

F: It is just there. It is a 6,6,6,3,2,3,1,6, alright. I am going to ask you a question that gives you a bit of time lapse, we nearly at the end. A time lapse here, thinking of this river overall, thinking more or less 5 years ago, no, let us start with the present how acceptable or unacceptable is the environmental quality around this canal, we talking acceptable, unacceptable we talking water, we talking vegetation, we talking about the ambiance, we talking about the aesthetic value. How acceptable, very acceptable or not at all? Environmental quality surrounding or along the canal?

P6: Well they can't do much (mutters)

F: It's a 9,10,8,7,10,9,9 and 8 thank you, Ten years ago how acceptable was it to at that stage, give me rating for ten years ago, think back ten years ago from what you have said now acceptable or unacceptable was it for you ten years ago. You would think ten years ago. Alright 6,10,8,10,9,6,9,8 right. How acceptable do you think it would be 10 years in future, what do you expect to happen around this river.

P6: I think it will stay the same (mutter quietly)

F: 10,8,10,4,9,9,9,7, right. These ratings any changes, why, something could be better something could be worse, just comments? Why the measurement?

P4: I think it is going to get worse because there is progressive in lure of the foot paths are breaking up and I don't think the city council is going to allocate money on maintenance in this suburb against the pressing needs of adjacent suburbs, so I can see a deterioration of the foot paths, the lighting is a bit suspect at the moment and the water system does not work anymore and my impression is I went from fairly good ten years ago to fairly bad now or in the future, I just see not part of council priority (interrupted)

F: Do you think the community still in future will take responsibility?

P6: Yes they will

P3: Yes, I see more younger people, families, with young families think they would want to (interrupted)

F: They would sort of a position sort of ok, that they might treasure it?

P1 & P2: Mm (in agreement)

P3: Because of their (emphasis) children, want their children to use it.

P7: I put the same rating from ten years ago, now and ten years into the future time really on the basis that quite a practical and robust solution to a city in terms of I was not particularly thinking of the paths and the deterioration on the paths and you might have a point there, although there are other paths next to the roads which do get upgraded on a fairly regular basis, but more in terms of the water, it does not pretend to be a babbling brook which would be completely impractical given the city in which we live in it would be horrendously polluted, it is a very robust and practical solution it's a canal, the litter can move through quickly when there is heavy rain it washes everything out.

P6: Mm (in agreement)

F: It is a solution for what? For urban?

P7: Well it there are 3 things I guess could have been done, it could be left as a babbling brook in which case it would be horrendously polluted and people would not want to go near it, alternatively the other extreme is it's a big pipe underground and no one knows about and then you just have development on top of it, roads and houses and there's no open space and what you have got to my mind is some sort of practical urban solution

F: which is an open pipe?

P7: (continue) yes, an open pipe but it allows a public open space that no one can build on where you can walk your dogs and you could go for a run and although you don't ever want to drink the water, paddle in the water let alone drink it at least looks quite nice

P3 & P4: Mm, ya (in agreement)

P2: I think, the water it gives them a sort of excuse, cos if that canal was not there and you just had a big piece of open land going all the way down, the water almost gives the excuse to get out and enjoy nature with the canal as it were rather than just a grass verge.

P6: Mm (in agreement)

F: So it is an add on, an add on for recreation?

P5: Yes

P6: yes

P2: Yes, I think so

F: It takes you into a sense of nature?

P7: There is a minor respect in which, the water is connected with the land, apart from the aesthetical visual I mean when it does flood and break it's concrete banks there is a brief time when

the water is flooding over the grass, not very often and not for very long but I suppose it does then soak into the water table, perhaps a bit more than from the rain and I suppose that does something for it.

P6: Mm (in agreement)

F: Like we said, then it becomes a river, you do not see the cement is that right? (All laugh)

P2 &P 5 & P6: Mm (in agreement)

P1: And to say that the deterioration I gave it a higher rating for ten years' time, in that it is probably time for an upgrade and restore some of the pathways and (interrupted)

F: Upgrade for you is? The surrounding

P1: Maintenance sorry ya, ya

F: Maintenance you talking about along the river?

P1: Yes, along the river

F: Not the canal itself?

P6: No

P5: yes (in agreement)

P1: only when it is in flood

P4: That is where it is a river as opposed to a canal and that's nice

P1: Ya

P6: Ya, ya

P5: Yes

F: Nice and wet houses (laughter)

P6: I just wanted to make a point and agree with the other participant that maybe future generations wouldn't see it, but I think future generations will, I think the ethos of the place is keep it green, keep the gardens and look after that canal and the adjacent, I know it will (emphasis)

P2 & P8 & P3 &P5: Mm (in agreement)

F: It is a case for the world that is true

P3: It is also safer, I mean you don't want to go out of your suburb for recreation, we have it right here and take your kids for walks and your dogs and you still feel like (interrupted)

P6: Ya

F: Future generations will preserve that?

P2 & P8: Mm (in agreement)

P6: I am sure they will

P3: Walking along the roads here you do not get the sense that you are in fresh air and exercising, whereas you walking along the canal, you hear the water, you feel you are, it's just a perception

P6: Ya, ya

P5: Yes

P4: I will say this one again, as an obsessive grandfather who walks my grand-daughters everywhere; there are two houses that open up onto the canal on the whole walkway.

P6: Ya

P5: Yes, yes I have seen that

P4: (continue) everyone else has a wall and most of the walls, first the garden city had low fences and then there were vibacrete walls with gates in and now they have blocked up the gates, so there is very little direct access from the homes onto what could be a beautiful space

P6: Ya, ya (whilst P4 is speaking)

P5: Yes (whilst P4 is speaking)

P8: I mean my sense of Pinelands and I won't pretend to speak for the municipality, councillor Watkyn's or whatever, there seems to be two things about it, that there is a family atmosphere and particularly with nature and trees and things like that and the idea that it is supposed to be secure and as a municipality I imagine that in ten years' time those would be the two things they would focus on quite heavily is trying to keep Pinelands secure and if you were wanting to make it more beautiful and attractive, the canal is kind of the first place you would start, whether they would have any kind of funding to do that is another thing and how long it would take until they feel the need to redo the entire pathway and things like that. It is more likely that they would just keep patching it as they go along (interrupted)

P6: Ya

P5: yes

P2: Mm

P4: There is an extended public works programme going on the canal right now so if you walk along the canal, you will find 10-15 people drinking tea (laughter)

P3: I also see them lying down (Giggle and laughter)

F: That is the next one; please help me on this one? What projects are you aware of in any that you observe along this canal? Is currently going on there? What projects do you see?

P2: Some of them were the street lights, and then it was the benches, they now sort of putting up steel benches, although it looks awful

P5: Ya

P6: I have seen that too.

F: Steel benches?

P2: (continue) they had wooden ones and then now probably after will go for the cheaper option and then some of the sections of the pathway have been

F: Restored?

P2: Restored (assurance), just sections though (muttering and nodding)

F: Any other activities that you are aware of?

P4: A while ago there was attempt to make something of the reserve area around the Clyde area, they wanted to encourage flamingo's, a whole plan , but that ran out of money, there was the watering system we spoke about which does not exist anymore.

P8: The one sort of watering the surrounding fields

P6: Yes

P4: Yes, we are trying to reactivate it, cos we ran a line along the canal from the treated effluent water from Athlone, so there is actually water running all the way along the length canal, but the city council never budgeted to tap into it, to start watering, cos it can be quite desolate in the summer months, as there is no summer rain.

P2 & P6: Yes, mm (in agreement)

P4: (continue) and brown

F: Desolate in terms of?

P4: It gets brown and wind swept the south-Easter its beautiful season I would say is winter.

P6: Ya

F: But during those periods still used by the public to the same frequency?

P3: Yes

P6: Yes it is

P2 & P1: Mm (in agreement)

F: The public it is their place, right through the year?

P6: Yes

P5: Yes

P2: Ya

F: If you could change one thing, if you were in the position to change one thing to this canal running through here, what would you like to see changed?

P2: The crime

F: The crime ok, what else? Just crime, you talking about crime?

P2: Talking about muggings, go out on your own or without pepper spray

P3: Out on your own yes! (Same time)

P6: Ya, ya

F: OK

P4: The quality of the foot paths

P5: Yes

P2: Yes

P6: Yes, you have to walk down there

F: If you could have it your way, what would you like to see?

P3: Would you get it done for us? (Laughter)

F: No!!

P3: Possibly more benches

P5: Places you could go and sit to chat to (Interrupted)

P6: Yes

P2: Mm (in agreement)

P8: The old bowling club that is abandoned, use it as a coffee shop, kids play area, my wife's idea

P3: Coffee shop (same time)

P5: Ya

P3: Yes

P6: I thought of a vegetable garden, like the one in Oranjezicht there, for Pinelands, what about that?

P8: Ya (that's an idea expression)

P6: We could all go and buy vegetables

F: You don't have, what I read into it , you don't have hub, along the canal whether it is a kiosk, vegetable garden there is no something that says I walk from here till there and further, it is either from here till there and home?

P6: No (whilst F is speaking)

P5: No (whilst F is speaking)

P2: No

P5: Yes, walk from here till there and home

F: There is no hub?

P7: What also might be quite nice if you could walk the length of the canal without crossing any roads you can almost do it but there are two roads that you have to cross, so if those roads were bridged or if you go under the roads it would be quite nice

P2 & P3: Mm (in agreement)

P6: Ya, ya

P4: Disturb blankie man there

P2& P3 & P5: Ya,(in laughter)

P3: I was going to say that I would feel safer going over

P5: It is like an institution on the river (muttered)

P4: Although in discredit the municipality put speed humps at all the bridges

P7: Ya I mean it is not as practical as it could be, you asked for a wish list

P6: Yes

F: That is a wish list, wish list

P8: Sometimes security would be nice, for bicycles (muttered)

F: So it sort of impacts on the whole system if you want to use it as a recreational system, at some stage you will come across a road

P7: I mean you have to put your dog on a lead, you can have your dog off the lead for most of the time but nearing the road you have to put you dog on a lead

F: I hear you, and your children (giggle)

P1: More people using it that is what I would want (interrupted)

F: More people using it why?

P8: The more people use it the more secure it will be

F: Why don't more people use it? Security?

P1: People don't feel safe they don't have (hesitation)

F: I sense from you people a lifestyle of a section linked to the river or canal and there are other people that stay away?

P6: Ya

P4: Ya

F: Just sketch me who are they, who are the people linked and who are those that stay away?

P4: I would say the people on the sort of west of Forest Drive walk dogs on the oval or Julianna veld, there other places and people on the east side would probably be more inclined to go to the canal

P2: Ya

P5: Yes

P6: Yes

F: Is that you experience?

P2: I stay on this side (showing east direction with hand gestures) and I am not going to go all the way to the oval just to walk around (muttering)

P3: I still go down there and I live this side (showing west direction with hand gestures) because I have been here with my kids when they were little and that made sense for me to go down there.

F: you right? There is an overflow? Probably practicality? Right

P2: Ya

P8: It is probably mostly active people too

P2 & P6: Mm (in agreement)

F: Information, you think about information, regarding this natural environment here, the environment in general the information about that, talking about nature (emphasis) where do you people read about nature, this is an add on question because what to know what sensitizes people, what information medium in this community?

P6: Community papers

P4: The muse

P6: Yes, the Muse, the Tatler

P4: The Tatler (same time)

P2: Even the Pinelands 531 facebook group

P4 & P5: Mm (in agreement)

P7: You talking specifically about canal now or general information?

F: General information of the natural environment we want to communicate to people in this area, what should be used, where do the people read about natural environment?

PP: Newspapers

P8: Newspapers, are the about the only thing I read

P3: Ya, I haven't really thought about it (chuckle and laugh in background) I can't sort of be aware of anything

P7: The emails, Brian Watkyn's always sends these emails out, so that goes to most of the Pinelands people

P6: The Tatler, it tells me what's coming up, of course, a lot of People read the Tatler and the Muse (Muttering between 2 people (P5 and P6) in background)

F: Would you trust most, with the most accurate information?

P1: Of those sources?

F: Of all those sources you mentioned now who is the most trustworthy?

P4: Julius Malema, he has nothing to do (majority laugh)

F: Surprise, surprise, here is the red party (pointing to a participant in a red coat) (all laugh)

P6: What information, sorry can you expand?

F: Environmental, talk about environmental knowledge natural environmental issues?

P6: Specific to this area?

F: No it was not the idea, it was generally, what sensitizes you for environmental, I mean, (interrupted)

P6: TV, 50/50 I watch that regularly

P5: Ya

F: You believe that higher rating source?

P6: it is just because of my circumstances, that I watch programmes like that I like watching nature, you know.

F: I know it is fairly informative but is it trustworthy?

P6: I think so

P4: Ya

F: Anything else?

P4: I distrust any officials, so I go for anything like Liesbeek Society and NGO's

P6: Oh, yes (mutter in background)

P5: Yes

P4: I would more likely believe their stuff than a city of Cape Town release

F: Right, interesting, right, other?

P8: I don't spend much time finding out about these things, so the local paper is about all I read, it is not to say I trust them, but I would trust the Muse more than I would trust the Cape Times

F: So you have a ranking in that? We talk about popular electronic media, you mentioned and whose name?

P4: Brian Watkyn's

P7: Brian

P6: Yes

P5: Yes

P4: Brian Watkyn's, he is the councillor

F: What do you trust him?

P4: No

P2: No, no really

P6: No

F: We talking about the quality of the information he (interrupted)

P7: I mean I would trust him

F: (continues) Is he sort of knowledgeable in what he is saying when he comes across with this

P1: Not really

P3: He is knowledgeable but I always google everything and read up on it afterwards, that is who I am (mm in agreement)

P4: He is a politician

P5: Ya, you are right

P2 & P6: Mm (in agreement)

P8: I mean regards to what is happening in Pinelands, he is a useful source to find out, but his perspective on the aquatic life on the canal is not his expertise (muttering)

P1: Ya I mean there is some news media, CNN, BBC, environmental documentaries and stuff

F: It's television that it is sort of respectable channels, 50/50, BBC, I hear you saying SABC? Not?

P6: SABC as 50/50 is on that channel

F: So you talking about a dedicated programme?

P6: Yes

F: SABC news?

P1: No

P6: No (emphasis) (laugh)

P7: Who has watched SABC in the last 10 years (all laughing)

P4: BBC and Aljazeera

P5: Ya

P6: Ya, Aljazeera is very good

P1: Ya

P6: Yes very good (same time)

F: Just go to the opposite, which type of information would you trust the least? We got know what you like?

P6: As regards to environmental affairs?

P1: All of them

P6: Politicians

P4: Oil companies

F: Politicians?

P6: Yes

P2 & P3:Mm (in agreement)

P8: Anything that says the ANC said this and the DA said that about what the other one was doing, generally it is (interrupted)

F: Politicians' is a no go

P6: (same time) fracking

P1: All the corporate entities

P6: Yes

P4: Yes

F: Corporate companies, linked to oil type of thing

P1: Ya

P6 & P4: Yes

F: Places like Shell and those types of people?

P1: Multi-nationals

P2 & P4 & P6: Mm (in agreement)

F: Very interesting, they are always give up so high that we are guys that we protect, Shell and BP

P4 &P1 7 P6: Mm (in agreement)

P4: I mean particularly to Pinelands, for years, back to the cooling towers

F: Tell me?

P4: There was never ever pollution from them and they proved it time and time again

P6: (giggle) the chimneys'

P4: People got sick, washing turned green, dogs barked like cats

P6: Yes, the washing did turn green

F: So it was never them?

P4: Much like the Caltex oil refinery at Milnerton, Edgemead no link at all between acute respiratory disease and the refinery, they proved it. (serious face)

P6: Big money proved it, conspiracy theories (muttering and giggling background)

F: You just don't trust each other, what characterizes for you an ideal river, an ideal river for you? (warmth of excitement from Participant 6)

P8: A large volume of water

P3: clean

P2: clean yes

P6: clean water

P5: Clean

P6: Babbling brooks over stones and water, Bainskloof (oh in excitement)

P7: Must be in the mountains

P6: Ya, trees (background mutter)

F: In the mountains

P7: So there is no pollution, so Jonkershoek River that is absolutely crystal clear

F: Right so if that river was to run through here you would still say it is a river with all these characteristics with no pollution, then it is a river, ok?

P1: A lot of trees

P5: Yes, trees around it

P8: Nature drawing from it, rather than (interrupted)

P2 & P3 & P5: Yes (all agree at same time as P8 made statement)

P7: I suppose for me, what is the key for me is you want to know what the catchment area is and that the catchment area is pristine.

F: Which is the case, with this canal, the catchment area is pristine

P7: No! (emphasis) it is not because the catchment not merely the mountains in Durbanville it is all the roads between Durbanville and here, whereas if you are at the Jonkerhoek River in the Jonkershoek mountains you can see the huge bowl of the catchment area and you can see it is pristine.

F: Do I sense that you have a different scale in which you want to evaluate this river, or a city river, the Black River. Do you have a different expectation?

P7: Yes, a different expectation. I don't expect this to be the same I think it is impractical given many other pressing needs.

P6 & P3: Mm (in agreement)

F: So your ideal river is rocky, mountainous, trees (interrupted)

P7: Many of which that are within 5 or 10 minutes of Pinelands, you know on Table mountain and so on (interrupted)

P4: In my mind it is a socio-economic thing as well, the other day I walked the Kirstenbosch, Liesbeek Parkway and Starke Ayres a bit if it is canalised a bit of it is natural stream and I think it has preserved a bit of its integrity because it goes through an affluent area from source to Black River it is going through leafy suburbs, so it is probably getting run off water and all that stuff

F: But you get the tail end of that river this affluent river (Emphasis)

P4: I think it has as a river integrity from source to about Black River

P6: What the Elsieskraal River?

P5: No, no

P4: No, the Liesbeek River

F: Oh the Liesbeek river, sorry

P4: Whereas the Elsieskraal I think from source pristine and going through a low socio-economic area and that is where the real pollution is.

Assistant: It originates from a farm Altydgedacht in Durbanville from three springs and then it moves through Durbanville, Bellville, Parow, Elsiesriver, Thornton, Pinelands and then just under the N2 in to Langa then it joins with the Black River 65% of is canalised. It starts in Durbanville and then I am not sure where it is then canalised. In the total length of the river 65% of it is canalised

F: The perception is it a river or is it a canal? We do have an interlink with the community with this, it seems to be rather because it is an open space because of different sense, that is a human factor, when you hear water, you see water that links up. That triggers us, you can see the mountain, because it was not built up to the edges, you could walk there, it is green alongside the river, that

triggers human senses. It is just an interesting phenomenon for us, how do people treat it and how we interact with it, is it a river or is it just a jungle gym for people to exercise?

P6: Mm (in agreement)

P4: Mm (in agreement)

P1: Do you know from the history why it was canalised?

Assistant: It was flooding towards this side (pointing to the end towards the end at the Black River) it used to flood, it used to flood the developing land on the side so they changed it to counteract the residents on this side

P4: The Clyde Pinelands area became like a delta, when it can down in flood as a kid it was wonderful cos you would have these islands that you would go to and fight you neighbours off and it was a little war zone, but it was a river, it had life

P8: Was it as deep?

F: Was safety an issue?

P6: No, not at all

P4: No, you would build catapults and sissies got hurt, cowboys did not cry. It was a different environment, it was I am sure there were safety issues but certainly none of my kids were and contemporaries of mine were killed, maimed, anything.

F: My question would also relate to the Black River now, it has normal banks?

P4: We would dig little tunnels and forts over there and it would probably collapse but I honestly don't remember fatalities, I remember adventures, not fatalities

P6: No, no

F: Thanks for that. I just want one more thing from you; do you think that there is enough goodwill from the people in Pinelands area to make financial contributions to get this thing back to what we want to see there?

P2: I think so

P6: Yes

P5: Yes

P1: Mm (in agreement)

P5: Yes, yes

P3: Ya

F: They will make contributions, financial even?

P6: I suppose to maintain it to what we were talking about

P8: I was going to say to get it back to; I mean I have only ever known it to be anything else.

P7: Ya

P6: Maybe to maintain it, the paths and that I am sure

P4: Yes, to fix it

P5: Yes

P2 & P3 & P4: Mm (in agreement)

F: So your concern is that you might lose it?

P6: No that it would get worse, the paths and things like that

P1: Then less people will use it

P8: There will be sufficient outcry because people love it, that you would want it to stay like that.

P6: Yes

P2 & P3: Ya (in agreement)

F: Very much part of Pinelands?

P6: Yes, yes

P2 & P3 & P4 & P1 & P8: Mm (in agreement)

F: Is Pinelands associated with the canal?

P8: It is the Pinelands canal! (emphasis)

P3: It's the canal

P2: The canal

P6: Yes, (laughter)

P5: If you give directions to people where I live you know across the river and then you turn right or left.

P6 & P2 & P3: Ya (in agreement)

F: It becomes a landmark?

P5: Yes, yes

P2 & P3: Mm (in agreement)

P5: Yes, for direction

F: This is important for maintenance; it will maintain in future, because if people don't value something such as a landmark obviously the red lights come up, we see it with fynbos, fynbos sort of disappears in front of developments because fynbos has got this big problem it does not have a forest environment, what you see ten meters from the road is the same thing you see 500 meters into the bush, it's the same vegetation it is not this spectacular what is next, what is next when you

are walking like in the Knysna forest, so fynbos got a serious problem from a human psyche that I have seen it all. Like if you go along Baden Powell it is a reserve what you see along the road is the same as you see 1kilometer into the reserve, so that's a human psyche problem we have in preserving fynbos, we have to overcome that and that is education.

P4: One thing that is interesting about the canal, is a Poplar indigenous or alien?

F: Alien?

P6: Alien

P4: Because most of the trees along the canal are Poplar's which we should probably get rid of

P5: Ya

P2: Mm (in agreement)

P8: Then Pinelands can get rid of all the Pine trees too (all laugh)

P5: Yes

P6: Ya

F: And Stellenbosch all the Oak trees (continue to laugh)

F: That's a huge debate I can tell you

P1: I believe all trees are indigenous to the earth

P4: Yes, ya, big view

P6: Yes

P5: Yes

F: Ladies and gentleman thank you very much, it was great fun I think we extracted what we need probably for this, the alternative of this that we go from home to home and ask specific questions,

P6: I don't know if I would do that (muttered)

F: This cross pollination brings up a lot more and brings the outside in here, we have got some good quality and I love it.

F: Thank you very much for your time.

P3: Do you want to go for a walk along the canal now? (all laugh)

P5: You will have to take a taizer with you

Assistant: I am doing the same study in Thornton, I want to see what they think of the river, and do they still bring up the same issues

P4: The interesting thing with Thornton is that it is on the border of Thornton and not central

Assistant: Yes, that is what I was going to say

P5: Ya, ya

P3: Yes

P8: Yes, that is what I was going to say

P2: yes

P3: Ya, but I mean Pinelands mind-set, we are all about recycling and greening, I mean you don't go to Thornton and see the recycling next to the house though

P2 & P5: Mm (in agreement)

P6: We lived in Thornton in 1984 and lived there for 5 years, and we had a lovely little house, Assegai avenue, literally five houses away from Heldersig road and the river and the 5 years we were there I don't think that I actually walked along the river, we would walk up to the park, I did not feel the connection to the river

P6: It is not very nice there

P6 & P3: Ya, Ya

Assistant: Do you feel a connection, even though it is a canal?

P4: Ya,

P5: Yes, definitely

P6: Yes

P2: Mm (in agreement)

P1: Ya, there some beautiful spots along the way, especially

P5: I mean the banks are green as you said

P6: My friend who I walk with, who moved here before I did, she should write a book, the most eccentric people, and interesting people walk along the canal. They have chats, the one is a conspiracy theorist, I can't wait for his next conspiracy theory and he backs it up with information, interesting I said write it down.

P5: Oh my goodness

P4: I think the Muse if not a book (all laugh)

P2: I just want to know if no one walks along the canal would you (concerned expression)? sort of like the Thornton canal, would you walk along there

P1: No you wouldn't

P4: No

P5: No

P6: No it would not draw me to go there

P2: The crowd draws a crowd

P1: Absolutely!

P6: It is the greenery, trees and the view as you say

P5: In certain times of the day you mustn't walk there, in the evening and the night time, you must think of your own safety

Assistant: How safe is that river?

P4: The river is safe, some of the people that walk along it are not (slight laugh), but Watkyn's has put there are a whole lot of signs, which would be great if you could read to say the canal is dangerous and he has got three ropes going across in theory that you can clutch onto if you are swept along

P3: They wanted to put nets with cans in it

P4: Yes

P8: Yes

P6: Yes

P5: Yes there is one up at our end

P4: Yes, that is what they have done already but they put coke bottles in there, but they have been stolen for recycling (laugh)

P6: Yes,

P2: Ya

P8: I mean it is not unsafe by any means; it is the people that are unsafe

P4: Yes

P2: Yes

P5: Yes

P8: Walking there and walking down the slope it is not the rivers fault

P3: I think it wasn't a problem until a child fell in and died, that happened a couple of years ago, about two or three years ago

P2: Ya,

P1: Yes, three years ago

P3: That is when it became dangerous and safety

P8: I mean it wasn't that the river snuck up on the kid

P3: Ya, the changes of the river that he fell in

Assistant: So it is the human element that is unsafe?

P4: Yes

P5: Yes

Assistant: Thank you for those comments, enjoy your night further

Appendix E: Thornton Focus Group transcription

Thornton Focus Group – 5 June 2014

 # F: Facilitator

 # P1-7: Participants 1-7 as seated to the left of facilitator

 # Assistant: Assistant to facilitator (researcher)

F: Just for interest sake do we call it a channel or a canal; I am not British or anything (all giggle)

P1 & P2 & P5 & P6 & P7: We call it a canal (all at the same time)

F: What is it for you is it a canal here or is it a river? We talk about in general and on the street?

P5: It's the canal

P1: Canal (muttered)

P6 & P7: Mm (in agreement)

P2: Can I just elaborate (interrupted)

F: Yes you may

P2: Where it is a river, it is still open ground, that the river is running through, but in this area and down through Pinelands it has been canalised in that they have put cement, they have made cement walls and a cement bottom, so it can't go anywhere else in that bit. It is a proper built canal, now ya, ya

F: So that does not make it a river?

P2: Well it is a river running through it, but it has been canalised so, that's why we call it a canal

F: Well the perception, how people perceive it as being a river and not a river anymore and when it passes through to Black River, it is a river again?

P2: Yes

P5: Yes

P6: Yes

P7: And then it goes further and then becomes part of the sea (giggles)

F: Right! I just wanted to get that off, and out of the mind. We talk about the canal that is what it is for you and the people out there. If I wake you up in the middle of the night and ask you, it could be anything littering, anything, if you think about the canal what comes to mind?

P1: Flooding

F: What else? Anything?

P2: Rubbish

F: Rubbish, ok

P6: An area that can be beautified

F: CAN be beautified! I like it, you and the people out there what so they say?

P1: Crime

F: Crime, anything?

P5: Play area for the kids

P2: Could be!

P5: It is still a play area, for my kids

F: Right, anything else? Anybody?

P6: It used to have wonderful spring flowers, flowers all along the banks, a lot has been built up, since the earlier days, but I was a wonderful place to go walking your dogs, taking children

F: It changed?

P6: It's changed there's, the walls backing onto the canal are higher, you don't feel as safe as what you used to do. It is more isolated

F: A little bit more, why does the walls not make you safe?

P6: Because it is the back of the houses, so if one is walking there, previously there would be open fences or low walls, people in the houses could see you, you just felt part of the community, whereas now you feel shut off, if you walk down along a large section of it

F: Walking there you do not feel part of the community?

P1: You do feel like you are walking in the canyon, I must be honest

F: In the canyon!

P1: You walk past the back of the houses, with high vibacretes, although a dog jumped over there one day, I never knew I could run so fast (all Laugh). The thing I also think about that place is that, you mentioned play area, I mean last year August, kids were playing there and a kid fell in to the canal and he drowned.

P7: It was about two years ago, I was actually going to mention something like that now

P5: During the flood season

P1: Yes, it was during the flood season

P5: Obviously, during the flood season, most of the kids know that they are not supposed to play there.

P1: I am not sure, not sure

F: You were talking about safety, you talking about safety for children?

P1: Safety in general, I mean the high banks people tends to hide or they break in and they go there and they run down either way you don't or can't follow which way they are going , they go disappear Pinelands way or disappear to the cemetery, so (interrupted)

F: So you don't mean safety that the children will fall into it? That was not the (Interrupted)

P1: That was part of the aspect also

F: That is part of it, ok

P1: Ya, that is why I would say that I would like some cycling tracks on it, it will be more utilised and there will be more people and will be less used by criminals because of all the activity of people walking their dogs and cycling there.

F: Not enough activity there at the moment?

P1: No, definitely not

P6: No it is very quiet

P5 & P2: Mm (in agreement)

F: But your children play there?

P5: Yes, but they are supervised, and we play in the space where it is visible, on that side close to the station

P7: The station, yes

P5: You would not let them play that side where you have the high walls, the neighbours high walls, the back of the houses high walls, it kind of (interrupted)

P4: It is quite secluded

P5: Secluded and obviously there is a cemetery opposite which also can, the criminals hide in there

P4: I am a runner and haven't been doing it for some while, I used to run quite often at least three times a week and that was part of my route and at some time or the other I had to go past there and it is daunting as you run along, because then suddenly you would see someone is just coming from nowhere, there are times when there is water in the canal and there are times when it is a bit dry, and when it is dry that is the time when, that you find the elements hanging around.

P6 & P5: Mm (in agreement)

F: Your running area is it on the bank?

P4: No, not in the canal, but I would pass it at some stage

F: I am just asking now, you take your children to play or you or other people, I am assuming all people, then why there, if it is not a river it is a canal?

P5: I think it is the water element, the fact that there is water and you know and I think for me the high walls is a safety issues for my kids, they now that they can fall in so they kind of stay on the edge not close to the water. It is a water thing, they can throw stones and it is safe for the kids to play, obviously in summer, in winter time when it is in flood it is a different story

F: Alright. Let us turn away from the canal now, let's talk about the concept of pollution? If you talk pollution in general, pollution what is the first thing that pops up?

P4: Plastic bags

P5: Papers

P7: Papers

P1: The armchair in the canal (all laugh), it was like laying there for three weeks. I am just glad that the water has now risen so it can wash it down to Pinelands (continue to all laugh) they can use the chair for a while

F: We are all talking litter at this stage?

P2: Yes

P5: Yes

P6: Yes

F: We not necessarily link it to the river; it seems to be litter as pollution for you, more or less?

P5 & P6: Yes

F: If I wake you up in the middle of the night, pollution is litter? Right?

P6: Air pollution

F: Air pollution as well, a little bit more, ok,

P6: In this area from Epping there are a lot of big trucks used, a lot of industrial pollution

F: Litter, air pollution, right good. Now the area along the Elsies River or the canal, in general we touched on it, what is the community, not you only, what do they use it for? It is for children playing, running, you are not doing your cycling there are you?

P1: No, no

P5: No (giggle)

P1: My wife won't be able to (giggle)

P5: Not anymore

P1: I used to walk the dogs there

P2: Yes

F: What do other people do there that you see? (Muttering)

P7: You now, few than there used to be (interrupted)

P2: A lot of people walk their dogs there, a fair amount at different times of the day

F: They do walk dogs?

P6: As the other participant said, fewer than previously, there used to be more

P7: Yes

P1: And Sundays tend to be a day when there is a lot more people walking their dogs, actually there is quite a lot of people that do walk along the canal not necessarily with a dog. There used to be an old man who used to jog every single morning along the canal

P2: Mm (in agreement)

P7: Well fortunately he lives where he can see who goes there (pointing to P1)

F: So what is you observation there?

P1: There is quite a lot of people that do use it, that space rather and like I want to point out what she said that flowing water does attract people it does soothe you sometimes, especially now

P5 & P6 & P2: Mm (in agreement)

P1: (continues) with the water flowing as it does, it is attracting the children, grown-ups as well and like, you mentioned beautifying it, somebody mentioned it

F: Mm (in recognition)

P1: I mean it can be such a place of (interrupted)

P2: Yes

F: She said it was beautified actually

P7: Years ago (emphasis) (same time as P6)

P6: I mean it used to be naturally but I would like to see it developed and beautified to make it much more user friendly (interrupted) it has potential

P5: Mm (in agreement)

P2: Now as in Pinelands, they have got beautiful brick paths on both sides, they have got trees, they have got lighting

P5: They got park benches

P6: Mm (in agreement)

P2: Yes, they got benches

F: You do not have that here?

P2: Nothing!

P7: You know we (interrupted)

P2: Just sand and mole heaps

P4 & P7: Yes, mole heaps (giggle)

P7: You see Patricia De Lille lives in Pinelands (giggle)

P2: And Brian Watkyns

F: I know PB Botha also lived in George (all laugh)

P7: That's all I can say, maybe that can explain why it is that side of Jan Smuts road

F: I know of a guy who lives in Nkandla (laugh even more)

P7: Do they have chickens?!

P1: He doesn't have a canal

P2: Because I lived in Pinelands before coming here, I used to walk every single day around the canal, I went right from the Masonic lodge where my flat was on Ringwood drive and I use to walk all the way down to those sports fields and then back up again on the other side, all in all you can do 5 kilometres all the way round

P5 & P7 & P4: Mm (in agreement)

F: Why not here?

P2: Because it is not safe and we do not have pathways, nothing you are walking on deep sand, so your shoes get full of sand and it is also not safe

P5: No pathways (same time as P2)

F: It seems that you know the river or the canal very well. Tell me in general what organisms or aquatic life that is in there, would you find along this river?

P2: Sacred Ibis

F: We look at the water life, aquatic life, anything that you are aware of, that people have mentioned?

P5: We saw baby little tadpoles

F: Tadpoles

P2: There might be frogs

P4: And crabs, you get I think like a it depends when it rains you get like a crab that comes out of here, comes out of the water

F: We haven't picked that up, interesting, just because you did not mention it, any fish?

P2: No I have never seen any

P5: Never seen any

P7: No

P1: Uh uh (meaning no)

P2: I think because it gets so low when there is no water running it is almost dry, so anything like fish is seasonal if you have got at all

F: Right! Let me just ask you, I want you to take an instrument in your hand please then I am going to read out the numbers to her. I want you to look at the dot side, the black dot side would be good and the white dot side would be sort of bad, so it is from very good to very poor would be the extreme, I want you to give me an indication, not you only the people around you, where you come from and so forth how would you rate the condition of the aquatic life in this river? Is it poor or good, how poor or good? I read out (3,1,3,2,1,1). Just have a little chat on this, why this? It seems to me not to be on the good side, it seems to be on the bad side why? What do you expect?

P6: I would think that there has been pollutants in the water from further up, where it has come from and that is why there is very little living life left in it by the time it gets here. The river has come a long way before it reaches Thornton

P2: Probably a lot of ecoli, stuff from people living on the banks higher up

F: Is there any specific toxic water dumped into this canal area or not?

P2: Well I have not seen it in Thornton, because I don't go there so often, but when I was in Pinelands there were often times when we used to see like soap suds, froth like coming down and other times green oil on the water. To be honest in Thornton because I don't go there I don't see it

F: I see you don't like what you see there, the quality of the aquatic organisms?

P2: Not at all, and people that let their dogs go in there, they have to take them home and go and bath them

F: Serious?

P2: Cos they stink (emphasis)

F: Tell me, serious?

P2: Serious!

F: Ok, that is why you won't walk in the water?

P2: No

P5 & P6: No (same time)

P1: My dog has never been into the water, not for that reason, I don't think that the water is good

F: That's interesting, in general?

P1: in general, especially when it is dry weather, that little water that is laying there, it is not even flowing, it is just practically laying there and green

P2: It is foul (muttered)

P6: I don't think many of us would walk in there at all

P5: well I did and I am still here (all laugh)

P7: Well she went to bath immediately after (all laugh)

P5: When I was a child we used to live next to a canal when I was four or five and it was our playground, and the water level was high enough we could use it as a swimming pool and we would play in the water and there were times when the water was clean and then when it was murky and dirty

F: I just want to ask you, how long ago was it?

P7: It wasn't in Thornton! (Emphasis)

P5: It wasn't in Thornton (all laugh)

F: Let's talk about vegetation next to the river water, not aquatic now, we talking vegetation, what sort of vegetation would you find, are you aware of, could you identify?

P4: Grass maybe

P2: Sort of kweek grass, and on the banks those sort of white daisies come out in spring

F: That is sort of not planted?

P2: No it is natural

P5: Wild natural

F: Daisies is a plant, any other vegetation that can be of use that is river like?

P2: Nothing because it probably is cement, yes

F: Right, again good bad, how good or bad would you rate the vegetation that we see experience next to this river, in general/ if you take this river span is it good is it bad I read (1,2,5,7,5,5) ok that's the vegetation. Any reason that you think it is like that?

P4: Again if we go right to the start of your interview you asked what is the difference between a river, if that thing was allowed to flow without cement or concrete cast inside there then that water would have had what a scientist might have called silt, we would have had it meandering and right now, nothing is happening. We humans are channelling that thing where we wanted it to go so we could build and reclaim land to do whatever we wanted to do, so we can't exactly blame the river, you watch 50/50, if I go quiet just forgive me then I am just thinking. The river needs plants inside the river and so what is happening man decided that it doesn't need plants inside there, so the water that is coming through can't be filtrated and the dirt inside the water can't be purified, filtrated and whatever needs to be done. So we have actually messed around with how that river is supposed to be flowing from point x to point whatever

F: it is not a river that is what you are saying?

P4: Yes, what man had done to the river yes!

P7: It is a canal (giggle slightly)

F: What is the difference between a canal and a storm water pipe? Is there any difference for you or is it the same?

P4: Well a pipe would then then be fully enclosed and to me, just based on what we said earlier on the canal it would then be opened

P7: Mm (in agreement) (as P4 is talking)

F: And (hesitates) then for you in terms of river, or canal or pipe, isn't this just an open pipe?

P5: No, because there is sunlight coming in, there is sunlight

P4: No a pipe is totally closed

P7: Pipe is closed yes

F: I mean so it is better? You would prefer a pipe?

P5: No, I wouldn't prefer a pipe, I prefer the canal

P4: No, no

P7: Mm (in agreement)

F: You would prefer the canal if the cement was (interrupted)

P4: No, no what I am saying, the way it was meant to be and then we would even have more maybe natural type of not only vegetation but animal life, so your fauna and flora would be totally different in that specific area

P7: Mm (in agreement)

F: We messed it up is that what you are saying?

P4: Yes

P6: I agree

P2 & P 1 & P5: Mm (in agreement)

P5: I mean it is just a different way of channelling water

F: I wanted to know, again a measurement, where it talks about the water and the lack of, again just give me, we want a rating on that, the water quality if you think it is good black side, if you think it is bad the white side, the water quality in general, just the water quality, seems you don't want your dogs to bathe in it, water quality, good or bad

P1: But that is dependent on the time of the year isn't it?

P7: Yes

P2: Yes

P5: Mm (in agreement)

F: Ok, help me?

P1: Well ok, now the water quality is a bit, quite a lot better because the water is continuously flowing and with this heavy rains there is this a continuous flow of water, the minute the summer comes or the rainy weather stops the water subsides and it just becomes a stagnant pool

P2 & P5 & P7: Yes (in agreement) (at the same time whilst P1 is talking)

F: Does it really become stagnant up to a point?

P5: Yes

P7: Yes

P2: Yes

P1: Yes

F: Interesting, right give me one for summer and one for winter, first of all give me summer its dry it is stagnant what is the quality in the river? I read (1,1,6,1,1,1). Winter time, now in flood how good is the water quality that runs through here? I read (8,6,8,4,5,2) thank you. The reason for this id=s basically the flood and the water runs fast and it goes through but there would still be litter and some effluent coming from upstream which you mentioned?

P5: Yes, yes

F: So that is why you don't give it a ten or an eleven?

P1: Ya

F: Summer time it is serious issue for you?

P6: Yes

P4: Yes

P1: And mosquitos

F: Ok and mosquitos that is the stagnant water, yes, good, again we talk about measurement, we talk about the concern. Very concerned black side not very concerned white side. If you talk about the people of Thornton, people living in this area, people interacting in this community you will find most of this discussion is the interaction with the river, how concerned are the people who live here, that is why we wanted people that live here, how concerned are the people living here about the condition, the environmental quality of this area and city that we live in?

P2: Not only the river you are talking about now?

F: No, are the people environmentally concerned here?

P4: Yes, yes

P2: Yes

P5 & P7: Mm (in agreement)

P4; Can I just come in there

F: Yes please

P4: (continue) if we look at the man-made and the natural things I am going to start of that way, we have trees growing all along the avenues and sometimes the branches grow quite far over into the streets and people are concerned as neighbours will come to me before they phone the council to say did you notice this and if I lodged a complaint or ask would you come and clean it would you be happy so that, you see what council would do it that they would clean the one in front of your house say for example number two Protea Road called they will just go down the road and do a clean-up, that's just my take on it because that is what happened with me in our street. Environmentally they are

F: Sensitive?

P4: Sensitive

F: In general here, it's not that the people don't care about the environment

P5: Yea

P7: Yes

P5: Yes, we do care that is why we stay in Thornton, we do care

P6: We love the greenery and (interrupted)

P6: What we and the people around us feel?

F: Yes, what people think of this river and area, you might be stronger, very concerned or not concerned?

P5: Yes

F: We talk about a (7,10,10,11,6,9) ok, right, again ranging from good black dots to unacceptable the white dots how would you turning this environmental issue to the river say are you concerned about the environment along the river? The environment along the river concerned to not concerned, you and the people you represent here?

P5: Could I answer that is a very tricky one because it depends for a lot of people how far the river is from them and again we look at how many people walk, run or are physically involved in their own bodies, it might not make a difference to them, because if you asked people to come here tonight and you asked which river or where and you say the canal then they know, but if you say the names then they are not aware of the thing

P1: Ya

F: The thing we are referring to, ok point taken. I still have to ask you to talk about the river now as is, I am going to ask you three questions on the same thing, how concerned would you say the average person in Thornton about, sorry about this how acceptable or unacceptable, acceptable black dots unacceptable white dots is the environmental quality for the people here in Thornton.

P5: I still say it is a concern

F: How would you rate the overall environmental quality of the river at present? At present the overall quality of the canal at present, acceptable black dots, unacceptable white dots. I read (7,3,9,3,6,3) ok, my next question is how acceptable or unacceptable was it ten years ago?

F: Coming to your age (giggle and laugh) how acceptable or unacceptable was the same area for you ten years ago, or you say or the people talk about ten years ago? I read (6,9,9,8,10,9). How acceptable or unacceptable do you think it will be ten years in future?

P7: Oh, oh, oh, oh (weary expression) there might be a few shacks!! (Emphasis)

P5: Not good

F: What do you think it will be like a prediction not you only the people around you, how acceptable or unacceptable will this river be for you in future (1,2,3,4,10,1), ok right we have done that

F: Let us move on to the next question, we have given these ratings of the quality at present, ten year ago and ten years in the future, why the change, some changes, why would it change?

P1: I moved here about fourteen years ago hey, it was better then, you never see a chair laying in the canal for one, it was just tidier then

F: Why?

P1: I have no idea I think it is because of the decline in, increase in poverty perhaps, and people not caring you know these, especially I must bring into account these horse and cart guys, they tend to dump things into the canal when no one is looking and it has just gone done, it has just declined

P5: Mm (in agreement)

F: You see that, I don't know your specific ratings; do you see it into the future?

P1: Yea it is just going down

P5 & P2 & P6: Mm (in agreement)

P3: Can I just make a comment there that there is actually, council is actually adopting now the whole biodiversity thing. I was actually at a meeting last night that where they presented the smart Cape Living and what came out from the leaf programme in Langa is that we as a community should take ownership, especially our rivers and things like that so we are to initiate things like that, council will be there to assist because there is currently a programme in the clean-up of the rivers it is in place but those are further things we need to highlight on our wish list and the thing we take forward to council

F: I mean do you think the community do it? Take responsibility?

P3: I think somebody should initiate it, it is same like the Langa concept they had all these dumping grounds in Langa and eventually the community stared to act on it, they have now transformed those dumping area, it was a process. Leaf gave us a presentation last night in the process of two years. Now they have got the most of Langa adopting the same principle and communities is starting to get

involved and getting their hands dirty, they are taking pride of the area. I think the same thing need to happen in Thornton so that is actually something I was going to bring over to the next meeting

P1: You should then they should reduce our rates

P3: Excuse me, reduce the rates

P1: For us to get involved more

P7: Mm (in agreement)

P3: I think it is more about taking ownership it is not to say that the funds won't be utilized where it should go but if we don't take ownership say if we allow, say for instance our kids to do that there is only a certain level of funds that can be made available for certain things so we need to if we see someone transgressing or doing something not right we should actually stop that person and say that is out area

F: Do you see it?

P3: We don't necessarily see it but we know there are culprits like the horse and cart, so when we see horse and cart we can start to alert each other and be on the lookout, we know what they are going to do in our area, so we need to also discourage our own community members not to make use of their service that is why they come back cos they know that they are making money and mess up our area

F: Some other issues on this?

P7: I would just like to say something about the canal areas before you get to Jan Smuts Drive there is a shack it is a brick, like somebodies room, like a security guard thing, you find these guys also sleeping there and that is also one of the reasons why that section of the canal looks the way it does as there is a lot of rubbish lying in the canal

P4: Yes, vagrants (same time as P7 talking)

P7: I mean the night that that child drowned we walk that canal all over the show (interrupted)

P3: Right through

P7: (continue) even though it was a winter's night there was still you know a lot of rubbish lying in the canal, I mean this time if the year it flows

P2: Really (same time)

P1: Flows yes

P7: Flows, that whole section from the Masonic temple side and our side of Jan Smuts a lot of rubbish and we need to get rid of those people that are squatting, there are squatters around here and of course and Conradie Hospital, you know that is just a dumping site or what is left of it

F: A little bit more why Conradie Hospital how does it impact the river?

P7: Conradie Hospital also runs along

F: Why does it impact on the river, the hospital?

P2: Vagrants there

P5: No, vagrants there

P7: There are vagrants there, you know they just dump things and they already stolen all on that side of Conradie Hospital I don't think there is anything left really. That is also one of the reasons why the canal looks the way it does

F: The decline in future?

P7: The decline, well if that continues we will still have you know

F: You do not see a turnaround easily?

P5: I think the decline is also the increase of population in Thornton I mean in ten, fourteen years there will be more; more buildings have be erected, obviously there will be more houses

F: Then you won't go down there? How do you visualise what it will look like next to the river in ten years' time?

P5: Most probably more population

P7: Low cost housing

P2: Yes

F: Closer to the river?

P7: Yes that area by Conradie Hospital or near there

P2: They have got it earmarked for low cost housing they just won't say it

P3: Gap housing

F: And more housing and so what?

P2: Well that is where it is going to be more polluted, more people

F: Why do people pollute?

P5: Because it is easier to throw something down, but I have also noticed that there are not a lot of bins in Thornton, so obviously the kids also throw stuff around

F: I mean so you don't throw it in the street?

P5: I don't

P7: We don't (chuckle)

P1: Mm (in agreement)

P6: Lack of education, lack of inspiration

P7: Mm (in agreement)

P6: I rated it high because if the council continues to upgrade areas like they have done in Athlone and other areas like Green Point Park if we get the support I think Thornton residents will pull together and uplift the area but I think we need to work together with council

P4: Could I just come in, sorry to bring this up but it's the truth, if you look at the residents that moved here, when I came here I was proud to live here because I am from Port Elizabeth and then I moved to Botswana and then I moved here so I moved around a bit and when I came here I wanted to know if I have kids and I settle here where am I settling and I found out about the area and this area was predominantly a railway, the railway people, the people that worked on the railways houses. So that was the first thing and they were predominantly white people and we must take a thing that happened called Apartheid and you wouldn't just find a black or a coloured person just walking. The river was always there they wouldn't just walk there because they were told you don't belong here in the area so if we want to face facts and we want to be (interrupted)

P6: Mm (in agreement) (same time P4 is talking)

P4: (continues) you wanted to know what will happen now in the future, we moved in here and are proud residents so we are also looking after it and then you find that we have different governments and dispensations that came in from the 40's 50's 60's right through to present time and people are just allowed carte blanche so even the residents that live right across the canal will say you are not allowed to do that you will still find that people with the horse and cart will just do what they want to, I am talking about people and human existence, co-existence but as far as natural things such as soil and silt in the river that I don't think we can help for much

P5 & P6: Mm (in agreement)

F: It will never come back?

P4: No

P2: No

F: Or what is on the river?

P4: Natural things, well I am talking about someone just throwing a chair in we still residents of Thornton but the laws have changed and it is allowing people to do just what they want to

P2: Mm (in agreement)

F: I think that could probably be the perception why you feel that and why your chair was there, but why the plea for community involvement is going to be, you will have to pick the right strings to get it going and there is negativity it seems?

P3: Ya

P2: Can I just add something about the negativity and where I perceive that it has come from, I can't tell you exactly how many years ago but let's say 15 to 20 years ago there was a high school here, there was a bowling club that function, we had a post office we had a community then the powers that be closed down the high school, the bowling club has died, there is nothing going on there at the moment

P1: Yes

F: You are too young?

P2: (continues) there's a it is just left there as a derelict building you know Conradie Hospital was looking after patients who really needed them and now its derelict buildings that vagrants have pulled to pieces and taken whatever they can from there. Nobody has taken ownership of it so the actual powers that be as far as I am concerned have caused a lack of community spirit in Thornton

P4: Yes

F: Ok, ok, point taken, touching onto what you have said and what you have added is, what improvements have you people observed regarding the river in recent times along the canal are there any improvements, what have you seen are there any?

P2: No

P5: No

P6: No

F: Carte blanche, nothing?

P5: No

P2: Just a sign board that has been put up

F: Which says?

P2: It is the Elsieskraal River and you may not swim and you may not do this and you may not do that, those sorts of general white and green boards

P4: Information boards

F: If you were asked to change one thing about this river that is running through your village. If you were asked the question about what you would like to see, you and your friends outside there you speak on behalf of would you like to see along this river? It is our river it is our canal, what would you like to see there?

P6: Beautification

P1: And I still say the pathway

P5 & P6 & P7: Yes, yes (all at the same time)

P1: For either cycling or walking

P6: Yes, and vegetation

P3: Park benches

F: Anything else?

P2: Lighting

P1: Ya

P5 & P6: Ya, ya

P7: Yes, as if you have to go and look for a body at night there

P6: Playground equipment in the areas

F: Along the rivers?

P7: Yes, especially along the Heldersig Road

P6: Yes

F: Any other improvements that you would like to see? Interesting I don't pick up anything about the water?

P3: Water quality is not ingenious (interrupted)

P2: I suppose we know it is beyond our control (all laugh)

P5: Yes, yes the water is a problem

P6: The thing is this river is not just Thornton

P1: Ya, ya

P6: (continues) it is coming from way up that side, so we can't do anything in our little section, it is going to be way back from where it starts

P5: Yes

P7: Ya, ya

F: Ok, so you accept that fate?

P6: Yes, yes

P5 & P7 & P1: Mm (in agreement)

F: Right if you require or you need information regarding what is happening in the natural environment around you, not the river now, talking about the natural environment, today is Environmental Day

Assistant: World Environment Day

F: (continue) if you want any information about the environment what would be your source?

P1: Google

P5: Mm (in agreement)

P7: Obviously the internet

Assistant: May I just step in there, anything closer to home, anything where you go and find?

P5: The 7 Eleven notice board for me

P6: I ask the people (hesitates) I have a landscape architect friend

F: So that is personal for you, 7 eleven notice board that is personal for you, anything else general environmental information

P1: I must be honest it used to be the neighbour that used to stay next to me, unfortunately he died, he stayed here for 47 years and he actually new quite a bit especially about the river, why it was deviated

F: Whom you would consider to be a fairly knowledgeable person about these things?

P6: Yes, yes

P1: Yes, he said they deviated the river in order to construct the road going past it used to flow further up into towards the railway line

P7: Ya

P1: (continue) and then they moved it

F: There was no road and no man-made stuff? I know he mentioned the name

P1: He mentioned that where the railway is, is where the road used to be apparently and then he also used to speak about how it used to flood that is also another reason why?

F: Just interested now if it is in flood would it take back where it came from? Where it did go?

P1: For sure, I have a boat just in case (all laugh)

P7: He is the closest to the river than all of us, yes

P1: I mean you just never know you never know (continue to laugh)

P5: Let's get your address

Assistant: So you read pretty much google is that where you get your information from

F: Personal contact, Right. Who do you trust most? We know now where you get your information it seems you would have trusted that individual (interrupted)

P1: Yes

P7: Yes, most definitely, the residents of Thornton

P1: 100%

P7: Eric would also have been a great help

P2: Yes

P5: I mean I also have a neighbour that he tells me and he is very old

F: And you politicians?

P7: Ooh no we won't waste our time thank you very much (chuckle)

P5 & P6 & P2: Uh, uh (meaning no)

F: And your newspapers?

P7: Well yea

P5: Yes sometimes I read them

P2: Yes, yes our local papers, The Tygerburger and (interrupted)

P5 & P6 & P7: Yes, yes (at the same time)

P2: And the Die Tygertalk, we get a quite a lot of information from there

F: And you trust that? The environmental information?

P1: There is quite a bit of information in there

P2: Yes, they have also got a councillor that is very active, Vos, he is no longer

P7: Mm (in agreement)

F: Would you trust that more than your knowledgeable neighbour?

P2 & P1 & P7: No (all at same time)

P7: Noooo

P2: The neighbours are the best

F: Interesting! Right, who do you trust least about environmental information?

P7: City of Cape Town

P5: Yes the politicians and the City of Cape Town

P7: Yes, yes

P3: I think there is a difference between the city and the politicians, obviously the politicians represent a party having been working for the city I know that all the changes in the political agenda actually interferes with the administrative agenda that is one of the biggest problems. I mean if you look on the website they make available all these biodiversity, energy saving, safe use of water and things like that. I think we need to look past the politicians because that is what I started to do and cos if we follow the politicians next election somebody else, somebody else and all of them got their own agendas but there is certain information that is relevant which they didn't put there but they should lead us to access that information

F: Let me rephrase the question? Not you people the people out in the streets and living around you, do they make a distinction between the politician and the official?

P1: No, I don't think so

P5: No

F: Can I make a conclusion in saying now the people you trust least to give valuable information is probably the politicians and the local officers?

P5: Yes, yes, for me yes

P6: I would say the politicians not the local officers necessarily

P3: Not the local officer

F: Got it, got it that is interesting, well it is sort of expected to a certain extent. You should know, I want to give you the background why we ask this type of question is that you have to communicate via a vehicle, some other medium and that simply means the last thing we have to use is a politician to take up the agenda of this

P1 & P5 & P3: Mm (in agreement)

P3: I just want to comment on that (hesitates) I think we must also remember that government has also put into place a programme for the community whereby they keep their councillors responsible for the spending of the money in each community so that programme is now in place that is why we as the neighbourhood watch have representatives on the council on the committees whereby we take the issues of Thornton forward. So now we have got another vehicle besides the ward councillor so that gives us a footprint into many opportunities, if I just look back that the things that we never got but we are getting now. The exposure that we are getting, the information that is being relayed

F: I assume you are talking about recent stuff?

P3: Ya

F: Because what you have said, the people around here; there are no changes in the environment, in the river up to know we see nothing is that correct?

P1 & P5: Mm (in agreement)

P3: Ya

F: Well I have something coming up, let me just take you to the next one what are the characteristics, we think about a river, we can have a real talk on this he mentioned it but we talk about it, we talk about a real river what are the characteristics, what do you associate with a real river?

P2: Bird life

P1: Flowing water, bird life

P1: Plants

P7: And of course fish

P5: Flowers

P6: Animals

P5: Beauty

F: Ok

P2: Trees and plant life

P3: The hydrology and the flooding

F: The things you mentioned here are not here?

P2: No

P1: No

F: Hydrology, a little bit more? What do you mean by that please explain?

P3: I mean the means of carrying away the water for flooding and transferring and that kind of things

F: That is the ideal river you are talking about, obviously we seldom get that

P7: The ones you see in the movies

P2: The ideal, you could have water sports, you could have people with canoes you could have all sorts of things

P1: (Chuckle)

P2: Your boat (all giggle)

F: Is that why you were fairly adamant in the beginning that is why this is not a river for you, because everything now I don't see it in the river it is a canal?

P1: Ya

P6: It's a canal

P5: It's a canal

P3: It's a canal

F: Would you be surprised if I say people downstream in the canal do fish?

P3: That must be very, very far down (giggle slightly)

F: Which comes through here, it must

P1: But that is more of a river down at the end

P3: That is where (interrupted)

P2: Cos it goes into the Black River

F: Tell me as far down, near the end yes

P1: Isn't it near to where the golf course is

F: Still in the canal, still in the canal

P2: But then it is open

F: Yes, but that fish must have swam with a hell of a speed to get there

P6: Those fish did not come from here they came from the bottom (adamant)

P7: It came from Athlone side

P5: Yes, yes where there is more water

P6: There is no ways they would have come down here

F: You are very adamant about that?

P5 & P6 & P7: Yes (all at the same time)

P7: She has not seen any fish for all the time she has lived here

P5: Tadpoles, we used to take them out

P2: There is not enough water for fish

F: Point taken that clarifies something for us, I thank you for that

P3: I have also seen a lot of people bathing, a lot of the foreigners is using the river I mean, from Bellville right down to here even in Thornton because there is people staying there at the cemetery so they make use of the river to wash themselves (interrupted)

P7: (Giggling)

P2: Ya of course

P5 & P6: Mm (in agreement)

P3: (continue) so that is another way that they pollute and do their thing

P2: As a toilet

P3: Yes as a toilet, and that is becoming common practice in Cape Town. From Bellville right through

F: But that picks up with the discussion on population

P5 & P6: Mm (in agreement)

P1: I was going to come back to what he said earlier on, people should take ownership. Thornton used to be an area where most people owned the houses with all these foreigners that's in here, and also the communicare flats on the other side

P7: Ya

P3 & P5: Mm (in agreement)

P1: (continue) that stuff used to come from those guys. The horse and cart guys would fetch it and just dump it in the canal. These people don't own, they don't stay in the area, they don't care they just rent, so they can just up and go. But you that is staying there you try your utmost to get things going but (interrupted)

F: I have one question left but I want to pick up the chair? (All giggle)

P5: The chair is gone

F: I don't want to pick it up, it got washed away. How come Thornton residents did not take ownership and flipping pick up the chair?

P1: They took the chair out after a few weeks; I was not going to walk in there in that nuclear reactive waste that is flowing in there

P6: You see the chair I wasn't going in that dirty water

F: You wouldn't walk in there?

P1: No ways I would not walk in there, and there it is I do agree with you we wait for the council to come and clean the canal cos we as far I am concerned we pay rates

P6: Yes

P2: Ya

P5 & P7: Mm (in agreement)

P1: (continues) they must come and clean up under the bridge there across the canal, I mean summer time it is a haven for cockroaches not the ones that walk on two legs the real ones

P2: Mm (in agreement)

P5: The six legged ones

P6: I think what we also haven't mentioned is that under the bridge at the station, there are very often people living there underneath the bridge and that is their toilet and their wash water and everything and (interrupted)

P1: Ya

F: You lot are fairly well in contact with the abuse of the water area?

P1: Yes

P6: Mm (in agreement)

F: Specifically using the water for whatever it is, you are sort of in contact with that in this area

P1: Ya

P6: We are aware of it

F: You are aware of it

P7: Especially the station side, they hide there also

P1: I must be honest I wait for the heavy rains to come because it washes them all out from under the bridge, I mean people need shelter but

P2: Yes

P5 & P6: Mm (in agreement)

F: When the heavy rains comes I would like to hear you out on this one and this canal is in flood does it become a river for you?

P7: No it stays a canal

P1: It is just a canal that is overflowing

P5: Yes

P7: I mean it is just very wild

P3: You do not want to be near it

P5: It looks dangerous

F: it is still not a river?

P6: No

P5: No

P2: No

P7: No it will never be a river; it will never flow like a river

F: Just inform me on this, we picked up this in another group that the people tend to say that when the river rises up to the edges and covers the cement they feel it looks like a river?

P5 & P6 & P7: Uh, uh (meaning no)

F: You still it's a river?

P5: It's a canal

P6: It's a canal

P1: I have never come across anybody that refers to it as a river even if it is in flood; they still say it is a canal

F: Is that so, ok last one. Do you think that the people of Thornton, you not necessarily, the people around here are they concerned enough to contribute money to revive, change the canal area into something that is bearable, acceptable, tolerable for the community, do you think that they did not take out the chair do think that the people would contribute if they would start the action?

P5: I think what is happening is that I have been here fourteen/fifteen years and the reason we joined the neighbourhood watch is because we want to belong to a body that is going to do something because we find that I speak, you speak but nothing happens and I for one reason, my daughters attend Thornton Primary School and there is always papers laying around and I pick up the papers and I sent an email to the principal saying that instead of the kids going to detention and sitting in the classroom for an hour, take those kids and I will help you with the plastic bags, I could

779 donate some plastic bags and so could some of the other mothers and get them to pick up the
780 papers around the school and outside the area especially the pathways. I have not heard from the
781 school ever since then and what I find then what is that people are not aware of what is going on in
782 Thornton, but I don't think it is because they do not want to be aware

783 F: Why?

784 P5: (continues) it is just because that they are not aware, I live in street and I speak to my neighbour
785 but the neighbourhood watch looks at me and he walks away but I think it is we need to do more for
786 our community and involve them more and then I think perhaps we can then say that people will be
787 willing to contribute, but right now I cannot say yes to that

788 P3: Apathy

789 F: General apathy?

790 P6: I think it is general

791 P3: I think that we will come back to what the other participant mentioned is and I mean I have
792 actually taken this forward to council also there is no sense of community, so the same like the
793 neighbourhood watch I mean we have drives to educate the people for them to join us and
794 everything but then it just fall by the wayside. You see you don't have a library you don't have a
795 community centre so where does the community meet, so every activity has to happen outside of
796 Thornton so it is difficult to mobilise people to get involved in community and activities because all
797 social events take place outside of Thornton so that is one of the negative things and the first thing
798 we need to get is a community centre or a recreation centre where the community can come
799 together, where the families can come together (interrupted)

800 P5 & P6: Yes (muttering)

801 F: Is there still a school in the area?

802 P2: Yes, a primary school

803 P3: 80% of the children there don't belong to Thornton so how do you actually mobilise you see that
804 is one of the breaking points

805 F: I see, I see, what is the reason for this? You mentioned it is lack of home ownership?

806 P1: Ya, because there are a lot of flats around in the area and I am sure

807 F: So they rent here temporarily, time being until we move on

808 P3: Ways of means to

809 F: Aren't there enough permanent residents to take up the burden? Or are these people so sort of
810 isolated with themselves?

811 P7: No, that is right

812 P5: I think there in Thornton there is not enough being done there isn't this body that can do
813 something and mobilise, it is not that the people are busy with their own lives I think that if we
814 decide, my husband and I were saying the other day we should, you and I alone should block off our

road because we have got a long stretch of road, block it down and call all the neighbours and let us have a braai outside there and we meet each other and that, we talk about it but it doesn't happen and nobody drives that so that is what I think we need perhaps a body that drives a sense of community and we will find that most people are actually wanting to do and go forward

P6 & P3: Mm (in agreement)

F: Do you think it was different?

P3: Ya, it was different, people were involved then (muttering)

P3: (continue) with the lack of the ratepayers association that is normally the body that encapsulates all these functions and problems but now because of being non-functional we as a neighbourhood watch is actually starting to embrace that function also because (interrupted)

F: That is right, I detected it that the neighbourhood watch has become sort of the hub or community organisation?

P3: So now we are busy with that and as I said last night I was at the meeting which is actually something that the ratepayers should have attended and I mean a lot of the social problems that we have pertaining to what the ratepayers should address that so now we sort of embrace that so (interrupted)

P7: Yes

P2 & P6 & P5: Mm (in agreement)

F: So I want to know come back to my question in saying do you think there is enough goodwill for the people to come to the fort to do it or do you really have to make an effort to bring them to the fort? It is not a spontaneous thing? (A lot of muttering)

P2: Well can tell you when we first moved in here in 2008 within a couple of weeks we had joined the neighbourhood watch and I went around to every one of our neighbours behind on the sides I had a notebook and can I give you my phone numbers and take yours, if I hear anything going on in your home I can let you know and vice versa and everybody was sort of quite keen but since then we have fallen out with our neighbour next door because he has put a big pile of bricks against the wall and his builders climbed onto our garage and stole all our copper piping, what I am trying to say is that nobody actually has a feeling for their neighbours anymore that's gone

F: That is probably worldwide but that's it

P1: Ya

P3: Ya

P2: It is sad because the old timers we had an elderly couple living next door to use when we moved here there is an elderly couple that moved here, this house was built in 1963 and we are only the third owners, this man her (pointing next door) is the second owner, the ones next door are still there, those are the old people that been here and that kind of (interrupted)

F: This is for me is very intriguing because if we talk to people in Site C, we hear the same talk, it is not the same, weather you looked after each other's children you go to work (interrupted)

P3: Ya

P5: Ya

P6: We had a man live up at the top of the road, Eric, he was like the mayor of Thornton, you wanted to know anything or what was going on, if there was a pothole in the street he would be the one to go talk to the municipality, everybody went to him, and he has died

P7: Mm (in agreement)

P1: Ya

P6: People are just so involved in their own lives with their google and their TV's

F: So it does not make it easier to reach out?

P3: So it has become very difficult, even to call a meeting I remember I had one of the meetings I called I actually made some posters "Thornton In Ruin" then we had the hall was packed to over flowing so peoples is not interested if you call a general meeting weather a ratepayers or neighbourhood watch or whatever, they are not interested but if you say to them the area is in ruins, bad things is happening then they all there and I tell you we had so many promises, we established committees right there after that meeting and the very next week the committees were nowhere to be found

P5: Yes, yes

P2: Yes

F: That is why the toilets were not built in Kayalitsha (all laugh) because the committees said that, they came together and said we will do all the enclosures we will do everything for you and then it didn't happen

F: I think it is the end of this one, thank you very much for your time, but now you must have something to eat, thank you very much for sharing some information with us

P1: Where does this river actually start?

Assistant: It starts on the farm Altydgedacht in Durbanville and travels down through Bellville, Parow, Goodwood, Elsiesriver, Thornton, Pinelands and just under the N2 it joins with the Black River

P1: Where is it canalised?

Assistant: I am not sure but Thornton and Pinelands and in Elsiesriver

P6: Yes and in Elsiesriver it is covered like a storm water pipe

P1: They must not close this here (the canal) otherwise they are going to build on top of it

F: You are right

P5: They must not close it because it is nice

F: I think you going to lose a lot

P3: It is actually an opportunity for us to have a nice biodiversity project

P5: Mm (in agreement)

F: On the banks?

P3: Ya, that has now been kick started I mean Leaf in Langa they have started something like that and this is the ideal site where we can do something like that

P5: Yes

P6: Have any of you been to Nantes Park in Athlone because that is lovely now and it also has a river flowing through it, that is a river it is not a canal

P3: Yes, but that is massive, that is big

F: But part of safety is population so if you could get those people to use the banks more visible people, walking, cycling on the banks it would be safer

P5: It would reduce the crime

P1: Ya, ya

P7: Yes it will

F: Yes, thanks for this evening again I really enjoyed it.