

AN INVESTIGATION OF THE POTENTIAL ROLE FOR ENVIRONMENTAL  
EDUCATION IN THE CONSERVATION OF THE SWARTKOPS  
ESTUARY AND SWARTKOPS NATURE RESERVE

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by  
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**ABSTRACT**

This study explores the potential role of an environmental education approach towards the conservation of the Swartkops Estuary and Swartkops Nature Reserve. More specifically it examines the opinions, feelings and perceptions of a sample of twenty seven people, who have a vested interest, in the possible conservation of the area. These stakeholders were comprised of people representing all the various groups and communities that use either or both the estuary and reserve. Opinions were examined by means of a qualitative data analysis from semi-structured interviews. The conservation opinions of respondents were obtained on both general topics and more detailed areas. Due to the small sample and exploratory nature of the project, these results should be viewed as tentative. Proposals are made for increasing the impact of Environmental Education programmes in this and similar environments, and recommendations are put forward to help facilitate related studies in the future.

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## PREFACE

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Finally, the writer would like to express his appreciation and thanks to his wife Gudrun for all her support and sacrifices over the past two years.

This study represents original work by the researcher. As far as he is aware, this is the only research of its kind on the Swartkops Estuary and Reserve.

## CHAPTER 1

## INTRODUCTION

"Over the past five decades, Environmental Education has evolved from a surrogate for nature conservation and a vague notion relating to better quality of life, to a sophisticated concept embracing ecological knowledge and understanding, total people-environment relationships, ethics, politics, sociobiology and public participation decision-making." (Irwin 1989:2)

## 1.1 INTRODUCTION

At a symposium on the conservation of the Swartkops Estuary and Reserve in Port Elizabeth, held in 1987, it was recognised that there was a major need to conserve the whole area. The challenge was to reconcile the needs of a massively burgeoning population of the city (expected to increase to one million people by the year 2010) with the ecological needs and long term sustainabilities of the area (Tyson 1988).

## 1.2 ESTUARIES

Estuaries are extremely fragile ecosystems that are easily disturbed by man's activities (Tyson 1988). They are also amongst the most productive ecosystems in the world (Martin 1991). Despite this, protection of South African estuaries is

sadly lacking. Heydorn (1985) urged that special protection of estuaries should be introduced to cover particular aspects being exploited. O'Keeffe (1986) stated that the only estuaries protected are those within nature reserves and this was not primarily because of the estuary itself.

### 1.3 THE SWARTKOPS ESTUARY (See Figure 1.1)

The Swartkops Estuary near Port Elizabeth in South Africa is tidal for approximately 16 km upstream (See Fig. 1.1 and 1.2). It is an exceptionally valuable environmental feature for the Port Elizabeth metropolitan area and is perhaps the best example of a well-preserved estuary to be found within a city boundary in South Africa. Tyson (1988) stated that in 1987 the Wildlife Society's National Director visited the area and identified the Swartkops Estuary as the most important natural asset in Port Elizabeth's metropolitan area.

The estuary is relatively unpolluted and suitable for many types of recreation including safe swimming. It has an extensive area of productive saltmarsh, with the grass Spartina maritima, covering 49% of the area (Baird et al. 1988). These saltmarshes create the base for the estuary's food web by supporting large populations of animals such as crabs, snails, birds and the plants upon which these animals

Fig 1.1 LOCATION MAP OF THE SWARTKOPS ESTUARY AND SWARTKOPS NATURE RESERVE

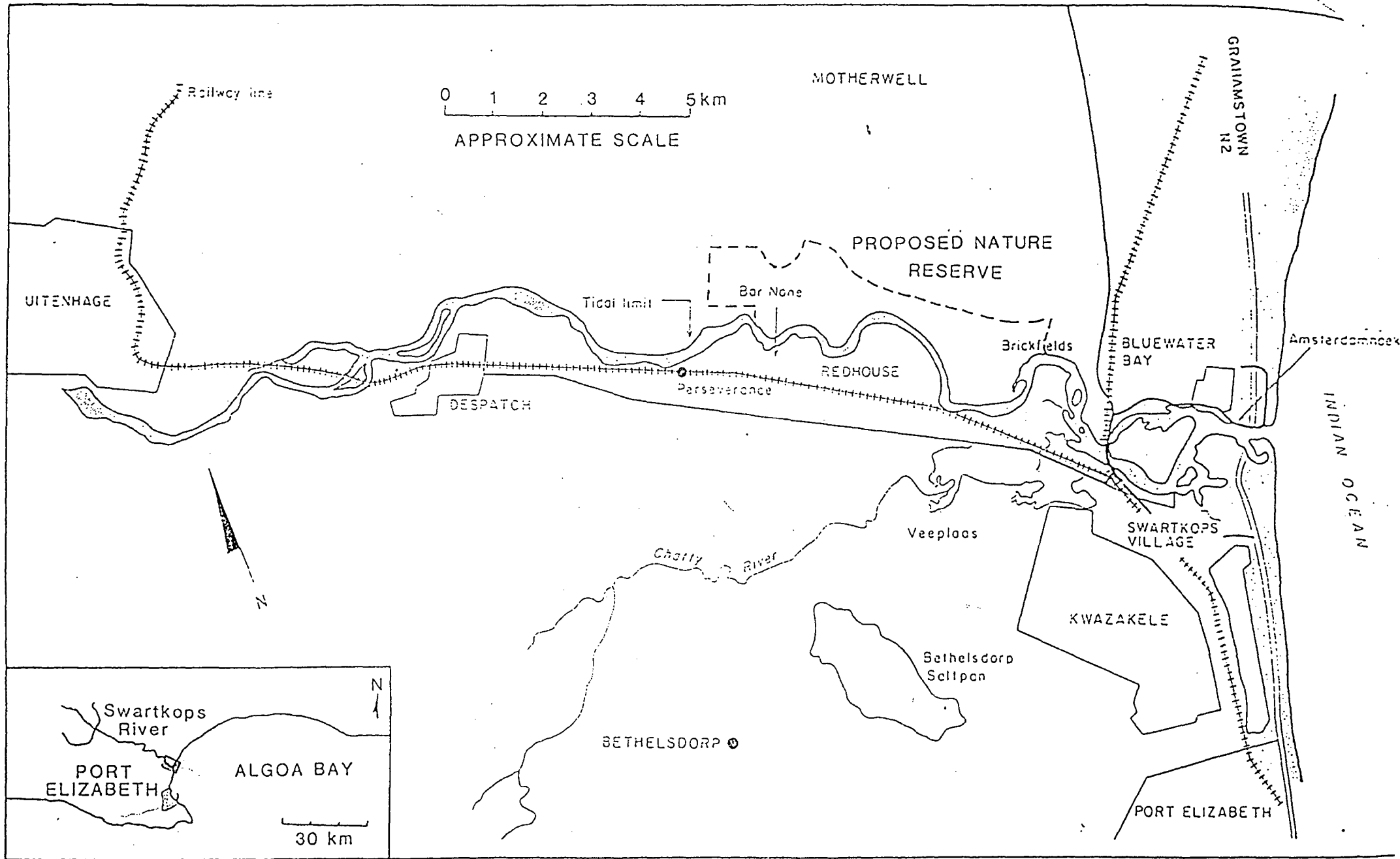
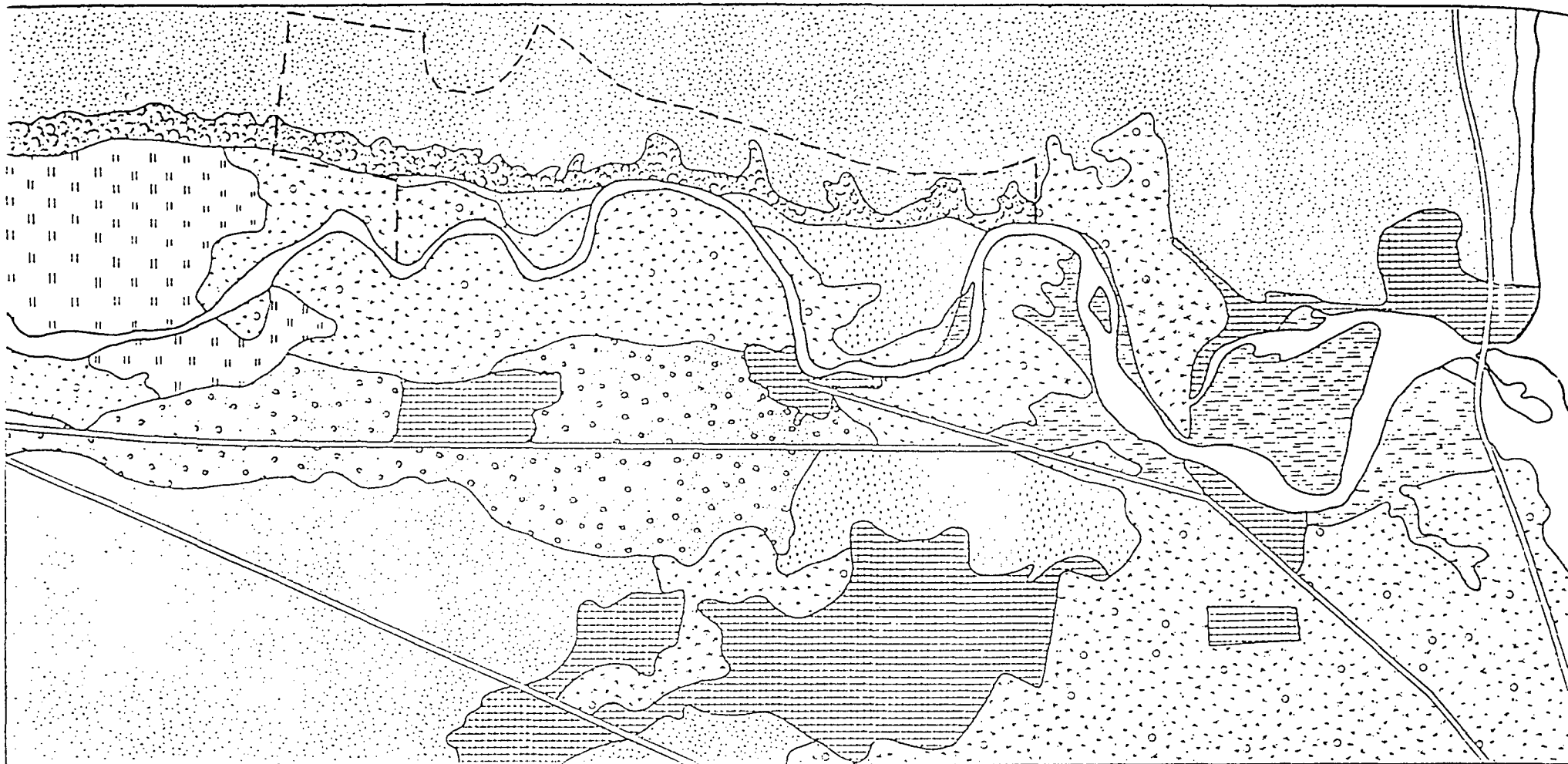












Fig. 1.2  
Reserve vegetation map (from Baird et al. 1986)



LEGEND

- |  |                        |   |                              |   |                       |   |  |   |                                |
|--|------------------------|---|------------------------------|---|-----------------------|---|--|---|--------------------------------|
|  | Cultivated land        |  | Developed area               |  | Intertidal salt marsh |  | Non-tidal floodplain where natural vegetation has deteriorated significantly |  | Terrace outside the floodplain |
|  | Coastal sand and dunes |  | Escarpment (Valley Bushveld) |  | High ground           |  | Saltpan  |  | Proposed Nature Reserve        |

feed and which help to stabilise the mudflats (Baird et al. 1986). Living on the mudflats is also the mudprawn which is the most important component (82%) of the invertebrate biomass (Baird et al. 1988). The estuary is also well known for its rich and abundant bird life, being the second most important estuary from a bird point of view between Knysna and Durban (Baird et al. 1988).

The estuary is surrounded by development including industries and densely populated townships that have been there for many years. The residents of these townships use the area regularly. There are also four villages alongside the estuary (See Fig 1) whose residents apparently have a strong interest in the river and its surroundings. Other interested parties are users from the city itself and the industries associated with the river.

Appendix A1 contains supplementary data referring to the geology of the Swartkops River catchment area.

#### 1.4 THE SWARTKOPS NATURE RESERVE (See Map Appendix A2)

The Swartkops Trust, a non-governmental organisation proposed that a section of the bushveld on the north side of the estuary should be declared a Nature Reserve (Martin 1988). This was agreed to by the Port Elizabeth City Council in consultation with the Cape Provincial Administration. These authorities felt that such a unique natural asset to Port



Fig.1.5 A GROUP OF MOTHERWELL TEACHERS LOOKING AT THE VIEW FROM THE SWARTKOPS NATURE RESERVE. THE SALTMARSHES AND SWARTKOPS POWER STATION IN THE BACKGROUND.



Fig.1.6 A VIEW OF PARTS OF THE ESCARPMENT THAT ARE NOT IN THE RESERVE. NOTE THE SERIOUS EROSION WITH NO REGROWTH OF VALLEY BUSHVELD



Fig.1.7

BELOW THE ESCARPMENT IN THE SWARTKOPS NATURE RESERVE

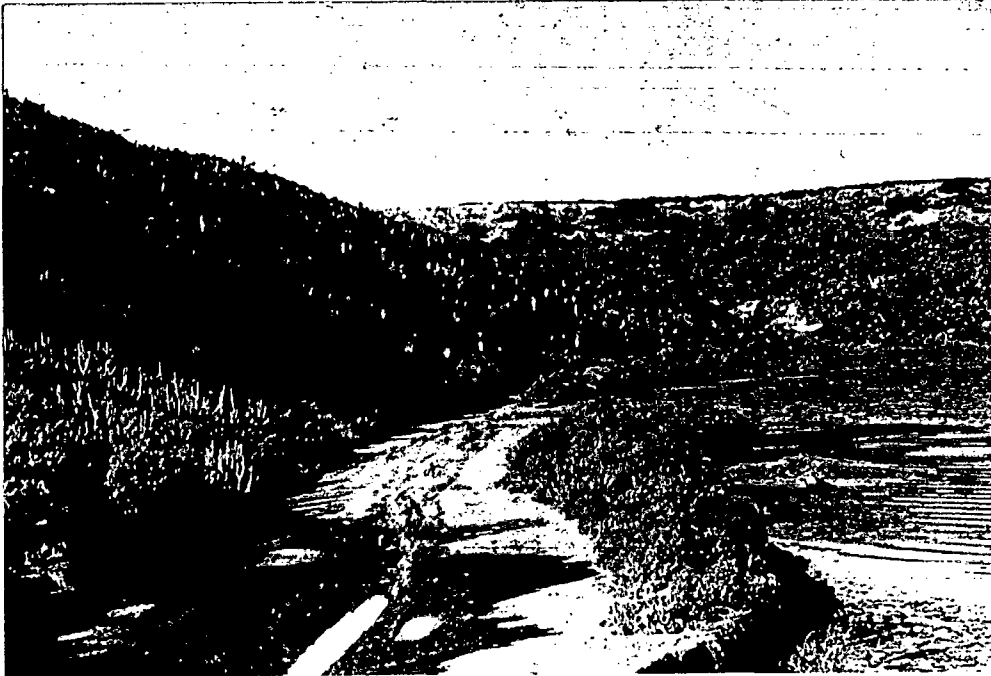


Fig.1.8

A GROUP OF MOTHERWELL TEACHERS AND STUDENTS IN THE RESERVE



Fig.1.9 A GROUP OF PRIMARY SCHOOL PUPILS ON THE NATURE TRAIL IN THE RESERVE

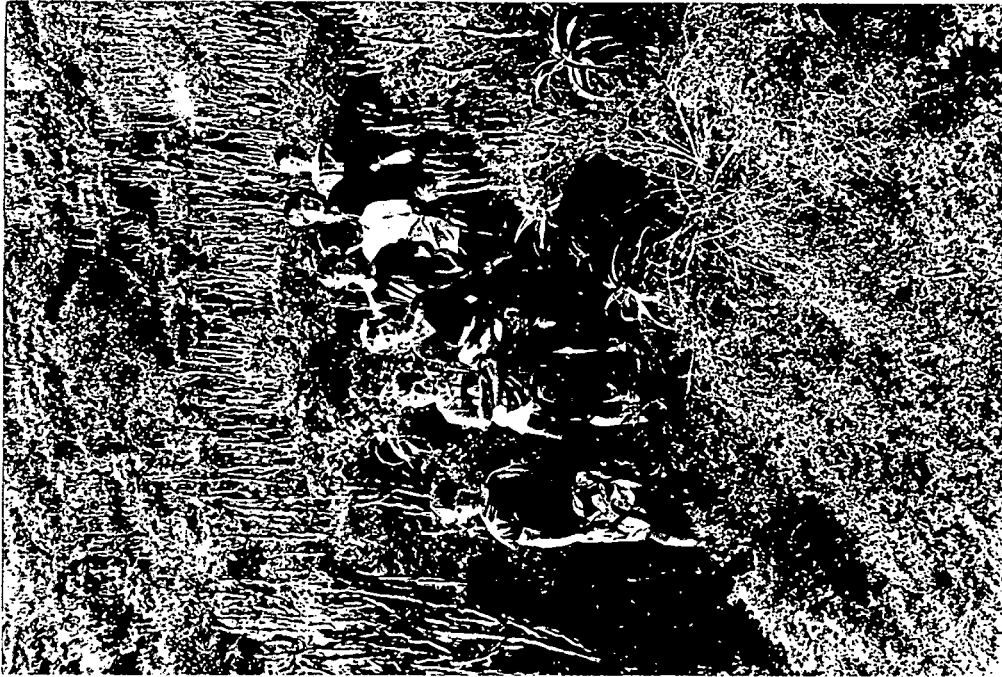


Fig.1.10 STUDYING THE MARINE FAUNA IN THE SWARTKOPS ESTUARY



Elizabeth requires protection. The prime purpose of the protection is to conserve the vegetation and animal life of the area in a manner that will benefit the many stakeholders concerned. The area was officially proclaimed a Nature Reserve on 20 August 1993 (Zwartkops Trust Open Meeting August 20 August 1993).

The area described as Eastern Cape Valley Bushveld (Wildlife Society of South Africa 1971) is in pristine condition. There is a rich assemblage of flora ranging from succulents, aloes and euphorbias to tall evergreen trees. Although the Reserve is a small area, its ecological and aesthetic qualities more than warrant its conservation (Jacot Guillarmod 1974) as only 1.2 percent of this vegetation type is at present conserved (Urton and Page 1993). The north bank of the river runs below the steep slopes of an escarpment which is part of the reserve. This escarpment is not only useless for agriculture but also extremely sensitive to erosion.

The declaration of the area as a Nature Reserve in no way, however, ensures that it will be protected and maintained in its present condition (Sancor 1986).

#### 1.5 THE AIMS OF RESEARCH

Irwin (1991:16) states:

" greater insights need to be sought in terms of environmental knowledge, understanding, attitudes, values and perceptions in our diverse society."

#### 1.5.1 Subsidiary aims were:

- \* To investigate the opinions of the stakeholders of the area. These would be the following :
  - Residents
  - Industrialists
  - Recreational users
  - Developers
- \* To analyse these opinions and use them as a basis for developing an environmental education approach to the area.
- \* To contribute towards the conservation of the Swartkops Estuary and Nature Reserve and benefit all concerned.

#### 1.6 CLARIFICATION OF TERMINOLOGY USED

The researcher is aware that there are terms used in this thesis that may need to be clarified. These are explained below:

- \* Opinions - The understanding of this concept is fundamental to the purpose of the research and is therefore discussed in detail in Section 2.2. The operational definition constructed by the researcher (See

Section 2.2) is the following :

What one thinks or how one thinks about something. It is a subjective judgement formed, a conclusion reached or a belief. It is not based on absolute certainty or positive knowledge but is what seems true to ones own mind.

- \* Perceptions - The researcher uses this term to mean the 'interpretations and explanations of experiences formed by the respondent from his/her own beliefs' (Drewer 1964; Flew 1984; Henerson *et al.* 1987).
- \* Feelings - This word is intended to denote an awareness, consciousness, sensation or sensitiveness. It could also be an opinion, sentiment or premonition (Friend 1964).
- \* Attitude - A disposition or opinion. Mode of regarding the object or thought. Manner of acting or behaviour representing a feeling or opinion (Friend 1964 and Allen and Hawkins 1991).
- \* Stakeholder - Someone who has an interest in the situation or will have something to gain or lose by the turn of events (Allen and Hawkins 1991).
- \* Affluent - The researcher uses this word to refer to the people living in the area who are property owners, have employment and are not dependent on the resources of the estuary and reserve for a living. In this group are the property owners of Redhouse, Swartkops, Bluewater Bay, Amsterdamhoek and Motherwell.

- \* Poor, Uneducated and Squatters - The researcher sees these people as those without employment, proper housing and other essential basic needs for survival.
- \* Respondents and interviewees are the twenty seven people who were interviewed by the researcher. Details of these people are listed in Appendix C.
- \* Conservation - The researcher uses this term to refer to the use of the area 'for the benefit of stakeholders while also preserving it in its original state as far as possible'.
- \* Preservation - This term refers to the 'keeping of the area in its complete original form and not allowing it to be used at all.'
- \* Sustainable Use - This refers to using the area in a manner that enables it to continue to sustain its ecological systems.
- \* Validity and reliability - According to Cates 1985 and Cohen and Manion 1980, the researcher understands these terms to mean :  
  
Validity - the research has validity if it is finding out what it is supposed to find out.  
  
Reliability - Consistency. The results are reliable if they can be expected to be predictable because of their consistency.

## 1.7 THESIS OUTLINE

The contents of the next seven chapters are as follows :

- \* Chapter 2 discusses the literature relevant to the study.
- \* Chapter 3 deals with the methods used in obtaining and analysing the opinions of respondents.
- \* In Chapter 4 the researcher discusses the general opinions and feelings of the respondents towards the Swartkops Estuary and Swartkops Nature Reserve.
- \* Chapter 5 concentrates on the opinions of respondents in dealing with management issues relating to the estuary and reserve.
- \* Chapter 6 deals with the opinions of respondents on possible environmental education approaches towards the Swartkops Estuary and Swartkops Nature Reserve.
- \* Chapter 7 discusses possible environmental education approaches to the Swartkops Estuary and Swartkops Nature Reserve.
- \* Chapter 8 is the concluding chapter which summarises and discusses the different opinions of respondents before coming to some conclusions and suggesting possible options for environmental education approaches. This chapter will also evaluate the research.



## CHAPTER TWO

### LITERATURE REVIEW

" the quality of the environment on Earth has deteriorated to the point that continued existence of life is threatened. In order to reverse present destructive trends caused by people - related activities and styles of life, an environmental literacy and environmental ethic must become a basic objective of education at all levels ---- ".  
(Robinson and Wolfson 1982:5)

#### 2.1 BACKGROUND TO CONSERVATION OF ESTUARIES AND RESERVES AND THE SWARTKOPS ESTUARY AND RESERVE IN PARTICULAR

The main areas addressed in the review of literature relevant to this study are the background to the conservation of estuaries and reserves and the Swartkops Estuary and Reserve in particular.

Barnes (1972) states that it is fairly well accepted that the term 'estuary' refers to areas in which sea water is appreciably diluted by fresh water from rivers. They are also among the most productive eco-systems in the world (Martin 1991). Grindley and Heydorn (1979) argue that estuaries are extremely vulnerable to human activities and that more and more demands such as development pressures, land reclamation and recreational projects are being made on them, a view confirmed by Martin (1991).

It appears from the literature that the management of South African estuaries is a complex task. SANCOR (1983) states

that the limited water resources in the country also creates problems causing excess irrigation and over-impounding of rivers. O' Keeffe (1989) supports this view emphasising that the estuaries in the Eastern Cape are unpredictable and subject to serious floods. He also stresses that estuaries are reflections of events in their catchments that are being developed for various uses.

### 2.1.1 The Swartkops Estuary

The Swartkops Estuary is one of the principal estuaries in the Eastern Cape and interest in its ecology started at the beginning of the century (Heydorn and Tinley 1980). There has been extensive scientific research done on the fauna and flora of the estuary and reserve (Jacot Guillarmod 1974, Watling and Watling 1982, Baird et al. 1986, Martin 1991) and various detailed structure plans and impact studies have been concluded (Hill et al. 1974, Stauch Vorster et al. 1977, Esterhuisen and Rust 1987, Hattingh and Rust 1991). Hill et al. (1974) express the view that the fauna and flora of the Swartkops Estuary are better known than that of any other estuary in South Africa.

In 1974 Hill et al. prepared a Technical Data Report on the estuary and reserve. This report was a detailed Scientific and Environmental Impact Study that has since been used as a comprehensive data base for research on different aspects of the estuary and reserve. This information is further

supplemented by numerous scientific studies carried out by mainly the University of Port Elizabeth. Examples of these are Geology reports (Hattingh and Rust 1991); Oceanography studies (Hanekom 1989); Zoology (Martin 1991; Hanekom and Erasmus 1988); Engineering (Municipal Engineer 1988 and The Civil Engineer 1990) and conservation (Martin and Randall 1987).

In a study by Heydorn and Tinley (1980) on the Estuaries of the Cape the following comments were made applicable to this study :

- \* The need to develop an effective management policy that embraces both ecological and economic needs. This would assist thousands of people who depend on the estuary and surroundings for their livelihood or recreation.
- \* The need to provide the managing authorities of estuaries and coastal reserves with information and advice.
- \* The need to provide research, educational and recreational facilities where these do not clash with the primary function of conservation.
- \* Because of the ecological interactions of the various components, the need to conserve the estuarine environment as a whole including adjacent vegetation areas.

In summarising the work of Hill et al.(1974) and Heydorn and Tinley (1980) valuable information was provided for : (a) Understanding the ecological dynamics of the estuary.

(b) Understanding the environmental education issues involved.

There have also been a number of management reports on the Swartkops Estuary.

Sancor (1986) in a report on marine research has supplied invaluable information on the interactions of estuarine environments and their fringe areas with the human impacts upon them. This has contributed towards knowledge needed for wise management through environmental education.

In 1987 the Estuarine Committee of SANCOR arranged a symposium on the Swartkops Estuary and Nature Reserve. This involved the presentation of ten papers on the various aspects of the estuary's ecology and management, and socio-economic implications for the Swartkops Estuary and Nature Reserve. Some of the resolutions and recommendations pertinent to this thesis are :

- \* The effective co-ordination of the activities of the various management authorities. This was a problem that has been mentioned by other authors and was also frequently stated by the respondents interviewed (See Section 5.4.3).
- \* The creation of a scientific/socio-economic advisory body.
- \* The compilation of a cohesive and comprehensive management plan for both the estuary and reserve.
- \* The need to create educational and consultative mechanisms to be used for environmental education with all the communities involved in the surrounding area.

The recommendations stressed the need for one authority to take responsibility for the co-ordination of the management, conservation and education of the Swartkops system if a successful structure is to be implemented.

In synthesising the symposium it was emphasised that:

- \* The Swartkops Estuary is presently in a good ecological state although the ecosystem is subjected to human influences likely to increase dramatically during the next two decades.
- \* The estuary is an asset of great ecological and recreational value to Port Elizabeth and its inhabitants.
- \* Provision must be made for careful development, planning and continuous evaluation of the status of the estuary and surrounding nature reserve.

#### 2.1.2 The Swartkops Nature Reserve

In 1982 the Zwartkops Trust, supported by several other conservation organisations, proposed that the escarpment from the Corobrik Brickfields to opposite Perseverance be proclaimed a Nature Reserve (See Fig.1.1). Six years later a detailed report and proposal was compiled by Martin and Baird (1988) for The University of Port Elizabeth on behalf of the South African Nature Foundation (See Fig. 1.3). There are a number of items covered in the report which are relevant to this study.

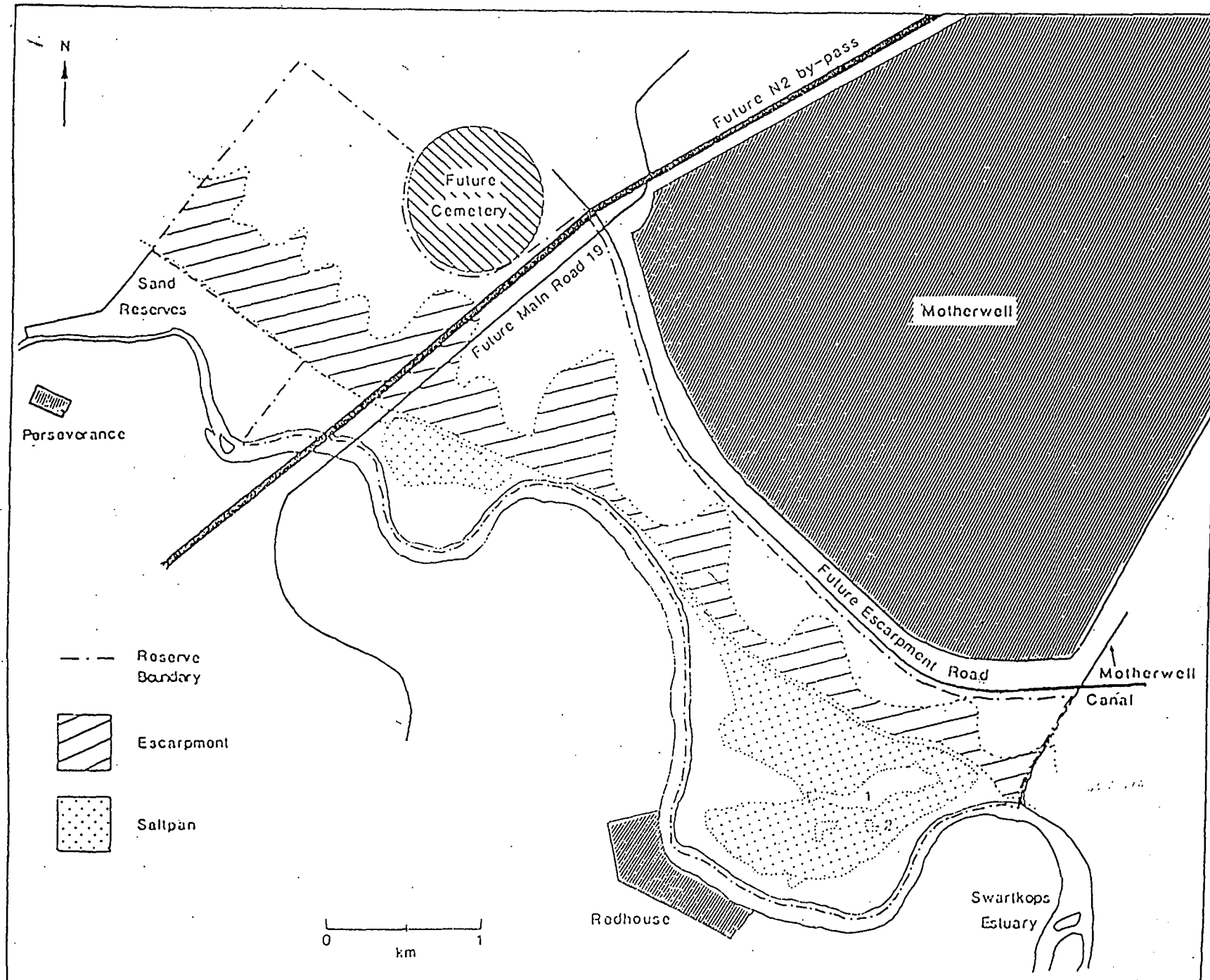
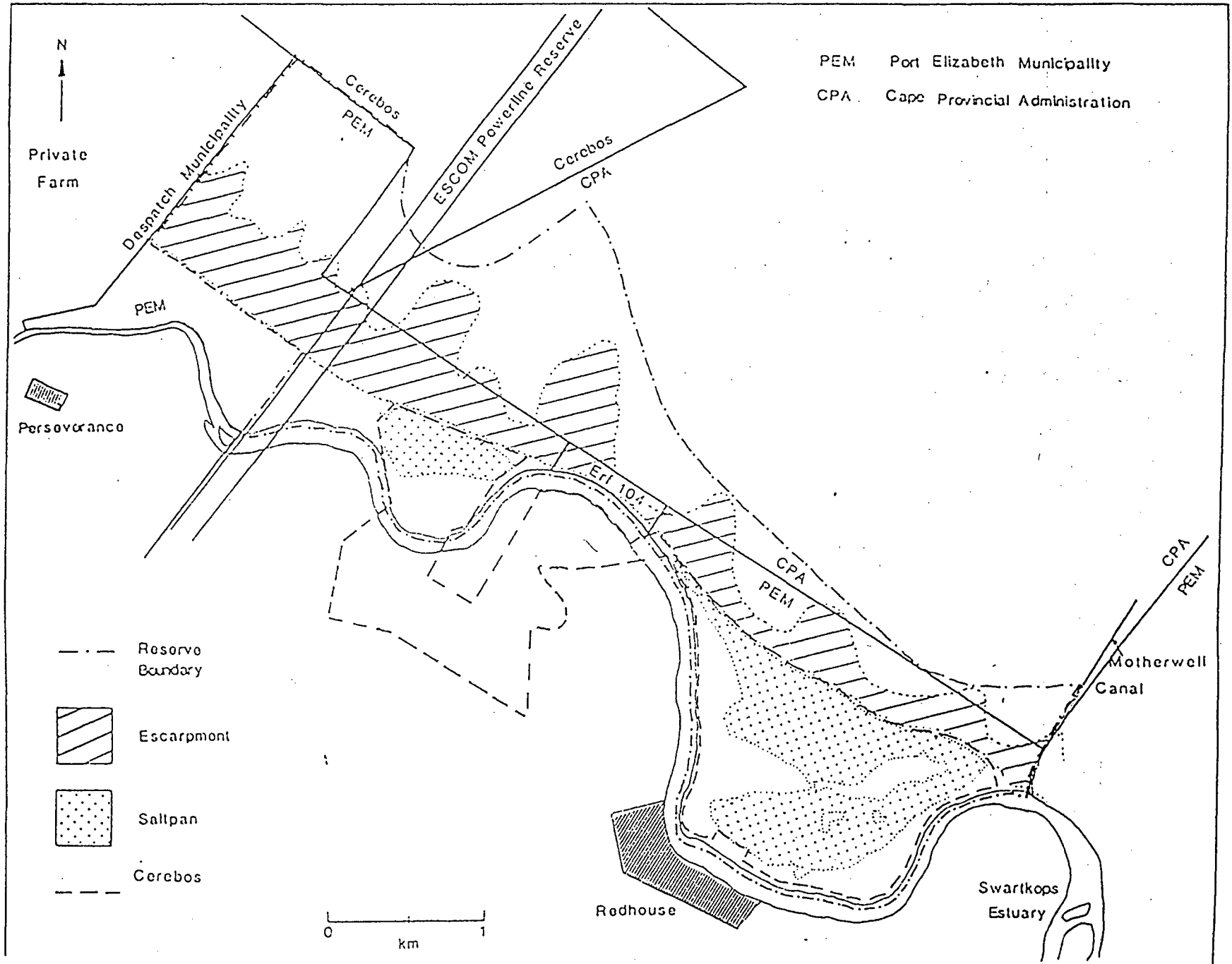


Fig.1.4

Map of land ownership within the proposed reserve



- \* It was mentioned in the report that one of the main reasons for proposing that the area be made a reserve was the environmental concern about the adjacent Motherwell Township. This township was designed to house 120 000 people. There was an urgent need for environmental education to be given to these people to prevent the deterioration of the pristine vegetation and further erosion.
- \* The area has high potential for environmental education. There are several habitats with a rich and diverse flora and fauna and the reserve is close to the large Motherwell Township. The report states :
  - ① The reserve is ideally suited to play a key role in increasing the environmental awareness of all race groups and all age groups. The close proximity of schools and centres of population add to the enormous potential of the area.②
- \* One major purpose of the reserve should be for sustainable utilisation of resources. It will be seen later that this has also been the opinion of many respondents in the present study. The challenges of managing a sustainable system with the projected huge population increases require specific aims, planning and management integrated with environmental education initiatives if there is to be any significant evidence of conservation success. Ferrar (1989) sounds a warning in this respect when he says that there is immense difficulty in managing any ecological system to some vaguely perceived 'optimum'



sustainable state'. He goes on to emphasise that this is especially the case with the area's surrounding rivers. These are characterized by extreme dynamics, fluvial functions and other attributes. They also have special biodiversity and socio-economic values.

- \* The need for a single management body was emphasised as there are four authorities having a variety of jurisdictions over the area.

Four other environmentally linked research projects undertaken on the Motherwell Township, are :

- \* Phillips (1988) who did an investigation on the possible creation of a resource centre in the area. The researcher believes that this would be a great boon to enabling various groups to come together for environmental education programmes in Motherwell.
- \* Roussouw (1992) conducted a study on the energy requirements of the area, the patterns of consumption and alternative sources available. This type of study will be most useful in implementing environmental education into the poorer squatter areas of Motherwell.
- \* Myrdal (1992) who has done a survey on the attitudinal, perceptual and usage patterns of Motherwell residents towards health services. His report gives details on the social conditions of the different areas of Motherwell and suggests ideas for improvements. This type of information would be of value when formulating environmental education approaches to the area.

Muller (1992) investigated the perceptions of consumers (defined as the stakeholders or users of the estuary) on environmental issues in the Swartkops River Basin and the influence this had on the industries associated with the processing of wool in the area. Some of the main conclusions arrived at were as follows :

- \* There were mainly three bodies that were responsible for the degrading of the ecology of the area, namely the Townships, Industry, and the various governmental authorities.
- \* There was a general perception that the ecological condition of the area had deteriorated over the last few years but that the situation was not irreversible. An urgent need was perceived for more stringent environmental control.

The following methods were suggested by respondents in the investigation to control industries that adversely affected the area : (a) Regular reporting and co-ordination by controlling bodies (b) Legislation to set standards for management programmes (c) Payment of fees to use the area and (d) Pressure from environmental groups.

The report also stated that the perceptions of respondents who were industrialists varied considerably from the perceptions of other consumers who used the area. Industrial management bodies did not perceive themselves as being responsible for any serious degradation of the area and considered that because they were not contravening any law, their actions were quite acceptable.

## 2.2 A STUDY OF WHAT THE OPINIONS OF STAKEHOLDERS MEAN

The main purpose of this thesis is to investigate the 'OPINIONS' of respondents on various environmental aspects and then to analyse them with a view to developing an environmental education approach to the area. The researcher realises that the term 'OPINION' has different meanings and connotations. It is important, therefore, that the reader is aware of some of the literature that discusses the concept and its meanings as they pertain to this study.

Baldwin (1960), speaking from a philosophical viewpoint, states that an opinion is an 'idea or conception of fact which aims at truth and is regarded as probably approximating it but not being certain of it.' He also says that from a psychological viewpoint its reference could rather be regarded as a 'condition of thought which is based upon evidence or an inference that is not adequate to produce assured knowledge.' The above perceptions suggest that an opinion is based more on belief or reason rather than blind guessing or an empirical fact.

Simpson and Weiner (1989) are of the view that opinions develop from what one thinks and how one thinks about something. They see opinions also as judgements, notions and conclusions reached or beliefs based on what is seen to be true. They emphasise that opinions are based on insufficient knowledge and are not certain or established and must therefore be distinguished from knowledge, conviction or certainty.

Guralink et al (1964) supports Baldwin (1960) and Simpson and Weiner (1989) in saying that an opinion is a belief not based on absolute certainty or positive knowledge but on what seems true, valid or probable. He adds another dimension, however, by emphasising that it is one's own mind or personal view that is the determinant of the type of judgement or opinion that is made. The opinion given will be influenced by previous experiences, sentiments, feelings, convictions and persuasions.

Allen and Hawkins (1991) concur with the above views stating that opinions are beliefs or assessments based on grounds that cannot be proved. They are views held that are probable about what is thought regarding a particular topic.

Based on the above views the definition that the researcher intends using in this thesis contains the following key aspects :

An opinion is :

- \* An idea, view, feeling or concept of fact.
- \* Based upon reasonable but not conclusive evidence.
- \* Formed by a subjective judgement or belief based on personal knowledge.

The fact that opinions are based on personal assessments of different people who have different perspectives of the same thing is a problem of this study. This is also alluded to by Zimmerman (1987:21) who states, " to demand that our

human interpretations and values should be universal is one of the hereditary madneses of human pride ----." There is also evidence of propaganda in the media and from other sources influencing the opinions of people. This is supported by Rajeki (1990) who states that persuasive-like communication has an impact on the attitude and behaviour of people.

The researcher is aware of the various interpretations of the concept of opinions as mentioned above. He also accepts the need to view these opinions within the contexts and environments in which they are received and to make the necessary allowances and interpretations when considering the results from a holistic viewpoint. We can only infer what a person's opinions are by the words used and the actions taken.

## CHAPTER THREE

## RESEARCH METHODOLOGY

" Recent analysis of the relationship between research and policy-making suggests a far greater potential role for qualitative research than has hitherto been recognised. Qualitative research is best viewed as a strategy which combines an interpretive theoretical framework with the use of qualitative research techniques, such as participation observation and in-depth interviewing".  
(Vulliamy 1990:151)

## 3.1 INTRODUCTION

The purpose of this chapter is to explain the researcher's choice of research method, as well as the procedures followed.

In order to achieve the aims of the research (See Section 1.4) it was necessary to incorporate elements of observation and close interaction with people to arrive at what are inevitably tentative conclusions.

To achieve these aims, the researcher chose a qualitative rather than a quantitative approach.

## 3.2 THE METHODOLOGICAL APPROACH

Non-positivistic Paradigm

The researcher chose a qualitative approach that relies on the subjective descriptions, personal feelings, values and ideas of respondents. The choice of a qualitative method is described by Cohen and Manion (1980:8) as follows :

".... those who view the social world as being of a softer, personal and man created kind will select an approach from a comparable range of recent and emerging techniques, accounts, participant observation and personal constructs, ....."

This method was considered by the researcher as appropriate to the form of opinion study envisaged and is supported by Irwin (1990) who states that environmental education fundamentally deals with human behaviour and the ethics upon which this behaviour is based. Alreck and Settle (1985) concurs with these views and states that qualitative research is a most effective method used in surveys to focus directly on the understanding or predicting of human behaviour, feelings and attitudes.

The researcher discarded the use of an empirical study in which details of observations, scientific sampling and collections of data are undertaken. Firstly, with the large numbers and varied population involved, suitable sampling techniques would be difficult to apply and secondly, even if statistical information was obtained, the tools for analysing perceptual and subjective impressions presently do not exist. Harre (1981) argues that when applied to the study of human behaviour, positivism and the scientific method become problematic because of the complexity of human nature and social phenomena. He also says that the tendency towards reductionism and compartmentalism, which are inherent in positivism, may result in knowledge being taken out of context. The study of people would then be isolated from their social context. This may lead to distortion and reduced relevance.

Cohen and Manion (1980) are of the view that the type of research which the researcher embarks upon is governed by his own personal conception of social reality. It is about how

society is perceived and the relationship between human beings and their environment.

### 3.3. INTERVIEWS

Cohen and Manion (1980:307) define the research interview as :

" a two - person conversation initiated by the interviewer for the specific purpose of obtaining research -relevant information, and research objectives of systematic description, prediction, or explanation." (ii)

The qualitative survey type of research method was therefore chosen by using a semi-structured open-ended interview approach.

#### 3.3.1 The interview sample

The respondents interviewed consisted of twenty seven stakeholders of the Swartkops Estuary and Nature Reserve (See Appendix C).

These stakeholders were comprised of people representing all the various groups and communities that use either or both the Swartkops Nature Reserve and Swartkops Estuary. They were as follows :

- \* Professional Environmental Education Officers and Volunteer Environmental Educational Workers closely involved with the conservation of the areas being studied (3/27 11%).
- \* Representatives of Political Organisations supported by the different people who have an interest in the area (4/27 15%).
- \* Residents of the 4 villages and the Motherwell township.



These people all live near the Estuary or Reserve (4/27 15%)

- \* Squatters who use either or both the Estuary and Reserve for making a living (6/27 22%).
- \* Office Bearers or active members of the many different organisations which use one or both the areas for their recreation or enjoyment (7/27 26%).
- \* Representatives of Industry which benefits from either or both the estuary and the reserve (1/27 4%).
- \* Teachers involved in Primary School education in the areas mentioned (2/27 8%).

Interviewees were selected on the following criteria:

- \* It was felt by the researcher that it was important to obtain opinions from people representing all the possible organisations or interest groups of the Estuary and Reserve. The sample was therefore made up of a wide cross section of the community users.
- \* The office bearers or representatives in certain instances were chosen by the researcher as he felt that they had been democratically elected and could therefore be assumed to represent the opinions and feelings of most of the people in their organisations. The chairman of the organisation was usually selected or if this was not possible then an active member of that group.
- \* A Knowledge and awareness of the wider implications of Environmental Education was also considered to be an important need where this was possible. This may then have led to deeper and more detailed insights into certain aspects.

\* A further requirement considered important, was an intimate knowledge of the area.

In certain circumstances it was not possible to pre-plan and schedule interviews with respondents. This was for example the situation with the people who did not have permanent homes, such as squatters. These respondents were selected at random by chance.

### 3.3.2 The interview approach

Patton (1987) states that in-depth open-ended interviews are one of the most successful research methods used in obtaining descriptive subjective evaluations of people's perceptions. The researcher concurs with these views. The interview approach was considered to be the most viable way of obtaining information from the study subjects. Generally, people find it easier to express opinions verbally than on paper as for example in a written questionnaire. This was experienced by Barrett (1991) when interviewing Law Enforcement Officers in a similar study. Brenner *et al.* (1985) states that it also allows both parties to explore the meanings of questions and answers. This enables both the interviewer and interviewee to clarify misunderstandings which may arise. The interviewer may also observe the respondent's body language which could communicate information not verbalised. Furthermore the interview and the questions can be adapted to the personal needs of the specific respondents concerned. This was particularly

relevant with regard to

the wide range of educational levels occurring in the group of interviewees (See Appendix C) where it was required that the interview be carefully modified and/or simplified when necessary. A further advantage was that it could be conducted in an informal non-threatening manner allowing respondents to express themselves freely and naturally.

The researcher accepts that face to face interviews may affect the reliability and validity of information as respondents may try to 'please' the researcher with their answers. Verbal data, by virtue of their complexity, are also particularly susceptible to error in interpretation. Cohen and Manion (1980) warn against the forcing of responses to satisfy the interviewer. Patton (1987) states that it is essential to maintain neutrality and not to make personal judgements.

### 3.3.3 Semi-structured interviews

" The interviewer has the schedule before him for completion during or immediately after the interview. It represents a guide as to all the information he must have secured by the time the interview is finished, but it leaves him free to decide how best to secure this information."  
Burroughs (1975 : 104)

Cohen and Manion (1980), in analysing the various modes of interviews, state that the semi-structured type of interview would be the most appropriate for the qualitative survey type of research envisaged in this study. This is because it is planned and has flexibility and freedom yet is

not uncontrolled and too casual.

Mahlangu (1987) supports the views of Cohen and Manion (1980) when he emphasises the advantages of the semi-structured interview by stressing its characteristics of modification, variability and the freedom of the interviewee to probe deeper if necessary.

### 3.4 COLLECTING THE DATA

#### 3.4.1 Recording interviews

During the interview the information was recorded in written form by the researcher. A tape recorder was also used in most cases (25/27 93%) and as soon as possible after the interview the transcription was done. This enabled the researcher to add further important information to the interview schedule that was missed while interviewing. The method of supplementing the interview with a tape transcription was supported by Leedy (1980:107) where he says, " We observe through the ear as well as through the eye.". Using the tape recorder was found to be most effective and it enabled the interview to flow as the respondents did not seem to feel that they should speak at a writing speed and the interviewer was able to listen and observe without being too concerned at having missed certain information. The interview was also able to be conducted in a relaxed atmosphere without any attempt being made to force responses. Patton (1987) emphasises that in depth interviews must not be used like interrogations. The respondent was given the choice of having the tape recorder operating or not and in each case

when it was suggested, they were agreeable that it be used. It was a small machine and did not create any distraction although on two occasions the respondents did request it to be turned off temporarily while they spoke about something they considered to be confidential.

#### 3.4.2 Observational notes

Observational notes were also recorded after each interview. These were considered necessary as they supplied information which helped in the interpretation of the data. Henerson et al. (1987:123) state " not all activities can be observed. Consequently, you must select the subjects of the observations". Sanders and Pinhey (1983:357) support this view by saying that " some notes are recorded on the basis of observations that may or may not be important to analysis." Many of the phenomena observed, were not directly linked to the questions but were, however, significant when analysing the reasons given for certain answers. Observational notes were based on the following :

- \* estimated age
- \* race
- \* language
- \* education
- \* socio - economic group
- \* political bias
- \* vested interest
- \* spontaneity

\* nervousness

### 3.4.3 Language

Twelve per cent (n=3) of respondents were able to converse in Xhosa only. This problem of interviewing people who do not understand your language is referred to by Leedy (1985) when he states that a knowledge of the language of the interviewees is a great advantage in a research project. He states, however, that if the researcher is not able to meet this requirement an alternative is needed. The researcher was given permission by the Port Elizabeth Municipality's Chief Conservation Officer to obtain the services of a native Xhosa speaker to do the interpretation of certain interviews with the Xhosa speaking interviewees. This interpreter was familiar with the people of the area and was fluent in both Xhosa and English. In order to obtain as valid information as possible, the researcher spent time with this Xhosa interviewer helping and guiding him in certain interviewing skills described by Henerson *et al.* (1987). The researcher also went through the interview schedule carefully with the interpreter to ensure that he was familiar with the reasons for the research and the type of information that was required. The accuracy and neutrality of the translation were also emphasised. The interpreter then accompanied the researcher and observed an interview to familiarise himself with the approach. He was then given the opportunity of

conducting a short 'Dry Run' (Henerson et al.1987) as practice.

This manner of obtaining information from people who could not speak English, was considered to be the most suitable in the circumstances. The researcher was, however, aware that there were inaccuracies on occasions in the translation. Many nuances, interjections and comments were also missed as the interpreter often tended to summarise what was said in his own words and from his own personal perspectives. The interpretation interviews were conducted in a relaxed and friendly manner and it was noted that many of the Xhosa speakers tended to be more relaxed and open with a person of their own language group who empathised with them. This latter observation was supported by Henerson et al.(1987:101) who state, " people speak more freely to an interviewer who they perceive to be like themselves." Unfortunately the interpreter was wearing his official municipality overalls during the interviews. The researcher considered that this may have adversely affected some of the spontaneous responses of interviewees because of his status as a conservation officer of the area. It was, however, observed that, apart from one group of respondents who were actually involved in illegally cutting wood when they were interviewed, the majority of the interviewees did not appear to be perturbed by the presence of a municipal employee. This was mainly due to his relaxed and friendly manner.

### 3.5 INTERVIEW PROCEDURE

Semi-structured interviews (Burroughs 1975) were conducted during the period 20 January to 4 April 1993. The researcher himself conducted or controlled all the interviews personally.

The main purposes of the semi-structured interviews with the people who had an interest in the estuary and reserve, were to :

- \* gain insights into their feelings and attitudes.
- \* determine in which areas they placed the greatest emphasis.
- \* assess their opinions of the future developments, dangers and possible solutions.
- \* obtain information which could be of assistance in the implementing of an environmental education programme that may both enhance the conservation of the area and benefit the stakeholders concerned.

The interview schedule was compiled after a survey of a range of literature on interviews (Cohen and Manion 1980, Henerson et al. 1987, Patton 1987, Mahlangu 1987) and a pilot survey of three typical study subjects. The interview was planned carefully and the respondent was advised of the date and expected duration beforehand. The length of the interview, however, varied considerably, ranging from thirty minutes to over three hours. In the majority of situations the more educated and knowledgeable the interviewee, the more detail tended to be given.



In every case the atmosphere was relaxed and informal and was often conducted in the outdoors either alongside the estuary or in the nature reserve. In certain circumstances it was necessary to conduct the interview with a group of people and not on a one-to-one basis. This was because certain of the less educated interviewees were often shy and apprehensive on their own but tended to be more natural and relaxed when in a group situation. The researcher was encouraged by the results of this type of interview as there was often more detailed and richer information forthcoming. The respondents tended to listen to the responses of each other and then discuss them and together give their agreed upon ideas. This 'Focused Group Interview' has been well documented by Patton (1987) who also refers to the classic work by Merton, Fisk and Kendall (1956). Patton refers to the group interview as follows :

" It is not a discussion. It is not a problem solving session. It is not a decision making group. It is an interview."

He also goes on to say that the participants are typically a homogeneous group who are asked to reflect on the questions asked by the interviewer. They then hear each other's responses and make additional comments beyond their own original responses as they hear what other people have to say.

### 3.6 ANALYSIS OF DATA OF INTERVIEW

The data was examined and analysed as follows :

\* First the opinions were grouped according to the

level of education obtained by respondents. There were two groups (a) Those with little or no education or education below standard 5 (b) Those with education above standard 5. This was to establish whether education influenced the opinions of respondents.

- \* The second grouping was according to the area in which they lived. This was to assess whether wealth and/or living in close proximity to the estuary and reserve influenced opinions.
- \* The responses were then categorised into either General Opinions, Management Related Opinions or Environmental Education Opinions.

### 3.7 EVALUATION OF RESEARCH METHODS

The decision to use semi-structured interviews as a research tool seems to have been justified. The interviews were time consuming but were effective in obtaining the detailed information required. Some of the main advantages of using this method of research could be summarised as follows :

- \* There was an informal, flexible and relaxed atmosphere which often enabled the respondent to volunteer data not originally planned for but which later proved useful when evaluating the reasons behind certain answers. Cohen and Manion (1980:253) emphasise the importance of a relaxed and calm atmosphere that will motivate the interviewees to

express their personal human feelings and attitudes. They state, "this distinct human element in the interview is necessary to its validity."

- \* The researcher was able to probe deeper on certain issues and even add in extra questions to clarify answers and obtain background knowledge when required.
- \* A further advantage was the non-verbal behaviour (Mahlangu 1987) that was observed and the opportunity for the interviewer to assess the reliability and validity of certain answers by observing such things as body language, spontaneity of answers and other indicators. The eagerness or reluctance toward certain questions and issues could be observed and noted.
- \* The researcher needed information and opinions from key respondents and this he was able to ensure he would obtain (See Section 3.3.1).
- \* There was a wide range of educational levels amongst the interviewees and this required a sensitivity and ability to adapt to their needs. The interview approach made this possible. Patton (1987) supported this view when he stated that one of the strengths of the interview is that it can be matched to individuals and circumstances.
- \* The researcher 'enjoyed' the interviewing and this may also have contributed to its perceived success as alluded to by (Patton 1987:141) where he states, " to be successful in an interview you must enjoy doing it. "

Some possible negative aspects of the interview approach as

experienced by the researcher were the following :

- \* In spite of trying to remain as neutral as possible the researcher undoubtedly projected to the respondents a certain view. This may have influenced the validity and reliability of some of the answers given.
- \* The fact that some of the interviewees themselves were guilty of contravening the conservation laws or were representing groups of stakeholders which were doing so, could have influenced the validity of some of their answers when in a face to face situation (Cohen and Manion 1980). The researcher did, however, attempt not to make any inferences in this direction.
- \* Misunderstanding on the part of, particularly Xhosa speaking, respondents could in certain instances have affected validity of answers in spite of having used an interpreter as referred to under Methodological Approach in Section 3.2 above.
- \* A number of the respondents knew the researcher personally and this may have influenced some of their answers to avoid embarrassment although this was not regarded as a serious threat to validity as most questions were not of a personal nature.
- \* The researcher was also conscious that in some instances he was regarded with a sense of tension and nervousness by the less educated respondents and with a sense of suspicion by the people of other races. This initially made him

concerned about the effect on reliability. However, because he was aware of this atmosphere he made every effort to down-play any uneasiness and spent some time in social interaction before attempting to commence with the interview. Generally, respondents soon relaxed and were willing to volunteer their ideas.

Despite the shortcomings mentioned, the researcher is of the opinion that the research method used in this study was an appropriate one, as it yielded rich and useful information.

**CHAPTER 4****GENERAL OPINIONS OF THE SWARTKOPS ESTUARY AND SWARTKOPS  
NATURE RESERVE**

① We live in one of the most beautiful parts of the world, with places of great beauty, wild scenery and incomparable wildlife. Yet many South Africans are totally unaware of their natural heritage, its importance, the pleasure it gives, or that it is threatened ② (Davies and Day 1986:5).

**4.1 INTRODUCTION**

In this chapter, the opinions, feelings and perceptions of respondents toward the Swartkops Estuary and Swartkops Nature Reserve are discussed.

There were nine questions that referred to the general opinions of respondents towards the Swartkops Estuary and the Swartkops Nature reserve. The numbers of the questions were 6 and 7, 8 and 9, 10, 11, 12, 13 and 23 (See Appendix B).

The researcher decided to combine questions 6 and 7, 8 and 10 and 9 and 11 as many of the responses were found to be similar.

**4.2 OPINIONS ON QUESTIONS**

**4.2.1 Questions 6 and 7 asked respondents whether they were interested in the future of the Swartkops Estuary and Reserve respectively.**

The purpose of these two questions was to assess the degree or extent of interest, appreciation and concern which respondents had for the future of the Swartkops Estuary and Swartkops Nature reserve.

All respondents answered 'Yes' to these questions. In general those living near the estuary were more emphatic in their answers regarding the estuary and those living near the reserve were more concerned about the reserve. It was also evident by the emphasis on certain answers (See Table 4.1) that the uneducated respondents (See Sections 1.6 and 3.3) were more concerned about the immediate area where they lived, whether it was the reserve or the estuary. This was because they made their living from either the estuary or reserve. The more educated and affluent respondents (See Section 1.6) tended to regard the estuary and reserve as one whole entity with each affecting the other. Martin and Baird (1988) support this latter view by stating that the protection of the reserve is essential for its own sake but also for the benefit of the areas around.

TABLE 4.1

TABLE OF RESPONSES FROM RESPONDENTS TO QUESTIONS 6 AND 7.

<u>Uneducated</u>	<u>Educated</u>
It is my only living	Yes for sustainable use
If it helps us	Gives satisfaction and relaxation
Fish to eat	Need to protect species
We get money for prawns	Do not have right to To destroy
Ons stokperdtjie om te swem	For education, bird life
feed children	Water sports, tourism, atmosphere, refuge
Prickly pears gives us food	Lovely people around
Snares also give food	Playground of P.E.
Because nature should be left like it is	Wildlife walks, salt-marsh studies, great selection of plants
We need it for medicines and our culture	Do not want industry blamed
We need for wood	Cannot put back what is destroyed

Additional responses to this question were as follows :

- \* 25/27 (93%) of respondents regarded both the estuary and the reserve as an important asset that they realise they are fortunate to have.
- \* The opinion that was evident in all but two cases (25/27 93%), was that the people were interested in conserving only if the stakeholders could benefit either economically or, in some other manner. This suggested that they were not concerned about 'preservation' (See Section 1.6) but only sustainable conservation. The researcher did explain to the respondents the difference between preservation and conservation (See Section 1.6) and 16\27 (59%) were of the



opinion that if conservation was practised then preservation would also occur. These opinions seem to follow very closely the ideas on sustainable development suggested by the World Commission of Environment and Development (1989:43-65). Milbrath (1984) expressed a similar view of conserving only if the people can use the resources and benefit from them. His views were expressed as 'modifying innate selfishness with empathy, compassion and a sense of justice for all in sustainable living.'

4.2.2 The next question asked the respondents their opinion on how they thought the Swartkops Estuary could benefit both themselves personally and the particular group to which they belonged (See Questions 8 and 10 in Appendix B).

The purpose of these questions was to find out how aware the respondents were of the benefits of the Swartkops Estuary and Swartkops Nature Reserve to them personally and to others in their group.

The responses to this question also showed a considerable variation in the opinions of respondents who had different levels of education (See also Table 4.1).

The opinions of those with no education were as follows :

- \* They perceived the estuary as a type of 'life line' (See Section 4.2.1) that could provide them with something to eat either directly by providing fish, crabs and shrimps or indirectly by enabling them to obtain cash by digging and selling bait. They were also able to assist the other more affluent users of the estuary with various small tasks such as digging prawns and/or helping launch the boats. The researcher, who is familiar with the area, observed that there seemed to be many more of these people making their living from the river now than was the situation in the past. This point was mentioned to some of the property owners who confirmed that the economic climate appeared to be responsible for more people trying to make a living from the estuary. Some respondents (4/27 15%) stated that they depended entirely on the estuary for survival and that they had been using the river as their livelihood for many years. They indicated that they would be unable to earn a living in any other way.
- \* Other comments from these respondents who lived near the estuary were that the estuary provided healthy safe recreation for their families. They also said that they enjoyed the view and relaxed atmosphere and the 'feeling' of being near the estuary.
- \* The two respondents who were squatters in Motherwell and lived two kilometres from the estuary, stated that it was of no use to them. This comment seems to indicate that the poorer people are concerned mainly about the areas within walking distance as they do not have transport.

Opinions of respondents regarded as educated (See Section 1.6) perceived the estuary as supplying the following benefits :

- \* For recreation - swimming, fishing, boating - many saw it as the "playground" of Port Elizabeth.
- \* Four of the educated (See Section 1.6) respondents living in Motherwell said that they enjoyed the opportunity of being able to leave the atmosphere of the township and walk down to the estuary for a swim although it was - "far to walk." They said their children regularly used the estuary to swim in.

Further comments that were repeated by more than one respondent in this group were the following :

- \* Tranquillity - An open air pocket to mentally relax and experience the beauty of the natural fauna and flora of a dynamic changing tidal area. It was an ideal opportunity for the people in the city to experience the atmosphere of country living.

- \* Economic potential - The scope for eco-tourism and the advantages for certain industries. \* Environmental

Education - This could be as follows :

- (a) Respondents saw the estuary as an ideal venue for schools from all areas to come and learn about a variety of birds, crustaceans and other estuarine organisms.
- (b) The wider aspect of learning about the relationships of the different people of the area to their environment

and how to live with it in a sustainable manner, could also be taught as there are many schools close by and even those in the city are only twenty minutes away by car.

- \* When the researcher interviewed four of the respondents who did not live near the estuary, they suggested that more people should be informed about the estuary. Their opinion was that many people in their area were not aware of the estuary and what it offered. This could indicate that a considerable portion of the residents of Port Elizabeth and surroundings are also unaware of the estuary and its potential.

4.2.3 The next questions asked respondents their opinions on how the Swartkops Nature Reserve could benefit both themselves personally and their group to which they belonged (See Question 9 and 11 in Appendix B).

The purpose of this question was the same as that in Section 4.2.2 but as applied to the Swartkops Nature Reserve. There were again differences between the opinions of the educated and the uneducated stakeholders. There were also some things that both groups agreed on.

The responses of the uneducated squatters were as follows :

- \* Their opinion was that the Nature Reserve was essential to their survival (See Section 4.2.2). The squatters were unashamed in admitting that by setting snares, taking

birds eggs and cutting wood, they were able to obtain enough food and energy to live on. The researcher asked them how they would feel if the area in which they now lived became like some of the older townships with no bush, animals or trees. Their response showed that they had a close attachment to the vegetation. They were genuinely concerned at the thought that they themselves could be destroying it. This impression of concern the researcher obtained when they made comments such as " I like the view and the feelings the bush gives me." When they compared their situation to those living in the flat areas of Zwide where there were no trees and bushes at all, they expressed genuine appreciation for the benefits of the parkland atmosphere of the reserve.

- \* The squatters (2/27 7%) also expressed support for the idea of sustainable use (See Section 4.2.1) which they agreed could benefit them if it enabled them to use the reserve for a living. This latter idea was supported by Moller (1986) in her 'Basic Need Fulfilment Approach' that focuses on the 'real needs' of people when considering conservation.
- \* Further benefits mentioned by the squatters, were the medicines available from many trees (Urton 1990) in the reserve, the fruit from the alien prickly pears and the grazing for their animals.

The opinions of the educated respondents toward the reserve, were as follows :

\* There were many comments made by the Xhosa speaking respondents which indicated to the researcher that they had a sense of suspicion and distrust towards any new proclaimed areas by the authorities. The findings of McCarthy (1986) in which he analyses the perceptions of the educated and affluent black people in Natal with regard to suggested developments of wilderness areas, seem to support these perceptions of a deep sense of suspicion and distrust. This group of respondents (5/27 19%) gave evidence of their suspicions by making the following comments :

- \* Their opinion was that the reserve was being used as a 'buffer zone' to protect the white residential areas along the estuary from the township people.
- \* They also felt that the reserve would not benefit the people living around it at all but was to be preserved entirely for the more affluent people, and especially the whites, to enjoy.
- \* They were also worried that by proclaiming the area a nature reserve, many of their traditional and cultural ways of life would be threatened. This included using the reserve for 'makwetas' and muti collection.

Some of the reasons for these attitudes could have developed from previous experiences of the black people in the area where they were not consulted but were forced into accepting situations. An example of this occurred in the area during 1992 when the building of the second Police Station was

started without the residents being consulted. The residents later compelled the government to discontinue with the building. Sterling (1985) warns that it is important that the right relationships and sensitivities exist between people and that one is not over-domineering or exploitive of the other as this will be damaging to both parties.

Despite the above suspicions, the researcher discovered that there was a positive attitude by the black community leaders (5/27 19%) toward the reserve. They also strongly supported the sustainable use approach (See Sections 4.2.1 and 4.2.2) and emphasised that if everyone benefitted from the reserve they would help care for it.

Further opinions of the educated black and white respondents toward the reserve were as follows :

- \* It created an attractive backdrop to the estuary (Supported by Martin 1988).
- \* It was a wonderful opportunity for both the township people of Motherwell and the suburban people of the city to experience a natural unspoilt environment on their doorstep (See Section 4.2.2). They felt that this could create an appreciation of the balance between rural and urban life and may become an area where the different races and classes could meet in a relaxed environment and so become more aware of one another.

- \* The variety of animal life, especially the birds, was stressed (See Section 1.3).
- \* The value of the area for recreation (See Section 4.2.1 and 4.2.2) was emphasised.
- \* The beauty of the plants at certain times of the year and the uniqueness of the Valley Bushveld (Guillarmod 1974) could with the other attractions be developed into a valuable eco-tourist attraction (See Section 4.2.2). As Elkington et al. (1988:166) have stressed, eco-tourism has grown at a rapid rate world wide and has now become an " inescapable fact of life and could be harnessed to the cause of sustainable development."

4.2.4 The next question asked was : How important do you feel it is that something is done to conserve the Swartkops Estuary ? (a) Important (b) Sometimes Important (c) Not Important (d) No opinion. (See Appendix B Question 12).

The purpose of this question was to assess the following :

- \* The degree of importance that the stakeholders attach to the Estuary.
- \* The feelings, attitudes and values that people have toward the whole concept of conservation and towards conserving the Estuary in particular.



The responses to this question were as follows :

- \* All respondents except one (26/27 96%) stated that they thought it was Important to conserve the estuary (See Section 4.2.1). Many also added other comments such as 'extremely, utmost and vital'. This indicated to the interviewer that there was much emotional feeling towards this issue and that respondents considered conservation of the estuary to be of major importance.
- \* There was no consistent difference in the responses between the various groups, ages or races. A somewhat surprising response from the uneducated respondents was that they would be in favour of a reasonably strict control of the users of the estuary. They stated that if this was not done there would soon be irreparable damage done that would affect everyone.
- \* There was again much support for the idea of conservation rather than preservation (See Section 4.2.1 above).
- \* There was concern expressed that the Swartkops and Sundays were the only two unpolluted rivers of the original five that flowed into Algoa Bay. The feeling was that careful management was essential if the Swartkops Estuary was to be prevented from becoming like the Papenskuil River and other similar degraded rivers.
- \* A further opinion was that the Swartkops Estuary was part of a much larger eco-system and that it played a vital role in the development of many different ecological environments. The control therefore of the rare estuarine

plants and animals was considered important.

- \* Respondents (4/27 15%) referred to the sensitive issue regarding the removal of squatters from certain areas. Van Staden (1987) emphasises the need for developing strategies to cope with the changing composition and structure of South African conditions and to be aware of the inter-relations between the physical environment and human experience. The respondents associated with these people felt that, although it was necessary that they did move, this should be done in a sensitive manner. This sensitive approach is also suggested by Dawes and Tredoux (1989) from their detailed studies of squatter camp removals.
- \* Other comments were: Conservation was essential for continued healthy recreation on the estuary. The need to protect the large bird population. The need to control erosion. Baird et al. (1986) support this latter view when they state that the conservation of the vegetation is essential if massive erosion is to be avoided.

4.2.5 Many of the above comments were also mentioned when a similar question : How important do you feel it is to conserve the Swartkops Nature Reserve ? was asked. There were, however, some additional responses that are summarised as follows : (See Appendix B Question 13)

The purpose of this question was to assess the following :

- \* The degree of importance that stakeholders attached to the Swartkops Nature Reserve.
- \* The feelings, attitudes and values that stakeholders have toward the whole concept of conservation and towards conserving the Reserve in particular.

The responses of stakeholders were as follows :

- \* All respondents (27/27 100%) stated that it was Important that something is done to conserve the Swartkops Nature Reserve.
- \* Most people (25/27 93%) emphasised that it was important that the reserve be 'used' by the people. The need for sustainable use was expressed (See Section 4.2.1). The example of the Kruger Park was mentioned and the question was posed - Would the Kruger Park still be in existence if the aim had been to preserve it only and never allow it to be used by the public ?
- \* The practical problem of conserving was also mentioned and many (12/27 44%) interviewees felt that this would be an impossible task with the logistics of the population involved.
- \* A further problem expressed was that the area had a low rainfall - approximately half that of Port-Elizabeth itself. This meant that if the reserve was over utilised and woodcutting and grazing was not controlled, there would not be sufficient moisture to sustain the bushveld.

- \* The opinion amongst both the educated and uneducated black resident respondents (7/27 26%) once again expressed the opinion that consideration must be made for the circumstances of the poorer people (See Section 4.2.4). The researcher was impressed by the intensity with which the people conveyed this feeling.

4.2.6 The final question on general opinions on the Estuary and Reserve was the following: - What do you think most people living in your area really feel about the estuary and reserve ? (See Appendix B Question 23)

The purpose of this question was to discover the general feelings and attitudes of some of the people who were not respondents but were also stakeholders.

Some respondents found this question difficult to answer as they stated that they knew how they themselves felt but not how others felt. The researcher discovered that by prompting interviewees with ideas on how to assess peoples' attitudes and feelings, this seemed to help comments and ideas to be expressed.

".. from the similitude of the thoughts and passions of one man to the thoughts and passions of another, whosoever looketh into himself, and considereth what he doth when he does think, opine, reason, hope, fear, etc., and upon what grounds, he shall thereby read and know what are the thoughts and passions of all other men upon like occasions."  
(Zimmerman 1987:21)

The responses to this section are stated in table 4.2 below.

Table 4.2

**TABLE OF RESPONSES OF WHAT RESPONDENTS THINK THAT OTHER  
PEOPLE IN YOUR AREA FEEL ABOUT THE ESTUARY AND RESERVE**

Responses of interviewees that were repeated by more than one  
respondent

Not sure

Many unaware of what estuary and reserve have to offer

Many not interested or concerned

If people visit it they will become concerned

Want to preserve it for own benefit such as atmosphere and to  
keep up property values

Want it as a buffer

Most people in Motherwell know very little about both reserve  
and estuary

Really appreciate them as they love parks

We would be surprised how many people would become interested  
and would help

People feel that it has been given by God and should be cared  
for

For fun, leisure and relaxing

Offers parkland, greenery

Opportunity to experience nature

The area has been neglected

Nature reserve should have been declared 15 years back

Wonderful for children

More concerned about estuary than reserve

A very sensitive issue

Little reaction

The opinions formulated by respondents regarding the  
attitudes of the people in their area towards the Estuary and

Reserve were from associations with these people through  
various social and business activities. These were as  
follows :

\* Respondents were of the opinion that there was a lack of

awareness (See Section 4.2.2) among the people they knew of both the Reserve and the Estuary. This perception was obtained because of the following : (a) Many people living near the reserve did not appear to know much about both the estuary and the reserve but especially the estuary. (b) Many people living near the estuary were perceived to have little knowledge of the reserve. (c) The respondents living in the city believed that many people they knew in their areas were unaware of especially the reserve but also the estuary. (d) Those that did know of the existence of the reserve and estuary had seldom or if ever been to visit them.

The researcher concurs with these opinions as he himself had frequently taken pupils from the suburbs of Port Elizabeth to visit both the reserve and estuary and had discovered that many pupils had never been there before.

- \* The next opinion obtained was one of indifference. This attitude is similar to the attitude mentioned earlier of the concern that people show only about their particular interest (See Section 4.2.1) and not the wider aspects of conservation. Respondents stated that people in their area often considered only their short term needs regarding the estuary and reserve. This attitude manifested itself in the concern, amongst some groups, of their property values and whether the reserve could be used as a " buffer zone " between the Motherwell Township and the residential areas on the estuary. The opinion of respondents in the more

affluent Motherwell areas was also that there were feelings of indifference among people in their groups. These impressions were obtained from the attitude of people who accepted the pleasures of the estuary and reserve for granted with the belief that they have a right to them but need do nothing to care for them.

- \* In contrast to some of the above opinions, the researcher discovered that 7/27 (26%) of the respondents were of the opinion that there was a strong dedicated core of concerned and committed people in their groups of stakeholders. These opinions were obtained by respondents when they observed the dedication of people in their groups who devoted much of their time, finance and expertise to assist in promoting environmental education, conservation and an awareness of the areas involved.
- \* The next opinion of respondents was that many people in their groups appeared to show a considerable attachment and even a sense of nostalgia towards both the estuary and the reserve (See Sections 4.2.3 and 4.2.4). Some of the reasons for these conclusions were from various comments expressed, such as - "river atmosphere where we have been all our lives", "country atmosphere when we escape from the city rush", "the walks in fresh indigenous valley bushveld that is a part of our Eastern Cape atmosphere", "the clear clean tidal waters which change the atmosphere daily". These feelings were obtained from a wide cross section of the community and did not differ significantly between races, ages or educational standards.

### 4.3 CONCLUSION

In summarising this section, the overall impressions gained by the researcher were as follows :

#### 4.3.1 Positiveness, appreciation and concern

There was more emphasis on the positive rather than the negative attitudes of people towards conservation of both the estuary and reserve. Some of the reasons for this conclusion were : (1) The appreciation expressed by a high percentage (21/27 78%) of respondents of the many benefits which could be derived by a large section of the Port Elizabeth population (See Sections 4.2.1, 4.2.3 and 4.2.6). (2) The fact that there was a dedicated core of people committed to the task of conservation of the area (See Sections 4.2.4 and 4.2.6). (3) That there was a high percentage of respondents (25/27 93%) that strongly supported a conservation approach (See Sections 4.2.1 and 4.2.4). This support came from all sections of the population irrespective of race, wealth or educational standard (See Section 4.2.4). The researcher was aware that the validity of the high degree of optimism perceived could have been influenced by the desire of respondents to 'please' the researcher during the interviews. Despite this caution there was, however, a consistency and genuine spontaneity in the answers from respondents. This made the interviewer feel confident in the validity and reliability of the above impressions.



#### 4.3.2 Negativeness and suspicion

There was also a degree of negativeness that was observed in the attitudes of the different race groups. This was evident in the suspicions that each group portrayed towards the motives of conservation (See Sections 4.2.3, 4.2.4 and 4.2.5).

#### 4.3.3 Sustainable use

The opinion of the respondents that the conservation approach should be one of sustainable use came out strongly. This was when using the estuary either for recreational use, making a living or any other purpose (See Sections 4.2.1, 4.2.3, 4.2.4 and 4.2.5).

#### 4.3.4 Educational differences in opinions

The different educational standards of the people were responsible for major differences in opinions (See Sections 4.2.1, 4.2.2 and 4.2.3).

#### 4.3.5 Lack of awareness of the Swartkops Estuary and Swartkops Nature Reserve

There was evidence from the opinions expressed that there were many people who were unaware of all that the Swartkops Estuary and Reserve had to offer. They also showed that they were unaware of the effects certain actions had on the conservation of the area (See Sections 4.2.2 and 4.2.6). The information obtained from the opinions as summarised above in Section 4.3 will be carefully considered and discussed in Chapter 6 when suggestions are made for an environmental education approach for the Swartkops Estuary and Swartkops Nature Reserve.

## CHAPTER 5

**OPINIONS OBTAINED ON POSSIBLE MANAGEMENT ISSUES RELATING  
TO THE SWARTKOPS ESTUARY AND SWARTKOPS NATURE RESERVE**

① Environment must also be an approach to development. Environment is a social justice issue and environment even is a peace and security issue. The barriers to achieving sustainable development are great, as might be expected in a major historical transformation, but they are far from insurmountable.②  
World Commission on Environment and Development (1989:301)

**5.1 INTRODUCTION**

In this chapter the opinions of the different stakeholders will be examined with regard to their attitudes on caring for, controlling and managing the estuary and reserve. There were four questions asked in the interview schedule that specifically referred to management issues. Question 14 dealt with the possible threats to the estuary and reserve and there were twelve parts to it. Questions 15 and 16 dealt with how the respondents and their groups could assist with the management of the estuary and reserve. Question 19 asked respondents to give their opinions on suggestions for conserving the estuary and reserve. (See Appendix B).

**5.2 POSSIBLE THREATS TO THE SWARTKOPS ESTUARY AND  
SWARTKOPS NATURE RESERVE**

The first group of questions relating to management issues was question 14 (See Appendix B). This series of related

questions concerned the opinions that respondents had toward possible threats to the conservation of both the Swartkops Estuary and Reserve.

The purpose of this question was to obtain an insight into how seriously the stakeholders of the Estuary and Reserve view some of the threats to the conservation of the area. These results could then be used as a guide when formulating an environmental education approach for the area.

The Swartkops Estuary and Reserve are under increasing pressure from residential, industrial, recreational, road building, and other developments (Grindley 1974; Baird et al. 1986 and Section 2.1). These threats will be discussed individually.

Respondents were asked to assess, from their viewpoint and that of their group that they represented, whether they thought each threat was : (a) Serious (b) Sometimes serious (c) Not serious (d) No opinion.

All figures listed in tabular form, refer to percentages.

### 5.2.1 Industrial pollution

The first part of the question concerned the threat of Industrial Pollution and the responses are summarised in TABLE 5.1. (See Appendix B Question 14 [1])

TABLE 5.1

## TABLE OF RESPONSES ON THE THREAT OF INDUSTRIAL POLLUTION

	Serious	Sometimes serious	Not Serious	No Opinion
ESTUARY	60	20	8	12
RESERVE	15	41	37	7

N = 27

- \* The respondents who regarded industry as a serious threat, felt that the pollution of the river upstream was the major concern (See also Section 5.2.5). Many respondents (10/27 37%) believed that the river was badly polluted above the tidal zone of the Perseverance Drift and that if flooding occurred this could cause the lower reaches of the estuary to become polluted. There was also the opinion that the exotic water hyacinth (Eichornia crassipes) infesting the non-tidal area of the river was purifying the water. This seems to the respondents one reason why the estuary had not become more polluted. There was also a popular belief (11/27 41%) that the tidal area of the river tended to purify itself (See Section 5.2.8). The findings of Watling and Watling (1982) and Baird et al. (1986) support these opinions of respondents.

Watling and Watling (1982) in a metal survey of South

African estuaries concluded that the metal concentrations in the estuary are not excessively high. Baird et al. (1986) state that the greatest pollution was caused by the Swartkops Power Station and the coal-fired steam engines which created dense smoke that settled on the saltmarshes and the estuary. This affected both the estuary and the reserve but now that both these sources have been diminished this method of pollution has become negligible.

- \* The other industries that the respondents said were also causing concern were Algorax, the Salt Pans and the Fishwater Flats (See Section 5.2.4).
- \* Several respondents (14/27 52%) felt that the main reason for many of these industrial problems originated from the insensitiveness of the Provincial Administration and the Port Elizabeth Municipality to the area around the Estuary and Reserve. Baird et al. (1986:43) in reference to the saltworks state, " the salt industries occupy large areas of the flood plain and are aesthetically unattractive." Stauch Vorster et al. (1977) concur that this industry should never have been allowed to be developed in the area. Van der Merwe (1974:1) stated,

①Unfortunately, a lack of co-ordinated planning has in the past led to no recreational development at all, but to a good deal of undesirable industrial and extractive activities, which in total pose a serious threat to the future of the estuary.①

10/27 (37%) of respondents felt that the industries mentioned in this section could have been established elsewhere without excessive economic disadvantage.

In spite of the above opinions of the respondents, Baird et

al. (1986) state that more recently the Port Elizabeth City Council which is the responsible authority for the area, has become more conscious of the pressures of development. It has been responsible for commissioning two reports of significance (See Section 2.1.1) that have been particularly relevant and helpful to the conservation of the area.

\* An industry which caused concern to a few (3/27 11%) respondents, was the Waste Tech Disposal Works. The Swartkops Trust investigated this industry, which deals with the disposing of dangerous chemicals, and are reasonably satisfied that it is carefully controlled but will require monitoring.

\* There was a difference between the opinions of industrialists and most other respondents. Evidence supporting this view was obtained from the following sources :

(a) Information obtained from an in-depth interview with one of the respondents who is an industrialist.

(b) Evidence obtained by Muller (1992) in his thesis on 'Perceptions of Industrialists on the Swartkops Estuary' (See Section 2.1.2).

There was the opinion by some (12/27 44%) of the respondents that the industrialists were insensitive to the conservation of the area. This opinion the researcher discovered, in certain instances, to be invalid.

Information obtained from respondents and from the thesis

of Muller (1992) showed that a number of industrialists were concerned about environmental problems of the area and, in some instances, were committed environmentalists themselves. Suggestions from respondents who were industrialists, were that it was essential for more dialogue to take place between industry, authorities and the conservation organisations involved. It was also suggested that representatives from each company in the area be represented on the Zwartkops Trust Environmental Sub-Committee.

The researcher was aware that although there was a marked difference in the opinions of non-industrial and industrial respondents towards conservation of the area, many of these differences were only opinions and not always accurate. The impression that the researcher obtained was that the attitude of respondents in both groups was mainly positive towards conservation.

- \* A positive opinion was that respondents felt that both industry and the Port Elizabeth City Council do often accept the recommendations and objections of the Zwartkops Trust and other conservation bodies and this has been much appreciated. The re-designing of the extensions to the Fishwater Flats Sewage Works and the stopping of extracting fill from the beach outside the estuary are examples of this co-operation.
- \* The opinion of most respondents (12/27 44%) is that much of the present development, such as the large residential

townships, is necessary and is a fact which cannot be reversed. Future industrial development, however, they feel can be avoided and need not be situated in the main ' Playground of Port Elizabeth '.

### 5.2.2 Erosion and woodcutting

The next threat was that of erosion of the sides of the escarpment and the river banks and the dangers of woodcutting (See Appendix B 14 [2] and [6]). The responses are summarised in TABLE 5.2 and 5.3.

TABLE 5.2

TABLE OF RESPONSES ON THE THREAT OF EROSION

	Serious	Sometimes serious	Not Serious	No Opinion
Estuary	64	4	20	12
Reserve	92	0	8	0

N = 27

The statistics above show that most respondents from all groups and areas felt that the destruction of the Valley Bushveld in particular was a serious threat to both the estuary and the reserve. The researcher observed that some respondents (5/27 19%) were emphatic when they stressed the importance they attached to keeping the vegetation of the area intact (See Section 4.2.4). A surprising response was obtained from the people who needed the bush in the reserve for survival - they also felt that it was necessary to have some control of the cutting and that



commercial cutting should not be allowed. This latter view seems to concur with the thinking of the conservation department of the Port Elizabeth Municipality.

- \* Particular concern was expressed about the possible denuding of the vegetation on the slope of the escarpment as the Valley Bushveld in the area (See Section 1:4) plays a vital role in preventing erosion on the steep slopes. It was felt that with heavy rains and flooding, mudslides and serious erosion could occur. Baird et al. (1986) support this view and mention that because the slope is so steep (1m in 1,75m) and is also composed of a clay base, it is almost impossible to revegetate the area effectively. Evidence of this is the number of places on the escarpment where only bare ground has remained after the indigenous bush was removed. There has been some minor success at revegetation with certain types of grass planted in the so called 'Sausage Method'. It was felt, however, that this method should only be used as a 'repair job' for what had already been done because it would not replace the original valley bushveld.
- \* Concern was also expressed at the apparent lack of planning and impact assessment studies done by the authorities before certain projects were allowed (See Section 5.2.1). Examples mentioned, were the use of bulldozers to clear large sections of bush for the ESCOM powerlines (See Fig.1.4) and the excavating of land for fills in the area.

\* There were a few respondents (4/27 15%) concerned with the possible erosion by power boats. According to the conservation officers, however, there appears to be little evidence of any significant erosion from this source.

The issues in conserving the Valley Bushveld were seen to be extremely sensitive (See Sections 4.2.4 and 4.2.5). The researcher was, however, optimistic about possible future solutions as many (25/27 93%) of the respondents from all sections of the stakeholders were positive about the need for conservation (See Section 4.2.3). They also seemed both anxious and willing to participate. There was, however, the need to create opportunities where contentious issues could be discussed. It was also considered important that the people who depended on the reserve were consulted and involved.

When responding to the threat on woodcutting, there was a difference of opinion between the educated respondents and those who were squatters and depended on the wood from the reserve for their living. The opinions of respondents were as follows :

The figures below in TABLE 5.3 are based on responses of the interviewees and signify how serious respondents view this threat to the estuary.

TABLE 5.3

**TABLE OF RESPONSES OF THE OPINIONS ON THE THREAT OF  
WOODCUTTING**

	SERIOUS	SOMETIMES SERIOUS	NOT SERIOUS	NO OPINION
ESTUARY	8	8	60	24
RESERVE	76	12	12	0

N = 27

- \* The educated respondents (17/27 63%) were of the opinion that this was a serious threat to the existence of the reserve (See Sections 4.2.5 and 5.2.2).
- \* Respondents from amongst the squatter areas around the reserve were initially opposed to any form of woodcutting control. However, having explained that they would be the main beneficiaries, they were much more enthusiastic about the idea. They nevertheless emphasised that they depended on the wood for their existence and would need to have a substitute (See Section 4.2.3).
- \* Suggestions mentioned on how to control the woodcutting varied from policing of the area to a more sustainable method of utilisation. Some ideas were as follows :
  - (a) The area immediately above the escarpment should be demarcated where no cutting should be allowed at all. In the past there had been similar suggestions. Van der Merwe (1974) stated that a significant buffer zone between the top of the escarpment and the Bluewater Bay housing estate should be maintained to allow for possible landslides.

- (b) The idea of providing the squatters with substitutes for the wood that they need. There were several suggestions such as, making use of the 'Card System' for supplying electricity or gas, producing gas from the rubbish dumps, the use of natural solar or wind energy and bringing in alien firewood from other areas, growing woodlots or allowing cutting in areas that would soon be developed.
- (c) Educating the people on how to cut the bush in a sustainable manner and how to collect the dead wood.
- (d) The issuing of permits to prevent commercial exploitation and only allowing people to carry wood for themselves without the use of a wheeled carrier.
- (e) Encouraging much more use to be made of the trail. It was felt that if there were people continually around, they would begin to appreciate the beauty of the area and would feel the need to conserve it. Their mere presence in the area would also discourage any illegal activities (See Section 4.2.6).

When confronting the respondents with the above suggestions on how to provide fuel for the residents and especially the squatters around the reserve, the following ideas and opinions were mentioned :

- \* Some black respondents (6/26 22%) perceived the government as insensitive to their needs (See Section 4.2.5). They believed that it was their right to have electricity. Moller (1986) says that electricity is regarded by many as a basic human right. This could be a

reason why there is indifference about conserving the bushveld (See Section 4.2.6). Elkington et al.(1988) state that energy is a major underlying problem in developing nations. Many respondents (13/27 48%) felt that the need for free electricity was vital to alleviate the problem of fuel.

- \* The opinion of 10/27 (37%) of the respondents was that Woodlots could be an alternative to electricity for supplying fuel. This method of production has been most successfully used in parts of Zululand (Panorama 1991) and appears to have considerable potential. Other advantages are that it is something that the people themselves could be responsible for and it could give them a sense of pride and a personal vested interest in caring for the trees. Okut-Uma and Wereko-Brobby (1985) state that the people do not want substitutes such as gas. They want their own wood. There were, however, some reservations expressed by respondents regarding the problems of the poor soil, inadequate water supply (See Section 4.2.5) and the grazing of the saplings by the livestock. Despite the problems, the researcher was aware of a need and desire by the majority of respondents (19/27 70%) to investigate the feasibility of establishing woodlots in and around the Motherwell area.
- \* In the short term, however, the opinion of respondents was that a more immediate solution to the fuel crisis was needed especially in the festive season when large volumes of wood were used.

\* A further threat to the destruction of the trees was from the 'muti' collectors. This problem may also be solved by the creation of 'muti nurseries' (See Section 7.2.4).

The majority of (20/27 74%) the respondents viewed this threat as the most serious to the reserve. The squatters themselves were also aware of their benefits by using a conservation approach. The opinion of respondents (16/27 59%) was that in the short term it may be necessary to have a reasonably strict control on certain sensitive sections of the reserve but that an approach to the problem in an environmentally educative manner was vital. The people themselves needed to obtain a vested interest (See Section 4.2.1).

### 5.2.3 Bait digging

The next question dealt with illegal bait digging (See Appendix B 14 [3]).

Twenty years ago Grindley (1974) stated that any destruction of the bait areas would destroy the primary producers of the estuary's food. This would then eliminate all life on the estuary and much life in the surrounding nature reserve. Responses to the threat of bait digging on the estuary, are summarised in TABLE 5.4 as follows :

TABLE 5.4

TABLE OF RESPONSES OF THE OPINIONS ON THE THREAT OF BAIT  
DIGGING

	Serious	Sometimes serious	Not serious	No opinion
Estuary	77	12	7	4

N = 27

- \* 8/27 (30%) of respondents regarded this as a form of poaching and felt that offenders should be punished as poachers.
- \* Concern was expressed at the manner in which the poorer people were being encouraged to break the conservation laws. This occurred when they were offered large prices for some of the scarce bait eg. R30 per bloodworm or tape worm.
- \* 12/27 (44%) of respondents were of the opinion that the amount of bait taken from the estuary in a legal manner was not a serious threat as the estuary would be able to replenish this amount. The problem of over exploitation arose when diggers were asked to produce numbers far in excess of the allowed quota. They realised that they could only do this by using illegal methods that caused destruction of the bait habitats and consequently a reduction and even elimination of the various species.
- \* Some respondents (2/27 7%) suggested following a more economic method of control by increasing the prices of bait with the purpose of decreasing the demand. This, however, could cause even more illegal poaching.

- \* 11/27 (41%) of the respondents felt that there was reasonably adequate control of bait digging by the authorities but that this could become a serious threat if not carefully monitored. This view is supported by Baird et al. (1986:44) who state that " properly controlled exploitation of resources of the area through application of regulations is probably preferable to preventing any exploitation or public access."
- \* The main time for transgressions is at night and very early in the morning when large holes are dug that totally destroy the habitats. This is when it is also not possible to exercise proper control. It was suggested that consideration should be given to appointing honorary rangers from local residents and regular estuary users. It appears that the Provincial Nature Conservation Department is investigating this possible avenue of control. The Zwartkops Trust has also discussed further methods of control and it appears they will be following up these ideas to assist the authorities.
- \* Other threats to the bait population were thought to be from development. This possible threat can be confirmed by the researcher who has been aware of requests from contractors to obtain fill material from areas around the estuary such as the sand prawn beds near the mouth. Such requests are fortunately referred to the Zwartkops Trust which states its recommendations. What has concerned respondents, is that many industries have shown their complete lack of sensitivity for the area by even



considering such a request.

- \* The opinion of respondents was that destruction of the bait population would not affect the estuary itself but would undoubtedly affect most of the animal species found in the estuary and also many found in the nature reserve. Martin (1991) states that 92% of the birds seem to feed on the various fauna of the estuary and especially the mudprawn (Upogebia africana) which is the main species being exploited.

#### 5.2.4 Insensitive development

The next threat to be discussed was that of Insensitive Development (See Appendix 14 [4])

Grindley (1974:3) stated :

" The greatest danger facing our estuaries today is the encroachment of industrial and other forms of development ---  
- . Such damage is far worse than the pollution or over exploitation of fish or bait about which there is frequently more concern."

O'Keefe (1989) says that management techniques are available to developers to mitigate threats to estuaries but because of the short term economic gain they obtain out of insensitive development, it is impossible to be other than pessimistic about their actions.

Results obtained from the opinions of respondents are summarised in TABLE 5.5 as follows :

TABLE 5.5

TABLE OF RESPONSES OF OPINIONS OF RESPONDENTS ON THE THREAT  
OF INSENSITIVE DEVELOPMENT

	Serious	Sometimes serious	Not serious	No opinion
Estuary	68	16	8	8
Reserve	76	8	12	4

N = 27

- \* Those that did not regard development as a serious threat were the squatters. These people tended to focus on the short term benefits because they benefited from such projects as the clearing of vegetation for the power-lines which brought them electricity (See Fig.1.4). Developments close by were regarded by them as positive because they were seen as providing job opportunities and markets for some of the natural resources from the estuary and reserve.
- \* The opinion of the majority of respondents (19/27 70%) was that insensitive development was a serious threat (See also Section 5.2.1). They were often vociferous in expressing the need for detailed impact assessments before any development is done. It was felt that it should be regarded as totally unacceptable that this area be used for industrial purposes unless there was a clear impact assessment conducted that proved the development was advantageous to the area. The Zwartkops Trust concurs with these opinions.

- \* Some of the main developments which had already occurred and were seen by respondents to be continuing threats to the estuary and reserve were as follows :
- (a) The Algorax (Carbon Black) factory which produces large amounts of thick carbon dust that settles on the floodplain and in the estuary. Many respondents (10/27 37%) felt that this type of development should never have been located in such a sensitive area.
  - (b) The Swartkops Power Station was built in the middle of the flood plain. The opinion was that it was also an obstruction preventing the natural flow of the estuary during flooding (See Section 5.2.1).
  - (c) The Bramlin Markman road was perceived as an invasion of the flood plain causing many of the associated problems.
  - (c) The opinion was that the stormwater-canal was a continual threat to the pollution of the river. It was seen by many (12/27 44%) respondents as transporting the sewage of Motherwell into the estuary.
  - (d) The informal settlements of shack dwellers along the Chatty river tributary of the estuary. Respondents (13/27 48%) felt that the Chatty river area could have been kept healthy and clean for the benefit of the people living around it if there had been careful planning of the squatter development in its catchment area. They now see the Chatty River Squatter Camp as a major threat to the pollution of the Swartkops Estuary.
  - (e) The opinion of 5/27 (19%) of respondents was that the

development of the salt pans on the flood plains of the estuary was a serious mistake (See Section 5.2.1). It was felt that the concentrated salt caused wide spread damage to the indigenous plants alongside the estuary and the once popular Redhouse Golf Course. Much indigenous valley bushveld on the escarpment was also cleared to provide for the roads and pans of the salt works.

(f) The opinion of (7/27 26%) of respondents was that the development of roads (See Fig 1.3) and railways over the floodplain and up the escarpment was necessary but it was felt that there had been much insensitivity shown by the manner in which this had been done. There had been little effort made to re-vegetate the areas where the natural bush had been cleared. The clay base in the soil also prevented re-growth. This had degraded the aesthetic atmosphere of the area and had created a situation where erosion and mud slides occurred frequently, causing destruction of the reserve and danger to the residents (See Section 5.2.2).

(g) The opinion of most (14/27 52%) respondents was that the Fishwater Flats sewage works should never have been in this sensitive area. There are also plans to extend this development and further encroach on the flood plain.

A positive response from respondents (6/27 22%) was their satisfaction with the new Bramlin Markman by-pass road (See

Fig.1.3 in Chapter 1). This has greatly reduced the noise and fume pollution to the areas around Swartkops and Amsterdamhoek from heavy passing traffic.

Development on the floodplain causes much ecological destruction. Winter and Baird (1990) in a study on the various nutrients of the estuary found that in the salt marshes there were considerable amounts of these chemicals, essential to all living systems, being formed. It seems likely that this will be greatly reduced if the salt marsh is invaded. It is possible that already the estuary's eco-system has been affected by development and its effects. An investigation by Hanekom and Erasmus (1988) shows that there was an increase of 300% in the mass of prawns in the purer lower reaches of the estuary compared to the area higher up above the Wylde Bridge where the concentration of pollution from development is more prevalent. A similar concentration of birds occurs on the lower section of the estuary where eighty seven per cent of all waders occur within two kilometres of the mouth (Martin and Randall 1987).

#### 5.2.5 Litter pollution

Litter pollution was the next threat that was investigated (See Appendix B 14 [5]).

Most of the litter was found in and around the squatter areas close to the reserve at Motherwell and along the Chatty River (See Section 5.2.4). Recently there has also been an

increasing amount of litter accumulation in the upper reaches of the river (See Section 5.2.1) and also in the Swartkops area. The opinions of respondents towards this threat are listed below in TABLE 5.6.

TABLE 5.6

TABLE OF THE RESPONSES OF OPINIONS ON LITTER POLLUTION

	Serious	Sometimes serious	Not serious	No opinion
Estuary	76	8	4	12
Reserve	64	20	12	4

N = 27

- \* The respondents who lived in the badly littered areas (10/27 37%) were particularly sensitive to this form of pollution. Their opinion was that it was the most serious threat to both the estuary and reserve. Despite being responsible for the litter, there was a desire by these people to improve the situation.
- \* Other littering which was seen as becoming an increasing threat, was the littering by visitors especially to the estuary. Some (5/27 19%) respondents were aware of a lack of knowledge and an attitude of complete indifference (See Section 5.2.10) by these people to the results of their actions.
- \* Environmental education was perceived by most (20/27 74%) respondents to be essential in the control of litter.
- \* Despite the above concerns and the statistics, most respondents (22/27 81%) did not regard littering as serious when compared to other threats. They felt that it

could become serious if not controlled.

Judging from the above opinions of respondents, littering was regarded more as aesthetically undesirable than as a serious threat to the conservation of both the estuary and reserve. There was, however, the need to make the rapidly expanding population of the area more environmentally conscious (See Section 4.2.6) to control litter pollution. Steiner (1990) emphasises the success of other countries in using education as a vital tool in reducing littering. The most encouraging opinion was the desire by the people, especially in the poorer badly littered areas, to improve the situation. It seemed therefore that with the correct approach, co-operation could be expected from these people.

#### 5.2.6 Sewage pollution

Sewage pollution from the sewage works, campers, residents etc. (See Question 14 [7]) and Sewage pollution from the residents of Motherwell via the Stormwater Canal (See Appendix B [8])

##### 5.2.6.1 Sewage pollution from the sewage works, campers, residents etc.

The Fishwater Flats is the main sewage treatment works of both industrial and domestic sewage for Port Elizabeth. There is also a sewage works higher up the river near Uitenhage. Responses from the interviewees are summarised in TABLE 5.7.

TABLE 5.7

TABLE OF RESPONSES OF THE OPINIONS ON SEWAGE POLLUTION FROM  
THE SEWAGE WORKS, CAMPERS, RESIDENTS ETC.

	SERIOUS	SOMETIMES SERIOUS	NOT SERIOUS	NO OPINION
ESTUARY	36	28	24	12

N = 27

- \* It was felt that the actual sewage was not a serious threat as it was properly treated.
- \* There was concern at the intended expansion of these sewage works. It was felt by respondents that larger amounts of effluent may not always be purified completely and if it is pumped into the sea it could enter the estuary mouth.
- \* The feeling was that investigations should be made as to the feasibility of using treated sewage for some useful purpose such as the watering of woodlots in Motherwell (See Section 5.2.2).
- \* Concern was expressed by many (12/27 44%) respondents about the sewage pollution that was apparently occurring higher up the river near Uitenhage (See Section 5.2.1).
- \* The opinion of (6/27 22%) of respondents was that sewage from the squatter areas and especially those on the Chatty River was also a source of pollution affecting the estuary. This is a serious problem that is being investigated by the authorities. The aim is to eventually resettle all the squatters living on the Chatty River and then utilise the area for the benefit of these people.



### 5.2.6.2 Sewage pollution from the residents of Motherwell via the stormwater canal

The first impression that the researcher obtained was that of frustration by the respondents at the insensitiveness of the authorities to build the canal in such a pristine area used by large numbers of people (See Section 5.2.4 and Fig.1.4). It was felt that there were other places that should have been considered where the impact on the environment need not have been so great.

Opinions of the respondents are summarised in Table 5.8.

TABLE 5.8

TABLE OF RESPONSES OF THE OPINIONS ON SEWAGE POLLUTION FROM  
THE RESIDENTS OF MOTHERWELL VIA THE STORMWATER CANAL

	SERIOUS	SOMETIMES SERIOUS	NOT SERIOUS	NO OPINION
ESTUARY	40	38	10	12
RESERVE	24	8	52	16

N = 27

- \* The opinion of 8/27 (30%) of respondents was that this threat was serious only when the normal sewage systems in Motherwell were blocked up or flooded especially in times of heavy rainfall. Weekend Post Reporters (1993) mention how even 50mm of rain had caused flooding in the Motherwell Township.
- \* Some respondents (5/27 19%) showed concern that more squatters may settle in the area around the canal and without proper sewage facilities, they could make use of

the canal.

- \* According to certain respondents (6/27 22%), there is the problem of whether the Motherwell Town Council or the Port Elizabeth City Council is responsible for the canal. This difficulty should be overcome once the Port Elizabeth City Council takes over responsibility for Motherwell.
- \* Most respondents (14/27 52%) were of the opinion that the tides of the river would flush out the sewage if it was only in small quantities (See Section 5.2.1). The problem may become serious when the population expands.
- \* The opinion of 7/27 (26%) of respondents was that the amount of effluent coming into the river was not as serious or as long lasting as that from the factories.
- \* Nearly half (13/27 48%) of the respondents felt that there was a need to educate the people of Motherwell as to the seriousness of the sewage run-off. The opinion was that they should be shown how to monitor the canal flow, where to report bad discharges to and when not to swim in the estuary. They should also be made aware that they have a vested interest in the control (See Section 4.2.1).
- \* In spite of this threat now being controlled, the opinion among some respondents (4/27 15%) is that the canal has caused the estuary to be unsafe to swim in. The researcher concurs with this view as he has also been aware of similar opinions of people who live in the City.

The opinion of the researcher was that the small amount of effluent in the estuary from squatters could be adequately

coped with by the cleansing operation of the estuary tides but that the situation should be carefully monitored. The respondents did not regard this threat as being serious for the reserve.

### 5.2.7 Fishing

Fishing was the next threat investigated (See Appendix B NO. 14 [9]).

The responses of interviewees are summarised in TABLE 5.9.

TABLE 5.9

TABLE OF RESPONSES OF THE OPINIONS ON THE THREAT OF FISHING

	SERIOUS	SOMETIMES SERIOUS	NOT SERIOUS	NO OPINION
ESTUARY	8	20	52	20

N = 27

- \* The opinion of most respondents (19/27 70%) was that this threat was not serious.
- \* 11/27 (41%) of respondents regarded the present restrictions as fair and acceptable to all and it was felt they should prevent any over exploitation. They felt that there could be a problem in ensuring that fishermen continually abide by these rules. This they said would require continual supervision. The presence of the conservation officers on the estuary was regarded as essential.

\* The opinion of some respondents (5/27 19%) was that there was also a need for an environmental education approach towards the pleasure fishermen (See Section 5.2.5) who they felt transgressed the rules frequently. It was felt that most competition fishermen abided by the conservation laws of the estuary as they had a strict code of conduct within their club.

Despite the above comments, some respondents (5/27 19%) closely associated with the estuary were emphatic that the size and number of fish being caught were decreasing each year. Their opinion was that the commercial boats anchoring in the sea outside the estuary catching large numbers of fish before they entered the estuary to spawn and the illegal methods of catching fish could be contributory causes. This latter method the researcher discovered has been reduced since the Swartkops Power Station has ceased warming the water and causing fish to congregate in dense masses.

#### 5.2.8 Power boats

Power boats was the next threat investigated. (See Appendix B 14 [10])

The responses of interviewees are summarised in TABLE 5.10.

TABLE 5.10

## TABLE OF RESPONSES OF THE OPINIONS ON THE THREAT OF POWER BOATS

	SERIOUS	SOMETIMES SERIOUS	NOT SERIOUS	NO OPINION
ESTUARY	16	28	40	16

N = 27

The opinion of most respondents (18/27 68%) was that power boats did not pose a serious threat. They cautioned that it could become more serious in the future if not strictly controlled.

Some of the comments of respondents were as follows :

- \* 4/27 (15%) of respondents mentioned erosion on the banks (See Section 5.2.2).
- \* Noise pollution was regarded as a serious threat by the respondents who were residents. The opinion of the fishermen was that the noise caused many fish to move away from the upper reaches of the estuary where most of the water skiing takes place.
- \* More recently, the opinion of 6/27 (22%) respondents was that rubberducks have become a threat to the destruction of the indigenous sea grasses essential to the eco-system. Talbot (1986:3) states that " sea grasses play a variety of important roles in the ecology of estuaries."
- \* There was the opinion that because the estuary was being used this was a healthy sign and the users would take care of it for their own benefit (See Section 4.2.1).

The researcher was aware of a range of opinions of interviewees towards this threat. The attitudes and

contrasting views of respondents were often influenced by their own particular interests. There was, however, an underlying consistency in the desire for conservation of the estuary. The estuary is an ideal setting for many different types of water sports and each had a right to be there. To accommodate these rights it seems that there is a need to educate people on how to use their speed boats in a sustainable manner.

#### 5.2.9 Destroying of animals

The threat to the ecology of both the estuary and reserve by the destroying of animals was the next question. (See Appendix B NO.14 [11])

Responses of interviewees to this question are summarised below in TABLE 5.11.

TABLE 5.11

TABLE OF RESPONSES OF THE OPINIONS ON THE THREAT OF DESTROYING OF ANIMALS

	SERIOUS	SOMETIMES SERIOUS	NOT SERIOUS	NO OPINION
ESTUARY	64	16	12	8
RESERVE	80	16	0	4

N = 27

\* The opinion of most of the respondents (21/27 78%) was that this was a serious threat (See Section 4.2.3). Many

(11/27 41%) felt that much damage had already been done especially in the nature reserve. The opinion was that the conservation officers had been " wide awake " to the poaching on the estuary and had managed to control much of the fauna destruction.

- \* Certain respondents (6/27 22%) stated that the problem was more serious in the reserve where many animals had already been almost annihilated (especially the different reptiles). This had occurred mainly through a total lack of knowledge and unnecessary fear for certain animals. Respondents (15/27 55%) felt that there should be more environmental education to control this threat (See Section 4.2.4). Supervision of certain sensitive areas was also suggested.

#### 5.2.10 Other threats

The final group of threats under this section was the one on Other threats than those mentioned above (See Appendix B 14 [12]).

Under this category there were many ideas mentioned as respondents tended to give their opinion from their own subjective viewpoint. As the number of ideas became unmanageable, the researcher decided to list all the threats mentioned but to only discuss those threats mentioned by more than five of the respondents. These are shown in TABLE 5.12 below.

TABLE 5.12

<u>THREAT</u>	<u>NUMBER OF TIMES MENTIONED</u>		
Floods	14	Borrow pits	5
Bridges too narrow	10	Beach Buggies	4
Off road vehicles	9	Flood pollution	3
Tankers going over bridge	2	Mouth blocking	4
Squatters	4	Waste Tech	3
Drought	10	Other industries	3
Muti collection	5	Lack of knowledge	5
Sedimentation	5	Political	11
Over - population	8	Lack of latrine	
Other man made pollution	3	facilities	2
Grazing animals	3	Burning bush	2
When land is not being used for some purpose	9	Indifference	12

- \* Flooding - This was a threat which concerned many respondents (14/27 52%). Hanekom (1989) states that floods occur in south-east coast estuaries every few years. There was an awareness that with the development on the flood plain and erosion in the reserve and surrounding escarpment there would be a much greater run-off. This together with the narrow bridges could cause damage and danger.
- \* In contrast to the above the opinion of some (9/27 33%) respondents was that the lack of flooding was a threat to the estuary. They felt that floods were urgently required to wash away the build up of silt that was occurring near the mouth just above Settlers bridge. Esterhuysen and Rust (1987) state that this build up of silt is the result of a period of no flooding.
- \* The opinion of many respondents (11/27 42%) was that political sensitiveness or suspicion was causing a major threat (See Section 4.2.3).



- \* The opinion of many respondents (12/27 44%) was that the indifferent feeling of the people to the future of the area was a serious threat (See Section 4.2.6).
- \* Other perceived threats to both the reserve and the estuary were the larger numbers of off-road vehicles being used, the increasing numbers of stock being grazed in the reserve and the number of squatters settling in these areas.
- \* 9/27 (33%) respondents stressed the need to show that the estuary and reserve were being used continually for the benefit of the people (See Section 4.2.1).

The researcher was aware that some opinions which respondents developed, originated because of a lack of awareness and knowledge of the circumstances that were involved. It appears that there is a need to address the problem of educating the stakeholders on the aspects of conservation before they will appreciate its significance.

### 5.3 CONTRIBUTIONS OF STAKEHOLDERS AND THEIR GROUPS TOWARDS THE CONSERVATION OF THE ESTUARY AND RESERVE (See Appendix B 15 and 16)

The purpose of this question was to obtain an insight into how respondents saw their own potential as being able to contribute to the conservation of the area (See Section 4.2.4). This information would then be used in an environmental education approach. The opinions of respondents were as follows :

- \* Acting as watch-dog. This meant taking note of activities likely to affect the conservation of the area and reporting these to the Zwartkops Trust.
- \* Creating a public awareness to motivate people to become more conservation conscious of the area.
- \* Encouraging stakeholders to support the Zwartkops Trust both financially and with their manpower.
- \* Setting the example. This could be in certain actions such as picking up litter or initiating anti-litter campaigns.
- \* Bringing pressure to bear on certain sectors to assist with conservation. Some stakeholders hold positions of influence in certain organisations and this could be used to attract attention to the needs of the area.
- \* Assisting the squatters around the estuary and reserve either financially or to become more educated.
- \* Encouraging people to use and enjoy the facilities. This will encourage them to take care of them.
- \* Motivating the owners of land near the estuary and reserve to develop the ground and to employ the people around so they have a vested interest in conserving it (See 4.2.1).
- \* Encouraging the Non Government Organisations to develop a more active interest in the area.
- \* Initiating publicity in the area to create more public awareness and to raise funds for the Trust.

The researcher was impressed by the commitment felt by most (24/27 89%) respondents to become involved and assist with environmental education in a variety of ways. He was also,

however, aware that these people were only a small group that were selected and were not true representatives of all the stakeholders. His opinion was that it would be essential for this dedication to expand to the other stakeholders in the area if they were to become a significant force in a conservation approach.

#### 5.4 SUGGESTIONS ON CONSERVATION ISSUES

The next question asked respondents to give their opinion on certain suggestions for the conservation of the Swartkops Estuary and Swartkops Nature Reserve (See Appendix B Question 19)

The purpose of this question was to obtain the opinions of the respondents on the merits of some of the different possible methods of conserving the estuary and reserve. Respondents were asked to classify the suggestions under the headings of Important, Sometimes important, Not important and No opinion.

5.4.1 The first suggestion was that of creating a trail through the reserve and encouraging people who are interested in the reserve to use it (See Appendix B 19 [1])

The respondents were unanimous that this was Important.

By using it, this would assist conservation (See Sections 5.2.2 and 5.2.10).

5.4.2 The next 3 questions (See Appendix B 19 [2];[3];[4]) referred to the control of powerboats, bait digging and woodcutting. These were discussed under 'threats' in the previous section (See Sections 5.2.3, 5.2.6 and 5.2.10).

5.4.3 The next problem of control is that of limiting public access (See Appendix B 19 [5]).

\* The responses to this question tended to range considerably from ideas of a strict permit system to a complete laissez-faire attitude. There were, however, a majority of respondents (16/27 59%) who believed in a pragmatic approach. This emphasised that the people must realise that the estuary and reserve belong to them personally and that if there is any type of control it is entirely for their benefit (See Section 5.4.1). With the increasing development and population some form of control could become necessary in the future. It was mentioned that there were fortunately other estuaries not far from Port Elizabeth and if these remained in good condition this could continue to control the number of users from the city.

\* It was suggested that there should be restrictions on the

use of four wheel vehicles and motor cycles in the area.

- \* An opinion expressed by 17/27 (63%) of respondents said was that if there were any restrictions, these should only be done after careful discussions with the various bodies representing the different groups of people especially in the Motherwell area (See Section 4.2.3).

According to Baird et al. (1986:72), an important problem of management of the estuary and reserve is "the lack of a single authority responsible for co-ordinating and enforcing policies decided upon" (See Sections 5.2.1 and 5.2.4). What is needed is a structure plan for the entire estuary and reserve. Money has recently been allocated for municipal officials to be appointed as conservation officers of the estuary. Respondents now also expect conservation officers to be appointed for the reserve which has been officially proclaimed.

The researcher is aware that progress has been made and proper control and usage is in sight, but critical issues still need to be addressed and these include especially the following :

- \* Representatives of the people, living in the vicinity of, or, making use of the estuary and reserve, should be consulted. Together they will need to develop an environmental approach which must be respected by everyone and should also be seen to benefit all stakeholders.
- \* The activities of the various authorities in the area also

need to be co-ordinated to maximise the effectiveness of conservation control.

- \* The officials who have the support of interested parties need to be given the manpower, authority and finance to implement the necessary policies agreed upon.

## 5.5 CONCLUSION

### 5.5.1 Opinions on threats to conservation on management issues related to the Swartkops Estuary and Nature Reserve

#### 5.5.1.1 Industrial pollution

The following opinions of respondents were mentioned :

- \* There was concern particularly of pollution upstream. The Water Hyacinth (Eichornia crassipes) and the tides did help to purify the estuary.
- \* Respondents felt that insensitivity of the authorities had been a major cause of industry degrading the area.
- \* The opinion of some respondents was that industrialists were insensitive to the conservation of the area. There was a need expressed for more dialogue between industry and the Zwartkops Trust as there were differences in opinions between non-industrialists and industrialists.
- \* There were positive opinions on the Bramlin Markman bypass and the fact that the Zwartkops Trust recommendations were often being accepted by the authorities and industry.

#### 5.5.1.2 Erosion and woodcutting

Respondents mentioned the following :

- \* 92% (erosion) and 76% (woodcutting) regarded these as serious threats to the reserve.
- \* All groups believed in some form of control.
- \* Concern was expressed about the denuding of vegetation on the escarpment and the difficulty of revegetating.
- \* The lack of planning and impact assessment studies done caused concern.
- \* There was a willingness to help with conservation.
- \* There was a difference in opinions between the educated and uneducated respondents.
- \* The suggestions on controlling woodcutting were as follows : certain areas to be demarcated for no cutting; supply substitutes to squatters; educating people on how to cut the bush; issuing permits; encouraging more use of trail; organising woodlots; transporting wood from other areas.
- \* Some black respondents perceived the authorities as being insensitive to their needs.
- \* Most respondents viewed this threat as the most serious for the reserve.

#### 5.5.1.3 Bait digging

The following opinions were obtained:

- \* This was regarded as poaching that should be punished.
- \* Poorer people were encouraged to break conservation laws.
- \* Legal amounts taken were not serious and there was adequate control at present.

- \* Main problems occurred at night. Suggested that Honorary rangers be appointed.
- \* The threats from development were regarded as serious - such as using the area for 'fills'.

#### 5.5.1.4 Insensitive development

The opinions of respondents were as follows :

- \* There were differences in opinions between educated and uneducated.
- \* The main developments that have detrimentally affected the area are : Algorax; Swartkops Power Station; Stormwater canal; Informal settlements; Saltpans; Roads and railways; Sewage works.

#### 5.5.1.5 Litter pollution

Mainly found near Motherwell or along Chatty River.

Opinions were as follows :

- \* Respondents showed sensitivity to this pollution.
- \* Visitors caused much litter.
- \* Environmental education was perceived to be essential.
- \* Not regarded as too serious a threat.

#### 5.5.1.6 Sewage pollution from sewage works, campers, residents and stormwater canal

Responses were as follows :

- \* Sewage treated and not a threat at present but concern at expansion.
- \* Need to investigate use of sewage for woodlots.
- \* Concern at sewage higher up river and from Chatty area.
- \* Frustration at building stormwater canal in the area.



- \* Was serious when Motherwell sewage works blocked.
- \* Concern at more squatters around canal.
- \* Unsure of authority responsible for canal.
- \* Belief that tides would clear out present sewage.
- \* Need to educate about sewage.

#### 5.5.1.7 Fishing

Responses were as follows :

Not a serious threat; Present restrictions fair; Need for environmental education for pleasure fishermen; Many felt that the number and size of fish had diminished.

#### 5.5.1.8 Power boats

Responses were as follows : Not a serious threat; Noise pollution serious; Rubberducks needed to be controlled; If the estuary is used it is a good sign.

#### 5.5.1.9 Destroying of animals

Responses were : Most saw this as serious especially in the reserve; Many had fear for animals.

#### 5.5.1.10 Other threats

The main threats mentioned were :Floods; Drought; Political; Land not being used; Indifference.

#### 5.5.2 Contributions of stakeholders and their groups

Opinions mentioned : As watchdog; Create an awareness; Encourage support; Setting example; Using pressure; Assisting squatters; Encouraging use; Develop ground; There was much commitment shown.

#### 5.5.3 Opinions on certain suggestions for conservation

- \* Creating a trail - Respondents unanimous in support.

- \* Control of powerboats, bait digging and woodcutting (See Section 5.5.1).
- \* Limiting access - people must believe it is for their benefit; restrictions on 4 wheel vehicles; careful discussion before restrictions.
- \* Problem of lack of single authority and overall structure plan.
- \* Representatives should be consulted before an environmental approach is made.
- \* Activities of different conservation bodies need to be coordinated.
- \* Officials need manpower.

## CHAPTER 6

OPINIONS ON POSSIBLE ENVIRONMENTAL EDUCATION APPROACHES TO  
THE CONSERVATION OF THE SWARTKOPS ESTUARY AND SWARTKOPS  
NATURE RESERVE

" ... if rich natural resources of Africa are to be tapped to assist development, then we suggest that the appropriate framework is that which inculcates and promotes environmental consciousness ... "

Okut-Uma and Wereko-Brobby (1985:142)

6.1 INTRODUCTION

This chapter examines the broad aims of environmental education and relates them to the opinions that were obtained from respondents. This provides the basis for discussion in the next chapter which considers environmental approaches that could be used in the conservation of the Swartkops Estuary and Swartkops Nature Reserve.

The opinions obtained in the survey are discussed in three sections as follows :

- (a) General opinions relating to environmental issues as referred to in Chapter 4 (See Section 6.3).
- (b) Specific opinions on certain aspects relating to the management of the estuary as in Chapter 5 (See Section 6.4).
- (c) Opinions on specific approaches and methods of introducing an environmental education programme (See

Section 6.5).

## 6.2 THE CONCEPT OF ENVIRONMENTAL EDUCATION

Perhaps the most frequently referred to and most widely accepted definition was developed by the IUCN (1980:17). It reads :

"Environmental education is the process of recognising values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the inter-relatedness amongst people, their culture and their biophysical surroundings. Environmental education also entails practice in decision making and self-formulation of a code of behaviour about issues concerning environmental quality."

In Irwin's (1991:4) definition below he confirms most of what is embodied in the above definition but also includes such concepts as holistic, politics, ethics and psychology.

"Environmental Education is a world wide socio-ecological phenomenon of many dimensions. It is a sophisticated and holistic concept embracing ecological knowledge and understanding, total people-environment relationships, ethics, politics, psychology, sociology, and public participation in decision making. It aims primarily to educate about human interaction with the environment. The bottom line of concern is human behaviour towards the environment."

The above definitions include many of the Tbilisi Principles (UNESCO-UNEP 1978) such as :

- \* Considering the environment in its totality.
- \* Focusing on current and potential environmental situations while taking into account the historical perspectives.
- \* Explicitly considering environmental aspects in plans for development and growth.

- \* Enabling learners to play a role ... .
- \* Relating to environmental sensitivity.

From the information obtained from the respondents it will be seen that the opinions, feelings and attitudes of the stakeholders towards environmental education correlate closely with the broad aims of environmental education as referred to by IUCN (1980), Irwin (1991) and supported in the Tbilisi principles (UNESCO-UNEP 1978).

Such subjects as relationships, ethics, politics, psychology, sociology, public participation in decisions, attitudes and culture were seen by respondents as important to the conservation strategy that should be formulated for the estuary and reserve.

### 6.3 GENERAL OPINIONS RELATING TO THE NEEDS FOR ENVIRONMENTAL EDUCATION

The researcher first analysed the results obtained from respondents on their general opinions of the need for environmental education in different areas. These are listed under the following headings :

#### 6.3.1 General interest, concern and desire to conserve

The opinions of respondents to Questions 6, 7, 8, 9, 10, 11, 12, 13 and 23 discussed in Section 4.2 suggest that there was a clear indication (See Section 4.2) by respondents from all

groups that they were genuinely concerned about conserving the estuary and reserve and could be expected to co-operate in acceptable environmental education initiatives. Results (See Section 4.2.1) also showed that many respondents were more interested in the immediate areas where they themselves were personally involved than areas some distance away. This showed a need for enlightenment on the wider aspects of conservation in the area.

#### **6.3.2 Conservation versus preservation (See Section 1.6)**

Respondents emphasised that they favoured conservation but not preservation of both the estuary and reserve (See Sections 4.2.1, 5.2.2, 5.2.8 and 5.2.10). There was also an awareness shown of how they overlap (See Section 4.2.1). These responses indicated to the researcher that there was a need for an environmental education approach to concentrate on the following :

- \* To inform the people of the aims of the conservation authorities (See Section 7.2.5.1). There was information that many respondents perceived these aims as different to what they were (See 4.3.2). It was important that this misunderstanding be rectified.
- \* To educate the people on sustainable use of the estuary and reserve (See Section 4.3.3).

#### **6.3.3 Awareness of the benefits of the Swartkops Estuary and Reserve (See Appendix B 23)**

\* There appeared to be a lack of awareness of the benefits of the Swartkops Estuary and Reserve (See Section 4.2.2 and 4.2.6). This suggested a need to provide a greater environmental understanding to people in the urban areas of Port Elizabeth (See Section 4.3.5). This lack of awareness of people in the immediate metropolitan area indicated that they may not appreciate the many benefits that the estuary and reserve offered. They therefore made little use of them and showed minimum concern for their survival.

#### 6.3.4 Sensitivity towards the different communities

The opinions of respondents discussed in Sections 4.2.4 and 4.2.5 indicated that there were many different types of people in the area. Each of these people had their own cultures, standards of living and levels of education. They would all require careful consideration when implementing an environmental education programme (See Sections 4.2.3 and 5.2.2).

#### 6.3.5 Overpopulation

Agarwal (1986) says that the two main pressures operating on the natural resources of developing countries are population growth and industrial development.

When the respondents were asked questions 6,7,8 and 9 (See

Appendix B), the uneducated (See Section 1.6) respondents (6/27 22%) stated that the reserve and estuary was their only source for obtaining the necessary energy and food for survival. All respondents (27/27 100%) were also concerned that with the rapidly increasing population the vital necessities of fish, animals and wood would not continue indefinitely but would soon diminish (See Sections 4.2.5, 5.2.2, 5.2.7 and 5.2.9).

The problems of overpopulation were alluded to by all (27/27 100%) respondents in some way. These problems included health control, education and general effects on the eco-system as a whole (See Sections 5.2.4, 5.2.5 and 5.2.7).

The researcher was aware of an urgent need for this vital problem to be addressed in an environmental education approach to the area.

#### 6.3.6 Vested interests

The World Commission of Environment and Development (1989) states that to deny people's rights and initiatives and not to allow them to participate in the fruits of development and protection of the environment will only create more destruction, poverty and increasing malnutrition.

Irwin (1991) supports this view where he emphasises that it is important for the people themselves to take the initiative



in environmental programmes that concern them.

The researcher perceived a more positive concern by respondents toward conservation when he asked questions which helped to explain the problems of environmental degradation. Some of the questions asked were as follows :

How would you feel if you had no trees or bush around you at all ?

What would you do without wood, muti or facilities for makwetas ?

Do you think that there will still be the same atmosphere if there are no bushes or animals around and the estuary is too polluted to be used for recreation ?

This desire to conserve because of personal vested interest was evident during interviews with both the poorer and more affluent (See Sections 1.5, 4.2.5 and 5.2.10) respondents although often for different motives. The poorer people usually gave their reason as one of survival whereas those of the wealthier groups was of prospects for economic gain through eco-tourism (Collis 1993), aesthetic atmosphere or retaining the benefits of being the 'playground of the city.' Clacherty and Clacherty (1990:18) quotes the following extract regarding the necessity for the children to be involved and to have an active interest,

" The most important thing is the children's realisation that they can actively play a part in shaping their surroundings, that what they say about where and how they live will be listened to and that the key to their future lies in their own awareness. "

The researcher was aware that these opinions displayed a need in an environmental education initiative to convince all stakeholders that they themselves would personally benefit from conservation measures. This view is confirmed by Agarwal (1986) when he states that it is essential that the people themselves have an 'interest in the commons', in this case the nature reserve and estuary and all must take part and benefit from its fruits.

#### 6.3.7 Psychological and sociological attitudes

The opinions of all four of the educated black respondents and two of the educated white respondents closely associated with the Xhosa communities around the estuary and reserve were as follows :

- \* The Xhosa communities were highly suspicious of the motives of the white authorities (See Sections 4.2.6 and 5.2.2).
- \* There was a deep sense of cultural attachment by the Xhosa people to the valley bushveld (See Sections 4.2.3 and 5.2.2) as it was an essential element to many of their traditional activities.
- \* There were people residing near the estuary and reserve that lived in extreme poverty. These people desperately needed the estuary and reserve to live off (See Section 4.2.2).

The above information will need to be carefully considered in

an environmental education strategy for the area. Irwin (1991:16) states:

" ... greater insights need to be sought in terms of environmental knowledge, understanding, attitudes, values, and perceptions in our diverse society."

#### 6.4 OPINIONS ON HOW ENVIRONMENTAL EDUCATION CAN BENEFIT MANAGEMENT PROCEDURES RELATING TO THE SWARTKOPS ESTUARY AND NATURE RESERVE

##### 6.4.1 Industry and Development (See Section 5.2.1 and 5.2.4)

Respondents were questioned separately on these two aspects but as they are closely related and often overlap, they are now discussed together.

The World Commission of Environment and Development (1989) states that industry is essential to developing countries to widen their development base and meet growing needs.

Elkington et al.(1988) adds that apart from the normal business considerations the industrialists will now need to regard 'environmental considerations as one of their priorities.'

Respondents gave the following management related opinions that had direct relevance to an environmental education approach to the area :

\* First, there was a marked difference in the opinions

between industrialists and developers as one group and those that use the estuary and reserve for residential or recreational activities as a second group (See Section 5.2.1). The former group perceived most of their developments such as stormwater canals, sewage works, factories, power stations and the extracting of 'fills' as essential and necessary. The residential and recreational users, however, felt that these activities should never have been installed in such sensitive areas.

This major variation in opinions between these two groups of stakeholders will need to be carefully considered in an environmental education approach.

- \* Secondly, respondents perceived a lack of awareness by stakeholders of the effects of certain developments in the area. This applied particularly to the Stormwater Canal (See Section 5.2.6) and the Waste Tech factory (See Section 5.2.1).

The concern expressed by these people seemed to develop from a lack of awareness of the facts of the situation. The necessary information would need to be acquired and used in an environmental approach.

- \* Thirdly, the respondents from the poorer squatter areas favoured development (See Section 5.2.4). These people should be made aware of the long term disadvantages of these actions and their immediate needs would have to be addressed.
- \* Fourthly, there were suggestions from respondents that

industry should be represented on the Zwartkops Trust.

This opinion suggested that in any environmental education programme there should also be incentives for industrialists to become involved themselves.

The researcher was of the opinion that the above information should be carefully considered if a successful environmental education strategy was to be developed.

#### 6.4.2 Woodcutting and erosion

" The most cruel environmental threat comes from the environmental movement itself as we see the natural vegetation laws destroy our way of life and violate our rights to our traditions and values. Yet our people need development. The challenge is to find strategies for development that meet the needs of the people and the environment."

( World Commission on Environment and Development 1989:283).

Clacherty and Clacherty (1990:18) states that with the rapid rate of both population increase and urbanisation that is taking place in South Africa everything possible must be done to conserve what we have as unless we do, " ---it will be impossible to give all the children represented by such rates of growth a wilderness experience."

As these two items of woodcutting and erosion are so closely linked to any environmental initiatives, they will be discussed together (See Section 5.2.2).

The threat to the reserve from destruction of the vegetation and all its consequences, was regarded by the respondents as

the most serious threat. These opinions will need to be included in an environmental education approach to the area.

They were as follows:

- \* There was a marked difference in the opinions of the affluent stakeholders and the squatters toward the indigenous vegetation of the reserve. This is a major problem that will need to be addressed. This latter view was also held by Knamiller (1981).
- \* Respondents representing the poor people in the reserve stated that if there was to be any restriction on the cutting of the bush, this would directly affect the survival of these people. It was therefore essential that an environmental education programme should be considered holistically and that it encompass the effects on the whole area.
- \* A further perception was the need for an environmental approach to consider short and long term solutions. There was an immediate need for substitutes for some people to live on. In the longer term it was deemed essential that the people themselves consider their future and have a personal stake in any long term programme. Irwin (1991) also holds this latter view.
- \* Another opinion was that people will conserve something that they can use and personally enjoy. A deeper desire to care for things would be developed if they were really shown how to love and appreciate them. This view is held by Opie (1987).

- \* In an environmental education strategy a need was identified to address the difference in opinions between the Xhosa people in Motherwell and the authorities toward the provision of energy.
- \* Further aspects that need to be considered, include the various cultures and their requirements from the vegetation. These could include certain provisions made for 'muti' and 'makwetas'. Buzzati-Traverso (1977:16), however, maintains that " many of our cherished idols and beliefs will have to disappear." He also says that our ways of living will need to change to make way for a new trust and faith in environmental considerations.
- \* The escarpment itself is the area most sensitive to any vegetation destruction and consequent erosion (Tyson 1988). There will therefore need to be careful consideration taken to ensure that this sensitive area is controlled.

Despite the many problems for environmental education in this sensitive area, the researcher was aware of a positive attitude amongst most (24/27 89%) respondents. They were determined to overcome the difficulties as they believed that all would benefit from conservation of the natural vegetation.

#### 6.4.3 Conservation of animal species

This heading has grouped together bait, fish, birds and any

other animals found in the reserve (See 5.2.3, 5.2.7 and 5.2.9). Respondents indicated an urgent need for an environmental education approach to help in the conservation of the various animal species. Some of the opinions were the following :

- \* 24/27 (89%) respondents felt that much unnecessary killing of species was due to a lack of knowledge and understanding.
- \* There were certain illegal commercial activities threatening the survival of the animals.
- \* Respondents again expressed their view that people would conserve species if they could be shown how they personally had a vested interest in this conservation.

#### 6.4.4 Power boats, litter and domestic sewage

Power boats were not regarded by respondents as a serious threat (4/27 14%) but it was felt that they could become serious in the future (See 5.2.8). 21/27 (78%) of respondents were concerned about the litter problem (See 5.2.5). The opinion of 10/27 (37%) respondents was that domestic sewage mainly around the Chatty river area and the potential squatter area around the stormwater canal was also serious. Respondents felt that it was important to include an environmental approach that considered the three abovementioned threats. This would need to make people aware of their actions and to suggest alternatives.



A consistent opinion of respondents regarding all management issues, was firstly, that environmental education programmes were essential and secondly, that they must also be supported by the community who should have a vested interest. Elkington et al. (1988:1) state that to be effective environmental education must be :

" supported by all relevant sectors of the community. It is critically important that business and professional people understand the nature of the challenge we face -- " .

Buzzati Traverso (1977:13) states that if future environmental problems are going to be effectively managed it will require a " new type of education with new professionals."

#### 6.5 OPINIONS ON SPECIFIC IDEAS AND METHODS IN DEVELOPING AN ENVIRONMENTAL EDUCATION APPROACH

Respondents were asked certain questions relating directly to environmental education itself. This was to obtain the stakeholder's own opinions on how they felt that environmental education could assist in the conservation of the estuary and reserve. The researcher was aware that most (17/27 63%) respondents did not have any experience of environmental education themselves. These people were therefore only asked questions on a more general nature and those who had had experience were asked the more specific questions.

6.5.1 The first question asked in this context was : " What contributions do you think that you, and the group you represent, can make in assisting with the conservation of the estuary and reserve ?" (See Appendix B 15 and 16)

This question overlapped with other environmental education issues and provided many interesting ideas. Unfortunately the scope of this research will not allow for discussion on the pros and cons of each suggestion but the readers will be able to assess this for themselves. Some of these ideas will be discussed under the section on recommendations in Chapter 8.

The opinions of respondents that lived near the estuary or reserve perceived themselves or their group that they were a part of, as able to assist in the following ways :

- \* Fund raising and sponsorship for environmental education initiatives.
- \* Supplying manpower to assist environmental education officers with various activities eg. Snare hunts and woodlots.
- \* Assistance in beautifying the area.
- \* Doing research on issues that could assist in conserving the environment eg. Writing a book on the vegetation or animals.
- \* Speaking to people about environmental issues and showing them around the areas eg. The trail.

- \* Giving advice to the users from outside the area.
- \* Convincing the controlling organisations of the need for environmental education eg. SANCO; ANC; DET.
- \* Encouraging parents to become involved with their children in environmental education projects.
- \* Motivating schools to conduct environmental education initiatives and competitions eg. Litter competition.
- \* Using own individual personal skills or office of influence.
- \* Developing unutilised land.
- \* See also Section 5.3.

24/27 (90%) of respondents were willing and often enthusiastic to assist in some way. There were only a few who felt that it was the task of the authorities to do everything because they were paid for it. They said that they themselves would help only if they were also paid.

**6.5.2 The next question (See Appendix B 18) concentrated on the possible target areas for environmental education and also investigated ideas respondents had on methods of approach**

**6.5.2.1 The first part of the question asked respondents what age of pupils should be targeted (See Appendix B 18 [a])**

This question was answered by 12/27 (44%) of respondents, the

remainder feeling that they did not have sufficient knowledge of what environmental education is about.

The results of the opinions of 12 respondents on what they thought the target area should be, were as follows :

Pre-primary : 4/12 (33%)

Primary : 7/12 (58%)

Secondary : 1/27 (4%)

The following additional viewpoints were expressed :

- \* Primary pupils between the ages of 9 to 13 were enthusiastic about nature and had not yet reached the age of the adolescence distractions. They were also old enough to understand some of the broader environmental issues involved. A further advantage was that most of these pupils were still at school whereas at secondary level many had left and would be lost to any form of environmental education.
- \* Some respondents felt that there were advantages of starting with the pre-primary pupils. These were firstly, that they would then be much more knowledgeable when they were older and secondly, that a solid foundation would be laid on which further consolidation could take place. This is also in line with the Tbilisi Principles (UNESCO-UNEP 1978) that environmental education should be an on-going process with gradual exposure at regular intervals throughout the school career (Ledger 1984).
- \* There was a feeling among a few (3/12 25%) respondents

that the older pupils should not be neglected completely as this could create jealousy. The opinion was that secondary schools should not concentrate on general environmental themes as in the primary areas. They should rather relate the environmental issues to more specific sections of their syllabus. This relevance may then encourage these pupils to devote more attention to the content of what is taught.

- \* The opinion of some respondents (8/12 67%) was that environmental education could be introduced into adult areas of activity such as womens leagues and political forums.

6.5.2.2 The second part of the question asked whether all pupils and schools should be targeted or only those interested (See Appendix B 18 [b])

The opinions of respondents were as follows :

- \* The statistics showed that there was a clear split down the middle on this issue. Half (6/12 50%) of respondents advocating that all pupils should be targeted and half (6/12 50%) stating that only the pupils and schools really interested should first be approached.

The motivations of respondents for supporting both the above ideas were as follows:

- (a) Rather initially make mistakes in a small way as this would be a completely new initiative and there would be much to learn from first experiences.

- (b) The logistics would make it impossible to introduce a realistic environmental education approach to all schools and all pupils.
- (c) By concentrating on certain pupils and schools it would be possible to choose the enthusiastic teachers and pupils. This would allow for a much more in-depth and on-going approach rather than a superficial method designed to cope with very large numbers of pupils.
- (d) A smaller group of pupils from each school could be given a concentrated series of environmental education lessons. These same pupils may then be used to give the same lessons to groups of their colleagues. This could then create a 'Ripple' effect in each school.
- (e) By only targeting a few pupils in each school it may be possible to make use of the most suitable teachers in the school and arrange for them to be sponsored for further training.
- (f) By selecting certain schools or certain pupils only, there could be jealousy. This would be especially pertinent if some schools are regarded as being under the auspices of certain political parties. When using the 'Ripple' idea, however, this problem would not arise as all schools could be approached.

\* The majority of respondents (10/12 83%) felt that the ideal situation would be for environmental education to be a compulsory school subject so that all pupils in all schools could be targeted.

- \* The next suggestion by respondents was that the first target group should be the principals of the schools. The opinion was that if the principals could be persuaded to encourage the idea of environmental education then the teachers would be motivated as well.

6.5.2.3 The third part of the question was a general one asking respondents to suggest any other ideas for introducing an environmental education approach (See Appendix B 18 [c])

The following are some of the comments mentioned :

- \* The content of the programme should be carefully structured to suit the age and the abilities of the pupils.
- \* Permission must be obtained from all organisations who have any influence over the people. This includes political as well as educational authorities.
- \* There could be much untapped potential in available manpower in the area. This it was felt should be investigated and if possible utilised.
- \* The environmental education approach should be the 'hands on' method. With this method pupils or/and adults are taken out of the classrooms to the nature reserve and estuary and shown real specimens or examples of certain features. This approach of enabling the children to experience things themselves is something famous

educationists such as Pestalozzi, Froebel, Montessori and Piaget have always advocated (Perry *et al.* 1971).

- \* The approach should also always involve an element of enjoyment for the pupils as this would encourage them to continue investigations after the lessons. The lessons must inculcate into the pupils a real desire and love for conservation (Opie 1987) if they are to be expected to influence others in the same way.
- \* The need for a permanent environmental education officer specifically for the area should be appointed.
- \* It was felt that the Zwartkops Trust, the Municipality, the various Education Departments and the Non-government Organisations should give support and encouragement to any environmental education initiatives for the area.
- \* There was a need to train suitable teachers to implement environmental education programmes.
- \* Sponsorship potential was perceived to be available and should be investigated.
- \* The approach of environmental education should be on sustainable use (See Section 4.2.1).
- \* It was felt that only a few people in Port Elizabeth knew about the nature reserve in particular but also the estuary (See Section 6.3.3). The idea of the trail through the reserve and along the estuary was supported by 26/27 (96%) of the respondents who saw it as an excellent idea for people to experience the area personally. Other additional aspects of the trail



considered important, were building hides, having guides at certain times, keeping groups small and being easily accessible to people.

- \* Suggestions of encouraging certain groups or schools to be in charge of caring for specific areas. They could arrange competitions such as snare hunts to motivate the pupils.
- \* Stakeholders should be convinced that they have a vested interest in conservation (See Section 6.3.6). People should become involved themselves in decisions taken and must agree with the conservation laws.
- \* The opinion of respondents was that the uniqueness of the area should be appreciated. They felt that environmental strategies should be aware of this. This view was supported by Tyson (1988).
- \* The potential sensitivity of the approach should be carefully considered (See Section 6.3.4) and empathising with the people was regarded as essential.
- \* The whole approach to the area should be considered holistically as there were many different elements in the whole structure that could be affected by one action.

6.5.3 The next question asked respondents to give their opinions regarding the main problems in the possible introduction of an environmental education approach to the area (See Appendix B 20)

The responses have been grouped in categories which the researcher believes will be useful when relating them to an environmental approach. The categories are : Statistics; Education; Economics; Political and Cultural and General attitudes.

#### 6.5.3.1 Statistics

The opinions of respondents on the different problems are listed below in order of perceived seriousness :

Large population	76%
Indifference of people	75%
Transport problems	64%
Financial Assistance	60%
Manpower	60%

#### 6.5.3.2 Education

Respondents perceived the following difficulties, associated with education, in successfully implementing an environmental education programme :

- \* Many adults and children living in the area are illiterate or have had very little education at all. This means that when designing a programme it will need to be borne in mind that there is often no foundation to build on. Most of the concepts being introduced will be completely new.

- \* The language ability, pronunciation and accents are difficulties that will be experienced if European teachers are involved in educating the Xhosa people.
- \* Three of the respondents who were involved in environmental education in the squatter areas, mentioned that there are many other survival problems which the people have. It may often be necessary to attend to these first before any environmental education can even be attempted.
- \* There is little environmental training and awareness amongst the Xhosa teachers. Opie (1987) stresses that the manner in which a teacher is trained and teaches is vital to the attitude he develops in the pupils. He should be a good " role model " to enable children to love conservation.
- \* Teachers in all departments are often mainly concerned about teaching the content of the syllabus. This means that environmental education issues which are not specifically mentioned in the syllabus are neglected. Opie (1987) states that there has not been sufficient training of teachers on how to integrate the syllabus with environmental concepts. The result is that teachers feel inadequate and therefore rather evade the issue of environmental education. Ledger (1984:22) confirms this view and says:

" --- most teachers are environmentally untrained and are not confident enough to rely on their own findings even in their own environment ---."

- \* Adults are often apathetic and indifferent and are not as interested in environmental education as the children.  
This may be the result of not always involving the Parent Teachers Associations in environmental initiatives.
- \* There is still much indifference and apathy in the attitude of the inspectorate and other authorities toward environmental education.

#### 6.5.3.3 Economic

Respondents gave the following opinions on how they felt about some of the economically associated difficulties in implementing environmental education programmes :

- \* The availability of transport to move people in and out of the area for lessons at the reserve or estuary.
- \* The availability of finance which would be essential if meaningful programmes are to be introduced. Elkington et al.(1988) states that Environmental Fund-raising has become a highly professional business and that if we are serious about sustainable development it is going to be costly.
- \* The lack of organised financial incentive schemes for encouraging people to collect and recycle waste products such as plastic and glass.
- \* The recessionary economic climate that has compelled many poorer people to concentrate more on their survival needs.

#### 6.5.3.4 Political and cultural

The respondents perceived the following possible political and cultural related problems that could affect environmental education initiatives :

- \* Inadequate knowledge of the different cultures and backgrounds of the people and their reasons for certain attitudes and actions.
- \* The inability of certain people to change their traditional manner of doing things eg. To grow own trees for 'muti' collection instead of using those in the nature reserve.
- \* Gaging the feelings and attitudes of the people before embarking on certain actions eg. When the Motherwell Police Station was erected the people were not first consulted and this created many problems so that the building had to be disbanded.
- \* There is much suspicion, distrust and prejudice between races that will need to be overcome.
- \* The political uncertainty in the country makes the planning ahead difficult.
- \* There is uncertainty as to who the proper authority is of Motherwell as both the Motherwell Town Council and the Port Elizabeth Town Council are involved.
- \* Before any initiatives are undertaken, it is essential that all interested parties be consulted and permission received. This is time consuming and could mean obtaining

approval from all the political parties, civic organisations, educational bodies and administering authorities.

#### 6.5.3.5 General attitudes

The problems perceived by respondents were as follows :

- \* The attitude of indifference and apathy amongst the people. Most of the respondents (15/27 56%), reported an unknown proportion of people who were unconcerned about the future and only interested in their immediate enjoyment.
- \* There was a need to convince people that they personally had a stake in any conservation initiative.
- \* There was the problem of enabling all stakeholders to become involved themselves. This was regarded as essential if they were to accept that they were interested parties. Hanks (1985:12) states:  
 " ---it is now widely accepted that development cannot succeed without the support of the people it intends to help ----".
- \* Being able to influence and change peoples attitudes to certain beliefs and activities. Opie (1987) says that the important criteria in educating to care for the environment is to get pupils to appreciate and love nature and all its wonders.
- \* The diversity in interests of the stakeholders could create difficulties in solving certain problems.

- \* The difficulty in obtaining commitment from people and organisations to do and carry through to fruition certain initiatives.
- \* There was the continual problem of trying to be positive and optimistic about all initiatives and to influence others to adopt this attitude inspite of the apparent insurmountable obstacles ahead.

Despite the difficulties mentioned above, the researcher detected a sense of enthusiasm and determination amongst the respondents to succeed in developing a suitable environmental education approach to the area.

## 6.6 CONCLUSION

### 6.6.1 General opinions related to the needs of environmental education

The opinions of respondents in this section emphasised the following :

- \* A genuine concern and interest in the aims of environmental education and conservation.
- \* The need to be aware of sustainable development, lack of awareness, sensitivity towards the poorer people, overpopulation, vested interests and uncertainty and suspicions between the different race groups.

### 6.6.2 Opinions on how environmental education can benefit management

The respondents indicated that the following points need to

be considered :

- \* The differences of opinion between various groups.
- \* The lack of awareness of certain groups.
- \* The indifference to the future of the area.
- \* The lack of knowledge and appreciation.

#### 6.6.3 Opinions on target areas and ideas and methods of approach in introducing environmental education

Respondents suggested the following ideas :

- \* The age to be targeted should be the Primary School.
- \* Half of the respondents suggested targeting all schools and half suggested starting only with those pupils and schools that were interested.

- \* The methods of approach suggested were :

Obtaining the necessary permission, Structuring course to suit age and background, Using volunteers for untapped potential, The 'hands on' method should be used

Pupils should enjoy the lessons, Sustainable use approach should be emphasised, make people aware, be sensitive with certain groups, train environmental teachers, obtain sponsorship, have a full time Environmental Education Officer.

#### 6.6.4 The opinions of respondents on the main problem areas for introducing environmental education

These were mainly the following, Rapid population growth in the area, Language communication, Finance, Cultural differences, Proving vested interests, Changing attitudes  
Diversity of stakeholders interests



## CHAPTER 7

A CONSIDERATION OF POSSIBLE ENVIRONMENTAL EDUCATION  
APPROACHES TOWARDS THE STAKEHOLDERS OF THE SWARTKOPS  
ESTUARY AND SWARTKOPS NATURE RESERVE

The class bias inherent in environmental concern has been clearly reflected by survey results in South Africa which have shown not only that South Africans in general are abysmally ignorant about the natural environment, but also that there is a strong correlation between environmental concern and socio-economic variables.  
(Khan 1990 :36)

## 7.1 INTRODUCTION

In this chapter the researcher introduces and discusses possible environmental education approaches to the estuary and reserve. These approaches are based on the opinions obtained from respondents and discussed in previous chapters. The two definitions of Environmental Education by the IUCN (1980) and Irwin (1991) and the Tbilisi Principles (See Section 6.1) will be used as a reference on which all suggested environmental approaches are based. The definitions were analysed and related to the opinions of respondents. Ten different ideas or concepts were then formulated by the researcher for consideration for environmental education approaches regarding the estuary and reserve. These were as follows :

1. An awareness of the values and concepts of environmental education.
2. Developing skills and attitudes.
3. Considering the culture and physical circumstances.
4. Developing initiative and innovation.
5. Developing a code of behaviour.
6. Being holistic.
7. Developing an awareness of eco-systems.
8. Considering relationships, politics, and sensitivity to needs.
9. Taking into consideration vested interests.
10. Emphasis on conservation and not preservation.

These concepts are perceived as relevant to environmental education in the area as they correlate with the opinions of respondents and are embodied in the definitions in Section 6.1. The stakeholders who would be target groups for the proposed environmental education approaches are :

- (a) Schools in the areas around the estuary and reserve with particular emphasis on the Motherwell area.
- (b) Recreational and other visitors to the area.
- (c) Residents in the affluent areas around the estuary and reserve.
- (d) The poorer people around the estuary and reserve but more particularly near the reserve in Motherwell.
- (e) The developers, industrialists and authorities.

The researcher suggests that the Zwartkops Trust Sub Committee on Environmental Education be the initiator and overall co-ordinator of all the Environmental Education Programmes. This sub-committee may need to be divided into sections each controlling certain areas of the environmental education programme.

7.2 METHODS OF APPROACH TO SCHOOLS, RECREATIONAL AND OTHER VISITORS, RESIDENTS IN AFFLUENT AREAS, POORER PEOPLE, DEVELOPERS, INDUSTRIALISTS AND AUTHORITIES

7.2.1 Schools

7.2.1.1 Introduction of an environmental approach to schools

The researcher suggests that the Primary Schools should be targeted in Motherwell, Bluewater Bay, Swartkops and Redhouse. He suggests that the following two methods could be considered :

- (a) The Ripple Approach or
- (b) Interested Parties Approach

The reasons for these suggestions are based on the following opinions of respondents :

- \* Primary pupils are old enough to understand the concepts of environmental education.
- \* Most pupils are still at school at this level.
- \* There is enthusiasm and real interest at this age before adolescence begins.

### The Ripple Approach

The researcher suggests this possible approach as he has had experience in using it while co-ordinating a similar successful educational programme in Science for The University of Port Elizabeth. This programme was conducted with underprivileged Xhosa pupils in the Townships near Port Elizabeth.

The Ripple Approach involves the following :

- \* All schools in the area are approached.
- \* The school is contacted and invited to take part in the programme. The principal will then discuss the aims of the programme with the staff. If favourably accepted, a suitable staff member will be appointed the task of being the school environmental education co-ordinator.
- \* The co-ordinator of each school will meet with the Zwartkops Trust Sub Committee on Environmental Education at regular intervals to undergo training courses.
- \* The co-ordinator will identify pupils in the school the who are particularly interested in becoming involved in environmental activities. The group chosen should be approximately fifteen pupils per teacher.
- \* The co-ordinator will initially introduce the concept of environmental education to these pupils. At a later stage he/she will then teach the pupils how to transfer this knowledge to their peers.

- \* The aim of this approach is for the pupils who are taught, to motivate and influence many more of their fellow pupils. This will then spread the various environmental concepts to as many pupils as possible.

The advantage of this method is that all schools in Motherwell are approached. This could prevent suspicions of discrimination and jealousy arising especially if certain schools are managed by specific political parties. The disadvantage, however, is the problem of logistics with the large number of pupils and schools being involved.

#### Interested parties approach

This second suggested approach would be to involve only those teachers and schools which have previously shown enthusiasm and interest in environmental education. The aim would be to train a core of environmentalists among the interested volunteer teachers who would then use their initiative to develop further environmental education programmes in their own schools.

The advantages of this approach would be the following :

- \* The target group would be small and easily manageable in the initial stages.
- \* Possible mistakes made would be with fewer pupils and teachers and therefore the repercussions would not be as serious. These mistakes could also be used to learn from

when implementing further programmes on a larger scale.

- \* The group would likely be more committed and enthusiastic. This would make the attendance at meetings more reliable and create a determination to follow the programme through to completion.
- \* The training of teachers and the follow up procedures by the co-ordinators would be less costly and time consuming because of the lower numbers involved.

The disadvantages of this approach compared to the Ripple Approach mentioned above, would be as follows :

- \* Only certain selected schools would be involved. This would mean that some schools would never have the opportunity of experiencing environmental education. Many pupils who may have shown an interest in environmental education may then never have an opportunity of taking part in the programme.
- \* There may be repercussions from parents and/or political organisations if only some schools are selected.
- \* The potential of pupils themselves, to influence others and learn more themselves by teaching, may be lost.
- \* If teachers are not encouraged and exposed to teach environmental education they may never realise whether they have the potential ability or desire to succeed in this area of education. The researcher firmly believes that in every school there will be at least one teacher who could co-ordinate an environmental programme at the

school if given appropriate guidance and encouragement. Before either of the suggested above-mentioned environmental programmes or any others are implemented, the following procedures should be adopted :

- \* All authoritative bodies who are involved or have an interest in the schools should be consulted and permission obtained to implement the programmes. These relevant authorities would be the Department of Education and Training, Political organisations representing the parents of pupils at the schools, Teachers Associations representing the teachers at the schools and the Local Administrative Authorities.

The Motherwell Township is the area where there is the greatest concentration of pupils. This area will therefore require particularly careful planning and organisation. There is fortunately an excellent communication structure in this township which will facilitate spreading the necessary information.

- \* Schools will need to be visited to obtain individual permission from Headmasters, School Committees and Parent Teachers Associations.
- \* Procedures such as identifying interested teachers, arranging venues and times for training will need to be decided upon. The teachers will have to be trained in the content of environmental education and the methods of teaching it. They will then have to be given guidance on showing the pupils methods of teaching their colleagues.

- \* Sponsorship will need to be found to cover the costs of transport, administrative expenses, teacher training, and if possible the payment of teachers and pupils. There was a positive feeling among respondents that there would be sponsorship for this type of initiative.
- \* Manpower will need to be obtained. This is an essential requirement to both co-ordinate the programme and canvass the schools. There are government and non-government conservation organisations that could be approached for support. Within the community of stakeholders of the estuary and reserve there may also be capable volunteers able to assist.
- \* A venue will need to be found where practical environmental education lessons could take place. The area of the nature reserve and estuary would be the ideal venue to conduct the environmental education programme for daily outings. There is also a strong possibility that the Amanzi estate, which is near the Motherwell township, could be used as a venue for overnight excursions and a teacher training venue.

The approach should if possible be in line with the ten general criteria mentioned (See Section 7.1). These criteria will need to serve as an integral part of the environmental education process. It will be seen in Section 8.2 how the opinions of respondents throughout the research allude to these same principles. There were also some additional essential requirements that respondents felt should be



included. These are as follows :

- \* An awareness by the teachers on what educational base they will be working on ie. degree of literacy, language ability, culture and extent of poverty. This would help the teachers to prepare the lesson structure so as to suit the target group.
- \* An appreciation of nature and the importance of species protection (See Section 7.1:7).
- \* The programme should include a 'hands on' experience method (See Section 6.5.2.3). The venues of the estuary and reserve are ideal settings for this approach.
- \* The approach should be to create in pupils an intrinsic enjoyment (See Sections 7.1:1,4,9).
- \* There should be on-going activities over at least three years. Initially there should be a general approach and then gradually developing this into more depth. This is in line with the approach in the Tibilisi Principles (UNESCO-UNEP 1978) where it is suggested that environmental education should be continuous and on-going.
- \* Parents should be involved as much as possible.
- \* Broader but vital issues such as the misery of over-population should also be alluded to in general even at this stage (See Sections 7.1:3;6;8;10).
- \* Competition often stimulates results. This could be created by allocating certain areas for schools to care for (See Section 7.1:4).

## 7.2.2 Recreational and other visitors

### 7.2.2.1 Introduction of environmental education to recreational and other visitors

On the basis of the conclusions of respondents (See Sections 5.2.5, 6.3.1 and 6.3.3) the researcher suggests that the second target group for consideration should be made towards the stakeholders who live away from the Swartkops Estuary and Nature Reserve but who make use of it for recreational purposes.

### 7.2.2.2 Approach method

The first requirement is to obtain the necessary manpower to assist with the task of communicating with as many of the visiting stakeholders as possible. The four different government authorities involved in the conservation of the area are the Motherwell and Port Elizabeth Town Councils, the Algoa Regional Services Council and the Department of Nature Conservation. The manpower available from these bodies is well below what is needed for the area.

The researcher suggests that additional assistance could be acquired by appointing Honorary Conservation Rangers and representatives from each of the groups of stakeholders in the area to assist with educating and controlling recreational visitors. This could be controlled as follows :

- \* Volunteers could be invited to apply to be Honorary Conservation Rangers. The Zwartkops Trust would then submit the names of those suitable to the Department of Nature Conservation and the other authorities in the area for approval. Once appointed these Honorary Conservation Rangers should then form a committee and this committee must then appoint one representative to serve on the Zwartkops Trust Environmental Education Sub-Committee.
- \* Each particular group of stakeholders who has an interest in the estuary and reserve should also be requested to appoint one representative to serve on the committee of the Zwartkops Trust Environmental Education Sub-Committee.
- \* A further suggestion is that the Environmental Education Sub Committee of the Zwartkops Trust be given the portfolio of giving advice to these representatives in environmental education and co-ordinating their activities. The training methods should be in line with the general aims of environmental education as outlined in Section 7.1.

### **7.2.3 Residents in the affluent areas around the Swartkops Estuary and Swartkops Nature Reserve**

#### **7.2.3.1 Introduction of environmental education to the affluent areas**

The stakeholders in this group are those living in Amsterdam Hoek, Bluewater Bay, Swartkops, Redhouse and the more

affluent areas of Motherwell.

Respondents were of the opinion that there were dedicated cores of people committed to conservation in these areas but that there were also many who were indifferent to the needs of conservation measures (See Section 4.2.6).

#### 7.2.3.2 Approach method

The researcher suggests that an approach towards these stakeholders could be as follows :

- \* Encourage them to assist in the whole environmental approach. This could be as honorary conservation officers, fund raising, manpower for helping with some of the environmental activities, beautifying the area, research, helping the poor and generally using their personal initiative and influence to support the conservation approaches.
- \* Make them aware of their personal stake in the area and encourage them to become involved.
- \* Inform them of the circumstances involved in conserving the area as a whole. This will require that they be shown or convinced of the hardships suffered by many of the people.

The content of the environmental education approach should follow the guidelines suggested under Section 7.1.

#### 7.2.4 The squatters and poorer people living in Motherwell near the Swartkops Nature Reserve.

##### 7.2.4.1 Introduction of environmental education to the squatters and poorer people

The threat to the nature reserve from this group of people was regarded by respondents as the most serious of all. Providing environmental education to these people was perceived as extremely complex. Most of them were excessively poor. They were concerned almost entirely with their personal physical well being and had little thought for the future.

##### 7.2.4.2 Approach method

For this group of people the approach would need to be sensitive and caring and to initially concentrate on their basic needs before attempting any type of educational input.

The researcher suggests that the following procedures be considered before implementing any environmental education approach.

- \* Permission should be obtained from all the relevant authorities and other organisations that have any influence or involvement with these people before implementing an environmental education approach.

- \* Discussions on ideas of implementation through various organisations such as womens leagues, political forums, workshops and tours must be carefully worked out.
- \* Communication procedures should be investigated. This could be via street committees, advertising and political organisations.
- \* Careful planning on how to get the people motivated and involved in conservation methods. The essential requirement would be to convince these people of their vested interest in conservation (See Sections 4.2.1 and 6.3.6).
- \* The next initiative must be to overcome the short term energy problem of the people by supplying them with a substitute to prevent them needing to cut the bushveld. The respondents had a number of opinions on possible solutions to this problem (See Section 5.2.2). This problem will need to be investigated and discussed with the authorities and all stakeholders of this particular area.
- \* The issue also crucial to the conservation of the area is the long term supply of energy. Some of the ideas mentioned under Section 5.2.2 could also be applicable for this purpose. The researcher, after careful consideration of all the opinions of respondents, recommends that the idea of 'WOODLOTS' (See Section 5.2.2) be investigated as a long term energy solution and as a supply for the necessary muti requirements.

The content of the environmental education programme and the method of approach should fall within the guidelines as mentioned under Section 7.1. The overriding issues of sensitivity and proving vested interest will be crucial if the programme is to succeed.

#### 7.2.5 Developers, Industrialists and Authorities

##### 7.2.5.1 Introduction of environmental education to developers, industrialists and authorities

The researcher suggests that an environmental education approach should also be considered for the developers, industrialists and authorities. This group will be comprised of people from different private companies that are situated near the estuary and reserve or that influence the estuary and reserve in any way. There will also be the four authorities involved in the area (See Section 7.2.2.2).

##### 7.2.5.2 Approach method

Information obtained from the opinions of respondents indicated that there was a need for an environmental education approach to concentrate on the following aspects :

- \* The communication gap. The perceptions of industrialists, authorities and other stakeholders differed considerably

as was discussed in Sections 5.2.1 and 6.4.1 and this problem needed to be addressed.

- \* The respondents also perceived a lack of awareness of the industrialists and authorities on certain vital issues (See Section 6.4.1). The opinion of respondents was that because there were too many authorities responsible for the area, this had caused certain issues to be overlooked. Baird et al. (1986) also refers to the number of different state and local bodies being concerned with the management of the area.

The researcher suggests that the following environmental approach be considered as an attempt to overcome the above problems that seem to have been caused by insufficient knowledge and understanding between the different interested parties mentioned above.

- \* There needs to be an agreement that will enable representatives of each of the industries to meet with the representatives from the authorities and the Zwartkops Trust Environmental Education Sub-Committee.
- \* At present the Port Elizabeth City Council, The Algoa Regional Services Council and one industry of the area is represented on the Zwartkops Trust. There is a need for a greater representation from industry and also representation from the The Department of Nature Conservation, the Motherwell Town Council and the Political Bodies of Motherwell.
- \* A structure as envisaged above would be able to contribute



much useful information for conservation and could develop into a strong cohesive unit that would initiate such essential projects as woodlots, recycling, pollution control and unutilised land development.

- \* Industry and all the other stakeholders could share in the profits of the contributions to conservation. There is undoubted potential in the many assets of the estuary and reserve described by Tyson (1988) as " An Urban Jewel ". Collis (1993) also states that Marine Life is now being seen as the key to African Tourism.

### 7.3 CONCLUSION

#### 7.3.1 Suggestions on possible environmental approaches to schools

- \* The Ripple Approach. This method involves targeting all schools in the area.
- \* The Interested Parties Approach. This method concentrates on only those schools who have teachers that have previously been involved or that volunteer because they are interested in environmental education.

#### 7.3.2 Considerations on environmental education approaches to recreational and other visitors

- \* Communicating conservation knowledge to the users.
- \* Obtaining and training manpower to assist with conservation.
- \* Having representatives from the above groups of

stakeholders on the Zwartkops Trust Environmental Education Sub Committee.

### 7.3.3 Introduction of environmental education to residents in affluent areas

- \* Encourage stakeholders to become involved and to assist in environmental education initiatives.
- \* Make these stakeholders aware of their vested interest.
- \* Make them aware of the need to consider environmental education for the area holistically.

### 7.3.4 Introduction of environmental education to the squatters and poorer people of the area

- \* A need for a sensitive and caring approach.
- \* To consider the basic needs of the people initially.
- \* The necessary permission to be obtained.
- \* Investigating ways of implementing ideas.
- \* Considering communication procedures.
- \* Careful planning.
- \* Consider short and long term energy problems.

### 7.3.5 Considerations when introducing environmental education to developers, industrialists and authorities

- \* The communication gap.
- \* The problem of lack of awareness.
- \* The need to form a body to facilitate communication between the different authorities and the conservation bodies and to make industries and authorities aware of their vested interests in conservation.

**CHAPTER 8****CONCLUSION**

"... to achieve the goals of sustainable development, good environment, and decent standards of life for all involves very large changes in attitude."  
(World Commission on Environment and Development 1989:335)

**8.1 INTRODUCTION**

This final chapter aims to consolidate the research findings, and explore their implications for an Environmental Education Approach to the stakeholders of the Swartkops Estuary and Swartkops Nature Reserve. The research project as a whole is also evaluated with a view to both highlighting its potential weaknesses and towards improving or developing related projects in the future.

The primary aim of this study was to contribute in a small way towards the creation of information and insights that could be used in the future to develop an Environmental Programme that may assist in the conservation of the area. The researcher considers that this aim has been reached in that a small body of data has been produced and many problems in gathering the data have been brought to light. Tentative results have emerged, providing material for future investigations which may either validate or reject this

research.

## 8.2 RESEARCH CONCLUSIONS

The researcher believes that the study results of this research indicate that the following data should be considered when embarking on an Environmental Education Approach (See Section 7.2) towards the stakeholders of the Swartkops Estuary and Nature Reserve. He also concludes that many of these results indicate close correlations with the aims of environmental education theory as mentioned in Section 7.1. The conclusions below emanate from the opinions expressed by the respondents and from the principles developed in 6.2 as guidelines for a basic educational approach.

- \* Attitudes towards conservation of the various groups of stakeholders differ considerably (See Sections 6.3 and 7.1: 1,3,8).
- \* There is much suspicion, distrust and uncertainty between the different race groups regarding intentions of conservation (See Sections 6.3.7,6.5.3.4, and 7.1:1,3,8).
- \* Indifference to the long term prospects of the area was unfortunately evident (See Sections 6.3.1, 6.3.6, 6.5.3.5, 6.6.2, 7.1:6,7,10).
- \* In contrast to the above there were also stakeholders very concerned about the future of the area (See Sections 6.5.3.5 and 7.1:1,2,4,7).

- \* There were many people in excessively poor circumstances that depended on the estuary and reserve for their survival. Sensitivity to their needs would be crucial (See Sections 6.3.4, 7.1:3,6,8,9,10).
- \* Committed enthusiastic manpower was available to assist with environmental education initiatives (See Sections 6.5.2.3 and 7.1:2,4,5).
- \* There was a high consensus of opinions on conservation only for sustainable use and not for preservation (See Sections 5.2.2, 6.3.2, 6.3.6 and 7.1:6,7,9,10).
- \* Many people in and around Port Elizabeth were unaware of both the benefits of and the threats to the area (See Sections 6.5.2.3, 6.5.3.5, 7.1:1,9).
- \* There was evidence of much appreciation for the atmosphere and benefits of both the estuary and reserve (See Sections 6.5.3.5 and 7.1:1,7,9).
- \* Appreciation was shown for future economic prospects such as eco-tourism (See Sections 6.5.3.3 and 7.1: 4,7,9).
- \* An awareness of the many problems but also of the vital necessity of introducing environmental education to the area (See Sections 6.5.3.5 and 7.1: 2,3,6,8).
- \* There is frustration and anger at how developers and authorities have allowed the area to be degraded (See Sections 5.2.1, 6.4.1 and 7.1: 1,6,10).

The opinion of the researcher is that the above information ~~will~~ stimulate thought among environmental educationists concerned with the Swartkops Estuary and Reserve and that

this will encourage further research in this area. He is also of the opinion, however, that the success of the abovementioned environmental education approaches will depend on the personal initiative, drive and commitment of those involved. The researcher is confident that this will be forthcoming. The reasons for this positive opinion are based on the following :

- \* There was a strong consistent desire amongst all respondents (27/27 100%) (See Section 4.2.1) that the Swartkops Estuary and Reserve should be conserved.
- \* There was a deep appreciation and attachment shown by respondents from all groups interviewed towards the estuary and reserve (See Sections 4.2.1, 4.2.2 and 4.2.3).
- \* There was a dedicated core of committed stakeholders that were determined to succeed in an environmental education approach.
- \* With the appropriate environmental education approach there would be a realisation that all stakeholders would gain by conservation initiatives.

### 8.3 RECOMMENDATIONS

In view of the abovementioned conclusions and the environmental approaches discussed in Section 7.2, the researcher recommends the following :

- \* That the Zwartkops Trust Environmental Education Sub-Committee, with assistance from other environmental

organisations, embark on and be in control of an Environmental Education Approach towards the stakeholders of the Swartkops Estuary and Swartkops Nature Reserve.

\* That the approach to the schools be by means of the 'Interested Parties Approach' initially and then later the 'Ripple Approach'. The reason being that the former approach will be started on a much smaller scale which the researcher feels is advisable in the beginning. This could be used as a form of pilot approach (See Section 7.2.1).

\* That environmental education approaches also be made to the following stakeholders :

Recreational and other visitors (See Section 7.2.2)

Residents in affluent areas (See Section 7.2.3)

Squatters and poorer people in Motherwell (See Section 7.2.4)

Developers, Industrialists and Authorities (See Section 7.2.5)

#### 8.4 EVALUATION OF THE RESEARCH PROJECT

##### 8.4.1 The aims of the research

The aim of the research was to investigate the potential role for environmental education in the conservation of the Swartkops Estuary and Swartkops Nature Reserve See Section 1.5). This was to be carried out by researching the opinions, attitudes, feelings and needs of the people who had an

interest in the area.

#### 8.4.2 Attainment of aims

By using the structured interview method the researcher was able to speak to each of the respondents in a relaxed non-threatening manner. This proved to be highly successful with over 93% of the interviewees spontaneously volunteering many of their feelings, attitudes and needs.

The information was collected from respondents representing all the groups of stakeholders who were concerned with the estuary and reserve. The researcher felt that because such a wide variation of opinions was obtained, this also increased the validity (See Section 1.6) of the research.

Although the opinions of the respondents were obtained independently and individually from each respondent and from a wide cross section of the community, they still showed an underlying consistency. This indicated to the researcher a certain degree of reliability and validity (See Section 1.6) in the results.

A further support for the validity of the information received, was that the respondents were not coerced, bribed or in any way encouraged to give certain opinions that would benefit them personally. The information obtained was volunteered freely, genuinely and willingly by all 27



interviewees. This indicated to the researcher that the information received from the respondents was reliable and close to what was intended to be obtained.

The aim of the research was to be able to use the information obtained in helping to formulate an environmental education approach towards the stakeholders of the estuary and reserve. The researcher believes that this practical objective of the research was achieved to a limited extent within which the scope of the investigation allowed. There was considerable information obtained that would be pertinent and essential to an environmental education approach to the area (See Section 8.2).

#### 8.4.3 Deficiencies and inadequacies in the research

The researcher perceived possible deficiencies in the research which could have affected the reliability and validity of the results. These are discussed below :

- \* The scope of the research was vast with the large population surrounding the estuary and the reserve from which the respondents were drawn. This meant that in a thesis of this nature only the surface of the problem could be investigated. The researcher was of the opinion that a much more detailed and comprehensive study needs to follow on from this study.
- \* Despite representatives from all possible sections of stakeholders being interviewed, the sample was small and this would make it difficult to obtain valid and reliable

information from some respondents who had very little environmental education knowledge, understanding of English or minimal or no education at all. The researcher sometimes needed to subjectively assess the meanings of some responses from these people and this could have affected the validity of the information.

- \* The researcher was aware that he came from a completely different background to some of the respondents. This he felt could have influenced his subjective judgement of the opinions of certain respondents.
  
- \* Although an effort was made to conduct the research interviews in as natural atmosphere as possible, the researcher was aware that some respondents would be uneasy or try to 'please' the interviewer and not always give their genuine opinions.
  
- \* The concept of environmental education was something many respondents had never before been aware of. This meant that there was no foundation to build on when introducing environmental concepts. This may have been a cause of unreliability with some responses.

## 8.5 CONCLUDING REMARKS TO THESIS

Finally, inspite of the weaknesses in the research mentioned in Section 8.4.3, the opinion of the researcher is that the research project has revealed important issues that will need to be considered if or when an environmental education approach is implemented for the Swartkops Estuary and Swartkops Nature Reserve.

Future studies may do well to examine not only the generalisability of the findings presented here, but also investigate new and more innovative methodologies. In the meanwhile, this thesis is considered as a contribution to the field of Environmental Education as a whole but more specifically to that of the Swartkops Estuary and Swartkops Nature Reserve.

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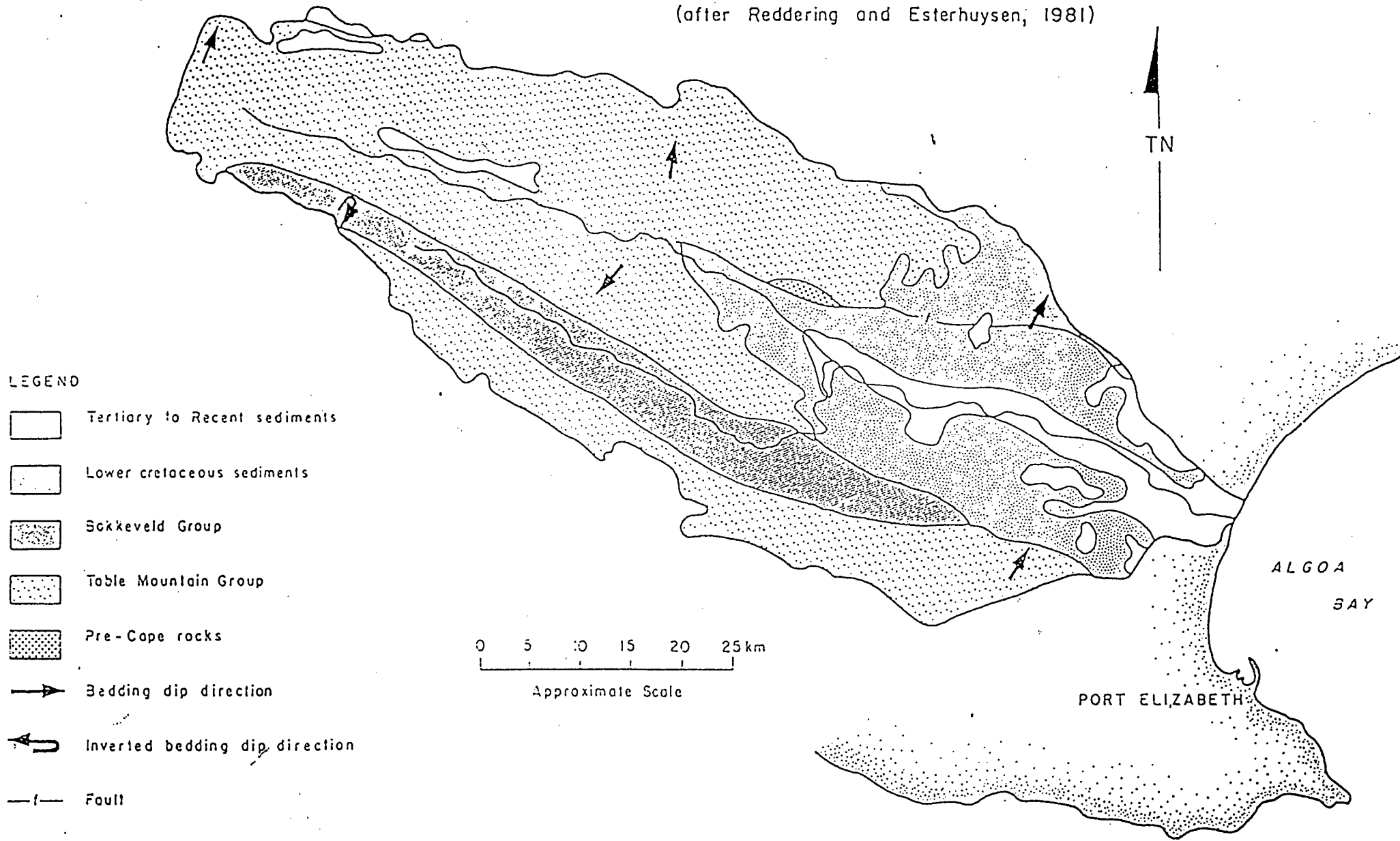
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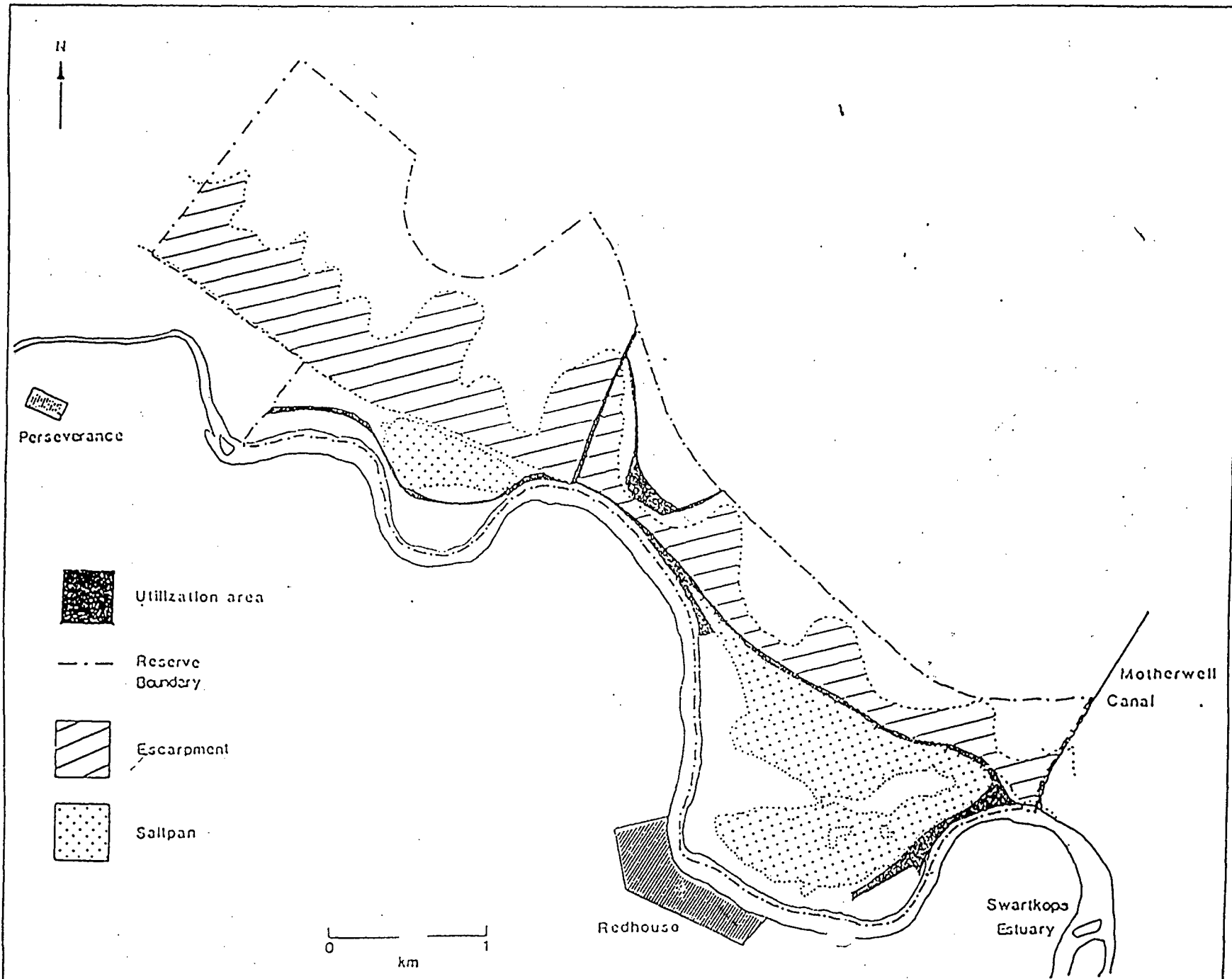
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The Geology of the Swartkops river catchment

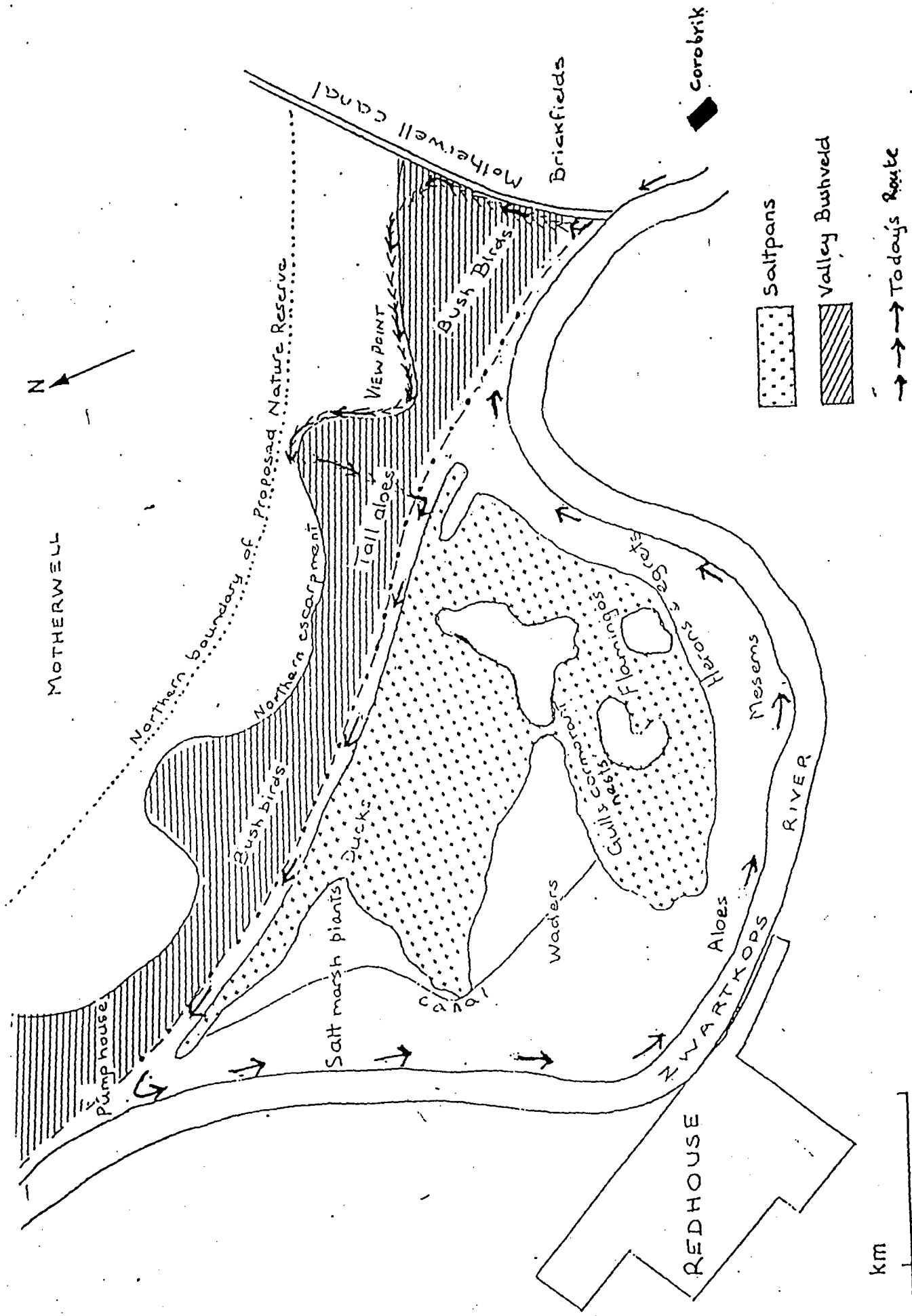
(after Reddering and Esterhuysen, 1981)



Zoning map indicating main areas for human utilization

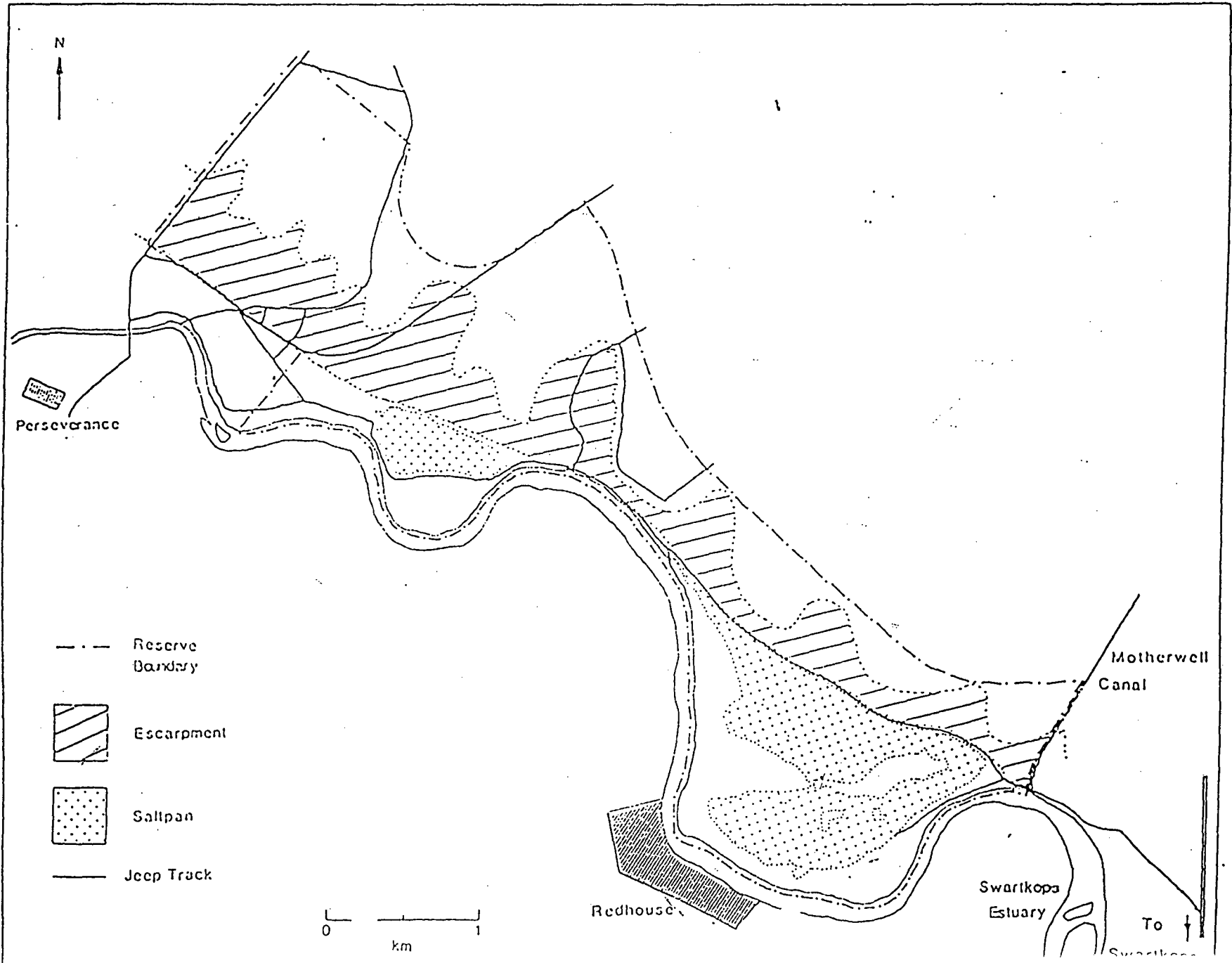


APPENDIX A 3



FLEMINGO TRAIL

Reserve road system map



APPENDIX B

INTERVIEW SCHEDULE

I am studying for a Masters Degree in Environmental Education at Rhodes University. The purpose of the research is to investigate the attitudes, feelings and needs of the people who have an interest in the Swartkops River Estuary and Nature Reserve. This information may then be used to develop an environmental education programme which could assist in the conservation of the area. The Swartkops Estuary is one of the very few estuaries in South Africa that is still relatively unspoilt although it is in close proximity to a large population and an industrial city.

In order to assist me in obtaining much of the information required, I would be most grateful if you could answer some questions. Please could you also explain the reasons for your answers in certain instances. By referring to the 'Swartkops Estuary' the intention is to include the salt water tidal area of the river up to the drift at Perseverance. The 'Swartkops Nature Reserve' includes the valley bushveld area between the estuary and the Motherwell township. This questionnaire is anonymous and there will be no personal follow up on any answers so please be as honest and open as possible.

QUESTIONS

1. What can I call you ? \_\_\_\_\_
2. Which area do you live in ? \_\_\_\_\_
3. Estimate age. \_\_\_\_\_
4. How far did you study at school ? \_\_\_\_\_
5. What language do you speak the best ? \_\_\_\_\_
6. Are you interested in the future of the estuary ? \_\_\_\_\_
7. Are you interested in the future of the reserve ? \_\_\_\_\_
8. What do you see as the main benefits of the Swartkops Estuary to you personally ?  
\_\_\_\_\_  
\_\_\_\_\_

9. What do you see as the main benefits of the Swartkops Nature Reserve to you personally ?  
\_\_\_\_\_  
\_\_\_\_\_

10. What do you see as the main benefits of the Swartkops Estuary to your community or group as a whole ?

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11. What do you see as the main benefits of the Swartkops Nature Reserve to your group or community as a whole ?

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12. How important do you feel it is that something is done to conserve the Swartkops Estuary ? (a) Important (b) Sometimes important (c) Not important (d) No opinion. \_\_\_\_\_

13. How important do you feel it is that something is done to conserve the Swartkops Nature Reserve ? (a) Important (b) Sometimes important (c) Not important (d) No opinion.

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14. For each of the following possible threats to the Swartkops Estuary and also the Swartkops Nature Reserve, could you please state whether you feel the threat is :  
(a) Serious (b) Sometimes serious (c) Not serious (d) No opinion.

	<u>SE</u>	<u>ZNR</u>
(1) Industrial pollution.	_____	_____
(2) Erosion of the sides of the escarpment and river banks by clearing bush, making paths etc..	_____	_____
(3) Illegal bait digging methods.	_____	_____
(4) Insensitive development.	_____	_____
(5) Litter pollution.	_____	_____
(6) Woodcutting.	_____	_____
(7) Sewage pollution from sewage works, campers, residents etc..	_____	_____
(8) Sewage pollution from residents at Motherwell via stormwater canal.	_____	_____
(9) Fishing.	_____	_____
(10) Power boats.	_____	_____

(11) Destroying of animals including fish  
by illegal methods. \_\_\_\_\_

(12) Other. \_\_\_\_\_

15. What contributions do you feel that you and/or your group could  
make in assisting with the conservation of the Swartkops River ?

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16. What contributions do you feel that you and/or your group could  
make in assisting with the conservation of the Swartkops Nature  
Reserve ?

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17. What do you understand about environmental education ?

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18. Do you have any experience of environmental education ? If yes,  
please could you answer the following :

If an environmental education programme was introduced into the  
schools of the area, please could you comment briefly on the  
following.

[a] Age of pupils that should be targeted. \_\_\_\_\_

[b] Should it be done at first with only the pupils really  
interested or with all pupils and should the programme be  
introduced at all schools in the area or only certain  
selected and interested schools ? \_\_\_\_\_

[c] Any other suggestions. \_\_\_\_\_

19. Please could you give your opinion on some of the following  
suggestions for conservation of the Swartkops Estuary and  
the Swartkops Nature Reserve.

For each of the items listed please state whether you feel it  
is : (a) Important (b) Sometimes important (c) Not important  
(d) No opinion.

(1) Creating a trail through the reserve and encouraging  
people who are interested in the reserve to use it. \_\_\_\_\_



- (2) Strict control of power boats. \_\_\_\_\_
- (3) " " " bait digging. \_\_\_\_\_
- (4) " " " woodcutting. \_\_\_\_\_
- (5) Limiting public access to the Swartkops Estuary and the Reserve.  
 Estuary \_\_\_\_\_ Reserve \_\_\_\_\_

20. What would you say are some of the main problems in introducing an environmental education programme to people who have an interest in :

(a) Estuary. \_\_\_\_\_

(b) Reserve. \_\_\_\_\_

21. Please state whether you see the following possible problems for introducing environmental education programmes as :  
 (a) Serious (b) Sometimes serious (c) Not serious (d) No opinion.

- |   |        |         |
|---|--------|---------|
| (1) The large population.                 | E_____ | NR_____ |
| (2) Facilities to transport people.       | E_____ | NR_____ |
| (3) Financial assistance.                 | E_____ | NR_____ |
| (4) Indifferent feeling of the people.    | E_____ | NR_____ |
| (5) Manpower available to educate people. | E_____ | NR_____ |
| (6) Any other problems.                   | E_____ | NR_____ |

22. Please could you mention any serious pitfalls and/or approaches which should be avoided when trying to conserve the Swartkops Estuary and Swartkops Nature Reserve.

(a) Estuary. \_\_\_\_\_

(b) Reserve. \_\_\_\_\_

23. What do you think most people living in your area really feel about the :

(a) Estuary. \_\_\_\_\_

(b) Reserve. \_\_\_\_\_

## APPENDIX C

LIST OF INTERVIEWEES

1. Chairwomen of Wild Life Environmental Education Trust and secretary of Human Rights Trust.
2. Educational Officer for Wild Life.
3. Chairwomen of ANC Environmental Desk - Eastern Cape.
4. Squatter in Motherwell squatter camp on border of Swartkops Nature Reserve.
5. As above.
6. Prawn digger on Swartkops River.
7. Chairman of the Motherwell Civics Association SANCO. This is a forum which represents the various political parties in Motherwell.
8. Representative of teachers association and also Vice Chairman of SANCO.
9. Squatter on Swartkops Estuary.
10. Old resident of Blue Water Bay Village.
11. Chairman of Swartkops Trust and resident of Amsterdam Hoek.
12. Head of Conservation for Swartkops Estuary and Nature Reserve for the Port Elizabeth Municipality.
13. Chairman of East Cape Wild Bird Society and Resident in Blue Water Bay.
14. Regular fisherman.
15. Commodore of Redhouse Yacht Club.
16. Head of Conservation for Algoa Regional Services Council.
17. Managing Director of two Factories on Swartkops Estuary and writer of a Masters thesis on the 'Perceptions of Industrialists of Environmental Issues on the Swartkops River.
18. Resident of Motherwell and on committee of Human Rights Trust.
19. Primary School teacher in Motherwell and keen environmentalist.
20. Squatter in coloured community at Corobrick Village on Swartkops Estuary.
21. As above.

22. Manager of Swartkops Fishing and Bait Club.
  23. Resident of Amsterdamhoek and very keen environmenalist who has been regularly involved with environmental education on the Swartkops Estuary and Nature Reserve.
  24. Botonist specialising in the study of all flora in the Swartkops Valley.
  25. Retired resident of Swartkops and keen conservationist.
  26. Resident of Redhouse and keen conservationist.
  27. Husband and wife who are long standing residents of Redhouse. They also represent the chairman of the rate payers association and chairwomen of the benevolent fund of poorer areas around the Swartkops Estuary and Nature Reserve.
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