

**An Exploratory study of an environmental conflict : The case of
Thyspunt, Oyster Bay in the Eastern Cape**

By

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DECLARATION:

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DATE: 08/01/2009

Abstract

As the global energy crisis continues to have an impact on developing countries such as South Africa, stakeholders form an increasingly significant role especially around the concerns of development and the impact on the environment. Environmental conflicts have risen to the forefront in many areas in South Africa. Environmental conflicts fall under public disputes, which often occur as a result of human needs.

This study is an attempt to explore the environmental conflict surrounding the proposed Nuclear Power station at Thyspunt, Oyster Bay in the Eastern Cape. Stakeholders are an integral part of environmental conflicts, and analyzing interests of stakeholders is vital in understanding environmental conflicts.

This explorative study, seeks explore and to describe the interests of homeowners who are one of the key stakeholders involved the environmental conflict at Thyspunt, Oyster Bay in the Eastern Cape. The homeowners are represented by the St Francis Residents/Ratepayers Association. The researcher conducted extensive face-face interviews with these homeowners. The organizations official documents, minutes of their meetings, letters to the media and various publications in which homeowners expressed their feelings were also made use of by the researcher in order to triangulate findings, as well as for data collection methods. The major themes were constructed from the study include: Security, Trust, Power and the various sources thereof, as well as a need for self-actualization based on values, and a final theme of the positive functions of conflict.

The challenges facing the homeowners in terms of human security and environmental impact of the nuclear development are highlighted. Further recommendations for a more in-depth study are also made.

I believe that to meet the challenge of the next century all human beings will have to develop a greater sense of universal responsibility. Each of us must learn to work not just for his or her self, family or nation, but for the benefit of all mankind. It is very old-fashioned to think in terms of my nation, or my country. Universal responsibility is the real key to human survival. Large movements spring from individual initiatives. Thus it is the individual working for the common welfare who makes the difference.

Dalai Lama

Acknowledgements

I am deeply indebted to my teacher and mentor, Dr Lyn Snodgrass for all her support and patience. Her passion and enthusiasm has been a fountain of inspiration for me throughout my studies and research.

I would like to pay tribute to the father of our nation, Nelson Mandela who through his own conflict resolution and peace building techniques, paved the way for a non-violent peaceful democracy of South Africa in which we are able to live. I am honored to study at a university who has the privilege of bearing his name.

I would like to thank my colleague and friend Juliana Obika from Uganda who through her own wonderful accomplishments inspired me to continue with my research.

I extend my gratitude to the homeowners in the St Francis Bay area who willingly participated in my research study. Their strong sense of community and regard for the well being and protection of the environment has served to raise my awareness, as well as the need to live with greater sensitivity, for there are still many generations to come who will walk this earth.

Finally I would like to thank my family, who without them, nothing matters.

Table of Contents

Declaration by the student	I
Abstract	II
Acknowledgments	III
Dedication	IV
Table of contents	V
Acronyms	VI
Keywords	VII
Chapter One	1
1. Introduction	1
1.1. Background to case study	3
1.2. Motivation for the study	6
1.3. Significance of the study	8
1.4. The aims and objectives of the study	8
1.4.1. The primary aim	8
1.4.2. The objectives of the study	8
1.5. Research design	9
1.5.1. Procedure	11
1.5.2. Sampling	11
1.5.3. Purposive sampling	12
1.5.4. Data collection and analysis	13

1.5.5. Data collection methods	13
1.5.6. Unstructured interviews	14
1.5.7. Data analysis	15
1.6. Validity and trustworthiness	15
1.6.1. Triangulation	16
1.7. Ethical considerations	16
1.8. Dissemination of results	17
1.9. Limitations of the study	17
1.10 Structure and format of the study	18

Chapter Two: Literature Study 22

Introduction	22
2.1. Environmental Security	22
2.2. Global energy	25
2.2.3. African energy	26
2.2.4. South African energy	26
2.3. Nuclear policy	27
2.3.1. Controversial industry	28
2.3.2. The effects of nuclear explosions	28
2.4. Environmental policy	31
2.4.1. The Uhuru decade	33
2.5. Relatively new area of conflict	34
2.5.1. Conflict and human needs theory	34
2.5.2. Nature of environmental conflicts	35
2.5.3. Examples of environmental disputes	36
2.5.4. Definition of stakeholders and stakeholder dynamics	40

2.5.5. Framing and conflict	41
2.5.6. Characteristics of environmental disputes	44
2.5.7. Dynamics of stakeholders	46
2.6. Conclusion	49
Chapter Three: Case Study	51
Introduction	51
3.1. Background of the St Francis area	51
3.2. History of the conflict	54
3.3. Nuclear conflict current status	56
3.4. Site selection	57
3.5. Sources of the conflict	58
3.6. The parties involved in the conflict	59
3.7. Sources of power	65
3.8. The spiral of unmanaged conflict	67
3.9. Conclusion	68
Chapter Four: Research design	
4.1. Introduction	70
4.2. Research design	70
4.2.1. The primary aim	71
4.2.2. The objectives of the study	71
4.3. Qualitative research	71
4.4. Procedure	73
4.5. The case study method	74
4.5.1. Advantages of the case study method	74
4.6. Sampling	75
4.6.1. Purposive sampling	75

4.7. Data collection and analysis	76
4.7.1. Data collection methods	76
4.7.2. Unstructured interviews	77
4.7.2.1. Preparing for the interview	78
4.7.2.2. Choosing an interviewing method	79
4.7.2.3. Conducting the interview	79
4.7.2.4. Reflections on interviews	80
4.8. Documents	81
4.9. Data analysis	82
4.10. Reliability and validity of findings	83
4.11. Limitations of the study	84
4.12. Ethical considerations	85
4.12.1. Informed consent	85
4.12.2. Privacy and confidentiality	86
4.12.3. Researchers role	86
4.13. Conclusion	87
Chapter Five : Discussion	88
5.1. Introduction	88
5.2. Security	89
5.2.1. Human participation in the environment	92
5.2.2. Sustainable development	95
5.3. Identity and trust	100
5.3.1. Imposed development versus negotiated development	101
5.3.2. Lack of transparency	104
5.3.3. Conflict as the result of poor communication	108
5.4. Power	110
5.4.1. Economic power	111
5.4.2. Community power	113
	VIII

5.4.3. Political power	115
5.4.4. Expert power	116
5.5. Values	117
5.5.1. Science versus values	120
5.6. Conflict as functional	122
5.6.1. Group binding functions of conflict	122
5.6.2. Conflict with out-groups increases internal cohesion	123
5.7. Conclusion	124
Chapter Six : Conclusion and recommendations	126
6.1. Introduction	126
6.2. Summary of the research findings	127
6.3. Challenges faced by the homeowners	128
6.4. St Francis residents/ratepayers successes	130
6.5. Impression of Environmental impact assessment	131
6.6. Limitations of the Study	132
6.7. Value of the study	133
6.8. Recommendations	134
6.9. Conclusion	136
References	137
Apendix	

Acronyms

ANC	African National Congress
CSIR	Council for Scientific and Industrial Research
EIA	Environmental Impact Assessment
DME	Department of Mineral and Energy
FOSTER	Friends of St Francis Nature Areas
KANG	Kouga Anti – Nuclear Group
KNCG	Kouga Nuclear Concern Group
NEMA	National Environmental Management Act
NGO	Non-governmental Organization
NMMU	Nelson Mandela Metropolitan University
NNR	National Nuclear Regulator
WWF-SA	World Wildlife Foundation – South Africa

Keywords

Stakeholder dynamics
Environmental conflict
Economic pragmatism
Human Needs
Nuclear power

Abstract

As the global energy crisis continues to have an impact on developing countries such as South Africa, stakeholders form an increasingly significant role especially around the concerns of development and the impact on the environment. Environmental conflicts have risen to the forefront in many areas in South Africa. Environmental conflicts fall under public disputes, which often occur as a result of human needs.

This study is an attempt to explore the environmental conflict surrounding the proposed Nuclear Power station at Thyspunt, Oyster Bay in the Eastern Cape. Stakeholders are an integral part of an environmental conflict, and analyzing interests of stakeholders is vital in understanding environmental conflict.

This explorative study, will explore and describe the interests of homeowners who are one of the key stakeholders involved the environmental conflict at Thyspunt, Oyster Bay in the Eastern Cape. The homeowners are largely represented by the St Francis Residents Association.

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Keywords

Stakeholder dynamics

Environmental conflict

Economic Pragmatism

Interests

Human Needs

Chapter One

1. Introduction

With much of the world's oil and gas supplies in the hands of hostile and unstable governments, the eiminent threat of fuel shortages (-Eerkens 2006:2) and the additional issue of global warming as a direct result of coal combustion, there has been a renewed interest in alternate forms of energy, — particularly nuclear energy. This renewed interest in nuclear energy as an alternative source of energy has also led to a great deal of conflict. Environmental groups raise the following points of conflict with regard to nuclear power programmes as an alternate source of energy:

- A concern with the disposal of nuclear waste.
- Radiation effects on people due to reactor accidents caused by intentional (terrorist) or unintentional malfunction.
- Intentional diversions and modifications for nuclear fuel to make nuclear weapons. (Eerkens 2006: 6), Alliance for Nuclear Responsibility, Earthlife Africa.

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~~[This sentence makes the reader expect that you will now discuss conflict. I suggest that you put it in the paragraph that will precede your third paragraph.]~~

It is estimated, that at present rates of consumption, oil and gas reserves will be depleted in 40 years. Unless preventative steps are taken, steadily increasing oil shortages will reach a crescendo by 2030, triggering a total collapse of our present oil-depend~~en~~t way of life (-Eearkens spelling?-2006:2).

According to Kursunglo, Mintz and Perlmutter (1998:1), in order to meet future energy needs arising from population growth and economic development, alternative forms of

energy need to be explored. Nuclear energy appears to be the most viable option at present.

~~Environmental groups raise the following points of conflict with regard to nuclear power programmes as an alternate source of energy:~~

- ~~• A concern with the disposal of nuclear waste.~~
- ~~• Radiation effects on people due to reactor accidents caused by intentional (terrorist) or unintentional malfunction.~~
- ~~• Intentional diversions and modifications for nuclear fuel to make nuclear weapons. (Eerkens 2006: 6), Alliance for Nuclear Responsibility, Earthlife Africa.~~

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Africa accounts for over a sixth of the world's population, but generates only 4% of global electricity. Three quarters of that is used by South Africa, Egypt and other countries along the North African littoral. The situation is bound to get worse, as the

~~demand for power continues to grow. (*The Economist*, 2007:34). **Titles of publications should be italicised. Names of authors are not. Please check that I have italicised correctly. A comma is needed between the title and the date. The full stop goes after the citation, not before it. I will do them for you, but you can check that I have caught all of them.**~~

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~~South African electricity consumption has been growing at a rapid rate, ~~due to~~owing to its booming economy, which is energy-intensive. South African electricity is mostly coal-fired and under the state-owned control of Eskom. (*Africa Geographic*, 2007:90).~~

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~~The country's coal reserves are abundant (estimated at 53 billion tonnes. **Check the spelling. I know it varies, but I would say this should be "tons"**), which makes the generating of electricity -and- relatively inexpensive ~~to generate electricity~~. The source of conflict is that burning fossil fuels produces ~~the "greenhouse gas,"~~ carbon dioxide, a major contributor to what has been loosely termed "global warming". Eskom~~

recognizes the proactive role it must play in pursuing a sustainable energy strategy that contributes to the reduction of greenhouse gas emissions and the impact on climate change (*Africa Geographic*, 2007: 90).

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According to Bezuidenhout (2007: 32), South Africa is a signatory of the Kyoto Protocol, and as an undeveloped country, unlike developed countries, is not required to achieve specific emission reduction targets. Nevertheless, it would stand the country in good stead to employ clean energy – coal technology, renewable energy and nuclear energy.

State power utility, Eskom, which has led pro-consumption marketing drives relevant to a past era when South Africa's low-cost electricity was underpinned by a surplus, is having to champion efforts to curb consumption and even promote competing energy sources (*Engineering News*, 2007: 16).

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A draft nuclear policy for South Africa in August 2007, addressed the growing electricity demand and the country's 87% reliance on coal for this. Building upon 23 years of experience with nuclear power, it outlines an extensive programme to develop all aspects of the nuclear fuel cycle. (www.uic.com.au/nip88.htm: date). **Please check with Lynn whether the URL is an acceptable citation.** The nuclear policy aimed **["Outlines" is present tense, but here you have past. Do they refer to different times?]** to ensure that South Africa diversified its energy sources away from coal, addressing security of supply and global climate change concerns. The vision is that nuclear power will account for more than 15% of South Africa's total power generation by 2025 – 2030 (www.environment.co.za).

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However, in South Africa, nuclear power generation is a topic which continues to cause much heated debate and it is virtually impossible to base decisions on fact, as **the facts** they are **all** aggressively contested by opposing parties **as can be seen from the following sources**. (*Africa Geographic*, 2007:100; www.earthlife.org.za, <http://nuclearfreesa.blogspot.com>).

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~~[It is unusual to have more than one citation. As you seem to have three here, perhaps you should introduce them by saying "as can be seen in the following sources" or something like that.]~~

~~[Here your topic has changed to accidents, which should have a new paragraph.~~

~~Check whether you have other material to put with it.]~~ The nuclear industry has been beset by catastrophic accidents (~~the most widely publicised of which was~~ the accident at Chernobyl ~~seems to be the most widely publicized~~), ~~as well as~~ environmental and safety-related corner-cutting, intrigues relating to the proliferation of weapons and radioactive waste disposal controversies: ~~(http:// nuclearfree.blogspot.com)~~. No country has an approved procedure for dealing with spent nuclear fuel and other high-level wastes – toxic and highly radioactive material which remains deadly for hundreds of thousands of years. (www.earthlife.org.za).

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~~The Nuclear Policy aims to ensure that South Africa diversifies its energy sources away from coal, addressing security of supply and global climate change concerns. The vision is that nuclear power will account for more than 15% of South Africa's total power generation by 2025-2030 (www.environment.co.za). [This paragraph can go with your earlier one about aims of the policy.]~~

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1.1. Background to the case study

Based on current planning, Eskom needs to increase its generating capacity by more than 40 000 megawatts of electricity over the next 20 years. This additional generating capacity could come from a variety of energy sources, ~~for examplesuch as~~ coal, liquid fuels, gas turbines, natural gas, hydro and pumped storage schemes, wind and solar energy and uranium ~~which is used to produce~~ (nuclear ~~energy.~~ ~~[This needs to be an short phrase, not just a word, but I don't have the knowledge to provide one. Something like "used in nuclear production" but I have no idea if that is correct content].~~

The year 2008 has been a year in which South Africa's energy crisis has been exposed.

Recent power outages in the Western Cape have highlighted the problem now facing the country. ~~Your topic now is problems. Make that clear in a topic sentence i.e. a sentence which introduces a paragraph, giving an idea what it will be about.~~ There is already a shortage of power in certain areas at peak load times, and demand is growing all the time. Currently, the only significant power station in the western side of ~~the country~~ South Africa is Koeberg, which generates 1800 megawatts of power. Electricity demand in the Western Cape peaks at above 5500 megawatts in winter, with the Eastern Cape adding another thousand megawatts.

Alternative energy sources such as wind and solar energy, ~~Is this paragraph going to be about problems or alternative sources?!~~ are unable to meet the huge "base load" required for industry, transport systems and large cities. The only viable option appears to be an increase in nuclear technology. Progress in constructing the pilot Pebble Bed Modular Reactor (PBMR) plant at Koeberg has been slow. This is partly due to design factors, and partly due to legal obstruction by environmental bodies, notably Earth Life Africa, which has brought a number of court actions against Eskom. ~~Due~~ Owing to these delays, and the urgency of building power stations, the government ~~at~~ has now announced that it is considering additional Pebble Bed Water Reactors ~~-~~ (PWRs).

As a result, Eskom has currently appointed Arcus Gibb (Arcus Gibb Document: 25 June 2007) to conduct the Environmental Impact Assessments (EIAs) at five potential nuclear sites along the South African coastline.

Based on various social, economic and environmental criteria, the following potential sites were identified:

- Thyspunt (~~e~~ Eastern Cape located west of ~~p~~ Port Elizabeth near Cape St Francis)
- Bantamsklip (~~w~~ Western ~~e~~ Cape 10km south east of Pearly-Beach)

- Duyenfontein existing Koeberg Power Station (-Western Cape located adjacent to the existing Koeberg Power Station, Cape Town)
- Brazil (Northern Cape located in Kleinsee/Port Nolloth area) θ
- Schulpfontein (Northern Cape located in Hondeklipbaai/Kleinsee area):

(Eskom: *EIA document* *Environmental Impact Assessment for the proposed Eskom Nuclear Power Station an Associated Infrastructure: Background information document and individuation to participate*). **[Not clear what all this is. If it is a citation, it should be placed at the bottom right side of the page. Do look at other examples of citing a long quote.]**

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The objective of the current EIA is to identify the site for the first 4000 megawattsMw **[These abbreviations must be consistent throughout the paper, even as regards capital letters and spacing.]** nuclear plant (more than double the size of Koeberg), but in time Eskom hopes to be able to develop all the identified sites. This has particular significance for Thyspunt, which is in fact two sites consolidated into one, and is therefore regarded as having potential for plants which could generate up to 8000Mw (-four times the size of Koeberg). There are strong political and economic pressures to place a Nnuclear power station at Thyspunt, to serve the needs of the Eastern Cape, and especially of the Coega Industrial dDevelopment Zone. **[Use all capitals if this is the title of an entity, none if they are general terms.]** (-*St Francis Bay Residents Association Newsletter*, August 2008).

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The conflictquestion in our case study, of concerning the pristine coastline of Oyster Bay area – whether it should be used for the development of a nuclear power plant, or preserved as a wilderness area is a legitimate conflict. **You are saying "The question is a legitimate conflict"** involving both economic issues and value differences. The clash between values and economic perceptions of a problem of energy supply for the country at large, has led to a situation of conflict. **Here you are saying "the clash has led to a situation of conflict." That's surely obvious.** The public has become more aware. **[More**

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~~than what? Or why has this happened? "More" implies information that you haven't provided~~ of the delicate, interrelated ecological systems that support life on this planet. As differences in environmental values become more explicit, environmental conflicts tend to multiply dramatically.

We find that most environmental conflicts have more than two sides. ~~This would make a good topic sentence for this paragraph.~~ It is not unusual to have a dozen or more parties in the controversy, including several public interest groups, companies, business associations, and local and national government (Carpenter and Kenney 2001:5). ~~Do you mean general conflicts? If so, this would make a good sentence to follow the topic sentence.~~ This is has certainly become evident with regard to the nuclear power station conflict in the Oyster Bay Region, where an estimated ~~twenty-five~~ 25 parties have been identified.

The main parties identified at this stage of the environmental conflict are the following:

~~Don't change the style or numbering. Stay consistent throughout the paper for numbering bulleted lists.~~

- ~~I)~~ Eskom - Eskom Holdings Limited is a state-owned enterprise, with the government of South Africa as its only shareholder.
- ~~II)~~ Foster - Friends of the St Francis Nature Areas, has been very effective over the past decade in consolidating and developing and managing a network of nature areas that link St Francis Bay and Cape St Francis
- ~~III)~~ St Francis/Kromme Trust – An environmental body representing the people in the greater St Francis Bay Area
- ~~IV)~~ And St Francis Bay Ratepayers and Residents Association – Representing the homeowners and ratepayers in the area.

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1.2. Motivation for the Study

Problem statement

Large scale development projects, such as the nuclear power station at Thyspunt, occur over relatively long-term periods. During this time period, views, attitudes and behaviour of stakeholders may shift in direction, intensity and magnitude. The interests of stakeholders in a project are a vital area of research in the quest to further our understanding of stakeholders dynamics in environmental disputes. This study will focus on the interests of one of the primary stakeholders, namely the homeowners who belong to the St Francis Residents/Ratepayers Association . The St Francis Residents/Ratepayers Association has made a submission against the nuclear power station on behalf of its members. The information obtained from this study will then be used to contribute to the growing body of empirical knowledge regarding the complexities of the interests of stakeholders in environmental conflicts as well as make recommendations for further in depth research. Such a scenario, becomes complicated, often requiring specializsed knowledge, skills, tools and techniques in order to analyzse the behaviour of stakeholders.

The environmental conflict in the Eastern Cape concerning the proposed Nnuclear Ppower station Be consistent with capitals. I prefer no caps, unless it is an accepted title. at Thyspunt tin Oyster Bay is an example of such a long-term, large scale public development project. It isn't necessary to give the specifics again shortly after giving them the first time. It was during the 1980's, that Eskom began looking for sites for a second nuclear power station to follow Koeberg. Eskom acquired the Thyspunt site near Oyster Bay, in the Eastern Cape. The project is still in the planning stage. The delay has been due to successful lobbying by the Kouga Anti-Nuclear Group (KANG) in 1998, as well as differences in opinion among powerful stakeholders. Eskom would ultimately like to develop all five sites, but is currently engaged in selecting the first of these, and an EIA (Enviromental Impact Assessment) process has been continuing for the past year. Community bodies and individuals from the area have been deeply involved in the process, and have made submissions against the nuclear power station at the appropriate stages. The St Francis Residents Association is one of the community bodies which has

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made a submission against the nuclear power station on behalf of its members. [A good paragraph! But where is the problem statement? This is useful background, but should come earlier in the paper.]

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The St Francis Residents Association is a community body, made up of homeowners in the St Francis Bay and surrounding areas. The Association is made up of a competent executive team of local residents who are elected annually by the ratepayers ~~annually~~. A nominal fee of R150-00, is required as an annual subscription, in order to become a member ~~of the St Francis Residents Association~~. The funds are used to keep residents informed on issues, and to take legal action where necessary in order to protect the interests of residents and ratepayers ~~interests~~. None of the committee members receive compensation for their efforts, as these are purely voluntary. (*St Francis Ratepayers Association Newsletter* 2008) The interests of stakeholders towards in a project is are a vital area of research in the quest to further our understanding of stakeholder dynamics and environmental disputes. [Ah! This is a new idea to the reader. If this is one of your themes, it must be given at the start of the paper.]

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These are some of the issues which have emerged: [No problem statement yet]

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- There has been no exploratory study done concerning the interests homeowners involved in the proposed Nuclear Power station at Thyspunt, Oyster Bay.
- No previous work has been carried out in order to understand the interests of homeowners involved in the conflict from 1980 to date. [Has the conflict lasted from then? Or is this the period of no previous work?]
- The homeowners who ~~oieh~~ are largely represented by the St Francis Residents Association are of particular relevance for study, as they are the individuals who will be most affected should a nuclear power station be built at Thyspunt, as this could lead to a change in the total environment there.
- There has been no intentional process of learning from the homeowners ~~stakeholders~~ ? involved in the conflict at Thyspunt, Oyster Bay in

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order to help build theory to understand the complexities involved in the interests and worldviews of homeowners involved in environmental conflicts.

~~This isn't a problem statement, Glynn. It is background. What does Lynn say?~~

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1.3. Significance of the Study

~~It is anticipated, that +~~ This study will explore the interests of the homeowners involved in the environmental conflict at Thyspunt, Oyster Bay. It is anticipated, that ~~the~~ ~~is~~ study will provide an empirical example of stakeholder dynamics involved in an environmental conflict, ~~previously discussed theoretically by a number of authors.~~ ~~[How? Where? Who? When?]~~ This ~~invaluable~~ information obtained from this research study ~~which information?~~ will then be used to contribute ~~it~~ ~~to~~ the growing body of empirical knowledge regarding the complexities of the interests of stakeholders in environmental conflicts. ~~[Good. But this theme must be made clear right from the start.]~~ The findings of this study will be made available in the library of the Nelson Mandela Metropolitan University (NMMU) and academic journals.

1.4. The Aims and Objectives of the Study

1.4.1. The Primary Aim

~~According to De Vos (1998:7), the aim may be aligned to a dream and the objectives are concerned with the steps that one takes in order to realize the dream. [I don't recommend "realising a dream" for an academic paper.]~~ The primary aim of this study is ~~stated as follows:~~

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~~A~~ an exploration of the interests of homeowners involved in an environmental conflict at Thyspunt, Oyster Bay in the Eastern Cape.

1.4.2. The Objectives of the Study

- To explore and describe the interests of homeowners ~~that are~~ involved in the environmental conflict at Thyspunt.
- To describe the impact of homeowner's' interests, on the environmental conflict at Thyspunt, Oyster Bay in the Eastern Cape. ~~[Organise the details. I'll explain.]~~
- Based on insights gained, to develop recommendations for more in-depth research ~~with~~ in the field of environmental conflicts and stakeholder dynamics.

~~[Good! Clear!]~~

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~~1.4. The Central Research Question~~

~~What are the interests of the homeowner's, involved in the environmental conflict at Thyspunt, Oyster Bay in the Eastern Cape? [Does this question cover your three points above? Are you wanting only to find what they are, or to discuss impact?]~~

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1.5. Research Design

According to Mouton (2001: 54), the research design is an integral part of the research process, as a research design forms the plan of how the research will be conducted. It focuses on what kind of study is being planned, as well as the end result ~~for~~ which the researcher is aiming ~~for~~. Without an adequate research design, a researcher would struggle to plan the ~~if~~ way forward.

De Vos (2007: 268) expands on the idea of a research design ~~further~~, by adding that many different authors make use of the concept "research design", but name it differently. Some authors use the term "methods", "paradigms" or ~~some authors maybe more inclusive and~~ use the term "research design" to refer to the entire process from the initial

research idea to the end product. For the purpose of this study, the term “research design” ~~shall will~~ refer to ~~all of the following: below.~~

The kind of research question which is being asked, ~~e~~ffects the type of research design which the researcher will make use of. ~~An~~(Babbie & Mouton 1998:80). An exploratory, descriptive qualitative research design will be used for this study. These concepts will be elaborated on below-. The research ~~shall be undertaken in order will to~~ describe and ~~further understand-analyse~~ stakeholder dynamics during an environmental conflict- (Babbie & Mouton 1998:80). ~~[Before any quote or list like this one, you need to tell the reader what the quote is going to illustrate. What are these things you are giving? If they are "concepts" you need to put the list straight after that sentence above.]~~

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- A Metatheoretical tradition of interpretism is the research design of choice, because in this study an attempt is being made to develop understanding, rather than explain or predict human behavior (Neuman 2006: 88).

According to the interpretive approach, values form an integral part of social life and no groups’ values are incorrect, only different. Interpretism is considered to be the most the most effective method in order to collect information when the subjectivity of human behavior is being explored (Neuman 2006:87).

- Qualitative researchers prefer to study human action from an insider’s perspective; the goal of research is to describe and understand rather than explain or predict. Qualitative research design, ~~is the design paradigm which~~ has been selected, as it is a multiperspective approach which makes use of various qualitative techniques as well as data collection methods in order to describe and interpret the meanings that the subjects attach to their role in the environmental conflict (De Vos 1998:240).

- There are various types of research designs which are made use of by qualitative researchers and they will often design their whole research project around the strategy selected (De Vos 2007: 269).

A case study has been selected, which focuses on a particular social phenomenon and has ~~having~~ the chief purpose ~~being one~~ of describing.

According to De Vos (2007: 272), case studies explore an in-depth “bounded-system”. The system to be explored may be bounded by “time” or “place”; in our case the system to be explored is bounded by “place” ~~and that which~~ is Thyspunt, Oyster Bay region.

Through exploration and description the case is studied, making use of various data collection methods (which may evolve as the research progresses in alignment with qualitative data collection methods). Typical data collection methods for a case study may include the following: Interviews, documents, observations or archival records. It is ~~thus~~ important that the researcher gains the trust of the participants. Such research usually produces rich results with in-depth description of cases (De Vos 2007:272) ~~.(Babbie 2007: 298). If you would say you should not give more than one author for one point. You use Babbie below, so I suggest deleting that one here.~~

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Because the aim of this study is to describe, and achieve an ~~an~~ ~~more-in-~~ depth understanding of an individual case, it is termed an “intrinsic case study”. According to Burawoy in Babbie (2007:298), researchers involved in a case study often have an expectation of what they might discover. This is usually ~~dueowing~~ to the review of the literature on a particular phenomenon before entering the area. Thus one of the uses of a case study may be to rebuild or improve existing theory

- According to Babbie (2007:88), a large proportion of social research is undertaken, in order to explore a topic which is ~~unknow~~ unknown to the researcher.

Exploratory studies are also useful for breaking new ground, as well as providing new insights into a topic for research. It is ~~for this reason, that~~ an exploratory approach is being made use of, as no previous studies have been undertaken with regard to ~~this~~ ~~the~~ ~~[This, a ? Ask me]~~ selected environmental conflict.

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- A basic research approach has been selected, as basic research addresses fundamental questions about the nature of behavior concerning cognition, emotion, psychobiology or social behavior. ~~In~~ ~~(Cozby 1993:8).~~ ~~In~~ -this study, the insights and understandings obtained will explore stakeholder dynamics during an environmental conflict. ~~(Cozby, (1993:8).~~ ~~I think the citation should go after the general sentence at the start of the item, rather than here.~~

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1.5.1. Procedure

~~The~~ ~~A~~ qualitative research design has been selected, and an inductive approach will be used. ~~and w~~ With regard to induction, a conclusion is not completely certain. Induction is a creative process of reasoning used to add scientific knowledge. It is tentative, because more information needs to be gathered in order to prove certainty (-De Vos 1998:91). With regard to research, the premise that positions and interests of stakeholders change during an environmental conflict needs to be explored.

~~A vital part of your theme. Needs to be mentioned earlier.~~ ~~Induction is a creative process of reasoning used to add scientific knowledge (De Vos 1998:91).~~ ~~[Move this sentence to after the first sentence of this paragraph.]~~

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1.5.2. Sampling

A qualitative study has been chosen, and as a result, non-probability sampling methods will be made use of. The implications of making use of non-random samples ~~entails are~~ that the sample size is often unknown in advance, with the qualitative researcher selecting cases as the research process unfolds (Neuman 2006: 220)-. According to the literature, for qualitative researchers “it is their relevance to the research topic, rather than their

representativeness which determines the way in which the people to be studied are selected” (Flick 1998:41) in Neuman (2006: 220). Here it's correct to give two authors, because they are published together.

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Whereas quantitative researchers tend to make use of mathematical theory with a great deal of pre-planning, the focus of the qualitative researcher is based on specific content of a case for selection purposes. (Neuman, 2006:220). As a result, information-rich subjects will be chosen for focused, in-depth study, so that the researcher can obtain an in-depth understanding of the situation in question. (De Vos, 1998:253).

1.5.3 Purposive Sampling

According to Babbie & Mouton (1998:166), it is acceptable for a researcher to select a sample based on knowledge of the population towards which the research is directed.

This type of sampling is often made use of during exploratory research, whereby in which case selection is undertaken with a specific purpose in mind. (Neuman, 2006:222).

The following purposive strategies will be used for sample selection:

- All participants identified in the environmental conflict at Thyspunt, Oyster Bay must be homeowners in the St Francis Bay area, and as a result thereof, must also be ratepayers.
- The researcher has selected the St Francis Residents Association from which to draw her sample as it is made up of homeowners in the St Francis Bay area. The St Francis Residents Association is one of the main stakeholders involved in the conflict around the proposed nuclear power station to be built at Thyspunt, Oyster Bay in the Eastern Cape.
- The stakeholders must have a direct interest in the outcome of the environmental conflict.
- The stakeholders must be significantly concerned about the environmental impact of the conflict, and as a result thereof, must have partaken in

submitting a ~~memorandum?~~ ~~submission~~ to the Environmental Impact Assessment Company, employed to do the environmental impact assessment.

The researcher will make a sample selection based on the above criteria, by ~~making a deliberately judgement and~~ selecting cases ~~with a specific purpose in mind~~ that are especially informative ~~about~~ of the content ~~of cases~~ that ~~she~~ ~~the researcher~~ wishes to ~~explore~~ ~~gain an in depth understanding of~~.

1.5.4. Data Collection and Analysis

Benny (1956) in De Vos (1998:297) ~~made known~~ ~~stated~~ that interviewing ~~is~~ ~~was~~ the most common method of data collection used by researchers to inform them of social life.

Four decades later, this is still the most widely used method of data collection, and ~~as a result~~, interviewing is regarded as the most “universal mode of systematic inquiry” (Holstein & Gubrium 1995:1) in De Vos, (1998:297). An interview will be conducted as the process of data collection. It will be based on exploration and description of the homeowners' interests in the environmental conflict at Thyspunt, Oyster Bay.

1.5.5. Data Collection Methods

Before the process of data collection via interviews begins, the homeowners selected will be contacted telephonically, or visited personally by the researcher in order to obtain their permission to include them in the study. A signed consent form will be obtained from each homeowner. Each ~~homeowner~~ ~~stakeholder~~ ~~[Can these be different?]~~ will also receive a letter, in which the full details of the aim and objectives of the study will be explained.

Data will be collected, by making use of unstructured interviews. The questions will be open—ended in order to provide a frame of reference for the homeowner's responses without influencing the ~~m~~ ~~homeowner's~~ ~~responses~~, in order to build an atmosphere of

mutual discovery and staying as close as possible to the homeowner's experience of the research subject (Neuman (2006:407); De Vos (1998: 297). ~~Check with Lynn about giving two authors. If you do give two, put a semicolon between them.~~

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1.5.6. Unstructured Interviews

Unstructured interviews will be held with each of the stakeholders ~~collected~~ in a venue of their choice. A research schedule will be made use of, in order to adhere to the questions and themes which are important to the research question. This also enables the researcher to cover all the relevant topics during the interview, as well as a systematic form of data collection (De Vos, 1998: 300).

The participants will be asked the following open-ended questions:

- Are you a homeowner in the St Francis Bay Area? Are you a member of the St Francis Residents Association or a rate payer?
- What is your interest/concern in the ~~N~~ nuclear power station which is proposed to be built at Thyspunt, Oyster Bay?
- On hearing of the proposed development, what was your position?
- Did your position change towards the development?
- ~~If yes, w~~What was the reason?
- What is your present position towards the development?

- Has the recent power crisis which we were and are still currently faced with in South Africa altered your feelings towards the nuclear development in any way?
- What are your feelings /attitude towards the Enviromental Impact Assessment in order to ascertain the viability of the development?
- ~~Do you hold any concerns about property values and the impact on it of the nuclear development there on?~~

1.5.7. Data Analysis

After collecting and recording the data from the research participants, a process of open coding will be used in order to break down the categories into key themes which arise from the data and can then be grouped (De Vos, 1998:271).

Once key themes have been established, the information which speaks to ~~one~~ individual key themes will be entered into a computer by making use of a cut-and-paste technique. Relationships will then be looked at, as well as causes and changes within each theme, until a pattern emerges (De Vos, 1998:339).

Both the explanations and conclusions which arise from the data analysis procedure will be verified with the participants of the study. This will be done to ensure that the participants agree that the conclusions which the researcher has made are indeed a reflection of their perspectives and responses.

1.6. Validity/Trustworthiness

According to Mouton (2007: 274), the paradigmatic factors to be considered within the qualitative paradigm are objectivity, validity and reliability. ~~Obtaining o~~Objectivity is achieved through “doing justice to the object of study”.

The following questions will be answered, in order to ensure the validity/trustworthiness of the researcher's findings: ~~They are as follows:~~

- Have the research findings been fed back to informants to obtain their opinion on the explanation being proposed by the researcher?
- How do the findings fit with existing knowledge on the subject in question?
- How do the findings relate to other comparable situations?
- Have the research cases ~~been~~ selected for investigation been chosen on explicit and reasonable grounds as far as the aims of the research ~~aims of research or~~ aims of the research? are concerned?
- Have alternative explanations been explored?
- Has the influence of the researcher's ~~influence~~ presence been recognized in the research? (Neuman, 2006:193); (De Vos, 1998:84).

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1.6.1. Triangulation

When enhancing validity and reliability within the qualitative paradigm, triangulation is considered to be the most effective way of doing so. This is achieved by collecting information about the topic of study from different points of view through asking different questions, seeking different sources and using different methods. (-Mouton 2007:275). The researcher made use of multiple sources of data collection in the form of interviews with the homeowners, documents obtained from the St Francis Residents/Ratepayers Association dating back from inception of the conflict in the 1980's to date, minutes of the St Francis Residents/Ratepayers meetings, letters to local chronicles and newspapers, ~~and as well as magazine~~ articles ~~written by published in magazines which~~ the homeowners ~~had written~~.

1.7. Ethical Considerations

The guiding principle of this research, ~~will shall~~ be that “no harm ~~will should~~ come to experimental subjects” (De Vos, 1998:25); Mouton (1998:527) reinforces this principle, by referring to the issue of “accountability”, whereby the scientific community needs to take into account the rights of society and to conduct their research in a socially responsible manner.

In order to ensure the above criteria are met, the researcher ~~sh~~will carry out the following tasks:

- The prospective research participants ~~sh~~will give their informed consent.
- The research participants ~~should~~will not be deceived in any way.
- The research information ~~sh~~will be freely and openly available for perusal.
- ~~Respect for~~ The participants' right to privacy will be respected. It will be up to the research participants as to what extent their attitudes, beliefs and behaviour will be revealed.
- Participants ~~will be~~ allowed to withdraw from the study at any time.
- An Ethics Committee at the [Nelson Mandela Metropolitan University \(NMMU\)](#) will ensure that the risks to the participants are minimal (Babbie & Mouton 1998:528; Neuman 2006:452; De Vos 1998:27).

1.8. Dissemination of Results

The research report will be available in the form of a treatise in the library of the ~~Nelson Mandela Metropolitan University~~-NMMU. The findings of

the research will also be made available to the stakeholders who took part in the study.

1.9. Limitations of the Study

Qualitative field research has distinctive strengths and weaknesses. Its strength lies in its ability to obtain a greater depth of rich understanding of social processes. It is flexible and relatively inexpensive to conduct (Babbie, 2007: 313).

With regard to the level of validity of qualitative research, it does appear to be superior to the other quantitative measurements which utilize surveys and experimental measures. Qualitative research yields greater validity in its research methods because it tends to tap a greater depth of understanding which remains generally unavailable to the quantitative researchers who often are only able to explore social processes in a rather superficial manner (Babbie, 2007: 314). Qualitative research's primary weakness lies in the fact that it is inappropriate for arriving at statistical descriptions of large populations, as well as having an issue with reliability. Opportunities which exist for being biased, this may be overcome by the researcher becoming aware of personal bias and relying on colleagues as a form of peer review to help him/her in this regard. Researcher integrity is a central concern to the qualitative researcher (Neuman, 2006: 152).

Use has been made of a case study in this qualitative study, with the chief purpose of describing and providing in-depth information and explanatory insights of a particular phenomenon. Case

studies, although rich in information, ~~do too~~ have their limitations. The primary limitation of a case study, ~~is being~~ the limited generalizability of what may be observed, ~~as well as the~~ non-standardization of measurement, ~~and as well as the~~ time-consuming process of data collection (Babbie, 2007: 300; Mouton, 2001: 50).

1.10. Structure and Format of the study

This study contains ~~six~~ five chapters which are summarized as follows:

Chapter one introduces the reader to the background, as well as the motivation for the study. It provides a brief overview of the power situation in South Africa, as well as the challenges which South Africa is facing with regard to power. The researcher briefly outlines the case study, of the environmental conflict in question namely, the proposed ~~creation of a~~ nuclear power station at Thyspunt, Oyster Bay in the Eastern Cape. A brief description of the methodology, limitations of the study, ethical issues and dissemination of findings is also supplied.

Chapter two provides a frame of reference for this study, with a literature review which details the energy crisis globally-, nationally and locally in the Eastern Cape. The National Environmental Management Act (NEMA) is discussed ~~as well as~~ and its suggestions ~~in order~~ for ~~ways to resolve~~ environmental disputes ~~to be resolved~~. A few South African environmental disputes are briefly examined. Eskom's nuclear policy, as well as the concept of "environmental security" is ~~also~~ introduced, as well as "environmental pragmatism". Environmental stakeholders are defined and the characteristics of environmental disputes are listed. The changing dynamics of ~~homeowners~~ stakeholders and the effect that this ~~inconsistency~~ ~~What? The dynamics? The stakeholders? Something~~

| [else?](#) has [on this](#) environmental disputes is also covered in the literature review.

| Chapter three describes the case study in detail in order to provide the reader with a background of the environmental conflict at Thyspunt, Oyster Bay in the Eastern Cape-

| Chapter Four provides an in-depth description of the research design and methodology used in the study, including the sampling procedure, data collection methods, data analysis, and the overall procedure followed during the research process. Ethical considerations and limitations of the study are also discussed.

| Chapter Five is concerned with data analysis of the research findings, by identifying and interpreting significant themes and categories.

| Chapter Six describes the purpose and value of the study as well as certain recommendations which the researcher makes based on the findings of the study.

Chapter 2 : Literature Study

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Introduction

This literature study aims to provide background information for this study. Use has been made of ~~what the~~ academic literature ~~that~~ is available on environmental disputes in the form of books, journals, and academic papers, as well as articles posted electronically on the ~~w~~Web. The topic is relevant and current both internationally and nationally, ~~so~~ ~~e~~Current Affairs magazines, newspaper articles and chronicles ~~2~~ have also been consulted in order to provide up-~~to-~~date information in order to supplement the existing academic literature. Of particular~~ly~~ good use have been the documents obtained ~~fr~~om the various stakeholders who~~ie~~h are involved in the environmental conflict at Thyspunt, ~~Oyster Bay in the Eastern Cape~~. ~~Much~~A good deal of information was obtained from the chairman of the St Francis Residents Association, in the form of historical documents dating back to when the conflict first reared its head in the 1980's, ~~to date~~. Included in this information~~;~~ are the minutes of the St Francis Residents Association's meetings, as well as various newsletters concerned with the proposed nuclear development at Thyspunt, ~~Oyster Bay in the Eastern Cape~~.

2.1. Environmental Security

A re-definition ~~has taken place~~ of the term "~~"national security"~~, "~~has occurred~~", which was conventionally linked to the military response to threat. (www.gmu.edu/academic) Environmental security has become a global issue. Attention has become focused on the well-being of the world's oceans, atmosphere and climate, and is the responsibility of all people. Environmental problems transcend national boundaries and interests, necessitating a global effort. (Redclift, (2000: 44-)). This has led to an awareness of the concept "~~"environmental security"~~", which is concerned with ~~shortages of~~ natural resources ~~shortages~~ and environmental degradation, especially with reference to economic interrelationships between natural resources and commerce.

~~The threats~~ to sovereign states ~~are not necessarily~~, ~~can thus no longer refer to~~ political ~~grand~~ national threats to sovereignty, but ~~have~~ been expanded to include the growing impact of environmental stress. ~~South Africa is also beginning to realise~~ ~~has followed suit, realizing~~ this threat. It has become a booming economy, that is energy intensive, and is one of the world's highest per capita contributors to greenhouse gas emissions. In the words of Vali Moosa, chairman of the board of Eskom, South Africa's aim is "to reduce the quantity of greenhouse gases emitted per megawatt of electricity generated." (*Africa Geographic*, (2007 : 90).
<http://gmu.edu/academic/pcs/zebich.htm>

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There are complex connections between economics, energy, and the environment.

Meeting the rising expectations of a growing world population, depends on economic growth, but if growth is fuelled by fossil fuels, there are dire implications in terms of the increase in carbon emissions, the changes in acidity of the rain, and living conditions on our planet. (-Kursungolu, 1998:5).

With much of the world's oil and gas supplies in the hands of hostile and unstable governments, the ~~em~~minent threat of fuel shortages ~~Eerkens (2006:2)~~ and the additional issue of global warming as a direct result of coal combustion, there has been a renewed interest in alternate forms of energy – particularly nuclear energy. ~~Eerkens (2006:2)~~ This renewed interest in nuclear energy as an alternative source of energy has also led to a great deal of conflict.

~~It is estimated, that at present rates of consumption, oil and gas reserves will be depleted in 40 years. Unless preventative steps are taken, steadily increasing oil shortages will reach a crescendo by 2030, triggering a total collapse of our present oil dependant way of life. (Eerkens, 2006:2). This is an exact repetition of what you said earlier. Not good practice.~~

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Uranium and ~~T~~horium, on the other hand, can provide the prime energy needed for massive production of these synfuels for more than 1500 years. (-Eerkens, 2006:36).

Conversion of coal energy into mechanical and electric energy via steam-cycle, has been utilized for centuries. Coal-burning produces carbon-dioxide gas, which has been found to cause irreversible warming of the earth's atmosphere ~~because of~~ ~~due to~~ the "green house effect". Coal combustion promotes global warming ~~in its function in its use of~~ generating electricity- (Eerken, 2006:6).

Besides producing globe-warming gaseous carbon dioxide, coal-burning plants also inject air-polluting mercury, uranium and other undesirables ~~entrained?~~ in particulate matter into the atmosphere. Scrubbers, recently installed on coal-burning plants to remove particulate emissions, have lessened air pollution, but considerably increased the cost of using coal energy- (Eerken, 2006: 14).

~~Due~~ ~~Be~~ ~~cause of~~ ~~to~~ global warming, it is claimed that millions of people will be displaced and die as a result of climate change, increased flooding of coastal areas and islands, ~~and~~ ~~as well as~~ increased hurricane activity. Eerken (2006: 15) predicts, that, should no steps be taken to alleviate the present global crisis, we might find ourselves in a worldwide economic recession and global conflict will result. Famine and warfare will break out, ~~warfare~~ because of a desire to control the world's resources such as energy and oil.

According to Kursunglo, Mintz and Perlmutter (1998:1), in order to meet future energy needs arising from population growth and economic development, alternative forms of energy need to be explored. Nuclear energy appears to be the most viable option at present.

Environmental Groups raise the following points of conflict with regard to nuclear power programmes as an alternate source of energy:

- A concern with the disposal of nuclear waste.
- Radiation effects on people ~~from~~ ~~due to~~ reactor accidents caused by intentional (terrorist) or unintentional malfunctions-

- Intentional diversions and modifications ~~offer~~ nuclear fuel to make nuclear ~~w~~weapons. (Eerken, 2006: 6, *Alliance for Nuclear Responsibility, Earthlife Africa*.) You need to give details for these publications. Names of authors, page numbers, etc., something that would enable a reader to find the specific place of the source. This will be further elaborated in the reference list at the end of the paper.

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Alternative forms of energy production, such as conversion of garbage to fuel, solar panels, wind and water turbines have been promoted by some, in order to solve all future energy problems. To cope realistically with industry, ~~for example~~— manufacturing of automobiles, aircrafts, bridges, houses and so forth, as well as transportation of goods and people by cars, trucks, trains, ships, ~~and~~ airplanes, enormous quantities of electricity are ~~needed~~~~consumed~~. (Eerken, 2006:3).

Wind farms are effective for low-power applications in wind-blown regions of the globe, but they cannot practically and economically solve the global fuel shortages we face ~~25~~~~twenty-five~~ years from now. Solar cells, wind-mills, and energy—conservation measures for houses and kitchens are useful, but only provide minor assistance as alternate forms of energy. According to Eerken (2006:3), to be considered as electricity providers to feed heavy industries and to manufacture oil-replacing synfuels for the transportation fleets of the world, ~~these energy forms~~~~they~~, ~~Who or what?~~ must be able to withstand the test of rigorous engineering evaluation. According to Eerken (2006:3) “renewables” fail that test when competing with nuclear power.

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2.2. Global Energy

The revival of nuclear power is most visible in America, where power companies are preparing to flood the Nuclear Regulatory Commission with applications to build new nuclear plants. (*The Economist*, 7/8 Sept 2007). To date, ~~39~~~~thirty~~ licence renewals have been approved by Nuclear Regulatory Commission, despite the fact that there is no

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planned permanent waste disposal- (<http://a4nr.org/>: Alliance for Nuclear Responsibility)

Finland is building a reactor. The British government is preparing the way for new planning regulations. ~~More than~~ 80% ~~plus~~ of electricity in France is generated from nuclear power with no ~~C~~carbon dioxide emissions, and 25% of it is exported to the United Kingdom. France ~~has~~ve obtained a 160 ~~B~~billion ~~rand~~ ~~what? Euros? Dollars?~~ contract for the Chinese ~~N~~nuclear power industry over the next 20 years, and ~~their next project will~~ possibly ~~be even~~ the ~~next will~~ be the South ~~African-African nuclear~~ project.

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~~Meaning not clear~~ In Australia-, which has plenty of uranium, but no ~~N~~nuclear ~~R~~reactors, the Prime Minister says that nuclear power is inevitable. Developing countries; have continued to build nuclear power plants: (*The Economist* 8/7 Sept. 2007)(*St Francis Residents newsletter* July 2008). According to *Engineering News* (-22-28 Feb 2008-), there were some 30 nuclear units under development globally, and that number was expected to rise as governments seek low-carbon power solutions,

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2.2.3. African Energy

Africa accounts for over a sixth of the world's population, but generates only 4% of global electricity. Three quarters of that is used by South Africa, ~~Egypt~~ and other countries along the North African littoral. The ~~energy situation~~ ~~Explain what you see in the situation; don't leave it to the reader. What point are you making?~~ is bound to get worse, as the demand for power continues to grow. Africa's relatively healthy economic growth has resulted in the demand for electricity increasing dramatically, and actual demand is consistently outstripping projected demand (*Africa Investor* :2007 Nov/ Dec).

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The ensuing ~~competi~~tion for energy; will see the world split between countries whose economies grow faster than their power consumption and those, including most of Africa, whose power consumption grows faster than their economies. ~~Neatly put-~~ Many African

governments are looking at alternative sources of energy to make up their projected shortfalls – nuclear energy being one of the options. (*The Economist*, 2007:34).

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2.2.4. South African Energy

South African electricity consumption has been growing at a rapid rate. The country is part of the Southern African Power Pool, with extensive interconnections. South African electricity is mostly coal-fired, and under the state-owned control of Eskom, and by far the most developed energy sector on the continent of Africa (<http://www.uic.com>, *Africa Investor* Nov/Dec 2007).

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Eskom is among the top seven utilities in the world in terms of generation capacity. It generates more than 95% percent of South Africa's electricity and supplies more than 50% percent of Africa's power demands, however, but demand is fast outstripping supply

(*Africa Geographic*, 2007:90). The country's coal reserves are abundant (estimated at 53 billion tones) and from coal it is relatively inexpensive to generate electricity. The source of conflict is that burning fossil fuels produces the greenhouse gas carbon dioxide, a major contributor to what has been loosely termed "global warming". Eskom recognizes the proactive role it must play in pursuing a sustainable energy strategy that contributes to the reduction of greenhouse gas emissions and the impact on climate change. (*Africa Geographic* 2007: 90). Due-Owing to South Africa's booming economy, energy usage is intensive, and although energy is cheap, it does make the country one of the world's highest per capita contributors to green house gas emissions. (*Africa Geographic* 2007: 90).

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According to Bezuidenhout (-2007 : 32), South Africa is a signatory of the Kyoto Protocol, and as an undeveloped country, unlike developed countries, is not required to achieve specific emission reduction targets. Nevertheless, it would stand the country in good stead to employ clean—coal technology, renewable energy and nuclear energy.

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2.3. Nuclear Policy

State power utility, Eskom, which has led pro-consumption marketing drives relevant to a past era when South Africa's low-cost electricity was at a surplus, is having to curb consumption and even promote competing energy sources. (*Engineering News*, 2007: 16).

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~~I think I should stop correcting your citations. You can see how to do them now, and this is costing time and therefore money. By all means check with me if you're not sure. Remember that a fullstop is always needed, but at the end of the citation. Also, remove the spaces you have after and before the brackets.~~

A draft nuclear policy for South Africa in August 2007, addressed the growing electricity demand and the country's 87% reliance on coal for this. Building upon 23 years of experience with nuclear power, it outlines an extensive programme to develop all aspects of the nuclear fuel cycle. (www.uic.com.au/nip88.htm). The nuclear policy aims to ensure that South Africa diversifies its energy sources away from coal, addressing security of supply and concerns about global climate change concerns. The vision is that nuclear power will account for more than 15% of South Africa's total power generation by 2025 – 2030 (www.environment.co.za) According to *Engineering News* (22-28 Feb 2008), Eskom would like to begin construction on the so-called "Nuclear 1" project by January 2011. Five sites are being considered for the project, includingnamely Oyster Bay, Pearly Beach, Bantamsklip, the current Koeberg site, and Kleinzee, and environmental approval processes are currently under way.

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2.3.1. Controversial Industry

Nuclear power has always been a controversial industry. There has been a resurgence nuclear energy as an alternative to coal~~of what?~~, as it is seen as a “cleaner” technology than fossil~~-~~fuel power.

In South Africa, nuclear power generation is a topic which continues to cause much heated debate and it is virtually impossible to base decisions on fact, as they are all aggressively contested by opposing parties. Africa Geographic (2007:100),

(www.earthlife.org.za), (~~http://nuclearfree~~.blogspot.com) **This also sounds like a repetition. Will you check?**

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The nuclear industry has been beset by catastrophic accidents (the accident at Chernobyl seems to be the most widely publicised), environmental and safety-related corner cutting, fears of weapon production and radioactive waste disposal controversies. (~~http://nuclearfree~~.blogspot.com) **Repetition?** No country has an approved procedure for dealing with spent nuclear fuel and other high-level wastes – toxic and highly radioactive material which remains deadly for hundreds of thousands of years. ~~(~~
www.earthlife.org.za)

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2.3.2. The effects of nuclear explosions

Nuclear explosions produce both immediate and delayed destructive effects. Immediate effects are burns, which are often the most prevalent injuries. The second~~ary effect~~, is termed the “Blast effect” ~~which is the volume effect~~. With a nuclear explosion of any kind, when the blast of the explosion passes through solid material, the energy left behind causes damage. The third immediate effect is radiation illness.

(www.earthlife.org.za)**You need to give a citation right up here somewhere to show that this information doesn't come from yourself.**

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The delayed effects~~;~~ are concerned with radioactive fallout and possible environmental effects. Fall-out is the residual radiation from a nuclear explosion, so named because it “falls out” of the atmosphere into which it is spread during the explosion. It commonly

refers to the radioactive dust created when there is a nuclear explosion. This radioactive dust, consisting of hot particles, is a kind of radioactive contamination. It can lead to contamination of the food chain. Severe local fallout contamination can extend far beyond the blast and thermal effects. The fall-out from an explosion depends on the weather situation from the time of detonation onwards. In stronger winds (such as the St Francis Bay area winds) fallout travels faster but takes the same time to descend, so although it covers a larger path, it is also more spread out or diluted. Survivability is highly dependent on factors such as proximity to the blast and the direction of the wind carrying fallout. Death is highly likely, and radiation poisoning almost certain if one is close enough within the radius of the blast, for example 3 to 4 miles (-approximately 6 kilometers). (<http://nuclearweaponarchive.org/Nwfaq?Nfaq5.html>)

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Traditional Emergency Planning Zones - in order to cope with a nuclear disaster ~~Is there a reason for the caps here?~~ require a population ~~Meaning not clear~~ of a maximum of ten thousand people within any 30 degree sector, and within ~~16~~sixteen kilometers of a nuclear site. The total geographical situation in the Greater St Francis area includes the communities of Rebelsrus, Mostert's Hoek, Cape St Francis, Sea Vista Township, Oyster Bay and St Francis Bay. These communities are not contained in any one 30-degree segment required for Emergency Planning Zones, but ~~in the event of a nuclear emergency~~ all would be dependent on one escape route, namely the R330, ~~in the event of a nuclear emergency~~. -All are downwind of Thyspunt under prevailing south-westerly wind conditions, and strong winds are common in ~~the~~ Greater St Francis area. It is estimated that all these communities could be affected within ten minutes of a nuclear accident under prevailing wind conditions. (*St Francis Residents/Ratepayers Association submission to Acer Environmental Management Consultants*)

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Although not as deadly as a fall-out, environmental effects may be ~~serious~~quite harmful. For instance, an explosion close to the ground sucks in large amounts of dirt into the "fireball". The dirt usually does not vaporize, and the radioactive isotopes are deposited on soil particles, which can fall quickly to earth. Fallout is deposited over a time span of minutes to days, creating downwind contamination both nearby and thousands of

kilometers away. The most intense radiation is created by nearby fallout, because it is more densely deposited. Weather conditions can affect this considerably. In particular, rainfall can “rain out” fallout to create very intense localized concentrations. Both external exposure to penetrating radiation, and internal exposure (ingestion of radioactive material) pose serious health risks.

The Mpopu Dam, which is situated approximately ten kilometers from Thyspunt (the proposed nuclear development site) and downwind in the event of an easterly wind, is the major source of risk in the event of a nuclear disaster. It is the major source of portable ~~potable? drinkable?~~ water to the greater part of the western section of the Eastern Cape, including Port Elizabeth and all towns and villages between Kouga and ~~along~~ the coastal area. Should contamination occur, this would instantly and permanently destroy this supply, without any alternatives being available. The implication would be immense, causing all industrial activity in the western half of the Eastern Cape and possibly all forms of human activity ~~to come to a halt~~ ~~to do what?~~. The threat could equally ~~ea~~ffect groundwater supplies in the region, which are substantial, and which would be crucial in the event of the failure of the Mpopu Dam. This region is a prime dairy producing industry, ~~and~~ any radiation contamination would destroy the whole industry in the area. The same applies to the Chokka fishing industry, which is a major industry in the area.

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Explosions close to the ground ~~but~~, that do not touch it, can still generate substantial hazards immediately below the burst point by a process termed “neutron-activation”. Neutrons absorbed by the soil can generate considerable radiation for several hours.

The Nuclear Policy aims to ensure that South Africa diversifies its energy sources away from coal, addressing security of supply and global climate change concerns. The vision is that ~~N~~nuclear power will account for more than 15% of South Africa’s total power generation by 2025-2030. (~~www.enviroment.co.za~~)

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2.4. Environmental Policy

Great conflicts leave a residue long after they have passed. So it is with environmental conflicts which may arise as a result of disagreements over appropriate land use, competition for scarce resources, inadequate management of pollution and hazardous materials, as well as wildlife management strategies. However, they also have a tendency to leave new ideas and suggestions for environmental management (Lane, Ross, Dale, and Rickson 2003: 89-98).

Over the past ~~forty~~40 years, ambiguous legislation, insufficient research, jurisdictional disputes between organizations, and conflicting attitudes, values, and policy preferences of stakeholders have contributed to the increasing frequency, intensity, and intractability of environmental conflicts (Odell, Mather, Muth 2005: 46).

~~The~~An environmental ~~g~~Green ~~p~~Paper is currently under discussion, but there is no guarantee that the government will adopt progressive options for reforming environmental governance. Although policy is almost in place, for settling conditions under which environmental impact assessments (EIAs) should occur, recent experience in South Africa points to the inadequacies of EIAs in resolving environmental conflicts.

~~(Fig :1996:1) What is this? Is it a Figure that the reader should see?~~ According to the Cape Argus 25/11/2008, University of Cape Town's Professor Richard Fuggle, raised the following points when addressing an Environmental Summit held in Cape Town by the ~~environment m~~Minister of environment-, Marthinus Van Schalkwyk. Professor Fuggle is responsible for ~~his crucial role in~~ developing integrated environmental management which currently forms part of environmental legislation in South Africa. Below are the points which Professor Fuggle has raised concerning shortfalls regarding environmental management: ~~Here you must introduce the quote,~~

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in other words say what it is and what it is going to contain. Is this anything to do with Prof Fuggle?

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- There was a need to call on Environmental minister Marthinus van Schalkwyk to establish a committee of registered environmental practitioners to advise him and his department and the provincial departments on all aspects of environmental impact assessment.-(EIA)
- The budgetary allocation for environmental management was inadequate and pressure should be put on Finance Minister Trevor Manuel to increase it.
- Environmental legislation had become complex and convoluted with numerous amendments.
- Environmental impact assessments are being corruptly manipulated by certain government authorities, and developers are exercising undue influence over political decision-makers.
- Junior to middle management government officials were often unduly influenced by government organizations.
- A problem area exists in the enforcement and monitoring of conditions imposed in terms of the Environmental Impact Assessment process.
- The overall statutory requirements of effectiveness of Environmental Impact Assessments in South Africa ~~was~~were ineffective and inadequate.
- The single biggest issue negatively impacting on Environmental impact Assessment effectiveness in South Africa is that assessments are often done without sufficient consideration of the broader context of the particular development application. The “one size fits all” approach that has generally been adopted in South Africa can never be implemented across all authorities.

- I have no idea of the relevance of these huge statements, who made them, when or where, and what conclusions you draw from them. The tenses look like a fruit salad. Do these things refer to the same situation?

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The NEMA (National Environmental Management Act 107 of 1998) (NEMA) sees environmental disputes as being between one or more of the various three tiers of government, as well as and between private parties and government. It has gives various dispute resolution procedures. ~~The first~~ A vital one ~~†~~ This phrase leads to the expectation that you will give more procedures, reasonably soon. I don't see any others. If there are no more to come, rather use a different phrase e.g. "One of them" or "A vital one" etc. is “conciliation”, whereby a dispute may be resolved by a Government minister, or a municipal council or who can't appoint a facilitator to resolve differences as a result of an appeal to protect the environment, or a Court or Tribunal may order the parties to submit to a tribunal in order to resolve differences. NEMA outlines procedures for conciliation, including the appointment of a mediator and the manner in which they/he/she should seek to solve the dispute. Should mediation be unsuccessful, disputes may be referred for arbitration

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(Couzens, E., Dent, M. 2006 :1-50). The inclusion of mediation in South Africa's legal environmental framework, was taken as mediation was viewed by the legislature as having the potential to result in an outcome which upholds the Constitutional right to an environment not harmful to health or well-being (Couzens, E. Dent, M. 2006 : 1-50)

According to Couzens and Dent (2006 : 1-50), NEMA has generally not been used to resolve environmental disputes in South Africa. There were o Only two situations in which mediation was used successfully without having recourse and would otherwise have gone to the courts. One of these i was a discharge of effluent into marine outfall pipelines on the Kwa—Zulu Natal South coast in the mid 1990's and the other was the proposed development of an abalone farm in the Western Cape in 2001. The first was

prior to the introduction of NEMA, and in the second the provisions of NEMA were applied.

2.4.1. The Uhuru Decade

According to *Business Day* (25/11/08), Anthony Turton, a political scientist and researcher formerly of the Council for Scientific and Industrial Research (CSIR), makes reference to the “Uhuru Decade” in a paper concerning the imminent water crisis towards which South Africa is heading. ~~for makes reference to the “Uhuru Decade”~~. Turton maintains that the Uhuru Decade has been manifest all across Africa when a liberation movement ~~has~~ inherited the infrastructure that ~~work~~sed for about ten years before starting to break down through a lack of investment in operation, maintenance and skilled human capacity. In South Africa’s case that infrastructure has been particularly robust, so it has lasted a decade and a half, but it is now clearly under pressure, and if left alone will collapse piece by piece. To illustrate this point, Turton says that South Africa has failed to mobilizse what previous scholars have described as “social ingenuity”, a necessary precondition for “technical ingenuity”, the capacity of a nation to develop solutions to problems driven by external change. He claims that the Uhuru decade ~~has c~~ame to an end with the electricity crisis in early 2008.

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2.5. Relatively New Area of conflict

Environmental conflicts are a relatively new arena, but as our concern for the environment has increased, so have the number of environmental disputes. (Carpenter, (2001: 105) According to conflict theory, environmental disputes are considered as a sub-sector of public disputes.

2.5.1. Conflict and Human Needs Theory

Burton (-1988: 53-) ~~maintains~~~~ascertains~~ that conflicts are deeply rooted in human needs, and when fundamental human needs become threatened, superficial compromises are not considered for conflict resolution. Anstey (-1999:17) ~~supports~~~~reinforces~~ this approach, ~~stating~~ ~~ascertaining~~ that conflict exists when fundamental human needs for security, identity, recognition and development are not met. Basic human needs theory has many non-psychological components which have found expression in ~~the~~ physical needs, such as the need for safety, but is an approach which originates in the psychological group of approaches to the causes of conflict, generally following the ideas of Abraham Maslow, who ~~recogni~~~~z~~ed the existence of psychobiological needs as a universal human characteristic. (Davies in Bradshaw 2007 : 45) According to Sibanda (-2003 : 29-52-), environmental conflicts are normally based on human needs, and at a local level tend to be over the allocation, distribution and management of natural resources.

Because needs are universal and fundamental to human nature, it is often ~~theoriz~~~~ed~~ that much of conflict ~~is~~~~occurs~~ when basic human needs become threatened, such as the need for security, identity, recognition and development. With regard to the relationship between development, environment and conflict, it is ~~-~~development which is imposed on a society that results in conflict, rather than negotiated development. The very nature of development is potentially conflictual, as it destroys some things, (~~in this case that is~~ the environment) ~~in this case~~ and ~~on the other hand~~ creates some things, ~~that is such as an~~ alternative source of power in the form of nuclear power ~~on the other hand~~ (-Sibanda 2003: 36).

~~However, w~~Where needs theory ~~further~~ aligns itself with environmental conflict ~~further~~, is that, although superficially it might appear that people are competing over resources, ~~that is~~ (the environment in question), the real causes of the conflict are usually much deeper. The actual cause maybe that the community needs to be involved , ~~recogni~~~~z~~ed and acknowledged in the development process which is taking place. Should the developer not address or recognize these needs, conflict may arise (-Sibanda, 2003 :36).

By taking into account the needs for the community to be involved, recognized and acknowledged in development, ~~conflict direct negotiations~~ between the parties ~~may be eliminated~~. Direct negotiation which allows parties to deal with differences in perceptions ~~which~~ they may have of one another ~~which may reduce have lead to~~ conflict escalation ~~maybe eliminated~~. Open exchanges of information and understanding each others' interests is important in order to prevent alienation. Identity theory stresses that human beings will strive to satisfy their needs at any cost, until they are met satisfactorily (-Bradshaw, 2007). With regard to the environmental conflict at Thyspunt, ~~Oyster Bay in the Eastern cape~~, all the stakeholders ~~involved~~ from environmental groups, government, homeowners and ~~so forth others~~, all have the need to be involved and acknowledged.

2.5.2. Nature of Environmental Conflicts

According to Jackson and Pradubraj (-2004 :1), ~~the nature of~~ environmental conflicts ~~involve have~~ the following characteristics:

- Environmental conflict is a result of scarcity and represents social struggles against uneven usage and allocation of resources.
- Environmental conflict reflects poor performance by governments in developing complex public policy.
- Environmental conflict involves the issues of power and rights.
- Environmental conflict is an inevitable consequence of development and can be constructive.

Another important factor according to Sibanda (-2003 : 29-52-), is that environmental issues tend to involve every-body in the community and often arise over the benefits or trade-offs between environmental and economic issues. This factor is clearly demonstrated concerning proposed nuclear power stations, with the community objecting because of environmental degradation versus the need for alternative sources of power in order to support the energy needs of a developing energy-intensive country ~~as South Africa~~.

Environmental conflicts have been defined as ~~the~~ fundamental struggles over the different capacities of social groups to meet their needs by gaining access to natural resources. Ellias, Jackson, Cavana (2004 :87) The potential for group formation increases as people identify with one another ~~due to~~ because of their shared perception of grievance, and the meaning of group membership is influenced by the degree and character of the grievance. The more high-profile the group is, the greater the perception of group action; it ensures that the costs of challenges to authority are distributed across many individuals, and it increases the probability that these challenges will succeed. (Percival and Homer-Dixon 1995 : 6)

2.5.3. Examples of environmental disputes

When people were removed from their land in South Africa during apartheid onto land with limited resources, a ~~lot~~ great deal of conflict arose. This was so, because people attached value to the land from which they were being removed ~~from~~. During the oppression years, conflict over the land went into a latent phase, only to erupt after 1994 ~~when~~ and all the tribes demanded restitution of the land (-Sibanda, 2003 : 29-52-). According to Saff (1996), the weakness of the state during South Africa's political transition provided an opportunity for a small minority of urban poor to seize prime land previously unavailable to them, resulting in the establishment of informal settlements within affluent previously ~~w~~ White suburbs such as Milnerton, Hout Bay, and Noordhoek. The affected communities were sympathetic to the plight of the squatters, but wanted them re-settled, a case of "Not in my backyard syndrome", by the communities affected by the influx of squatters into their area. They ~~but, who? however~~ were unsuccessful owing ~~due~~ to the nature of s South Africa's transition. ~~Both~~ of the above examples demonstrate ~~ing~~ the intrinsic value which land may have for ~~to~~ individuals, and because the land is scarce, due to scarcity of it, conflicts may erupt.

The Zimbabwean conflict over land is a prime example of a conflict which has taken place at great expense of the environment. It also demonstrates an important issue with

regard to mishandled conflicts, that they never go away, but just go into a latent phase and are triggered by an incident which leads them into the escalation phase once again.

(Deutsch, Coleman, Marcus : 2006-). The Zimbabwean conflict over land involving environmental degradation ~~may be~~ is divided into five stages: "May be" is a verb, e.g. "This may be true". We also use "maybe" (one word) as an alternative to "perhaps." e.g. "Maybe this is true."

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- 1) 1890 -1929: Colonialists grabbed the land and imposed ~~w~~White rule over the country.
- 2) 1930 – 1959: ~~By~~ The Land Appointment Act, fertile and good land was legally removed ~~from~~ the ~~b~~Black population and millions of black Zimbabweans were pushed to marginal lands with limited resources, which resulted in land degradation setting in.
- 3) 1966-1979: Armed conflict arose, primarily over the land issue. The destruction of the farming infrastructure came into being, with dip tanks ~~bro~~oken, streams polluted with chemicals, and forests ~~were~~ burnt by soldiers as they tracked the freedom fighters.
- 4) 1980-1997 : ~~The~~ "Land resettlement programme" ~~which~~ resulted in the opening of former conservation acres to ~~a~~ land-hungry ~~b~~Black population who cut down trees, overstocked and overgrazed the land, gradually de-vegetating areas .
- 5) The economy of the country declined rapidly-, ~~and~~ the ruling party went about refocusing on the land issue which was unresolved. This resulted in land invasion, fragmentation of the land, -and further plundering of natural resources (Sibanda 2003-).

Sibanda (2003: 34) also refers to the impact of refugee activities, and how they may affect the environment. Refugees are usually a large number of people who enter into areas without any planning or any provisions made for them. We are currently experiencing this phenomenon in South Africa at the moment. In the area in which refugees choose to settle in, they cause competition for resources like fuel-wood, timber for reconstruction, water and fertile land for cropping, thus and creating tensions between them and their receiving communities. Assistance maybe given, but only in the form of food; not included is the energy to cook the food. In these camps, deforestation and cropping lead to de-vegetation.

South Africa has enormous tourism potential, part of which arises from protected areas set aside for conservation purposes. St Lucia is a case in point, where in the past, conservation competed as a land use with subsistence agriculture, sugar plantations, afforestation and the Defence Force. More recently, it has competed with the mining industry. Coastal dunes on Lake St Lucia's eastern shores contain significant mineral deposits, such as titanium. Richards Bay Minerals, a subsidiary of Gencor and Rio Tinto Zinc, secured a prospecting rights in the 1980's. After a lengthy EIA process, the question became whether tourism could outperform mining in enhancing the local development, and mining was found to be a less viable option, and the plans for mining were discarded. Though this was a victory for the conservationists, the expectations of job creation and ecotourism have not been met. (Fig 1996:4).

Environmentalists are however extremely active regarding the importation of toxic materials into South Africa. The most notorious case is that of Thor chemicals with a plant in the KwaZulu Natal midlands. Thor chemicals took advantage of weak environmental regulation to import mercury waste for recycling. No evidence of successful recycling has ever been shown. Management of the mercury was so poor that it seeped into local rivers at lethal concentration levels and a number of workers at the plant died, while the health of others was seriously damaged by exposure to mercury. A commission of inquiry by professor Dennis Davis is currently under-way.

Hazardous waste landfills have often been highly contentious in South Africa. Local objections to poor management of sites have caused their closure, for example at Margolis in Gauteng, and Umlazi, south of Durban.

Over a hundred years of mining has left a legacy of severe degradation. Often, unfortunately, the companies who have caused the damage no longer exist, and the scale of the environmental damage. Recently, the Chamber of Mines revealed that over forty years of uranium mining has left a legacy of radioactivity in slimes on the Witwatersrand that will be too expensive to remedy. South Africa urgently needs a vigorous policy on the environmental impacts of mining.

With regard to development conflicts in coastal holiday towns, a few what have come to light. The case of Arniston, a quaint coastal town in the Southern Cape was riven by strife over developmental profits and principles. The local ratepayers' association describes the undermining of transformation, a disregard for democracy at local level, and the manipulation of politicians by the wealthy in the town. The result has been that the local ratepayers' association has had to go to the high court to force its own council and a property developer to stop the building of an unauthorized structure. The local council officials behaved in a manner patently serving the interests of wealthy business people – to the detriment of the local fishing community – in the process flaunting local and national policy directives (Noseweek December 2008 : 20).

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The highly sensitive biodiverse hotspot and internationally renowned birding destination of Wakkerstroom is where the Department of Minerals and Energy (DME) has handed a coal company prospecting rights to over 20 000 hectares of the district's pristine grasslands and wetlands. This permission was granted to the mining company, Delta Mining, without the knowledge or approval of any of the interested and affected parties, including the farmers whose properties the mining company intended invading with drill rigs and lorries. The farmers concerned reacted by barricading their roads, and the farmers and local community have been joined by the country's most influential environmental organizations in two high-court applications to have the prospecting

rights revoked. The World Wildlife Foundation of South Africa (WWF-SA), the Botanical Society and Birdlife South Africa are mobilizing their members for what is expected to be the most concerted challenge yet to the supremacy of mining over natural systems. At the same time the objectors are also challenging the Department of Mineral and Energy (DME), ~~that~~ and the process by which the DME granted Delta mining prospecting rights was “fatally flawed” (Noseweek ~~DD~~December 2008 : 34).

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2.5.34. Definition of a Stakeholder and Stakeholder analysis

A review of the environmental conflict literature gives a strong impression that stakeholders form an integral part of environmental conflicts. The trend in environmental conflict literature with regard to the definition of a stakeholder, tends to be inclusive in nature, trying to accept a large number of individuals and organizations as stakeholders. The classic definition of stakeholders is the following : “ Stakeholders can be defined as any group or individual who can affect or who is affected by the achievement of the firm’s objectives.” (Freeman in Elias, Jackson, Cavanan 2004:87-104).

According to Gray (-2004: 166-176-), the way in which stakeholders are involved in a conflict and frame the issues and the conflict itself, can lead to success or failure of a collaborative partnership between all stakeholders. When stakeholders frames ~~about the~~ issues, the process of interaction and about each other are vastly different, collaboration to find an agreeable solution becomes exceedingly difficult.

Collaboration over environmental issues is difficult ~~because of due to~~ the following-:

- Multi-level regulatory jurisdictions (-local, regional and national government)
- Stakeholders’ differential knowledge and experience
- Value clashes
- Historical mistrust

- Frequent uncertainty about the viability of the proposed outcomes.

Gray (-2004:166).

2.5.54. Framing and Conflict

~~Due to~~Because of the way in which stakeholders frame the issues and the conflict itself, environmental conflicts may become intractable. "Frames" can be seen as ~~refer to~~ the "lenses" through which ~~that~~ the stakeholders see and make use of in order to understand the conflict. Frames are used to define whether a problem exists, what action should be taken about it and by whom. ~~They also reveal~~ as well as how stakeholders ~~we~~ define themselves ~~ourselves~~ with respect to the problem, and often convey ~~their~~ our ethical stance towards s the problem. Unfortunately, when stakeholder's frames concerning the issues, the process of their interaction and about each other differs considerably; e Collaboration in order to reach an agreement then becomes exceptionally difficult. (Gray 2004:167)

Framing has also been instrumental in igniting ~~and inciting~~ a conflict. These frames typically depict a particular group as victims who have suffered unjustly at the hands of others. This is termed "diagnostic framing". "Prognostic framing" on the other hand, offers the victims a roadmap for how to remedy the injustice which they may have experienced, and "motivational framing" provides an impetus for the victims to take actions ~~regarding on~~ the proposed solutions. (Gray 2004:169)

Certain framing patterns and their effects may ~~however contribute to intractable conflicts~~. ~~Several framing effects have been noted to~~ create a situation of intractability:

- Strong identity frames – stakeholder groups which adhere to strong identity frames and which maybe threatening to their core identity. This may cause

the stakeholders to behave defensively, to ensure that their identity remains intact. (Gray 2004: 169)

- Unabated history of negative characterizations
- A limited repertoire of differences in preferred conflict management frames-
- Lack of agreement about risk frames-
- Repeated adoption of protest-oriented approaches to managing conflict. (Gray, (2004:169).

Interactive conflict requires the collaboration of interest groups, the identification of shared values, continuous learning and continuous modification and evaluation. It is a dynamic process that has been called "adaptive planning. (-Trist 1980: 113-127)

Environmental disputes often involve a trade-off between economic and environmental objectives, and ~~due to~~ because of this dynamic, involve public decisions which usually involve a diverse set of stakeholders. (Jackson and Pradubraj 2004: 1-11)

Authors such as Jackson and Pradubraj (2004: 1-11) claim that environmental stress is only one part of the problem, that there is no such thing as an exclusively environmental conflict. The social, economic and political repercussions of environmental change, and not the change itself, are the most important determinants of conflict over the environment.

The term “-environmental pragmatism” has been coined in order to describe ~~the people's~~ economic priorities ~~of people,~~ which may also become a hidden issue in environmental conflict. Sabatini in Jackson and Pradubraj (2004: 1-11), states that the poor tend to be more accepting of economic development, even being prepared to accept the risk of environmental degradation. Herein, lies the paradox, that activities which cause environmental impacts also provide employment and economic benefits for the poor.

This view has been expressed by a homeowner in the St Francis Bay area, with regard to the conflict around the proposed nuclear power station,

Thus, when determining people's position with regard to an environmental conflict, it is important to consider their level of material motivation, ~~and as well as~~ economic and social pragmatism. Jackson and Pradubraj (2004:1-11) According to Galsbergen in Elias, Jackson and Cavan (-2004: 87-104), ~~that due to the fact that~~because environmental conflict covers a wide range of issues, as well as stakeholders, environmental conflicts are more likely ~~prone~~ing to becoming public disputes.

Of importance in the environmental conflict literature, is the ability to implement stakeholder analysis. (This will be ~~implemented~~discussed in Section 3 of this paper with regard to the ~~E~~environmental conflict inn the Oyster Bay Region.) -This involves a process of identifying the key actors in the conflict, as well as their attributes, interrelationships, and interests related to the conflict issue or resource ~~in conflict~~. Stakeholder analysis, aims at differentiating and studying the stakeholders, as well as addressing ~~3~~three interrelated dimensions:

- The nature of the problem~~-~~
- Its boundaries
- Those who own the problem~~.~~

(Elias, Jackson, Cavana 2004:87-104)

Carpenter and Kennedy (2001: 86) suggest another route of stakeholder analysis, by making use of a Conflict Analysis Chart. The chart provides a detailed list of the parties, their issues and their interests. Any dispute involves personal agendas, tensions between organizations, good and bad relationships between individuals and a history of previous encounters~~;~~ ~~and it is~~ Ffor this reason, ~~that~~ public disputes are never as simple as they first appear. The analysis must cover the people, their relationships with each other, and the substance of the dispute. The main interest groups, the secondary groups and key individuals all need to be identified, as well as any special attitudes, values~~-~~, motives~~.~~ and bases of power~~-~~ (Carpenter~~;~~ 2001:108)~~.~~

According to Elias, Jackson, and Cavanaugh (2004:90), the reasons for stakeholder analysis that make it a very useful tool are the following:

- Complex and compatible problems are better understood.
 - Empirical and existing patterns of interaction are revealed.
 - It improves analytical interventions.
 - It is useful for managing the conflict and decision-making.
 - It may also be used as a tool to predict conflict.
- Environmental Conflict Analysis is vital, as it provides a basis for an appropriate strategy for resolving the conflict.

(Carpenter 2001:108).

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2.5.6.5. Characteristics of Environmental Disputes

- Environmental conflicts are complex due to the interrelationship among air, water, and land issues. Added to that, are the social and economic effects of natural resources.
- They are difficult to resolve, as in many cases information may be lacking, long-term effects of a decision and the risks may be great, and there may also be serious disagreements over the interpretation of data. For example, toxic substances, hazardous wastes and pesticides may have effects that are unknown and potentially disastrous. The consequences of a decision may only be learned in years or decades later.
- Many environmental decisions are irreversible. An animal species, if allowed to become extinct, will not be recreated.

- Environmental disputes lack private and public mediation and arbitration, as well as lack of clear jurisdiction in decision-making. Institutions are not willing to take responsibility for decision-making. International problems are even more problematic in this ~~issue area~~. Acid rain ~~and~~ oil spills ~~are a few~~ of the environmental conflicts that cross inter-national boundaries.
- Environmental regulations often have time requirements that put pressure on groups to make decisions regardless of ~~whether~~ sufficient information is available or adequate discussions have ~~tae~~ken place.
- Environmental disputes tend to have many parties involved, public interest groups, companies, business organizations, ~~non- governmental organization (NGO) s~~ and so forth. According to Carpenter —(2001:107), the Center for Environmental Problem-solving in the United States of America, ~~during its conflict analysis~~, identified ~~forty two~~ 42 separate interest groups and agencies that could have an influence on a mediated settlement, ~~during its conflict analysis~~.
- Power is often imbalanced. For example, a small local interest group maybe up against an enormous multinational corporation. Access to resources becomes an additional issue, as the large corporation may have financial and technical resources beyond ~~those at~~ of the local interest group.
- ~~The d~~egree of organization of parties involved in the conflict may also play a role. One group, maybe ~~a~~ well-established entity, and another maybe a fragile association whose leadership may dissolve next week.
- Problems are often created by contending groups, where no real conflict exists. Failure to exchange information necessary for full understanding of the issues may cause unnecessary controversy. In the absence of information, people tend to make up their own facts, which maybe problematic. Information which is unintelligible to the average citizen, mining reports which exclude information which would be of public interest, environmentalists who express their views in an accusatory tone, all

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contribute to ~~an in~~accurate exchange of relevant information concerning the environmental conflict in question.

- Stereotyping may result in creating controversy and manufacturing of a conflict.
- Differences ~~in~~ ideology and values may also exist among parties, thus causing a clash ~~and creating conflict~~. The question of how to manage a pristine mountain area – ~~w~~hether it should be preserved as a wilderness area or used for mining or livestock grazing ~~is~~ is a legitimate conflict ~~involving~~ involving technical issues and value differences.

2.5.76. Dynamics of Stakeholders

The changing dynamics of stakeholders involved in an environmental conflict are extremely complex and pose challenges with regard to agreeable definitions of issues, defining the boundaries, and ~~for~~ identifying relevant stakeholders. According to Elias, Jackson, and Cavana (2004:91), the following are typical of stakeholder dynamics:

- Changing ~~their~~ positions and interests ~~of stakeholders~~
- Changing ~~their~~ structure, attitudes and behaviours ~~of stakeholders~~
- Changing ~~their~~ importance ~~of stakeholders~~

The importance of positions and interests in environmental conflicts cannot be underestimated. According to Fischer and Ury (1981), bargaining over positions is inefficient, when there are many parties involved. They ~~pre~~posed an approach called "~~pr~~incipled negotiation", which consists of ~~the~~ four basic strategies:

- 1 Separate the people from the problem
- 2 Focus on interests, not positions.
- 3 Invent options for mutual gain.

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- Insist on using objective criteria. You should use only the same dots throughout. I don't know how to change it for you.

Bradshaw (2007:111) states that a conflict management system should be a permanent rather than a once-off intervention which involves all the stakeholders in a conflict. The whole process should be based on sustainability and be accessible to the affected community at the point of need. It should be a dynamic process, as conflicts tend to change over time .

This approach tends to produce mutually satisfying options, and fair standards, and typically results in a wise agreement. When resources become scarce, competing interests cannot be fully met. Stakeholders involved in the environmental conflict thus tend to make choices about how to pursue their own interests. The complexity of resource management becomes evident, as it involves complex and competing demands and interests. (Elias, Jackson, Cavana 2004:91).

Of the issues that are of relevance towards an attitude of conflict resolution, interdependence is of vital importance. ~~This is due to the fact that because~~ stakeholders will often need to co-exist after the conflict has been resolved, thereby shaping their attitudes and behaviours ~~of stakeholders~~. According to Mackenzie in Elias, Jackson, Cavana (2004:91), stakeholder values are of vital importance in ~~the~~ environmental conflict literature. Public policy disputes over natural resource management issues involve deeply held values and associated positions. Awareness and understanding of stakeholders involved in an environmental conflict, is thus important to consider when moving in a direction of conflict resolution. Unfortunately, different and conflicting values are involved in resource allocations and ~~use~~ decisions about use. This is due to the fact, that stakeholders involved in the environmental conflict reflect different worldviews, needs and expectations.

According to Field (2001:13), on the one hand are those stakeholders who believe that we are degrading and exhausting natural resource endowments that the future of

humanity is being threatened, and on the other hand are those who believe that the technological and institutional challenges of natural resource scarcity maybe overcome ~~by~~^{via} human effort and ingenuity. However, wherever one stands on the ecological spectrum, it is clear that future outcomes ~~way~~^{weigh} heavily on human decisions concerning resource use. Carpenter and Kennedy (2001:10) reiterate this point~~,~~ concerning conflicting values and environmental conflict by stating that a clash between developers and preservationists is largely due to conflicting values~~,~~ ~~and~~ divergent beliefs about what is right or wrong. As a result, neither side is able to understand ~~the one~~ ~~another~~.

Changing structure, attitude~~d~~ and behavio~~ur~~ of stake-holders is another important aspect of stakeholder dynamics. Under the banner of attitude~~,~~ fall the stakeholder~~'s'~~ perceptions and misperceptions of one another. They maybe positive or negative and are influenced by emotions such as fear, anger, bitterness, hatred and distrust. According to Deutsch, Coleman and Marcus (2006:-110)~~,~~ eruption of any conflict situation usually injures trust and builds distrust, thus one of the main objectives in resolving any conflict, is to build an atmosphere of trust.

With regard to environmental conflict literature, another interesting aspect regarding stakeholder dynamics is that there are a large number of actual and potential participants as well all interested parties. The stakeholders involved in ~~the an~~ environmental conflict~~,~~ also tend to enter into various alliances and oppositions over different aspects of the conflict, and at different times. Over time, the stakeholders involved in the conflict may change~~,~~ (Elias, Jackson, Cavana 2004: 92, Carpenter and Kennedy 2001:5)~~,~~

Schellenberg (1996: 72) proposes a Systems Theory Approach for understanding the functioning ~~-of~~ conflict within the the larger environment . Systems Theory emphasises the general interrelatedness or interdependence of the system's parts, the state of disequilibrium during a conflict situation~~,~~ and the way that parts of a system continuously organi~~z~~^{se} in order to bring things back to a state of equilibrium~~,~~ There is a never-ending interplay between the three interrelated systems of stakeholder analysis, namely:

- Nature of the problem
- Boundaries
- Those who own the problem.

By understanding the nature of the problem, the boundaries are defined, which in turn identifies the stakeholders involved. (Ramirez in Elias, Jackson, Cavana 2004: 92)

The environmental conflict literature also stresses the importance of stakeholder dynamics in real-world situations. ~~For example, while acknowledging the importance of change, complexity, uncertainty and conflict in environmental resource management that planners and managers encounter changing conditions, needs and expectations. Where, are the subject and verb?~~ What might be unacceptable at one time might be acceptable at another time. (Mitchell in Elias, Jackson, Cavana 2004: 93)

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~~You need to give a reason/explanation for a bulleted list. This isn't a list anyway, so there's no need for the bullet. Is it perhaps a long quote? In that case, remove the bullet, introduce it with an explanation, and put the citation at the end of the quote.~~

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The challenge in dealing with environmental conflicts, is that there are many stakeholders involved, and added to that, is that groups in a multi-stakeholder process may not act or interact in exactly the same way – in fact, the same group may interact differently from one meeting to another. (Elias, Jackson and Cavana 2004: 94) It is this fluid dynamic which makes working with many stakeholders a challenge. The combination of changing economic conditions, and increase in public environmental sensibilities have laid the ground for environmental conflicts.

2.6. Conclusion:

The literature reviewed in this chapter has provided an over-view of the energy situation on an international, national and local level. It re-defined the concept of “national security,” extending it to encompass the environment as an area in need of securing. The concept of environmental dispute was also explored and various examples of environmental degradation due to conflict, were cited. Environmental policy in South

Africa was outlined, as well as the need for further environmental policy regarding mining. The importance of stakeholders in an environmental dispute was ~~highlighted-discussed~~. The following chapter, Chapter 3 will deal with the case study, from its origins to ~~the present~~ate, involving the environmental conflict at Thyspunt, Oyster Bay in the Eastern Cape.

Chapter 3

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Case Study

Introduction

The previous chapter dealt with the literature study and provided a frame of reference for the reader around the area of environmental conflicts. This chapter deals with the case study, the environmental conflict around the proposed nuclear development at Thyspunt, Oyster Bay in the Eastern Cape. The demographics of the St Francis Bay area are discussed, the history of the conflict, current status of the conflict, site selection, sources and parties involved in the conflict are all described in this chapter.

3.1. Background of the St Francis Bay area

The total geographical area in the Greater St Francis area includes the communities of Rebelsrus, Mostert's hoek, Cape St Francis, Sea Vista Township (primarily where the non-white community reside), St Francis Bay and Oyster Bay. These localities are served by a system of small village roads. The overall area is bounded on the South and East by the sea, and on the West by the bypass sand dunes, which extend all the way to Oyster Bay. There is a single road to Humansdorp which joins the N2, passing over a single Kromme River Bridge, into which all the minor roads feed.

The Mpofu Dam, which is situated 10 km from Oyster Bay, is the major source of potable water to the greater part of the western section of the Eastern Cape, including Port Elizabeth and all towns and villages between Kouga and Port Elizabeth along the coast.

According to the St Francis Ratepayers/Residents Association's submission to the Environmental Impact Assessment consultants (2007), the latest census figures were so incompetently conducted, that only about 50% of the populace featured. As a result, the Association concludes that the demographics in that census are therefore completely unreliable. The St Francis Residents/Ratepayers Association argues that the Greater St

Francis Area, is primarily a holiday resort, with huge fluctuations in population over holiday periods. The census is always taken mid-year, when the population is at its minimum. There are two distinct “normal” levels of population, namely the “out of season” level and the fully populated “ holiday “ level. Estimations have been, that the peak “holiday” population may reach as much as 25 000. (Attached see latest census figures).

In terms of the economy, while constituting only one third of one ward of this very large ~~10-ten~~ ward municipality, St Francis Bay is believed to contribute as much as one third of its total revenue . The ~~C~~chokka industry , which is based at St Francis Bay, employs some 3000 people who ~~are belong to from~~ the local community, and are largely ~~Black or e~~Coloured people. This industry generates hundreds of millions of rands annually. (Simpson 2006:113). ~~You need a figure here and a citation as evidence.~~

Most of the catch is exported, and achieves premium prices, in competition with suppliers from other parts of the world. This region, has also recently become ~~recogniz~~ed as one of the prime dairy-producing areas in the country. Employment figures run into the thousands, and annual financial turnover into the millions, with estimated investment in the billions of rands. (Simpson 2006:114). ~~Again, no good without facts and figures.~~

The ~~T~~ourism industry is extremely lucrative, having been identified as a prime industry for the most potential in terms of growth and job creation. ~~?~~ (-St Francis Residents/Ratepayers Association : *Submission to ACER*) Adjubatus Marine and Wildlife Rescue situated at the Seal ~~p~~Point Lighthouse in Cape St Francis enjoys ~~“The Rescue enjoys the visitors”?~~ many visitors throughout the year and is the only sea animal rescue and rehabilitation centre ~~one of a kind~~ operating along the Eastern Cape seaboard. ~~Doing what?~~

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From the earliest days, the St Francis Bay area housed two ~~recogniz~~able groups of people, namely the permanent residents and the absentee landlords whose holiday “cottages” stood empty except at holiday times. The permanent residents, also comprised the local community who lived in Sea ~~v~~Vista township and worked in the gardens and

kitchens of the largely ~~w~~White homeowners, as well as working in the local chokka and dairy industry.

During the 1990's St Francis Bay area was overtaken by escalating property values resulting from the increasing activity of first-world buyers. The days of "holiday cottages" in a peaceful, remote seaside paradise were on the way out. People were now building holiday mansions instead. Alterations and extensions offered an opportunity for the building trade to prosper, which it continues to do as development in the area progresses at a rapid rate. The area has seen the canal area expand a number of times, and ~~recently~~in 2006, the last of the canal stands ~~were have been~~ sold to enthusiastic buyers. The development of the Golfing Estate, with a world-class golf course designed and opened by Jack Niclaus, has had its successes and failures, and would possibly be a topic for a whole new study in the area of environmental conflicts. Private residences continue to be erected, and at last count in 2007 in St Francis Bay alone there ~~were 47~~forty-seven residences being erected. (-Simpson, 2006:113). The current market value of developed St Francis Bay property is estimated by local estate agents to exceed two billion rand. (-St Francis Residents / Ratepayers Association-; (Submission to ACER- : St Francis Residents / Ratepayers Association).

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The area has an abundance of natural resources. Botanically, the Greater Cape St Francis area falls within the Cape Floral Kingdom and is distinguished by its own unique St Francis-/Thicket Mosaic. The dune fynbos in the area, is classified as endangered and is protected by the Biodiversity Act. There is a wonderful wetland system between the Sand River and Oyster Bay. Many environmental groups are active in the area; one in particular, the Fourcade Group, works with the National Botanical Institute ~~and as well as~~ ~~elose~~ly with a local environmental group, the St Francis/ Kromme Trust, and is currently involved in an initiative to create a Greater St Francis Area Conservancy. (-Simpson 2006:114).

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The birdlife in the area is prolific, and ~~as a result~~ has led to the formation of St Francis Bay ~~b~~Bird Club. Members are active in the community and take part in various research

projects as well as working closely with the Avian Demography Unit of Cape Town University, The Birds in Reserves Project, the biannual Co-ordinated Waterbird count and the annual co-ordinated Avifaunal Roadcount, where birders cover the country by road counting all the storks, cranes, secretary birds and other large birds found on the neighbouring farms: *(Simpson 2006:114)*.

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The Agulhas current, South Africa's equivalent to America's Gulfstream, flows 30-40 ~~thirty to forty~~ kilometres off-shore, providing big game fishing for both national and international fisherman, thereby establishing St Francis Bay on the deep-sea ~~game~~ fishing map.

Last but not least, in terms of natural resources, ~~the waves in the area are classified as~~ some of the "best rides in the world". Both national and international surfers visit the area in order to surf "one of the best right handers" in the world. Part of the fame of the waves may be attributed to the iconic surf movie "Endless Summer" made in the 1960's. ~~Is this connected with the place in some way? If not, it isn't relevant.~~ Some of the surfing spots include "Bruce's Beauties", "Hueletts", "Seal Point" and "Seal Point" beach break *(St Francis Chronicle : July 2008)*.

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In terms of community development projects, Child Welfare is active in the local township area of Sea Vista. The Talhado ~~e~~Children's Haven was established in 1998, under the auspices of ~~e~~Child ~~w~~elfare with the sponsorship of the local group, Talhado ~~f~~Fishing ~~i~~ndustries. Many of the local doctors in the area provide voluntary ~~se~~ aid ~~r~~VICES to those in the community who are unable to afford their services. A ~~P~~re-primary school was set up in 2001, as well as the Sea Vista's ~~e~~Children's Steel Band.

3.2. History of the conflict

According to Mayer (2000:86), it is important to understand the historical context and experience of a conflict. All cultures possess historical experiences concerning success and failures in conflict, and thus hold an expectation of the likely outcomes of conflict

maybe. Thus, ~~in~~regarding the history of most cultures, there are key events that have come to symbolize cultural values and beliefs about conflict, and as a result ~~thereof~~, it is important to understand both the general historical context in which a conflict has been handled and the key events that form the common cultural memory or experience of the conflict. ~~(Mayer- 2000:87).~~

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According to Thorpe Document June 2007 ~~What is this?~~, during the early 1980's,

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Eskom

Eskom Holdings Limited (Eskom) began looking for sites for a second atomic power station to follow Koeberg. Eskom acquired the Thyspunt Site, near Oyster Bay, ~~in the Eastern Cape.~~ ~~Eskom a~~At the time, Eskom had a lot of excess power-generating capacity. ~~At the time, i~~It was known that ~~i~~international ~~N~~nuclear safety ~~R~~regulations imposed an upper limit of 10 000 on the population within any 30 degree sector within 16 kilometres of a nuclear site. The purpose was to ensure ease of safe evacuation should an emergency arise. In relation to Thyspunt, St Francis Bay fitted neatly into such a sector at the time, ~~but th-~~ ~~(The population has~~ subsequently ~~grown since then.)~~

Some 15 years elapsed, before anything happened. Then, in December 1997, a draft Kouga Coast Sub-Regional Structure Plan, motivated and sponsored by Eskom, was published. It stated clearly that developmental controls might have to be applied to ensure that the population of St Francis Bay did not exceed 10 000. It became obvious, that Eskom was trying to ensure the integrity of Thyspunt as a nuclear site, and this in turn meant that they were planning to use it as such. The Kouga Nuclear Concern Group (KNCG) was quickly formed, led by Hilton Thorpe and Bokka Du Toit. This body, following an enormous amount of research, published a document called "Nuke or Not" 1997 document, for submission to Eskom with a view to public debate. At this stage, Eskom had already successfully lobbied the Jeffreys Bay and Humansdorp Municipalities and obtained their support, primarily on the grounds that a power station in the area would create a lot of new employment. St Francis Bay area was against limitations on growth.

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According to the Carpenter and Kennedy (-2001: 9), public disputes/environmental conflicts not only contain a broad range of issues as has been demonstrated in the case study, but new issues tend to emerge. Eskom then decided to substitute ~~PBMR~~ (Pebble Bed Modular Reactor (PBMR)) technology for ~~PWR~~ (Pressurized water reactor) (PWR) technology, and the benefit of job creation as an advantage no longer existed, as PWR's use considerably less manpower. Humansdorp and Jeffreys Bay were thus persuaded to join the St Francis-/KNCG opposition.

Eskom ~~then~~ sent a deposition to talk to the opposition, and it then came out that they were planning an Environmental Impact Assessment (EIA) aimed at the establishment of a PBMR pilot plant at Thyspunt, ~~Oyster Bay~~. The KNCG was dissolved and became the Kouga Anti-Nuclear Group (KANG). Eskom then hastily pushed the Kouga Coast Sub-Regional Structure Plan through the Western Districts eCouncil in December 1998. The EIA was initiated.

KANG then produced their document "*Grounds for Objection*," which played a significant part in influencing the final decision to locate the PBMR Pilot Plant ~~at~~ Koeberg, instead of Thyspunt, Oyster Bay. Carpenter and Kenedy ~~Spelling?~~ (-2001: 9-) also refer to the importance of technical information in understanding the nature of a problems and of finding alternatives. KANG informed themselves ~~considerably~~ thoroughly with regard to nuclear power, development, waste removal and storage, and the various types of Rreactors that Eskom wanted to make use of. ~~It was~~ ~~†~~This technical information ~~which played a crucial role~~ and their submission document against the Rreactor at Thyspunt ~~that~~ played a significant role in the decision rather to locate the PBMR Pilot Plant ~~at~~ Koeberg instead of Thyspunt.

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Carpenter and Kennedy (-2001: 9-) hold that technical information is sometimes not available or equally understood by all parties, ~~and~~ †This may certainly be a disadvantage during at the conflict situation to one or a few parties involved, and could have been the case for the Citizen group, ~~namely~~ KANG if they had not sufficiently informed themselves as to what Eskom ~~SKOM~~ had in mind.

3.3. Nuclear conflict current status

Eskom ~~Holdings Limited (ESKOM)~~ is currently proposing to construct a ~~N~~nuclear ~~P~~power ~~S~~station and associated infrastructure either in the Eastern, Northern or Western Cape Provinces. This is ~~a result of due to~~ South Africa's rapidly growing electricity demand, which requires that Eskom expand its electricity generation capacity: ~~(ACER document 25 May 2007).~~

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Based on current planning, Eskom needs to increase its generating capacity by more than 40 000 megawatts of electricity over the next 20 years. This additional generating capacity could come ~~from~~ a variety of energy sources, ~~for examplesuch as~~ coal, liquid fuels, gas turbines, natural gas, hydro and pumped storage schemes, wind and solar energy ~~and uranium and~~ ~~(nuclear energy).~~ ~~We had this before. Please change similarly.~~

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Recent power outages have highlighted the problem now facing the country. There is already a shortage of power in certain areas at peak load times, and demand is growing all the time. Currently, the only significant power station in the western side of the country is Koeberg, which generates 1800 megawatts of power. Electricity demand in the Western ~~e~~Cape peaks at above 5500 megawatts in winter, with the Eastern Cape adding another thousand megawatts.

Alternative energy sources such as wind, are unable to meet the huge ~~"base load"~~ required for industry, transport systems and large cities. The only viable option appears to be an increase in nuclear technology. Progress in constructing the pilot PBMR plant at Koeberg, has been slow. This is partly due to design factors, and partly due to legal obstruction by environmental bodies, notably Earthlife Africa, which has brought a number of court actions against Eskom. ~~Due to~~Owing to these delays, and the urgency of building power stations, the government~~al~~ has now announced that it is considering additional PWRs.

3.4. Site Selection

As a result, Eskom has currently appointed Arcus Gibb (-Arcus Gibb Document : 25 June 2007) to conduct ~~the EIA~~Environmental Impact Assessments at five potential nuclear sites along the South African coastline. Large ~~N~~nuclear power stations such as the Koeberg type, which do not need to be close to the source of their fuel (uranium) are, ~~therefore~~ ideally located at the coast, to use sea water for cooling. Such stations do, however, require specific geological conditions for safety reasons, and, similarly licensing authorities require population and infrastructure management measures to be in place for effective emergency planning.

Based on various social, economic and environmental criteria, the following potential sites were identified: ~~Haven't you said all this before? p. 5. You could copy the corrected version from there.~~

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- Thyspunt (eastern Cape located west of port Elizabeth near Cape St Francis)
- Bantamsklip (western cape 10km south east of Pearly-Beach)
- Duyenfontein existing Koeberg Power Station (Western Cape located adjacent to the existing Koeberg Power Station, Cape Town)
- Brazil (Northern Cape located in Kleinsee/Port Nolloth area)⁰
- Schulpfontein (Northern Cape located in Hondeklipbaai/Kleinsee area)

(~~Eskom: EIA document~~Environmental Impact Assessment for the proposed Eskom Nuclear Power Station and Associated Infrastructure : Background information document and invitation to participate)

The objective of the current EIA is to identify the site for the first 4000Mw nuclear plant (more than double the size of Koeberg), but in time Eskom hopes to be able to develop all the identified sites. This has particular significance for Thyspunt, which is in fact two sites consolidated into one, and is therefore regarded as having potential for plants which

could generate up to 8000 ~~megawatts~~^{Mw} (four times the size of Koeberg). ~~This can be copied from page 5 too.~~

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The EIA process is currently in the scoping phase. This is the initial crucial phase, in which any issues arising ~~from~~ the proposed developments can be identified, and must be considered in the decision-making process. Anyone is welcome to give input at this stage. ~~While~~ other public participation opportunities will arise, the ~~S~~scoping phase is the appropriate forum in which to raise concerns.

3.5. Sources of the conflict

According to Moore (1986 : 26), conflicts tend to have many causes which are not always obvious to the observer, as they maybe covert in nature. A practical way to examine conflict, maybe demonstrated by the use of the conflict cube. It diagrammatically depicts the multifaceted nature of conflict by making use of the six sides of a cube ~~by-and~~ listing the types of conflict : value-based conflict, interest-based conflict, needs-based conflict, data-based conflict, structural conflict and relationship conflict. (Bradshaw (2007: 17).

Burton (1990:37) states that a conflict of values is concerned with the ideas, customs, language and religious ideologies and more recently, environmental values, of a particular group and when these are under threat, conflict may result. This is an important aspect, as the ~~defensce~~ defence of values is related to the fundamental basic needs of identity and security, -which to a large extent is what this environmental conflict ~~concerning the proposed nuclear development at Thyspunt, Oyster Bay is all about~~ based on.

According to Car~~p~~enter and Kennedy- (-2001:10), ~~thea~~ divergence of values and ideology may exist among parties. Some parties may be motivated by their strong commitment to a set of values, while others view the same problem as an economic~~al~~

issue. Negotiating about values is more difficult than negotiating about interests- (Cohn (2002: 30).

The question in our case study concerning the pristine coastline of the Oyster Bay area, whether it should be used for the development of a nuclear power plant or preserved as a wilderness area, is a legitimate conflict involving both economical issues and value differences. The clash between values and technical perceptions about~~of~~ a problem of energy supply for the country at large has led to a situation of conflict.

The public has become more aware of the delicate, interrelated ecological systems that support life on this planet. As differences in environmental values become more explicit, environmental conflicts tend to multiply dramatically.

3.6. The Parties involved in the conflict

Turning to the stakeholders involved in environmental disputes, we find that most environmental conflicts have more than two sides. It is not unusual to have have a dozen or more parties in the controversy, including several public interest groups, companies, business associations, and local and national government. The most common element of Environmental/Public disputes is that new parties tend to emerge as the process unfolds (Carpenter and Kennedy, 2001:5). This is has certainly become evident with regard to the nuclear power station conflict in the Oyster Bay Region, where an estimated 25~~twenty five~~ parties have been identified. However, the main parties identified at this stage of the environmental conflict are described below~~: the following~~:

1) Eskom

Eskom Holdings Limited is a state-owned enterprise, with the government of South Africa as its only shareholder. It is represented by the Minister of Public Enterprises. The main objective of Eskom is to provide energy and related services including the generation, transmission, distribution and supply of electricity. According to Eskom, (Document : Eskom Nuclear Power Station and Associated Infrastructure) South

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African economic growth and social needs are resulting in substantially greater energy demand. ~~(Document : Eskom Nuclear Power Station and Associated Infrastructure)~~. There is a requirement for more ~~than 40 000 megawatts~~ **Is this consistent with the others?** of new electricity-generating capacity over the next 20 years. Baseload capacity forms the major component of the 40 000 megawatts of new generating capacity that is required in the next 20 years, and only a few sources are suitable for base load power stations. The primary energy sources in South Africa that are suitable, and are available in sufficient quantities, are coal and uranium.

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The use of nuclear power has the potential to make a substantial contribution to sustainable development as well as ~~and a significant contribution to~~ reducing South Africa's greenhouse gas emissions. As a result the Eskom board has approved the investigation Is this the right word? of up to 20 000 megawatts of nuclear capacity over the next 20 years.

Currently Eskom has commissioned an environmental impact study at each of the five designated sites which have been ear-marked for nuclear power plants. In terms of the National Environmental Management Act 107 of 1998 and its Environmental Impact Assessment regulations, it is a prerequisite that environmental authorization is obtained, before Eskom can proceed with development in any of the five designated areas. (*Eskom: EIA document Environmental Impact Assessment : Eskom Nuclear Power station and Associated Infrastructure : Background information document*)

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2) ii) ~~Don't use Roman numbers.~~ Foster (Friends of the St Francis Nature Areas)

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Foster, has been very effective over the past decade in consolidating, ~~and~~ developing and managing a network of nature areas that link St Francis Bay and Cape St Francis. This environmental group objects to the proposal for a large nuclear facility at Thyspunt, ~~Oyster Bay~~, as it lies in the heart of the St Francis conservancy. The group claims that a Nnuclear reactor at Thyspunt would have an unacceptably high

environmental impact on the area. The dune fynbos in the area is classified as an endangered ecosystem. Ecosystems which are thus classified, are meant to be afforded protection in terms of the Biodiversity Act.

Added to that, the Thyspunt area supports a magnificent series of interlinked wetlands, which deserve international recognition. The understanding of the Foster group is that the establishment of the proposed nuclear facility, at the designated site will require the removal of huge amounts of sediment, owing to the steep dune topography of the land immediately inland of the site. Such earthworks, will have a major impact on the region's ecology. (*Submission to Acer : EIA document*)

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Varying levels of expertise is an important characteristic in the Environmental /Public dispute arena. Carpenter and Kennedy (2001: 5) This becomes evident in this case study, with the Chairman of FOSTER, resigned as a specialist adviser to Arcus Gibb in order to oppose the project. (Arcus Gibb who are the company employed by the ESKOM to perform the Enviromental Impact Assessments at each of the five designated sites)

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3) in order to oppose the project. Huh?

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III) St Francis/Kromme Trust

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The St Francis-/Kromme Trust is a prominent regional environmental body representing the people of the greater St Francis Bay area.

4) IV) The St Francis Residents/-Ratepayers Association

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The St Francis Residents-/Ratepayers Association consists of homeowners and ratepayers in the area. It has a competent executive team of local residents who are elected annually by ratepayers ~~annually~~. As homeowners, they feel responsible for their own destiny. Homeowners are kept informed on issues, and sometimes legal action is taken where necessary in order to protect ~~their residents / ratepayers~~ interests. None of the committee members receive compensation for their efforts, ~~which these~~ are voluntary in nature. The interests served by ~~this Association - St Francis Residents / Ratepayers Association~~ are the following:

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- Service Delivery : water, electricity, refuse collection , roads, and fire control. These are all monitored by the Association and work with the relevant Municipal bodies is undertaken in order to improve service delivery.
- Land use and spatial development : A special plan was drawn up to facilitate adequate zoning patterns, and the Association has to step in occasionally ~~step in~~ to ensure that inappropriate development does not take place.
- Community Policing : Collaboration between the Association, local police and neighbourhood watch and local security companies takes place in order to curb crime in the community.
- Beach Reconstruction : The Association has members involved in this process, and the community is informed regarding the pros and cons of the project. Ratepayers will then be able to express their views via a referendum.
- Provision of Information : Public Mmeetings and newsletters are used to keep homeowners informed.
- Enviromental Matters : The Association has strong links with the Kromme Trust. The two organisations keep each other informed and work together on issues relating to environmental matters.
- Critical Mmatters : The potential erection of the Thyspunt Nuclear Power station, is an issue that the Association has taken up with Eskom.

The Kromme Trust and St Francis Ratepayers/~~and~~ Residents Association

~~(Documents: St Francis Bay Ratepayers and Residents Association Submission to ACER and St Francis / Kromme Trust submission to ACER)~~ objects to the proposal for the development of a Nuclear Plant for the following reasons:

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- Certain aspects of the overall investigation are excluded ~~from~~ the Environmental Impact Assessment on the grounds that they are the responsibility of statutory bodies other than Eskom. The Trust feels that the investigation is not being carried out in an integrated fashion. The fragmentation of the ~~e~~Environment Impact assessment (EIA) is of supreme concern, as the current EIA ~~is~~ has a very limited mandate and a number of the most crucial issues fall within this category~~-~~, notably the viability of the Thyspunt site (responsibility of the National Nuclear Regu~~l~~ator) and waste disposal (responsibility of the Nuclear Corporation of South Africa).
- Current South African ~~L~~egislation restricts the population of an Emergency Planning ~~one~~ to a maximum of 10 000 within any 30 degree sector of sixteen kilometre~~r~~ radius, centred on a nuclear installation. The current ~~“high~~ season” population of this area, which includes St Francis Bay, the increasingly populous Sea Vista township (~~-~~both formal and informal) and Cape St Francis is generally regarded as being well over 20 000. In terms of current nuclear safety legislation, therefore, it appears that Thyspunt can no longer be ~~r~~egarded as a viable site.
- The ~~N~~uclear viability of Thyspunt in terms of the adequacy of provision for emergency evacuation of the resi~~s~~idents ~~-~~of the emergency planning zone is inefficient in the event of a serious nuclear disaster.
- ~~There is a~~ The potential for ~~N~~uclear contamination of the Mpofu ~~d~~Dam and its catchment area, ~~which~~ ~~as~~ it accounts for a significant supply of the water to

Port Elizabeth, Uitenhage, Jeffreys Bay, Humansdorp and other smaller consumers. The dam is located at its nearest point within six kilometres from the Thyspunt Nuclear site, making it particularly vulnerable to contamination from a potential due to a nuclear fall-out.

There is a

- ~~The~~ potential for contamination of an important dairy industry. Contamination, as in the case of the Mpofu Dam, could be of a long-term nature.
- There is a ~~The~~ potential for nuclear contamination/disruption of a significant ~~F~~ishing/~~E~~xport industry, namely that is the calamari industry, which is based at ~~the~~ Port St Francis. The proposed pressurized water reactor at Thyspunt would draw large volumes of sea-water for cooling purposes, which would be continuously ~~be re-~~cycled into the sea. Product contamination, as well as the perceptions of international buyers, is the point of concern here.
- A possible ~~The potential impact of a~~ nuclear accident at Thyspunt would have a considerable impact on and the regional tourist trade, as both local and foreign tourists visit the area, contributing to substantial economic growth and employment. Tourists and investors alike, with alternative destinations and investment opportunities, would undoubtedly steer clear of any risk of nuclear contamination or even the perception of it.
- ~~Potential Impacts of a~~ Any proposed ~~A~~ction which would involve Statutory limitation of the levels of population and related development in the St Francis ~~B~~ay area would have serious potential impacts. This point area addresses the concern that new legislation might be introduced to restrict or prevent further population growth in conjunction with a decision to proceed with development of the Thyspunt site. Linked to this issue is the probable impact

on existing developed Real Estate. Bearing in mind that the current total market valuation of developed St Francis Bay property is estimated to exceed ~~R2 billion~~~~two billion rand~~, forced limitation of population ~~as a direct consequence of property development~~ on grounds of danger of nuclear disaster, would be more likely to result in severe ~~population loss and~~ property devaluation rather than the present continued growth and property appreciation. A second issue of importance, is the envisaged adverse impact on undeveloped real estate and planned on-going development projects. ~~There are~~ numerous undeveloped, privately owned plots and ongoing or potential developments which represent existing legal rights of development ~~and~~ to which further ~~more~~ specific high and appreciating values can be attached. Population limitation and the consequent development limitation would inevitably lead to an infringement of these rights.

- ~~The~~ Waste disposal should be part of the ~~EIA~~~~environmental Impact Assessment~~, as it forms an integral part of any ~~N~~~~nuclear~~ programme. The community is not prepared to accept the depositing~~ing~~ of any ~~N~~~~nuclear~~ waste. There is still no final solution to permanent disposal of nuclear waste, anywhere in the developed world.
- The transparency of the process is under question, and ~~it is~~ doubtful that the South African public has been fully informed concerning the risks of nuclear power, as well as the ecological impact that such a decision ~~my~~~~might~~ -create.

~~((Documents: St Francis Bay Ratepayers and Residents Association Submission to ACER and St Francis / Kromme Trust submission to ACER))~~

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3.7. Sources of power

Mayer- (-2000:50-) sums up this dimension accurately, by stating the following: “ Power is the currency of conflict. ~~“”~~. In order for a conflict to develop, all ~~those~~ involved must have some power. It would seem that the issue concerning power and

conflict is not whether to make use of power, but the way in which the dimension of power is utilized within a conflict situation. Mayer (-2000:62-) does not believe that it is possible to balance power, and in fact implies that a “balance of power” is a meaningless concept. It is necessary to consider the dynamics of power and the interactional context in which power functions during conflict-functions. Parties in a conflict situation should rather possess enough power, so that others must at least consider their concerns and have enough power to resist any solution that fundamentally violates their interests. Huh?

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According to Mayer (-2000:66-) in order to understand conflict, it is necessary to understand power. To a large extent, the choices which parties involved in a conflict situation make that are involved in a conflict situation are dependent on their power. According to Carpenter (-2001; 107-) parties vary tremendously in the amount of power they have to exert over a particular issues. Power is evident in a variety of forms, such as namely : financial resources, legal authority, knowledge and skills, numbers of people, access to decision makers, personal respect, and friendships.

A small local-interest group may be pitted against an enormous multinational corporation. Generally, a corporation will have financial and technical resources far beyond those of the local interest group . With regard to the conflict over the nuclear power plant at Thyspunt, Eskom, which is a large government-funded organization, has a large amount of resources and therefore financial and legal power, as well as a great fund of in the form of financial, legal, knowledge and skills. The fact that it is a government-controlled body, further enhances its power base, as it may be able to make use of administrative policies, regulations and directives.

The citizen groupings, FosterOSTER, St Francis/Kromme Trust, and the St Francis Bay Ratepayers/-and Residents Association possess power in the form of political pressure, Community solidarity, and experience in negotiating.-(the chairman

~~went has been~~ through the process of successfully challenging Eskom five years ago).
 expert knowledge
 (-Professor Richard Cowling of ~~Foster OSTER~~, is one of South Africa's eminent
 botanists-), and constructive working relationships. The three citizen groups have a
 close alliance with one another, and along with various other citizen groups may
 lobby together making use of "the power of the people" ~~which that is a form of power~~
~~which~~ derives its source from large numbers of people- (Carpenter and Kennedy
 2001:-6).

According to Carpenter and Kennedy (-2001:-6), ~~F~~financial power is an important
 source of power ~~to with~~ parties involved in a conflict situation, and organizat~~ions~~
 may vary in their ability to commit financial resources. This may significantly
 enhance or reduce their power base, as some organizat~~ions~~ (Eskom) may have the
 ability to assign staff members to do technical studies, develop strategies and produce
 materials, whereas others (~~Foster et al. OSTER, St Francis / Kromme Trust, St~~
~~Francis Bay Ratepayers and residents Association~~) may have to rely entirely on
 volunteer assistance and not have the financial resources to do as thorough a job as
 the paid staff of their adversaries.

6.3.8 The spiral of unmanaged conflict

The spiral of unmanaged conflict, according to Carpenter & Kennedy (1988 :14),
 continues along the following sequence:

- The problem emerges: A proposed development for a nuclear power station at
 Thyspunt, ~~Oyster Bay in the Eastern Cape~~ is announced by Eskom. The
 homeowners are concerned, but more information is needed. A step up the
 spiral occurs when safety issues are raised.
- Sides ~~F~~form: The ~~H~~homeowners become suspicious when the necessary
 information is not provided. Homeowners begin to unite in order to oppose

the development. Meetings are held, and positions are taken – sides form. Letters are written and the news media become involved.

- Positions harden: The homeowners become rigid in their definition of the problem and interact only with similar--minded people, ~~and lessnot~~ with others.
- Communication stops: Communication takes on an adversarial tone. The Eskom officials are out of step with what is happening. Information which could have led to a solution no longer flows between the parties.
- Resources are committed : The position of the homeowners becomes more rigid and clearly defined. They are firmly opposed to the proposed nuclear development at Thyspunt, ~~Oyster Bay in the Eastern Cape~~. The homeowners are ready to invest resources, aware that there will be demands in personal time and finances. There is talk of taking the matter to court.
- Conflict goes outside the community: Homeowners look outside the community for support and power . The conflict expands into a new and wider scenario. Greenpeace International is approached, as well as various newspapers and popular magazines.
- Perceptions become distorted : Objectivity becomes lost, especially towards the motivations of the adversary, namely Eskom. The thinking is now only “black and white”. ~~In South Africa, this is not a good metaphor. You don't mean it racially, do you?~~ The spiral of conflict grows.
- A sense of crisis emerges: The community is totally divided into factions-- those for the proposed nuclear development and those against ~~it-the nuclear development~~. The media highlights the environmental conflict in the area. The atmosphere is tense and angry; the goal is now to win at any cost.
- ~~This bullet needs to come into place. I don't know how to do it.~~
—Outcomes vary: The next step is litigation. This is an option which the

St Francis Residents/-Ratepayers ~~have~~ discussed in their meeting ~~of~~ 21 August 2008. ~~(Minutes of meeting 21/08/08).~~

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3.89. Conclusion

The case study ~~has been was~~ clearly outlined, describing the demographics of the affected area, as well as the primary stakeholders involved in the conflict. The conflict ~~has been mapped, from, form~~ its origins to ~~the present, date was mapped.~~ The following ~~e~~Chapter 4 will concern itself with the detail surrounding the research design as well as the methodology used in the study. The sampling procedure and data analysis will be ~~described explained~~ in depth. ~~Of~~ significance are the limitations of the study as well as the ethical issues ~~s~~urrounding the study, which will be discussed.

Chapter 4: Research Design

4.1. Introduction

The previous chapter provided a frame of reference for the study. ~~The energy~~ ~~?~~ situation on a international, national and local level ~~was explained.~~ The importance of stakeholders in an environmental dispute was highlighted, and the case study ~~was mapped from~~ its origins to ~~the present position~~ ~~date was mapped~~. The following chapter will concern itself with the detail surrounding the research design, as well as the methodology used in the study. The sampling procedure and data analysis will be explained in depth. Of significance are the limitations of the study and the ethical issues surrounding the study, which will also be explored.

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4.2. Research Design

According to Mouton (2007:54), the research design is an integral part of the research process, as a research design forms the plan of how the research will be conducted. It focuses on what kind of study is being planned, as well as the end result ~~for~~ which the researcher is aiming ~~for~~. Without an adequate research design, a researcher would struggle to plan ~~the~~ ~~their~~ way forward. ~~Repeated from 1.5.~~

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De Vos (2007: 268) expands on the idea of a research design ~~further~~, by adding that many different authors make use of the concept "research design", but name it differently. Some authors use the term "methods", "paradigms" or ~~perhaps the some authors maybe~~ more inclusive ~~and use the~~ term "research design" to refer to the entire process from the initial research idea to the end product. For the purpose of this study the term "research design" ~~sh~~ ~~awill~~ refer to ~~the material in the rest of this chapter given in~~ ~~all of the below.~~

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~~This paragraph is also a repeat of 1.5~~

4.2.1. The Primary Aim

According to De Vos (1998:7)-, the aim maybe aligned to a dream and the objectives are concerned with the steps that one takes in order to realize the dream. ~~m.m. Did we agree to delete this when it occurred earlier? I still don't like it.~~ The primary aim of this study is stated as follows:

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An exploration of the interests ~~I think I suggested this should be extended to include the other aspects of the paper.~~ of homeowners involved in an environmental conflict at Thyspunt, Oyster Bay in the Eastern Cape.

4.2.2. The objectives of the Study

~~To explore and describe the interests of the homeowners involved in the environmental conflict at Thyspunt.~~

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~~To describe interests of the homeowners ~~This is stated above.~~ and the impact this To what word does "this" refer? has on environmental conflicts~~

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~~Based on insights gained, to develop recommendations for more in-depth research within the field of environmental conflicts and stakeholder dynamics. To explore and describe the interests of homeowners involved in the environmental conflict at Thyspunt.~~

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~~To describe the impact of homeowners' interests, on the environmental conflict at Thyspunt, Oyster Bay in the Eastern Cape~~

~~Based on insights gained, to develop recommendations for more in-depth research in the field of environmental conflicts and stakeholder dynamics.~~

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4.3. Qualitative research ~~From here to the end of 4.4 this is a straight copy of 1.5 in Chapter one. Please check with Lvn if that is acceptable. I question if an examiner will be happy reading the same information twice. I have not repeated the same changes I made in the earlier version. You could simply copy the paragraphs from there again.~~

The kind of research question which is being asked, effects the type of research design which the researcher will make use of. An exploratory, descriptive qualitative research design will be used for this study. These concepts will be elaborated on below. The research shall be undertaken in order to describe and further understand stakeholder dynamics during an environmental conflict ~~-(Babbie & Mouton 1998:80)-~~.

~~Repeated from 1.5~~

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).

- A Metatheoretical tradition of interpretatism is the research design of choice, because in this study an attempt is being made to develop understanding, rather than explain or predict human behavior (Neuman 2006: 88).
- ~~Repeated from 1.5~~

According to the interpretive approach, values form an integral part of social life and no groups's values are incorrect only different. Interpretism is considered to be the most the most effective method in order to collect information when the subjectivity of human behavior is being explored (Neuman 2006:87).

~~Repeated from 1.5~~

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- Qualitative researchers prefer to study human action from an insiders perspective; the goal of research is to describe and understand rather than explain or predict. The qualitative research design, is the design paradigm which has been selected, as it is a multiperspective approach which makes use

of various qualitative techniques as well as data collection methods in order to describe and interpret the meanings that the subjects attach to their role in the environmental conflict (-De Vos 1998:240-). Repeated from 1.5

- There are various types of research designs which are made use of by qualitative researchers and they will often design their whole research project around the strategy selected (-De Vos 2007: 269). Repeated from 1.5

A case study has been selected, which focuses on a particular social phenomenon . Repeated but here you have a new sentence. The defining characteristic of a case study is its emphasis on an individual unit. This goes back to 1.5 now. According to De Vos (-2007: 272-), case studies explore an in-depth “bounded-system”- . The system to be explored, may be bounded by “time” or “place”, in our case the system to be explored is bounded by “place” and that is Thyspunt, Oyster Bay region.

Through exploration and description the case is studied, making use of various data collection methods (which may evolve as the research progresses in alignment with qualitative data collection methods) Typical data collection methods for a case study may include the following: interviews, documents, observations or archival records. It is thus important that the researcher gains the trust of the participants . Such research usually produces rich results with in depth description of cases (~~-De Vos 2007:272-~~),(-Babbie 2007: 298).

Repeated. My changes and comments still apply.

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Because the aim of this study is to describe, and achieve a more in depth understanding of an individual case, it is termed an “intrinsic case study”. According to Burawoy in Babbie (2007:298) researchers involved in a case study often have an expectation of what they might discover. This is usually due to the review of the literature on a particular phenomenon before entering the area. Thus one of the uses of a case study may be to rebuild or improve existing theory.

Repeated

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- According to Babbie (2007: 88-) a large proportion of social research is undertaken, in order to explore a topic which is unknown to the researcher . Exploratory studies are also useful for breaking new ground, as well as providing new insights into a topic for research. It is for this reason, an exploratory approach is being made use of, as no previous studies have been undertaken with regard to the selected environmental conflict.

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- A basic research approach has been selected, as basic research addresses fundamental questions about the nature of behavior concerning cognition, emotion, psychobiology or social behavior. Cozby (1993:8) in this study, the insights and understandings obtained will explore stakeholder dynamics during an environmental conflict. Repeated

4.4. Procedure

The qualitative research design has been selected, and an inductive approach will be used, and with regard to induction, a conclusion is not completely certain. (As is the case with deduction) It is tentative, because more information needs to be gathered in order to prove certainty (-De Vos 1998:91). With regard to research, the premise that positions and interests of stakeholders change during an environmental conflict needs to be explored. Induction is a creative process of reasoning used to add scientific knowledge (De Vos 1998:91). Repeated as original

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4.5. The Case Study Method

I think this is actually something new. I'll edit it as such.

According to Mouton (2001: 48), case studies provide an in-depth description of a particular phenomenon, and tend to be qualitative in nature, although not always. General ideas are formed, which act as a guide for empirical research.

The aim of the case study method, is to illuminate the general by looking at the particular. The ~~application usefulness~~ of such a method, is that by concentrating on one case, insights may be gained, that may be applied to other cases. The chief purpose of a case study, is to provide in-depth information and explanatory insights of a particular phenomenon (Babbie 2007:300, Mouton 2001: 50). –According to Obika (2008:-54)-, all evidence gathered by making use of a case study is of value, and none needs to be discarded. She equates the use of a case study as analogous to a judge presiding over a court room gathering as much evidence as possible in order to make an assessment of a case. Although not always “tidy”, all evidence is of value. ~~Interesting point~~ This description epitomizes the role of a case study in qualitative research.

4.5.1. Advantages of the case study method

The primary advantage of the case study, is that it is able to provide in-depth insights, which are rich in information. It is the holistic nature of the case study which enables this to be attained, as the researcher is able to focus on the “whole picture”, instead of on isolated factors. The high construct validity is an added advantage of a case study (Mouton 2001:-50)-. Further, the establishment of rapport with the research subjects, is an important advantage. In this way, a researcher is far more able to obtain rich information. This is primarily achieved, through the use of the sources of data collection which the researcher makes use of, namely, semi-structured interviews, participant observation, documentary sources and other existing data which the researcher obtains from the research participants -(Mouton 2001 :50)-.

4.6. Sampling

A qualitative study has been chosen, and as a result, non-probability sampling methods will be made use of. The implications of making use of nonrandom samples, entails that the sample size is often unknown in advance, with the qualitative researcher selecting cases as the research process unfolds (Neuman 2006: 220) . According to the literature, for qualitative researchers “it is their relevance to the research topic, rather than their representativeness which determines the way in which the people to be studied are selected” (Flikk 1998:41) in Neuman (2006: 220) . Whereas quantitative researchers tend to make use of mathematical theory with a great deal of pre-planning, the focus of the qualitative researcher is based on specific content of a case for selection purposes. Neuman (2006:220) As a result, information rich subjects will be chosen for focused, in depth study so that the researcher can obtain an in depth understanding of the situation in question. (De Vos 1998:253). **Repeat of 1.5.2**

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4.6.1. Purposive Sampling

According to Babbie & Mouton (1998:166), it is acceptable for a researcher to select a sample based on knowledge of the population towards which the research is directed. This type of sampling is often made use of during exploratory research, whereby case selection is undertaken with a specific purpose in mind. (Neuman 2006:222). **Repeat of 1.5.3**

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The following purposive strategies will be used for sample selection:

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- All participants identified in the environmental conflict at Thyspunt, ~~Oyster Bay~~ must be homeowners involved in the conflict.
- Ten homeowners will be selected from the St Francis Bay Residents-/Ratepayers Association, as it is one of the most active and involved groupings in the ~~E~~environmental conflict.
- The homeowners must have a direct interest in the outcome of the environmental conflict.

The researcher will make a sample selection based on the above criteria, by making a judgement and selecting cases with a specific purpose in mind; she will select those that are especially informative of the content of ~~-which she cases that the researcher~~ wishes to gain an in-depth understanding of.

4.7. Data Collection and Analysis

Benny (1956) in De Vos (1998:297) made known that interviewing is the most common method of data collection used by researchers to inform them of social life. Four decades later, this is still the most widely used method of data collection and as a result, interviewing is regarded as the most “universal mode of systematic inquiry” (Holstein & Gubrium 1995:1) in De Vos (1998:297). Repeated from 1.5.4

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An interview will be conducted as the process of data collection. It will be based on exploration and description of the key stakeholders selected which are involved in the environmental conflict at Thyspunt, Oyster Bay. Repeated from 1.5.4

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4.7.1. Data Collection Methods

Before the process of data collection via interviews begins, the homeowners selected will be contacted telephonically, or visited personally by the researcher in order to obtain their permission to include them in the study. Each homeowner will also receive a letter, in which the full details of the aim and objectives of the study will be explained.

Data will be collected, by making use of unstructured interviews. The questions will be open – ended in order to provide a frame of reference for the homeowners responses without influencing the homeowners responses, in order to build an atmosphere of mutual discovery and staying as close as possible to the homeowners experience of the research subject. (Neuman 2006:407, De Vos 1998: 297). Largely repeated from 1.5.5

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4.7.2. Unstructured Interviews

Unstructured interviews will be held with each of the homeowners selected in a venue of their choice. A research schedule will be made use of, in order to adhere to the questions and themes which are important to the research question. This also enables the researcher to cover all the relevant topics during the interview, as well as a systematic form of data collection (De Vos (1998: 300). ~~Repeated from 1.5.6~~

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The participants will be asked the following open-ended questions:

- Are you currently a homeowner in St Francis Bay / Cape St Francis area?
- Are you a member of the St Francis Residents / Ratepayers Association?
- What is your interest/concern in the Nuclear power station which is proposed to be built at Thyspunt , Oyster Bay?
- On hearing of the proposed development what was your position?
- Did your position change towards the development?
- What was the reason?
- What is your present position towards the development?
- Has the recent power crisis which we were and are still currently faced with in south Africa altered your feelings towards the nuclear development in any way?
- What are your feelings / attitude towards the Environmental Impact assessment which is being under taken?

- Do you think it will influence the outcome on the proposed nuclear development at Thyspunt, Oyster Bay?
- Are you concerned about property values being affected as a result of the nuclear development? **Repeated from 1.5.6**

4.7.2.1. Preparing for the interview **A new section, so I have edited it.**

The researcher had already “gained entry” into the area via the “gate keeper” the chairman of the St Francis Residents Association. According to Cresswell (1998:117), gaining entry into an area which the researcher wishes to study is an important prerequisite, especially with regard to a case study. It is done by a researcher in order to build trust and establish rapport with the community which the researcher wishes to study. This was done via a lengthy face-to-face interview ~~last year~~ in August 2007 prior to this research study. The researcher obtained valuable background information regarding the environmental conflict around the proposed nuclear development ~~at Thyspunt Oyster Bay in the Eastern~~ ~~from the chairman of the St Francis Residents Association from this gentleman~~, who had been involved with the ~~aforementioned~~ conflict ~~since from its~~ inception ~~which was~~ in the 1980’s, ~~to date~~.

Most of the interviews were conducted between the months of August 2008 and September 2008. Participants selected for the study, were contacted ~~via~~ ~~by~~ telephone, in order to find a suitable time and place ~~in order~~ to conduct the interview. The researcher had decided to select 10 members of the St Francis Residents Association, as this Association was one of the main stakeholders involved in the ~~environmental~~ dispute, regarding the proposed development at Thyspunt, ~~Oyster Bay~~. This Association had also been involved in the ~~environmental~~ dispute when it first came to the fore, in the 1980’s when Eskom first ~~made a~~ ~~propos~~ ~~edition~~ ~~of a~~ ~~N~~ nuclear power station at Thyspunt, ~~oyster Bay in the Eastern cape~~. This Association had made a submission to the Environmental Impact Consultants against the ~~N~~ nuclear power station recently as well as obtaining great success in the 1980’s lobbying against ~~it~~ ~~the proposed development of~~

~~a nuclear power station~~. Of further importance to the study is that this Association represents the homeowners, as well as the ratepayers in the St Francis Bay / Cape St Francis area, and ~~is perhaps possibly~~ the group of people who will be most directly affected by the proposed nuclear development.

4.7.2.2. Choosing a recording method

The researcher made use of a digital dictaphone, so that as much information ~~as possible~~ could be captured during the interview. ~~The researcher~~ was then able to transcribe the interviews and reflect on the information obtained during the recording . By making use of a recorder, direct communication and flow of easy question-~~and~~-answer responses ~~were~~ enabled. Eye contact and comfortable communication ~~were~~ also facilitated. A dictaphone is advantageous, especially when a researcher is conducting more than one interview on a given day and ~~these~~ can then be accurately transcribed. The researcher also jotted down notes occasionally ~~while~~ she was interviewing.

4.7.2.3. Conducting the interview

At the beginning of each interview, the researcher explained the purpose of the study, as well as obtaining the participant's consent to take part in the study. Ethical issues were discussed and explained, and ~~asking~~ questions ~~asking~~ was encouraged. The researcher also ~~made it clear~~ clarified, that, although the participants had agreed to take part in the study, ~~that they would~~ also ~~needed to~~ consent to being recorded. All interviews were carried out in English, so ~~the services use was not made~~ of a translator ~~were not used~~.

The research participants were asked the following open-ended questions: ~~Not an exact copy of 1.5.6, so I have edited it from here on,~~

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- Are you a homeowner in St Francis Bay/-Cape St Francis area?
- Are you a ratepayer/-member of the St Francis Residents Association?
- What is your concern/-interest in the Nuclear Power station which is proposed to be built at Thyspunt, Oyster Bay ~~in the Eastern Cape~~?

- On hearing of the proposed development, what was your position?
- Did your position change towards the development at all-?
- If yes, what was your reason?
- What is your present position towards the proposed development?
- Has the recent power crisis which we ~~were and~~ are still currently faced with in sSouth Africa altered your feelings towards the nuclear development in any way?
- What are your feelings/attitude towards the Environmental Impact Assessment which is being undertaken-?
- Do you think that it will affect the outcome of the proposed nuclear development in any way?
- Do you feel that property values will be affecteded in any way as a result of the proposed nuclear development?

4.7.2.4. Reflections on the interviews

The participants were willing to share the information with the researcher. At times, the researcher found that the participants found it a cathartic experience to express their views, as there is a lot of uncertainty and anxiety in the area at the moment surrounding the proposed development.

Although the dicataphone was helpful to the researcher, enabling her to collect information from the participants more effectively, a certain amount of “dis- ease” and self-consciousness on the partbehalf of the participants was noted by the researcher, ~~as~~

~~they were being recorded.~~ There was an awareness that they were being recorded, and that elicited a certain amount of nervousness ~~on their part, which was noted by the researcher.~~ One of the interviewees expressed her nervousness directly to the researcher. The use of the Dictaphone was thereafter sensitively used ~~at by making use of~~ the researcher's discretion, and sometimes pure note-taking was made use of.

According to the literature (Mouton 2007:288), the qualitative interview is much like a conversation as it is flexible and continuous, with the research participant doing most of the talking. The researcher found this to be the case, and ~~experienced it as~~ a most enjoyable part of the research process. The information gathered ~~from through the~~ interview ~~sing research process~~ has depth and a richness to it, which has been described in the ~~research~~ report ~~given in during e~~ Chapter 5.

4.8. Documents

Documents are an important source ~~of for providing significant~~ ~~important~~ insights into the social meanings that underpin social action. They provide useful evidence on how institutions, ~~or~~ organisations are constructed, as well as ~~providgivinged~~ valuable information ~~aboutas to~~ how people interpret their social worlds. (McNeill and Chapman 2005:156).

The researcher was willingly supplied with documents, dating back to the inception of the conflict, by the chairmain of the St Francis Residents Association. This included minutes of meetings, public statements, submissions to Eskom and the Enviromental Impact Assessment Company, as well as booklets and flyers which they had distributed during the process of the environmental conflict ~~from~~ the 1980's to date. Local newspapers and Chronicles were also made use of by the researcher in order to formulate a reliable sense of what had transpired during the course of the conflict. A useful book, which was written by an executive member of ~~a~~ key environmental group, the St Francis Kromme Trust, was also made use of by the researcher.

All of the documents mentioned above were used by the researcher to add to the process of data collection.

4.9. Data Analysis

The process of qualitative data analysis was based on “reductionism” and “-interpretism”. According to Neuman (2006:88), the focus of interpretative research is on how people interpret and experience their daily lives, and what is meaningful or relevant to the participants involved in the research process. Getting to know a particular social setting, and seeing it from the point of view of those in it, is t. ~~This was the goal of the researcher, and this was true of this study. during the process of data analysis with regard to the homeowners involved in the environmental conflict in the greater St Francis Bay area.~~

According to Babbie & Mouton (2007: 283), in reports of analysis of case studies, research reports a description must be given of -must describe the context and conditions under which the themes appear. Pattern matching is important , and this is carried out by matching emerging themes with existing theory, thereby enhancing the internal validity of the study.

By making use of a coding procedure-, the data collected from the transcribed interviews, documents, minutes of meetings, letters to newspapers and chronicles was reduced to themes and sub-themes-, until the researcher was satisfied that the relevant themes and sub-themes had been established. According to Creswell (1994:153), the process of data analysis is eclectic and the allows the researchers to express their findings in a way that they find satisfactory. It is important to note-, that the literature review also acted as a literature control during the process of data analysis. The researcher then compared the findings of the research with the literature review in order to contextualize the findings.

According to Creswell (1994: 155), the following eight steps are a process of data analysis may be made use of by a qualitative researcher. The researcher used this process as a guide when interpreting the data that was collected for the study.;

- ~~1)~~ Getting a sense of the whole and reading through the transcriptions slowly and carefully, ~~and~~ making notes as ideas came to mind.
- ~~2)~~ Selecting one transcript, critically analysing it and while ~~so~~ doing so, jotting down notes in the margin.
- ~~3)~~ The same process as above ~~was~~ then applied to all the transcripts. Themes which were identified, were placed together in order of major, minor and unique topics.
- ~~4)~~ The researcher then returned to the data after abbreviating the themes into codes. These codes were then written next to the appropriate segments of text ~~as a~~ to see whether new themes emerged.
- ~~5)~~ The most descriptive wordings were used for the topics that were turned into themes. The researcher also tried to reduce the list of themes by grouping related topics ~~under below an~~ "umbrella" themes.
- ~~6)~~ A final decision on the name of each theme was made, after which they were constructed in order of importance.
- ~~7)~~ The data belonging to each theme was assembled in one place and the preliminary analysis was performed.
- ~~8)~~ Where necessary existing data was recorded. Quotes that were useful in generating themes, were also marked by the researcher.

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4.10. Reliability and validity of the findings

It important to note, that the paradigm is an important factor when discussing the issue of reliability and valididty as the paradigm dictates the methods the researcher should

~~use~~ ~~here to~~ when trying to establish a reliable and valid study. The aim of the interpretative paradigm is to provide understanding and meaning of the social phenomena under study and not to generalise the results ~~to the~~ to the general population, as a quantitative study would undertake to do. (Babbie & Mouton 2007:274).

With the above information in mind, the researcher undertook to use the method of triangulation in order to improve the validity and reliability of the study, as it is generally considered to be the best method ~~in order~~ to enhance validity and reliability in qualitative research. The use of triangulation entails making use of multiple methods in the same study to collect information concerning the phenomena under study, as well as proving helpful in reducing deficiencies or biases that stem from one researcher or research method. Triangulation is obtained, ~~by writing of~~ extensive field notes, member checks, peer review, an audit trail, ~~and using as well as~~ supporting documents which the researcher may have obtained during the course of the study.

4.11. Limitations of the study

According to Babbie & Mouton (2007:281), most case studies involve the examination of multiple variables. The variables in this case may be aligned to the stakeholders, of whom ~~eh~~ there are many. Ideally, the original intention of the researcher was to sample all the stakeholders involved in the environmental conflict at Thyspunt, ~~Oyster Bay in the Eastern Cape~~. Upon examination of the content that such a study would consist of, ~~it~~ it was decided in conjunction with the researcher's supervisor, that such a study would be too large an undertaking for a Master's treatise and would possibly be suitable for a doctoral study. It was subsequently decided to limit the study and focus on the homeowners in the area, drawing a sample from the St Francis Residents/Ratepayers Association as they were the most active stakeholders ~~involved in the conflict in question~~.

It is important to note, ~~that~~ that the researcher does not consider "lack of generalisability" to be a limitation of the study, as the intention of the study was not to generalise the findings ~~thereof~~, to the general population. ~~A~~ (Babbie & Mouton 2007: 274). ~~As~~ the researcher was working ~~within~~ a qualitative framework and making use of an interpretative tradition, the aim of the study ~~within the interpretive tradition~~ was to

provide meaning and understanding of the ~~homeowners~~ interests of the homeowners involved in the environmental conflict at Thyspunt, ~~Oyster Bay in the Eastern Cape.~~ (~~Babbie & Mouton 2007: 274~~).

~~**It isn't clear what Babbie and Co. have to do with this. It's better to put the citation at the end of a statement that could have come from Babbie.**~~

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4.12. Ethical considerations

Knowing what is considered to be ethical or unethical, is important for anyone conducting social science research. The power which the researcher possesses as an "expert" in the research process must be exercised with care, and respect for the dignity and welfare of the research participants should be of paramount concern. Regardless of whether the participants volunteer for the research study or not, care should be taken to not injure the participants at any level. Psychological harm is the concern of the social researcher, and because this occurs at a subtle level, any level of discomfort on the behalf of the research participants must be closely monitored by the researcher. (Babbie 2007:62).

The researcher was required by the Ethics Committee of the Nelson Mandela Metropolitan University to present a research proposal as well as clearance forms, clearly explaining and describing the research procedures and ethical considerations of her study as it involved the participation of human beings. It was first approved by the ethics committee, and then the researcher could embark on the research process. (Letter of approval attached in the Appendix section) ~~**I don't know how this should be cited.**~~

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4.12.1. Informed consent

In order to confirm that the participation of the participants was voluntary and that the participants understood the nature of the study, a consent form was signed by the ~~research~~ participants. Informed consent implies that the researcher is competent to undertake the study and that it has the approval of the university. Further, it re-iterates

the concept of voluntary participation, the right of the participants to discontinue if they so wish, and that the participants were not paid or coerced in any way to participate in the study. (Babbie & Mouton 2007: 522)

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After verbally explaining the research topic and objectives, to the participants, emphasizing that their research participation was of a voluntary nature and that they could withdraw at any time, the researcher obtained the signed consent of each of the participants. Many of the research participants felt that their signed consent was not necessary.

for their signed consent.

4.12.2. Privacy and confidentiality

According to Babbie & Mouton (2007: 524), the most fundamental technique of ensuring confidentiality of the research participants, is the removal of identifying information as soon as it possible. This is the responsibility of the researcher. The research participants were assured that their identities would remain confidential and that their responses would only be known only to the researcher, as the each individual responses would be grouped into themes during the data-analysis process. As soon as possible after the interview the research participants were labeled in the following manner: "Participant 1", "Participant 2" and so forth. The researcher undertook not to mention the names of those participants who took part in the research interview process, an undertaking which she the researcher has taken seriously. She assured all the participants, that the information which she obtained from them, would only be used for academic purposes and that they could obtain a copy of her findings in order to verify this undertaking of confidentiality.

4.12.3. Researcher's role

The guiding principle in this research report has been accountability. Accountability to the scientific community of which this researcher is a part, of, and

accountability to the community and participants in which the researcher has conducted her research.

There is an expectation by the scientific community that the researcher ~~is~~be familiar with the professionalism which is expected from a social science researcher in the form of knowledge of the social scientific process, and most importantly the ethical considerations which the researcher ~~must be~~ ~~has to~~ ~~considered~~ when conducting research with human participants. The researcher's results need to be accurately reported in written format, with no scientific fraud or willful misrepresentation of information. In terms of accountability, researchers must admit to any shortcomings and limitations which they experienced during the research process. This is achieved through critical self-reflection on ~~the part~~behalf of the researcher. The researcher has made mention of the limitations of her study in the previous sections. The research findings have been presented in written format, in the ~~shap~~form of a research report for the perusal of the scientific community, as well as the research participants.

4.13. Conclusion

This chapter has described the research methodology in detail. The motivation for the qualitative research paradigm was explained. The limitations and advantages were ~~considered~~highlighted and the important issues of validity and reliability ~~was~~ere covered. The sampling process was discussed and the importance of ethics in social science research was clarified. In the following chapter, the findings of the research are discussed, using the literature review as a control and various other sources of data ~~which~~ serve to triangulate the themes discovered by the researcher.

Chapter Five :Discussion

5.1. Introduction

In the previous chapter, ~~chapter three,~~ both the research design and methodology of the study were discussed in detail. The primary aim and objectives of the study, the data collection methods, ~~the~~ sampling procedure ~~and as well as~~ the limitations of the study, were all clearly outlined. This chapter, will focus on the findings of the study. According to Patton

(-2002:306) in De Vos, Fouche, and Delpont ~~(2007:343),~~ ~~Needs a date,~~ when performing a qualitative study it is important to make use of a combination of procedures which may include interviewing, ~~and~~ document analysis, that is minutes and agendas of meetings, mass media articles which may be in the form of newspapers, magazines, journals, newsletters and so forth as well as archival material. By making use of many sources of information on a particular phenomenon, the researcher may easily validate and cross-check findings.

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More importantly, because each data source has its strengths and weaknesses, use of triangulation may enable the strengths of one procedure to compensate for the weaknesses of another. ~~By ma~~ Making use of the triangulation method to improve validity and reliability, ~~it~~ also enables the researcher to allow the participants in the interview process to speak freely ~~when they are being interviewed,~~ without distorting what they say ~~while they are interviewed.~~ (Mouton 1998: 275-). This study made use of face-to-face interviews, minutes of meetings of St Francis Residents /Ratepayers Association, documents obtained from the chairman of the St Francis Residents Association ~~those~~ which are current and archival, dating back to the inception of the conflict, as well as local newspapers and chronicles. The qualitative data collected from the semi-structured interviews was carefully analysed and interpreted by reducing the volume of information collected, ~~by~~ making use of open coding, breaking the data ~~which was collected~~ into parts, examining it, looking for main ideas or themes, naming them and communicating the essence of the data collected, as well as triangulating the findings with supporting

literature obtained through the literature study- (De Vos, Strydom, Fouche, Delport 2007: 343)-. The literature review which is documented in Chapter two, served as the literature control for this study.

Before undertaking to report on her findings, the researcher finds it important to note that, according to the literature on research methodology, “there seems to be no agreement among authors concerning the elements or structure of a qualitative research report, in fact there are many acceptable forms for a qualitative report.” (De Vos, Strydom, Fouche, Delport 2007: 354). The findings of this study are discussed, focusing on the aim of ~~the~~his study which is to explore the interests of homeowners involved in an environmental conflict at Thyspunt, Oyster Bay in the Eastern Cape. Through bringing order and structure to the data collected, the central themes were revealed and will be discussed below.

5.2. Security (~~Safety~~) ~~Not clear why you use both words. Either of them is fine on its own.~~

The major theme which runs through this discussion is related to the basic human need for security. Although human needs are not directly observable, there is sufficient evidence resulting from observation of human behaviour to indicate that they do in fact exist. One of the homeowners who had the previous experience of living next to Koeberg nuclear power station in the Western Cape, had the following to say:

Participant 2 : “.....I lived in Duinefontein next to Koeberg, so I kind of.....it's a funny feeling at the back of your mind when you live in an area with sirens.....once a year, they test the sirens.....so at some level, it must have a deep psychological impact somewhere.”

With regard to the environmental conflict surrounding the proposed development of the nuclear power station at Thyspunt, ~~Oyster Bay, in the Eastern Cape,~~ the need for physical security/~~safety~~ by the homeowners has arisen as a primary concern. According to

Burton (1988:53) ~~conflicts~~ are deeply rooted in human needs, and when fundamental human needs become threatened, superficial compromises are not considered for conflict resolution. Anstey (1999:17) echoes this sentiment ~~by ascertaining in saying~~ that conflict exists when fundamental human needs for security, identity, recognition and development are not met. Basic human need theory has many non-psychological components which have found expression in the physical needs, such as the need for safety, but is an approach which originates in the psychological group of approaches to the causes of conflict, generally following the ideas of Abraham Maslow who recognized the existence of psychobiological needs as a universal human characteristic. (Davies 1988:26) ~~There seems to be no agreement on exactly what these needs are, however but~~ Burton (1988:50) refers to them as the need for identity, the need for security, the need for control, and the need to be perceived as rational. Davies (1988:26) on the other hand refers to the physical needs, the social—affectional needs, the self-esteem or dignity needs, and the self-actualisation needs. He does ~~assert~~ ~~certify~~ that there is a priority in needs fulfillment, with the physical needs ~~needing to usually being the first to be~~ satisfied ~~first~~.

The concern for safety around the proposed nuclear development at Thyspunt, ~~Oyster Bay~~ has been expressed in a number of ways by the homeowners: ~~**You'll see that I have suggested changes in the way some of the speech has been transposed below. I take it these things were spoken, not written? Of course, if they were written, you keep it exactly as you have it here. I have just done a few because I see further down you have some elided and some not, so perhaps you are already transposing accurately,**~~

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Participant 3 : “so if this thing is so marvelous and so flippein safe, why do they not ~~I don't want to change actual speech, but I think this would probably have been said as "don't they" have it slap bang next to Coega?~~”, “ You know everybody says that nuclear is fine, but nobody is prepared to have it in their own back yard!”
 “those concerned with safety, will be listed as a small group of greenies.”

Participant 12 : *“ ...the viability of the site and the impossibility of evacuating the area in time in the event of a nuclear disaster has still not even been considered .” “just the position of Thyspunt, as I still do not don't? believe that it is it's safe to put it at Thyspunt.”*

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Participant 2 : *“....we've only got one road out, we have a whole Sea Vista community that does not doesn't have transport....”*

Participant 11 : *“ ..safety, that is what's what really concerns me. If they take into account all the scientific facts, and tell me that everything will be okay and there will be no problem with safety, I will !!! be satisfied.”*

Participant 10 : *“opposed to the idea as nuclear development has historical negative connotations and am I'm apprehensive regarding safety of the area....”*

Participant 9 : *“Health, how is it going to affect us, we are us? We're not even aware of the impact which it could have on our health..”*

Participant 7 : *“ ...safety issues are a great deal of concern for me. How safe will it be? “*

Participant 5 : *“ ...the possibility of fall-outs and that kind of thing is a concern to most people in the area”*

Participant 4 : *“....Healthwise..... I am from Europe. I have seen from Chernobyl what happens .”, “another thing the people here, they are quite different from the people in Europe. If it is 4 o'clock, they go home. They don't care if there is a problem. You can't do that with a power station.”, “.... and if you do need power stations, the safety and the quality here will not be good! “*

Participant 14 : “.....*the viability of the site and the impossibility of evacuating the area in time had have? still not even been considered....”*

Homeowners ~~have~~ also expressed their concern with safety by raising public consciousness ~~s~~ through letter writing to a variety of newspapers and chronicles, articles in journals, ~~and as well as~~ the ratepayers' submissions towards the scoping report of the Environmental Impact study.

In an article in *The Herald* newspaper : 6/03/2008, the chairman of the St Francis Residents-/Ratepayers Association made a public appeal to Eskom regarding the safety of the proposed nuclear development at Thyspunt while addressing a meeting about the proposed nuclear project in Port Elizabeth at the Beach Hotel. This is what he demanded from Eskom:

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“Eskom must halt all investigations into the feasibility of Thyspunt as a nuclear site until it has proved that it can evacuate 25 000 residents along a single road, in 11 minutes, through the epicenter of a nuclear disaster”

The St Francis Residents-/Ratepayers Association included the following concerns in their submission to ACER, who in conjunction with Eskom, were conducting the Environmental Impact Assessment:

“considering the position of St Francis Bay and surrounds, it is a fact that it would be impossible to evacuate the area in time, with a fresh westerly wind blowing (most of the time) in the event of failure of radiation containment, and resultant release in the atmosphere.”

In the minutes of the St Francis Residents-/Ratepayers Association, August 2008, the safety of the homeowners in the event of a nuclear fall-out was a pressing concern. They expressed concern about evacuation:

“the impossibility of evacuating the area in time had still not even been considered...their agreeing to reduce the emergency planning zone to 3km...in the context of Thyspunt this was totally unrealistic.”

In an article written for [the journal Biophile](#), ~~What is this?~~ a homeowner expressed ~~their~~ concern ~~aroundabout~~ the safety of the proposed ~~N~~nuclear development at Thyspunt, (Issue 17 : 22) :

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“we are 10 kilometers down wind from the proposed nuclear power station and will have approximately 15 minutes to evacuate. Is this possible? If there is an accident how will our families health be affected?”

5.2.1. Human Participation in the Environment

A sub-theme which has arisen ~~during the research process from the need for security/safety, during the research process,~~ is concerned with human security and how ~~this~~ ~~What? The security or the concern or safety? Ambiguous.~~ may be influenced by human participation in the environment. Davies (1988:26) distinguishes between substantive needs and instrumental needs, which may be secondary needs derived by the urge to satisfy primary needs, which ~~is~~ in this instance ~~is~~ the need to ensure human safety/~~security~~. In this way, human security may not only be seen as freedom from specific threats ~~to human security~~, but also freedom to participate in the wider society and the environment.

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According to Redclift (-2000: 34-), human security may also be referred to as the degree to which human beings are protected from environmental degradation, resource scarcity and environmental hazards by their own and social institutions and processes. This sub-theme of human security and the environment, arose during the interview process, and

was demonstrated in the following statements by homeowners and their concern with environmental hazards:

Participant 2 : “.....My personal concerns are around the environmental impact.....the fact that the site is on a really sensitive area.....the long term impact.”

Participant 11 :” ...there is the issue of waste. No where in the world have they sorted out adequate waste disposal. And, South Africa does seem to have a casual approach towards waste, remember not so long ago, we nearly became the dumping ground of the world for waste!” *It's always an issue with participant comments whether the author me to make little language corrections or not in these comments e.g. "Nowhere" as one word, no comma after "And," "long term". and a new sentence starting with "remember." I don't want to disturb you on Christmas Day, so I'll leave it and you can tell me when you check the paper. I can easily go back and change things, or you can yourself, of course.*

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Participant 5 : “the long term health concerns for the community in the area...”, “...waste disposal and that kind of thing?”

Participant 4 : “....and they have still not solved the waste problem....I have seen with the Koeberg Plant , with the waste seeping through the ground and we will have the same problem here with the wetlands! We get floods here and look what happens with the waste, it gets washed into the area!. “

Participant 3 : “ And you know what, ? we have got our big dams that supply Port Elizabeth with water and if anything goes wrong, the city will be without water, because it is a feeder dam to the metro.”

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The issue of waste disposal was also raised in the St Francis Residents/Ratepayers submission to ACER, eef, the environmental consultants handling the environmental impact study on Eskom’s behalf:

“...to our knowledge, no site has yet even been identified, let alone researched and licensed, for the permanent disposal of long-lived and high –level radio active waste.

For many years, the nuclear industry world-wide has ~~not~~ been criticized for dragging its heels over this issue...”

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A homeowner wrote a letter to the local newspaper, *Our Times* : 30/11/07, and this is what he had to say regarding his concern with the waste from the proposed nuclear development :

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“they do not publish the fact that huge amounts of depleted uranium fuel which is a billion times more radioactive than its original uranium is stored on site.....this deadly material remains radioactive for tens of thousands of years. Who will monitor all that waste closely enough for such a long period of time?”

In a letter to the Chairman of the St Francis Resident’s / Ratepayer’s Association from a homeowner he has the following to say regarding human participation in the environment:

“.....we are faced with Safeguarding our way of life in the future.”

The concern was expressed in the minutes of the St Francis Residents/ Ratepayers meeting August 2008 about the overall impact this development would have on the environment and the overall impact on the community as a whole:

“a major concern was the overall impact which the choice of Thyspunt would have on St Francis Bay Area.....it was predicted that it could become another Mossel Bay, following the arrival of Mosgas”

As transport options were being considered by Eskom-, homeowners in the meeting also voiced their concerns about the road to Thyspunt and ~~its the effect thereof~~ on the environment:

“.....Eskom was considering transport options which would be a road to Thyspunt from the top of Tarragona Road, and via “The Dunes”. This would have huge implications for St Francis Bay, and would involve crossing a major wetland.”

A home owner expressed the following sentiments in *The Herald* : 6/03/2008 ~~article:~~

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“ The eco –cost of interfering with an ancient dune system or causing major marine pollution at Thyspunt could far exceed any other problems elsewhere... ”

Davies (1988: 30) ~~asserts~~ ~~emphasises~~ ~~of~~ “security of the environment”, rather than “~~“~~ security from the environment” ~~and~~ brings the issue of human security and the environment to the ~~issue~~~~concept~~ ~~Meaning not clear~~ of sustainable development, which is a point of contention regarding the proposed development of a nuclear power station at Thyspunt, ~~Oyster Bay in the Eastern Cape~~. Sustainable development thus forms ~~our~~~~the~~ next sub-theme under the umbrella of the human need for security.

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5.2.2. Sustainable Development

In order to achieve ~~an~~ increased ~~in the~~ ~~human security which is a~~ fundamental ~~human for~~ ~~security, need that humans are compelled fulfill~~, as well as sustainable development, there is a need to begin questioning the sustainability of existing social and political practices. A homeowner expressed the following view in this regard:

Participant 2 : *“..it is going to be the long term impact.....how are they going to make inferences about that, because how are they ever going to know?”*

Participant 3 : *“.....Ja, there will be jobs for two or three years while they build the thing, but when it comes to sustainability there after tourism will be flat on its face, because no one wants to be near it!”*

Participant 4 : “.....*every house could have solar power and so forth, even the lightbulbs, you know, those longlife ones.....we could all do something to help*”

Participant 5 : “ *...I mean South Africans are spoilt, we waste electricity, we are not conserving like we should be so there has got to be some kind of plan.*”, “ *...if we could each reduce our electricity consumption by at least 10%. But not one household that is excessive has actually cut down.....I don't think that we are trying as hard as we could be.*”

In a letter to the *St Francis Chronicle* : September 2007, a homeowner had the following to say regarding sustainable development:

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“...diversifying energy sources should rather involve solar and wind – truly renewable resources that South Africa has in abundance instead of vastly expensive nuclear programme that involves a dependence on foreign bank loans, foreign science, foreign manufacture and plenty of radioactive waste.”.

The immediate security of the environment, is not only a present concern, but a concern for future generations ~~to come~~. It is with this idea in mind, that the concept of sustainable development becomes relevant. The environment is moulded by human purposes, and changes in management of the environment is essential in order for development to be sustainable. —(Redcliff 2000: 34). This is what the homeowners had to say in this regard:-

Participant 2 : “*...it is a catch twenty two, as it is a so called clean energy in the short term, way less emissions than a coal firing station, but then you are sitting with nuclear waste....*”

Participant 5 : “*...And I mean if you look at coal.....I don't know if you have been to the Transvaal areas where they have got the coal mines? The air pollution is horrific!*”

Participant 7 : “*I feel that we could use alternative ways for generating power, more sustainable ways, such as solar, wind, and water. Not nuclear.*”

In a letter to the *St Francis eChronicle* : July 2007, a homeowner had the following comments regarding sustainable development:

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“..the future is all about sustainable, environmentally friendly development – one thing that nuclear is not and renewable energy is. Nuclear does not create jobs, renewable energy does.”

In a letter to a local newspaper, *Our Times* : 30/11/07, a home owner had the following to say regarding sustainability and the proposed nuclear development:

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“..... the nuclear industry which pursues in priority economic interests regardless of the short and long term consequences for human life and regardless the destructive environmental impact.”

With regard to the economic sustainability of local unemployed people, a homeowner had the following comment :

Participant 5 : “.....*Are they going to be using people from the area, or are they going to be bringing people in?.....If they employed from the community, it is a great economic thing.....at least they will be earining, and potentially having work ongoing, because they might be employed by the company afterwards.*”

In an article written in *Biophile* Issue 17, by a St Francis resident, he states that:

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“..... only renewable energy rightfully deserves to be classed as true sustainable development.”

~~During the research study~~ ~~Aa~~ -participant ~~have during the research study~~ expressed the concern for future generations :

Participant 2 : “ *behind the dunes there is a whole fresh water system.....and .if we start messing with stuff like that now, we are only in future going to realize what the impact is.*”

If freedom from insecurity and unsustainability is desired, a form of environmental citizenship is required ~~thereby to~~ widening people’s entitlements, duties and responsibilities as citizens. A homeowner interviewed felt ~~lets~~ that sustainability should be a goal of development, not a by-product:

Participant 2 : “.....*look to me there is a big difference between growth and development, development is what we are doing now, it is unsustainable growth.....what is happening now, we are not doing in a sustainable way.*”

In a letter to the *St Francis Chronicle* : July 2008, a homeowner ~~made has~~ the following ~~comment to say~~ with regard to the sustainability of the proposed nuclear development :

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“ ...we already have thousands of jobless squatters, and the Eskom plant will attract another influx of “ job seekers” . They will simply erect their structures in the vicinity – and stay on. Inevitably crime will result in the area. The chokka fishing in a wide radius near the plant will be destroyed. The ocean temperature will change, which will be death to the delicate marine ecology”

Another homeowner in a letter to *Our Times* : 30/11/07, ~~a local newspaper wrote a letter~~ ~~and~~ expressed the following:

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In their submission to the ACEReer, the environmental consultants managing the Enviromental Impact Assessment on behalf of Eskom, an environmental body in the area,

~~The St Francis Kromme Trust, had the following to say with regard to the planning of a nuclear power station and the sustainability in terms of a nuclear waste programme:~~

“ ..the reality is that waste disposal is an integral part of any nuclear programme, and should be addressed right from the outset”, “....We submit that waste disposal should be included as part of the EIA investigation.”

Sibanda (-2000: 31) emphasizes the fact that environmental conflicts often arise over benefits or trade-offs between environmental and economic issues, as is the case ~~of~~with Thyspunt. However, environmentally caused conflicts tend to erupt in developing countries, which are often not in a position to implement sustainable development. With this in mind, a cycle is often formed, whereby development can cause negative environmental impacts, which lead to conflict, and conflict could result in further environmental degradation, and so the cycle continues. The St Francis Bay area has been dramatically altered~~is wrought~~ This word means "made and decorated" but I'm not sure what you want to say here, so I don't have an alternative ~~by~~with environmental degradation . A homeowner had the following to say in this regard:

Participant 2 : “*I would prefer it if we had some areas in our coastline that would be absolutely no go development zones.....it makes sense, because now government has to fork out money to rehabilitate beaches, which should not have been developed in the first place”* .

“.....Look at the problems at Balito (Natal coast).....and when we had our storms now, and our canal houses we flooded...” .

“....it might look right now, but in 20 years time, it is going to cost ratepayers money to fix up areas that should not have been developed in the first place!”

Participant 11 : “ ...*what we should be more afraid of than a nuclear power station is global warming, that is frightening. One only has to take note of all the environmental changes here in St Francis to realize it is a real phenomenon.* “

According to the *St Francis Residents-/Ratepayers Association #Newsletter*; 9/04/08 :

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“.....never in the history of our village have there been more enviromental issues that need to be addressed. “

According to the ~~P~~ublic ~~R~~eport-~~B~~ack meeting held at the Village Hall, St Francis Bay 21 August 2008, ~~at 6pm~~, these “issues” include the ~~B~~each reconstruction project (-due to rising sea levels), ~~f~~lood ~~D~~amage caused by the November floods and prevention of a re-occurrence thereof, silting up of the canal system, ~~-~~and Thyspunt.

5.3. Identity and Trust(~~Trust~~) Not clear what (Trust) means here

The human need for identity, may be explained as the need for human beings to establish, maintain and protect a sense of self, meaning, predictability and purpose. Burton (1988: 53). Can you give a citation for this? This has arisen as a theme during the interviews ~~which the researcher undertook~~ ~~with~~in the group of homeowners. It is an important element during a conflict situation ~~because~~as when an individual or community is feeling threatened, or unsafe in any way, they may often respond in a defensive manner in order to avoid psychic or physical threats. This response often serves to “fuel” the conflict. This has certainly been the case in the environmental conflict around the proposed nuclear power station at Thyspunt, ~~Oyster Bay in the Eastern Cape~~, - as the community has felt under severe threat and feels distrustful of the whole process which Eskom has undertaken. ~~This~~One participant was particularly ~~outspoken~~~~blatant~~ about his lack of trust regarding the proposed nuclear development and the power crisis which the country is ~~suffering~~~~lays claim to~~. Meaning?

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Participant 4 and Researcher :

Researcher : “.....so you distrust them, because they switched off the power?”

Participant 4 : “ *Definitely, Yes!*”

Researcher : “ *You don’t think that we have a power crisis and therefore need nuclear power?*”

Participant 4 : “ *No’*

5.3.1. Imposed development versus negotiated development

In describing the relationship between development, environment and conflict, Fredman (-1994: 6-) discusses negotiated development versus development which is imposed on the community. This has arisen as a sub-theme of the need for identity byin the affected community. The general feeling which has arisen from various sources, is that the community does not have a real say on whether or not the proposed nuclear power station will be builttake place. Homeowners expressed the following sentiments with regard to an imposed development of the proposed nuclear power station at Thyspunt:

Participant 2 : “ *...I don’t like the way that mis-management is at the moment blackmailing us into putting up structures twenty years ago, they knew that we would run out of power..... I am not going to be blackmailed by Eskom , to accept nuclear power”*,

Participant 3 : “ *.....Thyspunt venue is a given, and they are not even prepared to consider an alternative site.*”, “ *I don’t think it (EIA) will effect the issue very much, they have decided. But, we don’t want it here!*”

Participant 4 : “ *.....the decision to build a nuclear power station was made long ago. I think they are going to do what they want to anyway, we are not going to be able to stop them.*”

Participant 5 : “*It is pretty much decided already, no matter what we have to say.*”,
“...*I think that they (Eskom) have made up their mind that this is where it is going to be.*”

Participant 6 : “ ...*I was completely opposed to it*”

Participant 7 : “ *I am against it*”, “*I don’t think that it will have an effect on anything at all. They (Eskom) have made up their minds about what is going to happen. I think that instead of listening to our concerns, they are trying to change our minds to their way of thinking!*”

Participant 9 : “*I think that it is going to happen, the nuclear power station. They have already began looking for a way to build a new road and have started to clear the area*”

Participant 11 : “...*so no, I do not believe that it will automatically go ahead and happen. Unless of course, money passes hands, as it often does in this area....*”

An article in the *St Francis Chronicle* July 2007 states that at a public meeting held in St Francis, the chairman of the St Francis Residents/Ratepayers Association had the following to say regarding the “imposed” nuclear development of the nuclear power station at Thyspunt:

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“ ...*the decision making process is not of a democratic nature.*”

A homeowner expressed the following opinion in a letter to the *St Francis Chronicle* :
August 2007:

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“*Up till now, we consider all public EIA meetings as being dominated by the developer’s interests. (Eskom)*”

In a further letter to the *St Francis Chronicle* : September 2007, a homeowner ~~made had~~ the following ~~comment to say~~ regarding the imposed development on the community:

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“...South Africa’s government has decided that nuclear solves all of its problems and has chosen to ignore all the problems that a nuclear programme creates.”

By its very nature, development is conflictual since it destroys some things -- the environment in this case, -- while creating others -- the proposed nuclear power station.

A comment by a homeowner :

Participant 8 : “*damage to the environment is the price we have to pay for the economic benefits gained.*”

Added to this, according to Friedman (1994:-7), ~~development~~ may destroy social relationships in a society, as it may trigger conflicts or violence from threatened communities. Development is often a process which raises expectations and brings change to a society resulting in conflicts and disagreements either within the community or between communities and planners. On the surface, it may ~~often~~ appear as though people are competing over resources, but the real cause of conflict is usually much deeper. The actual cause, might be that the community needs to be involved, recognized and acknowledged in the development which is taking place. ~~Good point! Ties in with your theme.~~ Therefore, if the planner does not address such needs, a seed of bitter conflict ~~would have been~~ sown. (Friedman 1994:6). A Homeowner had the following to say on the issue of community involvement:

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Participant 3 : “.....*You see, everybody must be able to make a proper decision. They keep avoiding the fact that we are entitled to public meetings where we can address issues. They are now opting for meetings in Port Elizabeth and big open days with us, so they can tackle us one on one and not as a group. So they are like doing the “divide and rule thing”, and not listening to our issues. So that is what we don’t like.*”

A view ~~was~~ expressed by a homeowner in a letter to the ~~St Francis Residents Ratepayers Association~~ of which he is a member :

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“Understand what situation we are up against. First, we are not being asked to be given the opportunity , to decide wether or not South Africa should have more nuclear power stations. That decision has already been made to have more by Eskom”

In a letter to the ~~St Francis Chronicle~~ August 2007, a resident had the following to say:

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“...I attended the public participation meeting on Wednesday 25/07/07....one sad fact which did emerge is the power stations on all five sites are “a fait accompli” and it’s simply a matter of prioritizing when and where stations will be built.”

Linsell and Mc Daid in Sibanda (2000:38) empahsise the fact that people want control over their lives and the environment. It is for this reason, that they ~~go into~~ conflict with environmental groups who want them to cho~~o~~se between their livelihood and saving the environment. If they are consulted on how they will combine the two, the result is often non-conflictual. This re-emphasises the importance of local consultations and internal solutions.This is reinforced by Fawkes (1992:10) who ~~stressed the importance of highlights~~ the involvement of the public in all stages of development and policy-making in order to ~~prevent ensure that~~ conflict ~~become a phenonmenon of the past~~.

5.3.2. Lack of transparency

A second sub-theme which ~~h~~was ~~been~~ established during the interview process, is a lack of transparency . The role of the ~~Enviromental Impact Assessment (EIA)~~ performed by ACER, has come under scrutiny and questions about objectivity of the process by the community, ~~and~~ is a further point of controversy and debate, further fuell~~l~~ing the conflict. A common complaint about the EIA is its tendency to consistently and perversely de-emphasise the adverse consequences of development while highlighting the potential

positive consequences. It is this perception of bias, that suggests that EIA studies are merely exercises in project advocacy. Well put! Below are some of the participants' feelings surrounding this theme:

Participant 2 : “I don't have a lot of trust in it. I think they' re doing it, so that they are able to say, we've done it. We have done the right thing. They hide too much, they are not transparent.”

Participant 3 : “the power lines are going to be worse, and now there's skullduggery going on because Scivest have a mandate to investigate from the dunes onwards, but I want to ask you what is happening from the nuclear power plant to the dunes? Is the electricity gonna fly? But why are we not told?!”

“.....my concern is lack of transparency. There is a vague undertaking that the zoning for nuclear development which was a radius of 16km, has been reduced to 3-6km from the development and Oyster Bay is right bang slap in the middle of it. And there is no scientific evidence to say that there is a reason for it being reduced. It is just “pie in the sky” to say that they are reducing it.”, “ Eskom have already signed an agreement for less than what they sell to the other suppliers of electricity. I mean this is all underhand, there is no transparency!”

Participant 4 : “First of all, you cannot tell me that it is independent! If I pay you to do a study, you will tell me what I want to hear not so?”

Participant 5 : “I don't think that they (Eskom) will even take the outcome of the impact assessment into account.....my husband works for a company and every high site they have to do, they do environmental impact studies and it never changes the outcome.”

Participant 12 : “the study does however lack objectivity, as the company of environmental consultants undertaken to do the environmental impact study, were commissioned by Eskom to do it, so that does not make the study suitably objective does

it, and that is concerning. We have hammered the idea of independence in our submission against the nuclear power station, as we feel that it is a very strong point of contention. The consultants are being paid by the Department of Minerals and Energy, so that does not make independant.”

In a letter to *The Herald* newspaper : 9/04/2008, a homeowner ~~had made~~ the following ~~comment to say~~ regarding the lack of transparency, ~~or rather lack thereof~~ as well as objectivity of the EIA process:

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“There has been much discussion recently of the apparent potential for manipulation of EIA.....the uneasiness stems from the fact that the EIA consultants are retained directly by Eskom and that National Nuclear Regulator, mandated to assess the nuclear viability of the site, is part of the department of minerals and energy which , with Eskom,, is a prime motivator of the whole nuclear programme.”,

“data studies for the specialists, it is noted are all being provided by Eskom.. It is difficult to escape the thought that Eskom is handily placed to influence both the direction and the outcome of the EIA process.”

“.....nuclear and its implications are too serious a matter not to be treated with complete transparency and unimpeachable correctness”

The issue of lack of transparency has become evident in relation to the issue of waste disposal as well. In a letter to a local newspaper *Our Times* 30/11/07, a homeowner ~~has~~ ~~the following to say in this regard :-~~ wrote:

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“the nuclear industry is trying to tell the people there are no toxic emissions released via the reactor venting holes and via the reactor stacks....they do “forget” to explain that theses infamous elements are deposited in the human body and that the addition could induce various kinds of cancer, leukaemia and deformities in babies (it happened at the vicinity of Pelindaba near the trial reactor of NECSA)”

A homeowner expressed the following opinion with regard to the results of the Environmental Impact Assessment :

Participant 8 : “.....*I would be interested in the results, but I do view them with some skepticism.*”

~~On whether it **What?** would influence the outcome of the nuclear power station.~~
~~Homeowners expressed the following reservations on wether the Environmental Impact Assessment would influence the outcome of the proposed development:- **If you put this, you must put the "reservation" straight below this phrase. Rather move the explanatory bit at the end of his comment.**~~

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Participant 4

~~Participant 4 :- (This participant owns a Bed and Breakfast directly opposite the entrance to the Golf Estate which he refers to and was severely affected by the flooding which took place last year. His establishment was buried in sand which was washed down from dunes, a natural Sand River which resides on the one side of the Golf Estate):-~~

~~“_.....look at the Golf course here! They did an Environmental Impact Study before, they did it on the dunes, and look what happened here! I was closed for three months last year and they said it would be safe!”~~

Participant 8 : “*Proably not. Look at Koega. There was so much debate about that and it still went ahead.*”

Participant 10 : “ ...*legally it must, but politically I do not believe that it will*”

Participant 9 : “.....my friend said that her husband’s company ,on of the engineering firms, has already put a tender in to build the nuclear power station. She wants to live in America, and he wants to stay here, in case they get the tender, because all his life, it has been his dream to build a nuclear power station.”

In an article in *Biophile* (Issue 17 : 20) titled “ The Nuclear Industry another heinous swindle for the sake of power and money,” the EIA ~~Environmental Impact Assessment~~ is criticized and viewed as flawed, by the participation of Arcus Gibb consulting engineers, who have a long history of working for Eskom and consequently a vested stake in the nuclear programme.

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~~In~~According to the literature, Lane, Ross, Dale and Rickson (-2003:89-) reiterate ~~at this~~ ~~which?~~ point of concern by stating that ~~Environmental Impact Studies~~ ~~Environmental Impact Assessments~~ ~~IAs~~ tend to portray the interests of the state and developers, ~~often~~ ~~thereby~~ marginalizing alternate value systems. This ~~What?~~ is seen as a central source of bias in ~~Environmental Impact Assessments~~ ~~environmental Impact Assessment~~ both in the literature consulted as well as by the community in the St Francis Bay area and the case study in question.

According to the ~~#~~*Minutes of St Fancis Residents-/Ratepayers Association* August 2008, concern was raised that “..... the whole EIA process could be simply paying lip-service to legislative requirements.”

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5.3.3. ~~Communication~~ ~~Conflict~~ as the result of poor communication, ~~Needs~~ ~~rephrasing~~ ~~misperception~~ ~~and~~ ~~miscalculation~~

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Poor communication, has also occurred as a sub-theme under the umbrella theme of trust. ~~Is this why "Trust" was put in at the start of this section? I don't think you have mentioned it before now. If Trust is part of this theme, you need to make the subheading "Identify and Trust." I don't think they are the same thing, though. Are~~

your themes clearly differentiated? Individuals often fall prey to “group think”, limiting their ideas to the ideas held ~~of~~by the group to which they belong . In this case, miscommunication is a ploy which is being made use of by Eskom, in order to sell the idea of nuclear development to the local community. A ~~Hh~~homeowner has the following to say in this regard :

Participant 3 : “.....*they are going to create jobs this is how they are selling the idea to the local community.*”

There is also a strong feeling that communication is one-sided and limited.

A homeowner attended a public participation meeting held by Eskom, and in a letter to ~~†~~*The Herald* : 30/07/07, she had the following to say regarding the communication process and her frustration surrounding it:

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“ I attended the public participation meeting Wednesday July 25.....vulnerable , fearful and frustrated citizens then try to articulate their concerns and are constrained by EIA parameters. A lack of clarity from Eskom and the consultants.....Eskom did’nt answer questions directly”

In a letter to the ~~†~~*St Francis eChronicle*: August 2007, a homeowner had the following to say:

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“ ...we have raised the issue of insufficient information on the proposed nuclear development by Eskom which has been given to the public”

A homeowner in a letter to the local newspaper, ~~†~~*Our Times* : 30/11/07 has the following to say regarding “one- sided” information:

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“ At this stage it seems that the Kouga municipality is provided with one-sided information by the nuclear industry.....the national and international nuclear industry do

not publish the unacceptable high risks caused by higher levels of radiation and mutagenic and toxic gases”

In an article titled “ The Nuclear Industry another heinous swindle for the sake of power and money” in *Biophile* (Issue 17:20) concern is being expressed about the communication around nuclear energy “-predictably the overall impact of nuclear energy, like so much about the industry, is being hidden behind a wall of disinformation”. Even the communication of information concerning the participation in the EIA process has been intimidating and confusing for the homeowners :

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Participant 2 : “...*the EIA process is a process which has been designed for people who have lots of time! I made a point of studying it, so that I understand it, because I am so involved in the environment, but for most people, they do not have the time!*”

According to Burton (-1972 :76-), groups in conflict harbour negative images of each other, which upon close examination tend to be mirror-images of each other. The human drive for consistency will generally ensure that only information that reinforces the negative image of the enemy will be assimilated, in this case, the idea of nuclear energy. A homeowner had the following to say regarding negative perception :

Participant 10 : “.....*Correctly or incorrectly, there is a certain negative perception with regard to Nuclear Power Stations.* “

In their submission, to Argus Gibb, the company employed by ESKOM to undertake the EIA Environmental Impact Assessment, the St Francis Residents/Ratepayers, listed “perceptions” and their influence thereof, as a point of concern regarding the proposed nuclear development:

“.....effects of a nuclear facility on the Tourism Industry, the industry with the most potential for growth and job-creation from building to service industries. A lot of the effects will flow from perceptions more than facts, but the end result will be the same.”

5.4. Power (~~Control~~) ~~Use one word or the other, not both. A heading must be clear.~~

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A discussion of power is a naturally emerging theme during a discussion of conflict, as according to Mayer (2000:50) “power is the currency of conflict.” The concept of power has been discussed in detail during the literature study in Chapter two, and it has been clearly stated that in order for a conflict to develop, all the stakeholders involved in the conflict must possess some power. Mayer (-2000:62-) states that the balance of power is not an important issue, and reference is made to ~~that case study~~the case study in question ~~Is this your study or another one? Not clear~~ which consists of an enormous multinational corporation-, government-~~owned~~ Eskom, which is pitted against small local interest groups such as the St Francis Residents ~~/R/~~Ratepayers Association – clearly an imbalance of power.

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However, Mayer (2000:62) is not concerned with this ~~over~~ imbalance-Meaning? of power between stakeholders, stating that the parties should rather possess enough power, so that others involved in the dispute must at least consider their concerns and have enough power to resist any solution that fundamentally violates their interests. This was achieved by the homeowners in the ~~eighties-~~80's:

Participnat 11 : “ *We – Bokke Du Toit, Hilton and a whole lot of us from Humansdorp, Jeffreys Bay, and our area, were very active in lobbying against the proposal, way back then in the early eighties.*”

However, the issue of power and the manipulation thereof, seems to be an issue that many of the homeowners are concerned with. One homeowner, felt that, as part of the manipulation of power process, Eskom ~~only~~-sent only female representatives to the public meetings, because then the community would not be inclined to be too severe with them, and would exercise more restraint. This is what the homeowner had to say in this regard:

Participant 3 : “they are very clever with Argus Gibbs, using women only so when men stand up they tend to back off, because they feel they must not attack a lady and when we speak to them, and when I speak to them – women upon women, it ends up in a cat fight and then one of the ladies will get terribly cross and disappear form the scene and go and drink a cup of water behind the scenes!”

Researcher : “ So you feel they are manipulating the process?”

Participant 3 : “ Yes , they are!”

Another homeowner felt that Eskom was ~~using~~manipulating the homeowners ~~our~~ to accept the proposed nuclear development :~~Don't use first person in a paper, Glynn. Whose attitude are you talking about here?~~ attitude as a society of convenience, to further manipulate the process of power utilization:

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Participant 2 : “...we are a society of convenience, and Eskom is using that to sell the idea to us, of nuclear. I mean when power fails, we just go and buy a generator and burn fossil fuels! We will not be able to do that when the water runs out!”

The following themes ~~aeecording~~related to power bases ~~has~~-ar~~ose~~isen during the ~~researcher's~~ interviews with the homeowners ~~of the St Francis Residents/Ratepayers Association~~:

5.4.1. Economic Power

The ~~strength~~measurement of each stakeholders's relevant power is impossible to measure with~~out~~ any degree of accuracy. It has been mentioned in Coser (1956:135) that possibly; only the measurement of economic power could take place, provided that it can be isolated from social power. This homeowner had the following to say regarding economic demands for power:

Participant 2 : “ *It is difficult, especially for financial people to understand. We need electricity now, so if we lose a whole wetland system, it's one of those things you know.....*”

Both the homeowners and the other stakeholders possess a fair amount of economic power, and this may be ascertained from the value of the properties in the area, which are all very expensive. According to the submission of the St Francis Residents/-Ratepayers Association to ACEReef, the environmental consultants employed to do the EIA Environmental Impact Assessment, “*..the current to total market valuation of developed St Francis Bay property is estimated #by estate agents to exceed R2 billion*”.

Eskom, which is government funded, possesses a large amount of economic power. According to the literature, Eskom possesses vast amounts of funds which have been made available for the proposed nuclear development project, ironically obtained from ~~the~~ taxpayers who are opposed to the project. An article in the Mail and Guardian 29/2-6/3/08, is concerned with the visit to South Africa by the French President in order “ *to help French company Areva secure the most lucrative deal south Africa has to offer..*” The article makes reference to the large amounts of money which Eskom plans to spend on its nuclear power project :

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“...the deal will make the controversial arms deal look like small change....the project, known as Nuclear 1, is for the construction of a nuclear power plant....the bill is expected to be about R120 billion.”

The idea of nuclear development by Eskom is further re-iterated in Engineering News : January 25-31 2008, :

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“ the year 2008 is set to be a significant year for the South African Nuclear industry.....state-owned electricity utility Eskom hopes to select and sign a letter of intent with a preferred bidder.....the competitors for the programme to build this new PWR are Areva of France and Westinghouse of the US....”

Added to that, economically Eskom is in a position of strength being a state-owned company, and according to *Money Week* (Issue 12 Vol. 12 : 27/08/07) :

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“ South Africa does hold one major advantage: we have the fifth-largest deposits of uranium resources in the world.”

Eskom ~~also~~ has the economic power to be able to impose loadshedding on the community, and will not suffer losses in production in the same way as the community has. Some homeowners feel that Eskom has made use of this power as a form of economic manipulation in order ~~to~~ coerce the public into believing that nuclear development is necessary :

Participant 3 : *“...it was a manipulation to get the 35%increase where they actually wanted 57%, it was a manipulation! Where’s the transparency?”*

Participant 4 : *“.....And have there been power ~~r~~cuts again? No! ~~W~~e using underfloor heating, but no power cuts. They just trying to make us aware, that’s all.”*

5.4.2. Community power

An important sub-theme has developed during the interview process, which is ~~and~~ a form of ~~power related to~~ community power or the power that people have in groups, rather than when they take on an issue alone. St Francis Bay Ratepayers-/Residents Association possesses es power in the form of community solidarity; ~~t~~—they are unified and have many alliances with other stakeholders involved in the environmental dispute, such as for example St Francis Kromme Trust, FOSTER, Adjubatus, and the Democratic Alliance ~~to name a few~~. The “power of the people” is being played out. The homeowners have all attended the meetings in order to gather information and lobby together.

Participant 2 :”some 20 years ago.....I was on the original committee of KANG”
(*The Kouga Anti-nuclear Group*)

Participant 3 : “.....We have put in many submissions, as ratepayers as well.”

Participant 4 : “.....I have attended many meetings....”

Participant 12 : “ *The St Francis Residents / Ratepayers Association has thus partitioned the Kouga Municipality to not approve the site without imposing a number of stringent conditions on Eskom*” ,

“the St Francis Residents/Ratepayers Association has researched the subject thoroughly and are the most active group... ”,

“.....It has been suggested at meetings, that the St Francis Bay community might have to organize itself and take the whole matter to court if the Environmental Impact process is abused in anyway.”

Participant 11 : “...I am also on the executive of the St Francis Kromme Trust, and we also submitted a submission against the proposed nuclear power station at Thyspunt

According to an article posted on the St Francis Residents/Ratepayers website entitled “*Thyspunt Up-Date August ,2008*” it states that:

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“..... community bodies and individuals from the area have been deeply involved in the process and have made submissions against the proposed development”, “ two of the most active and well-supported community bodies in the area” (St Francis Ratepayers/Residents Association and St Francis Kromme Trust)“have researched the subject in depth”, as well as making “joint submissions against the proposed development to Eskom.”

According to the ~~the~~ *Minutes of the St Francis Residents-/Ratepayers Association, August 2008*, the Chairman ~~of the St Francis Residents/Ratepayers Association~~ has “... led a presentation to the Municipality in which he suggested that the Kouga Municipality should not approve the site without imposing a number of stringent conditions on Eskom.”

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In a letter to ~~the~~ *The Herald 30/07/07*, a St Francis ~~R~~resident expresses the following sentiment :

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“*Local communities need not only to be heard, but to participate powerfully and equally when development has the potential to radically threaten lives and townships.*

~~According to the~~ *St Francis Chronicle July : 2007*, ~~At~~ a public meeting of the St Francis Residents/ Ratepayers ~~a~~Association ~~in~~, ~~according to the St Francis chronicle July : 2007~~, there was a call by the chairman of the Association for homeowners to stand together and lobby against the proposed nuclear power development:

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“ ...*we will get what we deserve if we don't work against the construction of a nuclear power station at Thyspunt.*”

In reply to a homeowner's letter to Greenpeace International complaining about the proposed nuclear development, this was the ~~ir~~ response, ~~of Greenpeace International~~ which was published in the *St Francis Chronicle July 2007*:

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“ ...*I encourage you to get involved in this process, particularly more effective if you could band together with several local people and form a registered local group or join an already active one.* “

This process is certainly underway in the ~~ea~~ffected area, with many local interest groups ~~s~~banding together, ~~r~~ in order to lobby against the proposed nuclear development.

5.4.3. Political power

A further sub-theme has developed, ~~which and that~~ is the political power which parties hold in the area. The two main political parties in the area, ~~are consist of~~ the ANC and the DA. Both are continuously lobbying for power; ~~in the area, and one~~ (the ANC) supports the nuclear power station and one (the DA) is against it. ~~The ANC is for the proposed nuclear development at Thyspunt, and the DA is against it.~~ A homeowner had the following comments around this issue:

Participant 11 : “...*there is another spanner in the works on a more political front, and that is that this is a DA stronghold. The ANC, who support the nuclear development would bring in a large a labour force in order to build the power station and in that way through an increase in their support base, win the election. Just thought that it was worth mentioning. You must chat to the DA representative and get her feelings on the matter.*”

Participant 8 : “*It is the*” politic-ing “*that goes on behind the scences that ultimately rule the day. The same will happen at Thyspunt.*”

Participant 4 : “.....*I came to this country because I love south Africa. Have you been to Home Affairs to get your certificate? They do what they want! It is a disaster! The same with this!*”,

“*no one has any trust in the government anyway. Look at Zuma, we all know he is going to get away with it!*”

Eskom is a state-owned entity, and the power which Eskom possesses ~~from due to~~ its alliance with the government, is being fully played out. A homeowner in a letter to *The Herald* newspaper: 5/03/2008 ~~stated the following had the following to say~~ regarding this issue :

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“*the whole EIA process is an elaborate exercise to demonstrate a committment to due process, while Eskom, with government support, will do what it wants anyway!*”

5.4.45. Expert power

The St Francis Residents / Ratepayers Association has ~~with~~in its organization a wealth of expert power in the form of professional people, environmentalists, engineers, academics, politicians and so forth. Added to this, the Association has aligned itself to Foster which contains a large amount of expert power. organizations with whichom it has aligned itself FOSTER, ~~against the proposed nuclear development contains a large amount of expert power.~~ Meaning not clear One of South Africa's eminent botanists, heads the group FOSTER. He is also a homeowner in the Oyster Bay area. He recused himself as an adviser on the team contracted to assess the proposed nuclear power plant at Oyster bay so that he can oppose the project. In an article in *The Herald* : 03/04/2007, he ~~states~~has the following ~~to say~~:

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"...I see this project as a really big threat to the region. The move I have made in resigning as specialist adviser for Arcus Gibb allows me to make public pronouncements about it and South Africa's nuclear policies generally."

Often the experts involved in a conflict situation, may use their expertise to intimidate and manipulate the other parties involved. This is certainly the case in the Oyster Bay area. ~~a~~ homeowner had the following to say about attending the community meetings with Eskom delegates:

Participant 2 : *" After attending one of those meetings you say to yourself, : "I am the most stupid person, I do not understand anything they are talking about..." , " but for normal people, when you go to those meetings they give you a lot of complicated words and if I was not so interested, I would have walked out half way! One feels so stupid!"*

"...the whole process is extremely intimidating!"

The only real way to establish the comparative strength of the parties involved in the conflict ~~is attainable~~ by the actual fighting out of the conflict. (Coser 1956:-133-).

A homeowner had the following to say regarding the environmental conflict in the area :

Participant 9 : “it is like a murder trial. Both the prosecutor and the defence manage to find doctors equally for and against the mental state of the accused.”

5.5. Values

A third theme which has emerged during the research interview process, is the question of values, and ~~the~~ conflict ~~of values thereof~~. Burton (1990:37) states that ~~a conflict of values is~~ concerned with the ideas, customs, language and religious ideologies, and more recently environmental values of a particular group, ~~and~~ when these are under threat, conflict may result. This is an important ~~aspect~~ issue, as the defence of values is related to the fundamental needs of identity and security. According to Carpenter and Kennedy (-2001:10-), the divergence of values and ideology may exist among parties. Some parties may be motivated by their strong commitment to a set of values, while others view the same problem as an economic ~~at~~ one, requiring a technical solution, ignoring or discrediting the validity of value concerns.

Eskom seems to be motivated ~~to~~ by formulating a technical solution to the problem of a shortage of energy in the form of nuclear power developments. This became evident during an interview with one of the homeowners:

Participant 12 : “....there is a greater concern to protect the viability of the nuclear sites, than the local population.”

According to an article posted on the St Francis Residents/Ratepayers website, titled “*Thyspunt Up-Date August , 2008*”, ~~states~~:

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“ there are strong economic pressures to place a Nuclear Power Station at Thyspunt, to serve the needs of the Eastern Cape and especially of the Coega Industrial Development zone.”

Negotiating values is more difficult than negotiating interests— (Cohn (2002:30)). When values become the central point of conflict, parties often may reach a deadlock, as groups and individuals are often not prepared to compromise on their values. The conflict of values concerning the pristine coastline of Oyster Bay area, whether it should be used for the development of a nuclear power plant or preserved as a wilderness area, is a legitimate conflict involving both economic issues and value differences. The clash between values and economic perceptions of a problem of energy supply for the country at large, has led to a situation of conflict. Many of the homeowners interviewed, have expressed this conflict of values:

Participant 12 : *“ there is a fear that the political and economic pressures for a power plant in the Eastern Cape would override any environmental or social considerations, and the whole EIA process could simply be paying lip-service to legislative requirements.”*

Participant 7 : *“.....what type of damage will it do to the environment? The ocean, the fishing industry, the dairy industry and the surrounding areas. That is a pristine coastline, very beautiful and unspoilt.”*

Participant 6 : *“.....I was very worried about what it would do to damage our environment.....it’s environmental purity and lack of major developments in the form of industry and shopping malls.”*

Participant 3 : *“.....Expensive transmission lines which will damage the coastal scenery....it’s going to destroy our natural appearance.....it’s going to be horrible.”,
“when we talk to Eskom about the water becoming 10 degrees warmer, they just talk about some new type of species that will enter the waters and we do not want a new*

species, because we are happy with the ones that we have got and I mean we have got a whole calamari industry here!”

An article in the *St Francis Chronicle* : July 2008 : “Surfers against Nukes” written by the chairman of the Supertubes Surfing Foundation, which is an environmental organisation, has come out strongly against the proposed nuclear development, stating that this is “*shocking news for local and international surfers who will not fancy surfing in radioactive waves at one of the best right hand waves in the world*”, as well as having a negative impact on sea life, and the pristine beaches in the area.

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5.5.1. Science versus values

The interplay between science and values is a complex issue with regard to environmental disputes. A participant had the following to say with regard to science and the values of environmental protection :

Participant 2 : “ *I fully understand that we need electricity in the country, I do not object to that and I do not object to nuclear.....Americans have just done a study on the California coastline on their nuclear power stations..... according to the American studies, this study measured what most of us cannot see.....the impact on the plankton and that type of thing, and the impact is huge! So in America, they are looking at different ways to cool their nuclear power stations.*”

The issue with regard to the case study in question, is how both indigenous knowledge and technical knowledge may be incorporated into the decision-making process, regarding environmental impact assessments. A discussion of the various types of knowledge bases which are utilized during an environmental conflict, is a natural progression ascension Meaning? after a discussion of power, as knowledge is a form of

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power. The great failure of rationalism, Pascal wrote, “ is not its recognition of technical knowledge, but its failure to recognize any other” (-Scott 1998 : 340-).

Scott (-1998 : 320) draws on Plato and Aristotle to distinguish technical knowledge or “techne” and indigenous knowledge or “metis”-. “-Techne” is knowledge which is characterized by impersonal and often quantitative precision and concern with explanation and verification.

On the other hand, “metis” is concerned with personal, experiential knowledge and practical results. It is ~~with~~ this knowledge base, that the community in St Francis Bay uses as their frame of reference, whereas Eskom and ACER, the EIA Company, rely on “techne”, technical knowledge. While indigenous and scientific knowledge ~~is~~are based on observation, indigenous knowledge tends to be holistic, ~~Doesn't make sense to have indigenous knowledge in both camps.~~ territorially oriented and concrete. On the other hand, science tends towards being abstract, ~~and~~ reductionist, and separates the human from the natural. Homeowners expressed the following views:

Participant 2 : “.....then you also have the issue of power lines.....I have requested that they make visual representations, so that people can see what it is going to look like, because effectively, the footprint of one pylon is going to be 80metres by 50metres and they are running 7 lines form the proposed nuclear power station.....once people see those pictures in the papers...it's a 5kilometre corridor that they are going to set out, so you know it's huge.....four along the coast past Jeffeys Bay and three over Humansdorp over Kruisfonteinand for an area like this that has very little visual pollution it is huge!”

Participant 9 “ How is it going to damage our environment. All the wetlands in the area, the fynbos and so forth, that will all have to be removed. We've driven to the sight where they want the development to be, so I know exactly where it is. The coastline will be affected, it is the most beautiful area and it will be damaged! And what about the animals in the area, both on land and in the sea, it will effect them as well.”

Scott (1998:320) raises an important point by stating that the scientific measurement of a landscape makes it “legible”, but provides only selective vision. The crucial elements of that landscape are the people and their customary practices, and this element is often ignored, rendering them “illegible”. This is an issue brought up continuously by the St Francis Residents/Ratepayers Association during the research interview process, and, as well as in the minutes of their meetings, as well as in letters written by homeowners to the local newspapers.

Participant 9 : “it is going to have a total impact on the area”

A homeowner in a letter to a local newspaper “*Our Times*” has the following to say :

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“.....Those of us who retired to this areause the Rocky coast farm stretch towards Thyspunt as a quiet, safe hiking , angling and cycling area. We deeply love and respect it.”

5.6. Conflict as functional

The previous themes have viewed conflict in a very negative light, creating divisions and animosity in the community at large. An additional theme which has emerged, is the positive or functional role of that conflict may play within a community. The duality of living is recognized and the tension between harmony and discord and their interdependence is realized. Coser (1956 : 33) is one of the foremost theorists associated with the extremely valuable social functions of group binding and group preserving and how it ~~What? even binds people together s-antagonists together in a relationship—how it~~ ~~What? establishes and maintains a balance of power, and how it~~ ~~What? creates~~ associations and coalitions. With regard to the environmental conflict under discussion, the following themes arose with regard to the integrative functions of conflict.

5.6.1. Group binding functions of conflict

A theme which has developed from the research process, is the functional aspect of the groups in conflict, namely the community in conflict with Eskom over the nuclear power station. Through conflict, boundaries between the groups have been entrenched, serving to strengthen group consciousness and group awareness. Individuals may have objective common positions in society, but they become aware of the community of their interests only in and through conflict. In this instance, as individuals, the people in the St Francis Bay area may have been against the proposed development of the nuclear power station at Thyspunt, ~~Oyster Bay in the Eastern Cape~~, but through their opposition to the proposed development, their communal interests became apparent, thereby performing the function of group binding and establishment of group boundaries. (Cosser 1956:34). This has been demonstrated by the following responses of homeowners:

Participant 12 : “ *the St Francis Residents-/Ratepayers Association is one of the most active and well-supported community bodies in St Francis bay and has researched the subject in depth*”

Participant 11 : “ *I am also on the executive of the St Francis Kromme Trust, an environmental group which works closely with the St Francis Residents-/Ratepayers Association and we also submitted a submission against the proposed nuclear power station at Thyspunt.*”

As the conflict around the proposed nuclear power station has developed, so ~~even~~ groups have become aware of their common interests and formed coalitions. In an article in *St Francis Chronicle* 2008, ~~CANE~~—the ~~e~~Coalition ~~a~~gainst ~~n~~Nuclear ~~e~~Energy; ~~(CANE)~~ undertakes the following to their “group”, the affected community of the proposed nuclear power development :

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“ I can guarantee your readers that CANE will fight day and night for your rights under Section 24 of the Constituion and will resist the unilateral imposition of a nuclear power plant in your beautiful part of the world”

5.6.2. Conflicts with out-groups increases internal cohesion

In groups where a high degree of consensus exists prior to the conflict, the group members are more energetic working together and dealing with the conflict, thereby increasing group cohesion.

This view is expressed by the St Francis resident in a letter to the Chairman of the St Francis Residents/Ratepayers Association. It clearly differentiates boundaries between those who are for nuclear power and those who are against it – the “them” and “us” division:

“.....the pioneers of St Francis Bay faced facts, met challenges head-on and worked to succeed. Succeed they did; the spirit that built St Francis Bay, must be re-espoused by all who would not like to see a nuclear power station at Thyspunt”

Participant 12 :”..... I was involved since inception and that was in the eighties and we were all totally against it. You will see in the documentation which I gave you. We lobbied against it actively and we believe we were successful in halting development then.”

5.7. Conclusion

In this chapter the researcher discussed the findings of the study. The major themes and sub-themes were analysed and discussed in detail while focusing on the aim of this study, which was an exploration of the interests of homeowners involved in the environmental conflict at Thyspunt; ~~Oyster Bay in the Eastern Cape~~. Five major themes were discovered by the researcher, which were all in line with the provision of basic needs.

which was the basis of this study. These themes ~~include were~~, Security, Identity and Trust, Power, Values and Conflict as a functional- aspect of conflict. Meaning? - The following Chapter 6 will serve as the concluding chapter, which will focus on the challenges faced by the affected community involved in the environmental conflict at ~~Thyspunt, Oyster Bay in the Eastern Cape~~. The value of the study is explained, as are some of the St Francis Residents/Ratepayers' successes. The limitations of the study are discussed, in depth, and the spiral of unmanaged conflict is discussed and recommendations are made in order to manage the conflict as well as future areas of research.

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Chapter 6

Conclusion and Recommendations

6.1. Introduction

In the previous chapter, the ~~researcher discussed the~~ findings of the study ~~were discussed~~. Several themes and sub-themes ~~had been~~ were developed from the research interviews with homeowners in the area. ~~Further information had been~~ was further gathered by making use of official documents, chronicles, and minutes of the St Francis Residents/Ratepayers meetings. This multiple collection of varied sources of data ~~collection~~ concerning the topic ~~under research, namely an exploratory study of the interests of homeowners involved in the environmental conflict at Thyspunt, Oyster Bay in the Eastern Cape~~ served to triangulate the data collected.

In this chapter, the conclusions based on the findings of the study will be presented, followed by a discussion on the limitations of the study. This chapter will also include a discussion on the value of the study, and a number of recommendations will be offered to guide the implementation of a ~~possible~~ wider study in the future. Suggestions will also be offered regarding the future research foci in the area of environmental conflicts, as well as ideas for environmental conflict resolution.

In consideration of the objectives set out at the beginning of the study, the researcher undertook to :

- ~~To~~ explore and describe the interests of homeowners involved in the environmental conflict at Thyspunt, Oyster Bay in the Eastern Cape;
- ~~To~~ describe the impact of homeowners' interests on the environmental conflict at Thyspunt, ~~Oyster Bay in the Eastern Cape; and~~
- ~~B~~based on insights gained, to develop recommendations for more in-depth research ~~with~~ within the field of environmental conflicts and stakeholder dynamics.

6.2. Summary of the research findings

It is the exploration and description of the homeowners' interests surrounding the proposed nuclear power station at Thyspunt, that this research study is concerned with. During the research interviewing process, the following themes emerged:

- Security* was an overriding theme established during the interviewing research process. This was based on the fears expressed by the homeowners interviewed, and their doubts concerning the safety of nuclear power plants. Their concern relating to the degree to which they would be protected from environmental hazards in the form of nuclear waste found expression in the sub-theme of *Human security and the environment*. Many participants questioned the issue of sustainability and the proposed nuclear development, and this issue found expression in a further sub-theme of *Sustainable development*, which focused on security of the environment, rather than security from the environment.
- Trust* was the second theme. This may be explained as the need for human beings to establish, maintain and protect a sense of self, meaning, predictability and purpose. A sub-theme developed, that of *Imposed Development* on the homeowners. Many of the participants interviewed felt that regardless of what they said or did, the proposed nuclear development was going to take place anyway. A further sub-theme which developed, was a *Lack of Transparency, which* was based on the views expressed by the participants in the interviews and their concern with the objectivity of the Environmental Impact Assessments performed by ACER and commissioned by Eskom. A strong impression from the homeowners interviewed, was that the study was not objective, but the developers, that is Eskom, were just following due process. An additional sub-theme, *was* had to do with *communication* and

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the *conflict which arose as a result of misperception, miscalculation and miscommunication of information*. Concern was expressed by the participants in the interview process, that much of the information around the proposed nuclear power station at Thyspunt, was being hidden behind a wall of disinformation.

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- A third theme which emerged, was that of *Power, during the research interview process*. A discussion of power is a naturally emerging theme during a discussion of conflict, as, according to Mayer (2000: 50) “power is the currency of conflict”. The following sub-themes around the issue of power and homeowners interests were discussed: *Economic Power, Political power, and community solidarity*, and *Expert Power*.

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- A *need for self- actualization based on the values* of the research participants also arose. It became evident, that a conflict of values between science, that is technical knowledge, *and* versus symbolic or value-based systems of knowledge may be effectively utilized in the *Environmental decision-* making process in the area around the proposed nuclear development in question.

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- The final theme which became evident during the research process of interviewing, was that *conflict maybe performing a useful function. Amongst the homeowners interviewed*. The following functions of conflict were identified, the group binding function of conflict and the fact that conflict with out-groups increased the internal cohesion of the St Francis Residents/ Ratepayers Association.

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6.34. Challenges faced by the homeowners

Should the proposed development of a nuclear power station at Thyspunt, *Oyster Bay in the Eastern Cape* take place, it will have a major influence on the affected areas. *The*

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proposed development. What? proposes to make use of a technology which has evoked opposition world-wide, and which raises issues of human safety and environmental impact. In such a context, the highest possible standards of independence, professional expertise, accuracy, integrity and quality control are to be expected. According to a Public Report-Back Meeting held by the St Francis Residents/Ratepayers Association on August 2008, at the Village Hall at 6pm, the Association has expressed the view that it might have to organize itself and take the whole matter to court should it become evident that the Environmental Impact Study was abused in any way. The issue of viability of the site, and the impossibility of evacuating the area in time in the case of a disaster had still not even been considered. This fell under the responsibility of the National Nuclear Regulator (NNR), who could do nothing until requested by Eskom to issue a licence. The National Nuclear Regulator (NNR) was obliged to have a public participation process when considering the licensing application, and this could be the opportunity for a lively debate.

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The cynicism which pervades government policy regarding sustainable development as utopian, This is mixed-up, rather than practical and necessary, is a challenge which the St Francis Ratepayers/ Residents Association is continually faced with. The losses to the environment around them through the pursuit of unsustainable economic growth in the form of resource degradation, may be cause for concern of about putting individuals' livelihoods at risk in the area. The St Francis Residents-/Ratepayers Association has listed as one of their primary concerns in their submission to Eskom against the proposed Nuclear power station the threat to the Chokka industry, as well as the Dairy industry, which are two main suppliers of jobs in the area.

The interests of future generations and economic development with sustainability being a goal of development is also a challenge which the Association is faced with. It seems to be a feature of developing countries, that the focus is on reducing the present economic inequalities of the system rather than making sacrifices for the gains of generations to come. The contention by Eskom that jobs would be created by the proposed nuclear development overrides the potential damage which would occur to the environment, as

well as the potential hazardous waste ~~thereof~~ which ~~would~~ ~~it~~ ~~ea~~ffect generations to come. This is in line with the literature with regard to environmental conflicts. In Chapter Two of this research report, the term “environmental pragmatism” is referred to, which raises the often hidden issue of economic priorities of people involved in environmental conflicts. Sabatini in Jackson and Pardubraj (2004:1-11) claim that the poor tend to be more accepting of economic development, even prepared to accept the risk of environmental degradation. The local community in Sea Vista township, which has a high rate of unemployment (See Demographic chart in Appendix) has es been promised jobs should the proposed nuclear development go ahead. They are largely represented by the ANC , which dominates the local Kouga municipality, ~~which-who~~ is in favour of ~~for~~ the proposed development.

6.45. St Francis Residents/Ratepayers Successes

Historically, the St Francis Residents/Ratepayers Association has experienced a great deal of success in lobbying against a proposed nuclear power station at Thyspunt, ~~Oyster Bay in the Eastern Cape~~. During the 1980’s, Eskom started looking for a site to follow the second atomic power station to Koeberg, and they aquired the Thyspunt site. The St Francis community shrugged the matter off, as it was such a long-term project, scheduled for some undefined date in the future. (*Document : Thyspunt*) Some 15 years later, mid-way through the 1990’s , Eskom’s proposed ~~€~~Thyspunt nuclear power station unexpectedly re-appeared on the agenda.

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However, certain framing patterns according to Gray (2004:169) may contribute towards intractable conflicts. He noted that there are several framing effects which have been seen noted to create a situation of intractability. The environmental conflict within the St Francis Bay area seems to be headed in the direction of intractability as the following framing effects have been noted by the researcher, and which are in line with framing effects discussed in eChapter two, which may lead to a situation of intractable conflicts.

The first framing effect identified is the strong identity frame which the St Francis Residents/Ratepayers Association adheres to. A strong identity frame -causes them to behave defensively to ensure that their identity remains intact. They see themselves as protectors of their environment and are responsible for ~~for~~ maintaining it in the present condition, ~~and also~~ Their active opposition of the proposed development is a very serious concern for them as homeowners. This is clearly stated in their ~~“~~*Vision 2020*~~”~~ *Partners in Progress for ~~At~~* in which they clearly state the following:

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“Unless we remain well informed and can stand together on a host of issues, our town will lose its charm. As homeowners we would like to be in charge of our own destiny.”

The second framing effect which may lead to a situation of intractable conflict, is the ~~St Francis Residents/ratepayers a~~ Association’s repeated adoption of protest-oriented approaches to managing conflict. In the past, they have focused on campaigns ~~and~~ booklets, ~~and~~ are now even considering taking the whole matter to court. In view of the above framing effects, ~~utilized by the St Francis Residents/Ratepayers Association~~ the development of an intractable conflict in the area poses a real threat. The topic of intractability of the conflict in the area, ~~does~~, however, require ~~fur~~th~~ur~~ research and exploration in order to be verified.

6.5. Impression of Environmental Impact Studies

It appears from the findings that Green Groups and environmentalists feel increasingly alienated and marginaliz~~ed~~ed from the system of environmental governance in South Africa. There is also an appearance of an adversarial relationship between the St Francis community and government concerning the environmental development process, particularly with reference towards ~~EIA~~environmental impact assessments. The government seems to have adopted a “-top-down” approach to environmental governance and in so doing has forced affected communities to adopt a reactive approach towards ~~EIA~~environmental impact assessments, instead of a proactive ~~one~~. The general impression from the community, ~~in this case the St Francis Residents/Ratepayers Association~~ seems

to be that ~~EIA~~ ~~Environmental Impact Assessments~~ are being corruptly manipulated by certain proponents of developments projects, in this case Eskom, which is being driven politically as well, by the ~~African National Congress (African National Congress (ANC))~~ led municipality.

These are serious concerns raised about a process which is supposed to be independent, efficient and effectively free of any bias. It appears that the level of confidence which the St Francis Residents/Ratepayers Association have in the Environmental Impact Assessment is marginal, to say the least.

6.6. Limitations of the Study

The limitations of the case study method have been referred to during Chapter 1, with the primary limitation being the limited generalizability of what may be observed as well as non-standardization of measurement, and added to that, the time-consuming process of data collection (Babbie 2007: 300, Mouton 2001: 50). This has been the experience of this researcher. Initially the researcher undertook to interview all the stakeholders involved in the environmental conflict at Thyspunt, ~~Oyster Bay in the Eastern Cape.~~

This would have included participants/stakeholders from all the major groupings such as the Kouga municipality, local community, environmentalists, Eskom representatives, political representatives, industry in the area such as the dairy industry and the chokka fishing industry, homeowners and many more stakeholders.

~~participants/ stakeholders from all the major groupings such as the Kouga municipality, Environmentalists, Eskom representatives, Political representatives, Industry in the area such as the Dairy industry and the Chokka fishing industry, , homeowners and many more stakeholders.~~

Consultation with the local community within the township of Sea Vista would have been a most intriguing and informative process. They are very important stakeholders

involved in the environmental conflict, and although not active as stakeholders against the proposed development as yet, it is anticipated that the local community will emerge during the process of conflict as it develops further, as many of them work ~~with~~ in the industries mentioned, that is the chokka fishing industry and the dairy farming industry, which are potentially the industries which ~~would~~ bear the primary impact of a nuclear development. Many of the community ~~members~~ of the Sea Vista community live “close to the earth” farming vegetables on a small scale, as well as fishing over weekends in order to add to their basic food needs. Changes in the sea temperature, ~~as well as~~ the effect of waste seepage into their vegetable gardens as a result of a nuclear power station would have a major impact on their way of life. The deception created in the form of “~~job creation~~” by the local municipality should the proposed nuclear development go ahead, would also need to be explored. According to the literature, nuclear power station building requires nuclear experts and not unskilled labour as most of the community are.

~~(Engineering News : 2008:18).~~

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This quote appeared in the ~~St Francis eChronicle~~ : July 2007 from the principal of Sea Vista ~~pPrimary sSchool~~, which is “the township” school in the affected area :

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“ As a school and its stakeholders we would like you to know that we are not in favour of any nuclear dangers to our area.”

Not only would this have been an extremely time-consuming process, but the breadth of the study would have been too great for a Master's treatise, for which this study is intended. The researcher thus narrowed down her study to a group of 10 homeowners, all of ~~whom~~~~which~~ were members of the St Francis Residents/Ratepayers Association, which is one the most active community bodies in the area involving the proposed nuclear development at Thyspunt, ~~Oyster Bay in the Eastern Cape.~~

A further limitation of the study, and according to Mouton (2007 : 276), is a limitation of all qualitative research, ~~namely~~ is the simple fact that objectivity, reliability and

validity will never be fully attained, but remains a goal of qualitative research “something to be striven towards, although never to be fully attained.” Through the method of triangulating data, the researcher has conducted this research with the goal of validity and reliability within the qualitative paradigm in mind. It is important to bear in mind that the goal within this paradigm is to provide an understanding of the meaning which the participants attach to the phenomenon under study, and not to generalize the results of this study to the general population (Mouton 2007:274). This is what the researcher has attempted to undertake, by exploring the interests of the homeowners involved in the environmental conflict at Thyspunt ~~Oyster bay in the Eastern Cape~~.

6.7. Value of the Study

The study attempted to explore the interests of homeowners involved in the environmental conflict at Thyspunt ~~Oyster Bay in the Eastern Cape~~. The findings of the study are significant for determining the feasibility of a more intensive study, as well as determining priorities for future research. It is anticipated that the findings will raise awareness regarding concerns of the homeowners in the affected area, as well as contribute towards the growing body of literature concerned with environmental conflicts.

A homeowner had the following to say with regard to the value of the researcher’s study:

Participant 11 : “...I am very glad that you are undertaking this study, because your contribution counts. It is very important to make a contribution to the body of knowledge.”

6.8. Recommendations

People want control over their lives and their environment, and that is the reason for them going into conflict with groups who want them to choose between their livelihood and saving the environment. If they are consulted on how they may combine the two, the

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results may often be non-conflictual. The importance of local consultations and internal solutions as opposed to litigation in order to resolve environmental conflicts is reinforced. There is a strong feeling that ~~the~~ nuclear development is being imposed on the community, and ~~that~~ insufficient consultation with the ~~ea~~affected community has taken place. This was a strong theme in the research findings, and that is one of the reasons for them considering the option of litigation should their concerns be ignored.

Environmental conflicts are managed in two ways :

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- A non-legal approach: by making use of this approach, threats are identified, assessed and the causes are reported on and advice is given on how to divert them. Added to this is the development of “soft laws” such as guidelines, resolutions, recommendations and standards.
- The second way is the legal process and all that ~~that~~~~which it~~ entails (Sibanda 2003:29).

Sibanda (2003:39) recommends that the developer, in this case Eskom, also takes on the role of mediator, as this is one of the most effective methods for ~~the~~ prevention of a conflict. The involvement of all the stakeholders in all stages of a development project should proceed along the following ~~recommended~~ lines ~~which are recommended for~~:

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- Forming : all stakeholders should be part of the formation of the project.
- Storming: all stakeholders should be involved around the debate of the project.
- Norming: all stakeholders should be involved in setting the norms.
- Performing: all stakeholders should be involved in project implementation.

This approach emphasizes the participation of all stakeholders affected by an environmental conflict. Bradshaw (2007:111) reinforces this point, by stating that a conflict management system should be a permanent rather than a once-off intervention which is owned by all the stakeholders involved in the conflict. It should be self-sustaining and accessible to the community at the point of need. Conflicts tend to change over time, so in line with this dynamic, so should the conflict management system. When designing a conflict management system, he recommends the following six principles which need to be adhered to:

- Focus on the interest-based methods, such as negotiation and mediation.
- Provide loopbacks that allow parties to return to lower-cost methods such as negotiation.
- Provide low-cost rights and power back-ups.
- Build in consultation before and feedback after taking any actions.
- Arrange procedures in low-to-high cost sequences.
- Provide motivation, skills and resources necessary to sustain procedures.

6.9. Conclusion

~~On the whole, the researcher believes that environmental conflicts can be effectively managed if all the foregoing recommendations are taken into account. It is hoped that this case study has highlighted the complex relationship between the environment, development and conflict and how they impact on each other. What this case study demonstrates is that planners, environmentalists and development agents never examine the social conflict dimension of the problems and the programmes that they are looking into, because they do not possess the extra lens provided by conflict management skills.~~

-An ideal situation would be that personnel that deal with environmental issues, that is Environmental Impact Assessment consultants, are trained in conflict management techniques so that the reduction of potential conflict areas would be part of the environmental planning process when a proposed development is envisaged, such as the proposed nuclear development at Thyspunt, ~~Oyster Bay in the Eastern Cape~~. The general principle that "prevention is better than cure" whereby potential conflict areas are targeted and addressed, and averted before the conflict becomes protracted, would be cheaper and more effective in managing environmental conflicts.

This chapter has described some of the challenges which St Francis Residents Association has faced, as well as some of its successes. ~~The spiral of unmanaged conflict was explained and related to the case study in question.~~ The researcher endeavoured to make suggestions and recommendations for managing environmental conflicts between the developer and all the stakeholders. By making use of a sample of homeowners drawn from the St Francis Residents-/Ratepayers Association, the researcher endeavoured to describe the interests of the homeowners affected by the proposed nuclear development at Thyspunt, ~~Oyster Bay in the Eastern Cape~~. The researcher made use of a triangular study to collect data on the interests of the homeowners, and it was revealed during the process that consultation with all the stakeholders prior to implementation of proposed development was an important pre-requisite for any developer in order to prevent an environmental conflict occurring.

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APPENDIX 1

Ethics approval



**Nelson Mandela
Metropolitan
University**

for tomorrow

• PO Box 77000 • Nelson Mandela Metropolitan University
• Port Elizabeth • 6031 • South Africa • www.nmmu.ac.za

**NORTH CAMPUS
FACULTY OF ARTS**

Tel . +27 (0)41 5043252 Fax. +27 (0)41 5049252
Jannet.Nxati@nmmu.ac.za

Ref: H/08/ART/PGS-005

25 September 2008
197441520

Student number:

Mrs GS Potts
11 Linton Road
Mill Park
Port Elizabeth
6001

Dear Mrs Potts

**“AN EXPLORATORY STUDY OF AN ENVIRONMENTAL CONFLICT: THE CASE
OF THYSPUNT, OYSTER BAY IN THE EASTERN CAPE “**

Your above-entitled application for ethics clearance served at the RTI Higher Degrees sub-committee of the Faculty of Arts Research, Technology and Innovation Committee.

We take pleasure in informing you that the application was approved by the Committee.

The Ethics clearance reference number is **H/08/ART/PGS-005** and is valid for three years, from 25 September 2008 – 25 September 2011. Please inform the RTI-HDC, via your promoter, if any changes (particularly in the methodology) occur during this time. An annual affirmation to the effect that the protocols in use are still those for which approval was granted, will be required from you. You will be reminded timeously of this responsibility.

We wish you well with the project.

Yours sincerely

Nxati

Ms Jannet Nxati
FACULTY OFFICER

cc: Promoter/Supervisor
HoD
School Representative: Faculty RTI

APPENDIX 2

Consent Form

Consent Form



NELSON MANDELA METROPOLITAN UNIVERSITY

INFORMATION AND INFORMED CONSENT FORM

(You are not compelled to use this pro-forma. It is provided as a convenience to those applicants who do not already have an informed consent form. Please delete any information not applicable to your project and complete/expand as deemed appropriate. The intention is that you make sure you have covered all the aspects of informed consent, as applicable to your work).

Title of the research project	
Reference number (for official use)	
Principal investigator	
Address	
Postal Code	
Contact telephone number (private numbers not advisable)	

A. DECLARATION BY OR ON BEHALF OF PARTICIPANT (Person legally competent to give consent on behalf of the participant)	Initial
<p>I, the participant and the undersigned I.D. number</p> <p>OR</p> <p>I, in my capacity as of the participant I.D. number</p> <p>Address (of participant)</p>	
<p>(full names)</p>	
<p>A.1 I HEREBY CONFIRM AS FOLLOWS:</p>	
<p>1. I, the participant, was invited to participate in the above-mentioned research project that is being undertaken by</p> <p>of the Department of</p> <p>in the Faculty of</p> <p>of the Nelson Mandela Metropolitan University.</p>	
<p>2. The following aspects have been explained to me, the participant:</p> <p>2.1 Aim: The investigators are studying:</p> <p>The information will be used to/for:</p>	

2.2	Procedures: I understand that	
2.3	Risks:	
2.4	Possible benefits: As a result of my participation in this study	
2.5	Confidentiality: My identity will not be revealed in any discussion, description or scientific publications by the investigators.	
2.6	Access to findings: Any new information/or benefit that develops during the course of the study will be shared as follows:	
2.7	<p>Voluntary participation/refusal/discontinuation:</p> <p>My participation is voluntary <input type="checkbox"/> YES <input type="checkbox"/> NO</p> <p>My decision whether or not to participate will in no way affect my present or future care/employment/lifestyle <input type="checkbox"/> TRUE <input type="checkbox"/> FALSE</p>	
3.	<p>The information above was explained to me/the participant by</p> <p><input type="text" value="(name of relevant person)"/></p> <p>in <input type="checkbox"/> Afrikaans <input type="checkbox"/> English <input type="checkbox"/> Xhosa <input type="checkbox"/> Other <input type="checkbox"/></p> <p>and I am in command of this language/it was satisfactorily translated to me by</p> <p><input type="text" value="(name of translator)"/></p> <p>I was given the opportunity to ask questions and all these questions were answered satisfactorily.</p>	
4.	No pressure was exerted on me to consent to participation and I understand that I may withdraw at any stage without penalisation.	
5.	Participation in this study will not result in any additional cost to myself.	

A.2 I HEREBY VOLUNTARILY CONSENT TO PARTICIPATE IN THE ABOVE-MENTIONED PROJECT			
Signed/confirmed at		<input type="text"/>	on <input type="text"/>
		20	
Signature or right thumb print of participant	Signature of witness		
	Full name of witness		

B. STATEMENT BY OR ON BEHALF OF INVESTIGATOR(S)

I, declare that

- I have explained the information given in this document to

 and/or his/her representative
 - he/she was encouraged and given ample time to ask me any questions;
 - this conversation was conducted in Afrikaans English Xhosa Other
 - and no translator was used / this conversation was translated into
 by
 - I have detached Section D and handed it to the participant YES NO
- Signed/confirmed at on 20

Signature of interviewer	Signature of witness
	Full name of witness

C. DECLARATION BY TRANSLATOR (When applicable)

I, I.D. number Qualifications and/or Current employment	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
--	--

confirm that I

- translated the contents of this document from English into
 (indicate the relevant language) to the participant/the participant's representative;
 - also translated the questions posed by
 as well as the answers given by the investigator/representative; and
 - conveyed a factually correct version of what was related to me.
- Signed/confirmed at on 20

I hereby declare that all information acquired by me for the purposes of this study will be kept confidential

Signature or right thumb print of translator	Signature of witness
	Full name of witness

D. IMPORTANT MESSAGE TO PATIENT/REPRESENTATIVE OF PARTICIPANT

Dear participant/representative of the participant

Thank you for your/the participant's participation in this study. Should, at any time during the study:

- an emergency arise as a result of the research, or
- you require any further information with regard to the study, or
- the following occur

(indicate any circumstances which should be reported to the investigator)

Kindly contact
at telephone number

(it must be a number where help will be available on a 24 hour basis, if the research project warrants it)

APPENDIX 3

Letter to research participants

31/July 2007

Ref:

Contact person: GS Potts

Dear Participant

You are being asked to participate in a research study that seeks to explore the environmental conflict at Thyspunt, Oyster Bay in the Eastern Cape. We will provide you with the necessary information to assist you to understand the study and explain what would be expected of you (participant). These guidelines would include the risks, benefits, and your rights as a study subject. Please feel free to ask the researcher to clarify anything that is not clear to you.

To participate, it will be required of you to provide a written consent that will include your signature, date and initials to verify that you understand and agree to the conditions.

You have the right to query concerns regarding the study at any time. Immediately report any new problems during the study, to the researcher. Telephone numbers of the researcher are provided. Please feel free to call these numbers.

Furthermore, it is important that you are aware of the fact that the study has to be approved by the Research Ethics Committee (Human) of the university. The RECH consist of a group of independent experts that has the responsibility to ensure that the rights and welfare of participants, in research are protected and that studies are conducted in an ethical manner. Studies cannot be conducted without RECH's approval. Queries with regard to your rights as a research subject can be directed to the Research Ethics Committee (Human) you can call the Director: Research Management at (041) 504-4536.

If no one could assist you, you may write to: The Chairperson of the Research, Technology and Innovation Committee, PO Box 77000, Nelson Mandela Metropolitan University, Port Elizabeth, 6031.

Participation in research is completely voluntary. You are not obliged to take part in any research. If you do partake, you have the right to withdraw at any given time, during the study without penalty or loss of benefits. However, if you do withdraw from the study, you should return for a final discussion or examination in order to terminate the research in an orderly manner.

Although your identity will, at all times remain confidential the results of the research study may be presented at scientific conferences or in specialist publications.

This informed consent statement has been prepared in compliance with current statutory guidelines.

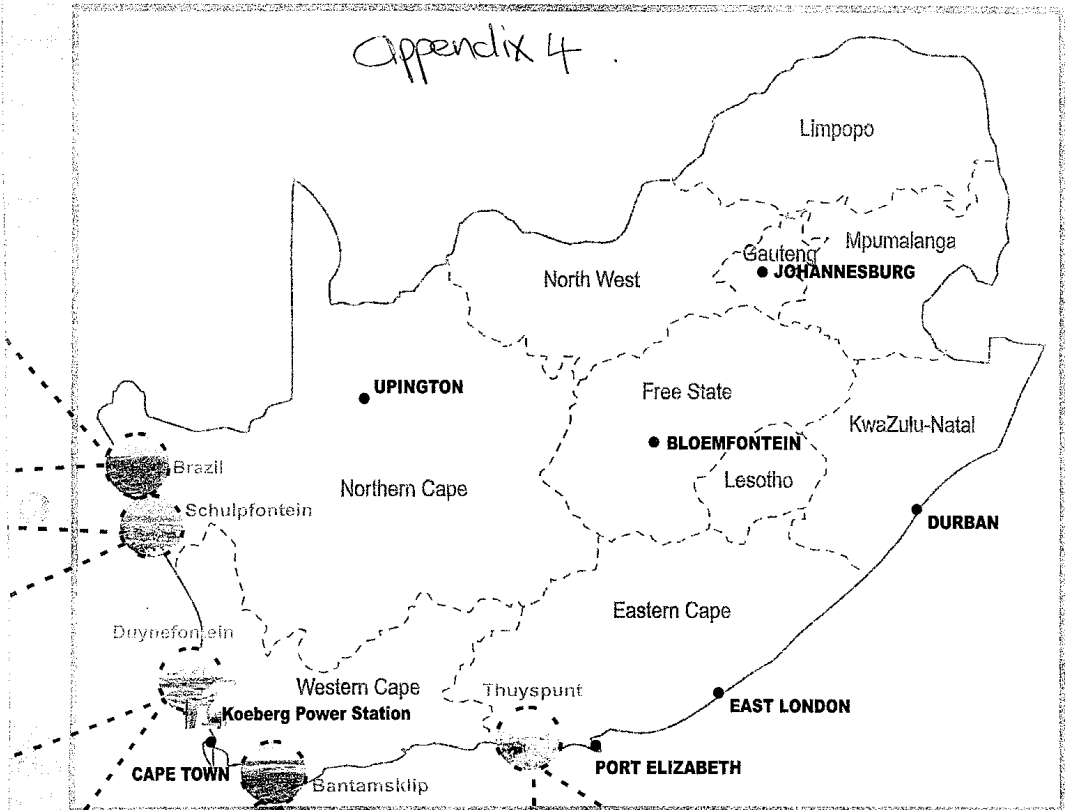
Yours sincerely

G S Potts
RESEARCHER

APPENDIX 4

Map indicating proposed nuclear sites

Appendix 4

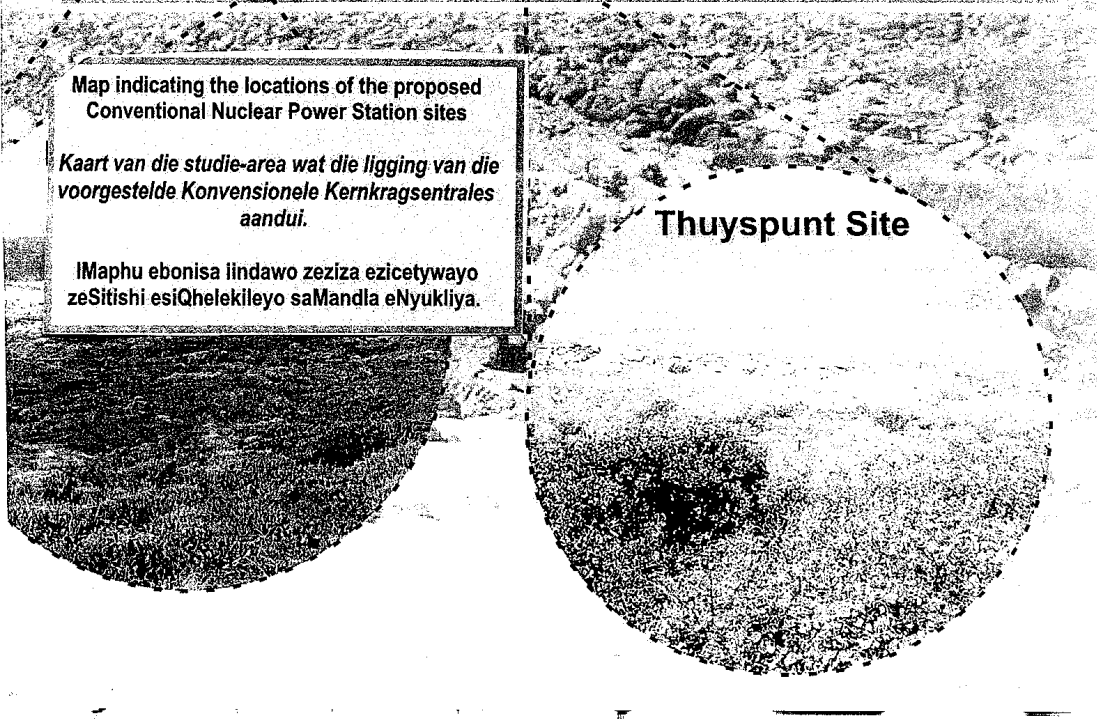


Map indicating the locations of the proposed
Conventional Nuclear Power Station sites

*Kaart van die studie-area wat die ligging van die
voorgestelde Konvensionele Kernkragsentrales
aandui.*

Imaphu ebonisa iindawo zeziza ezicetywayo
zeSitishi esiQhelekileyo saMandla eNyukliya.

Thuyspunt Site



APPENDIX 5

Population demographics



Kouga [EC108]

Eastern Cape Index Definitions of Terms Main Index

Click on the links below to view maps of the following indicators for the municipality



Population Density



Illiteracy



Electricity



Water

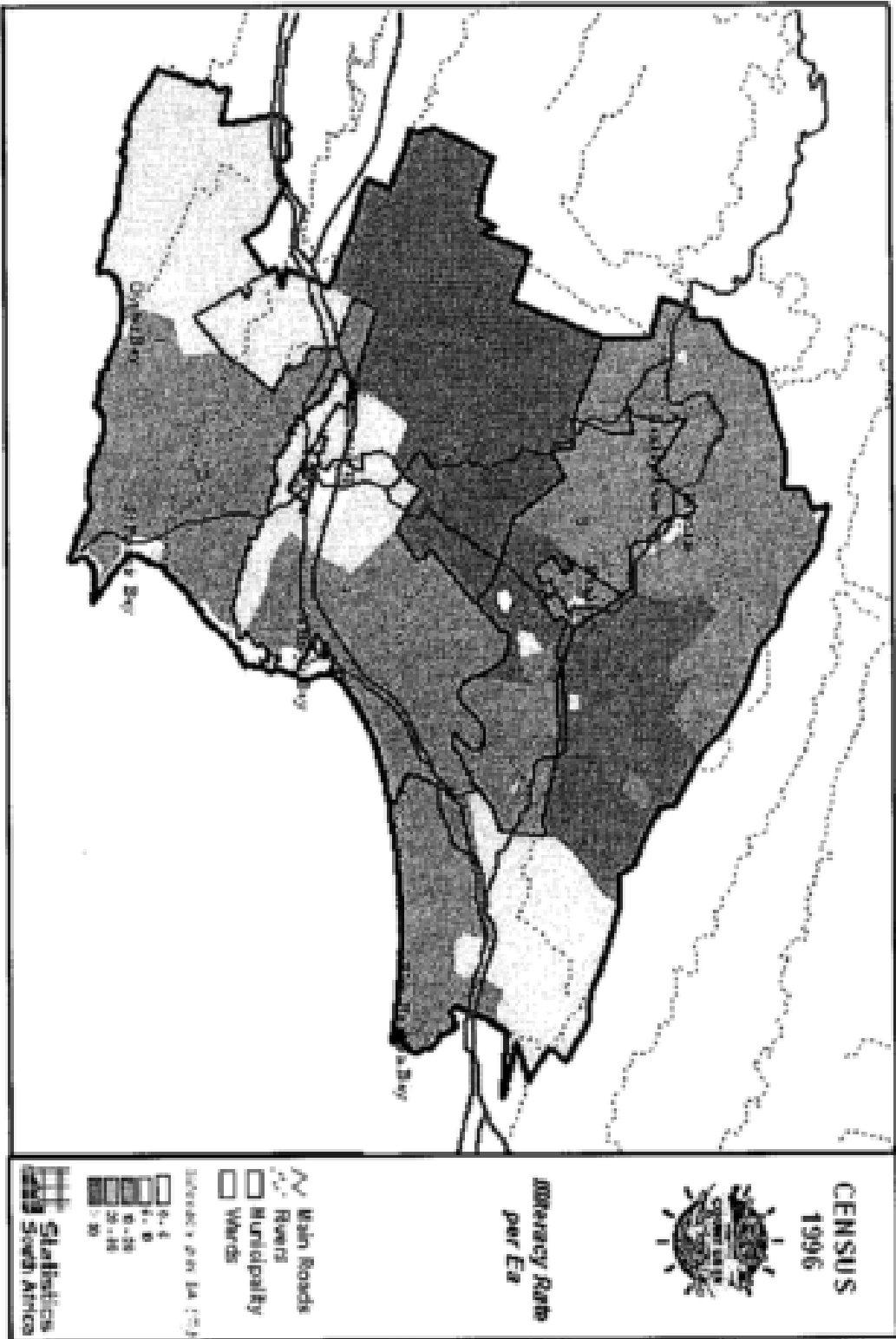
Population Demographics										
		Race(%)					Gender(%)		Martital Status(%)	
Ward	Population	African	Coloured	Indian	White	Other	Male	Female	Unmarried	Married
1	4346	23.0	30.1	0.3	46.3	0.3	50.6	49.2	33.3	54.3
2	5767	40.8	57.9	0.0	0.2	1.1	52.2	47.8	47.7	33.4
3	3453	2.5	1.7	0.0	95.7	0.2	46.1	53.6	15.6	72.6
4	5066	10.9	86.0	0.0	2.1	0.9	49.4	50.6	40.2	42.0
5	7176	2.3	80.4	0.1	16.5	0.7	46.3	53.7	41.4	44.0
6	7669	76.7	11.2	0.1	10.4	1.6	50.3	49.6	51.3	33.3
7	3113	11.4	23.1	0.0	64.7	0.8	47.6	52.7	24.1	53.1
8	7319	49.2	46.7	0.1	3.5	0.6	47.3	52.5	55.7	31.8
9	7934	42.0	53.2	0.0	4.7	0.1	47.4	52.6	52.4	35.0
10	10726	34.0	53.2	0.2	11.7	1.0	52.9	47.1	45.6	31.7

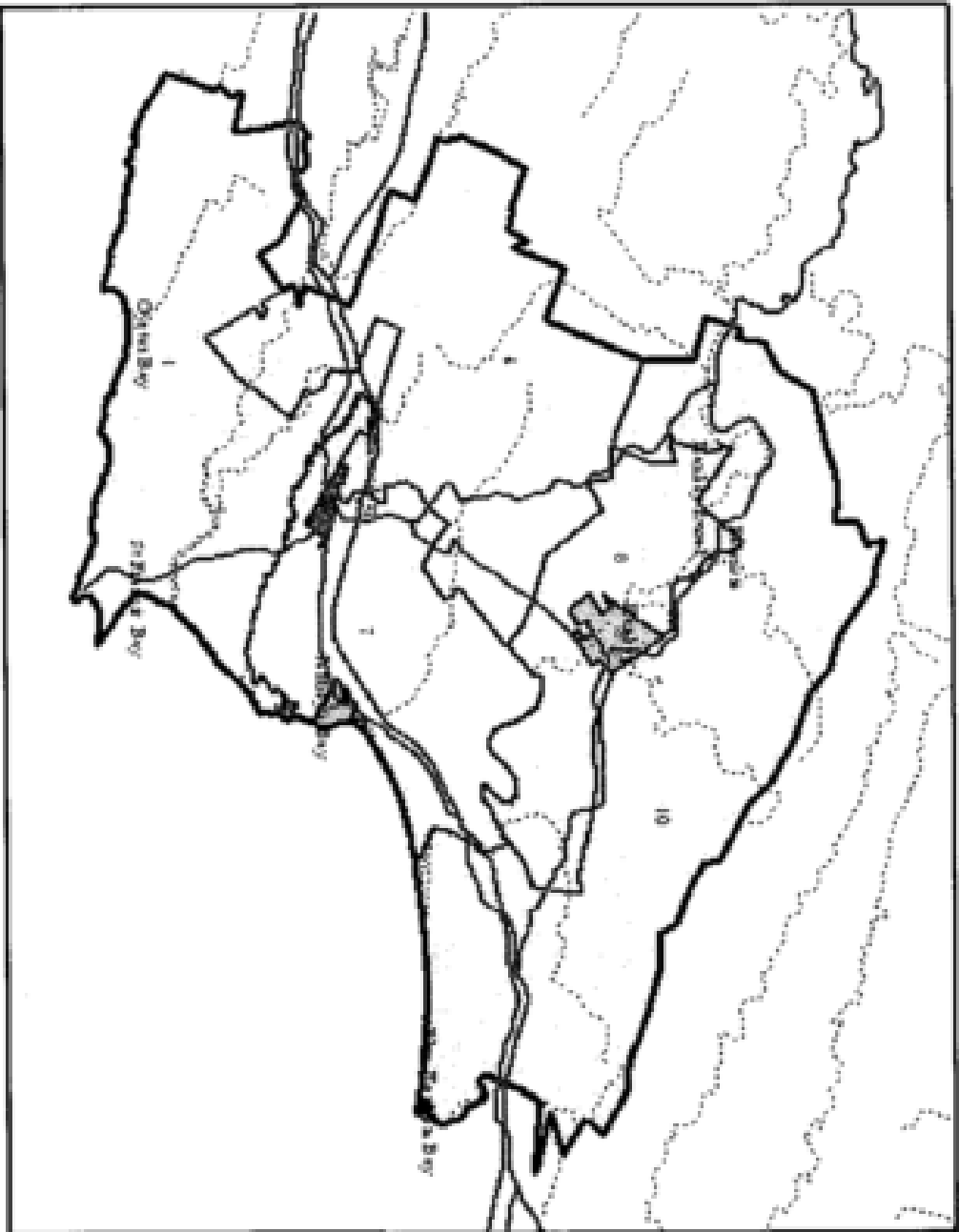
		Age(%)				Employment St	
Ward	Population	Children	Youth	Middle Age	Elderly	Employed	U
1	4,346.0	25.0	31.5	31.8	10.3	90.1	
2	5,767.0	28.5	44.9	22.8	2.2	80.2	
3	3,453.0	14.7	20.2	48.7	15.4	94.3	
4	5,066.0	34.5	36.0	25.0	4.0	80.2	
5	7,176.0	31.4	33.8	26.3	8.0	79.7	
6	7,669.0	27.9	38.5	28.2	5.2	73.5	
7	3,113.0	23.2	28.4	32.9	13.9	94.7	
8	7,319.0	34.2	35.3	24.9	5.0	61.0	
9	7,934.0	34.7	34.1	25.0	5.7	58.1	
10	10,726.0	31.5	38.1	25.9	3.9	92.1	

First Home Language(%)										
Ward	IsiNdebele	IsiXhosa	IsiZulu	Sepedi	Sesotho	Setswana	Siswati	Tshivenda	Xitsonga	Afrikaans
1	0.1	18.7	0.3	0.0	0.1	0.1	0.0	0.0	0.0	59.5
2	0.0	36.5	0.9	0.1	0.2	0.0	0.1	0.2	0.0	60.6
3	0.0	0.6	0.0	0.0	0.3	0.1	0.0	0.0	0.0	72.0
4	0.1	3.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	95.2
5	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	87.6
6	0.0	74.9	0.7	0.0	0.1	0.0	0.0	0.0	0.0	21.8

7	0.0	7.5	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	78.3
8	0.0	48.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	50.6
9	0.1	39.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	58.9
10	0.1	22.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	75.0

Service Delivery						
Ward	Households	Formal Dwellings (%)	Telephone at Home (%)	Electricity (%)	Sanitation (%)	Piped Dwe
1	1403	93.2	55.8	72.5	78.5	:
2	1270	47.4	15.7	59.5	94.9	:
3	1351	96.0	90.7	99.6	98.1	:
4	959	52.1	25.2	51.0	19.1	:
5	1512	94.7	46.8	96.4	49.5	:
6	1808	56.1	27.6	59.8	65.6	:
7	1034	89.6	66.5	86.4	81.1	:
8	1423	52.1	19.0	66.1	30.4	:
9	1542	46.4	26.0	78.0	31.3	:
10	2303	77.1	23.1	65.2	33.2	:





**CENSUS
1996**

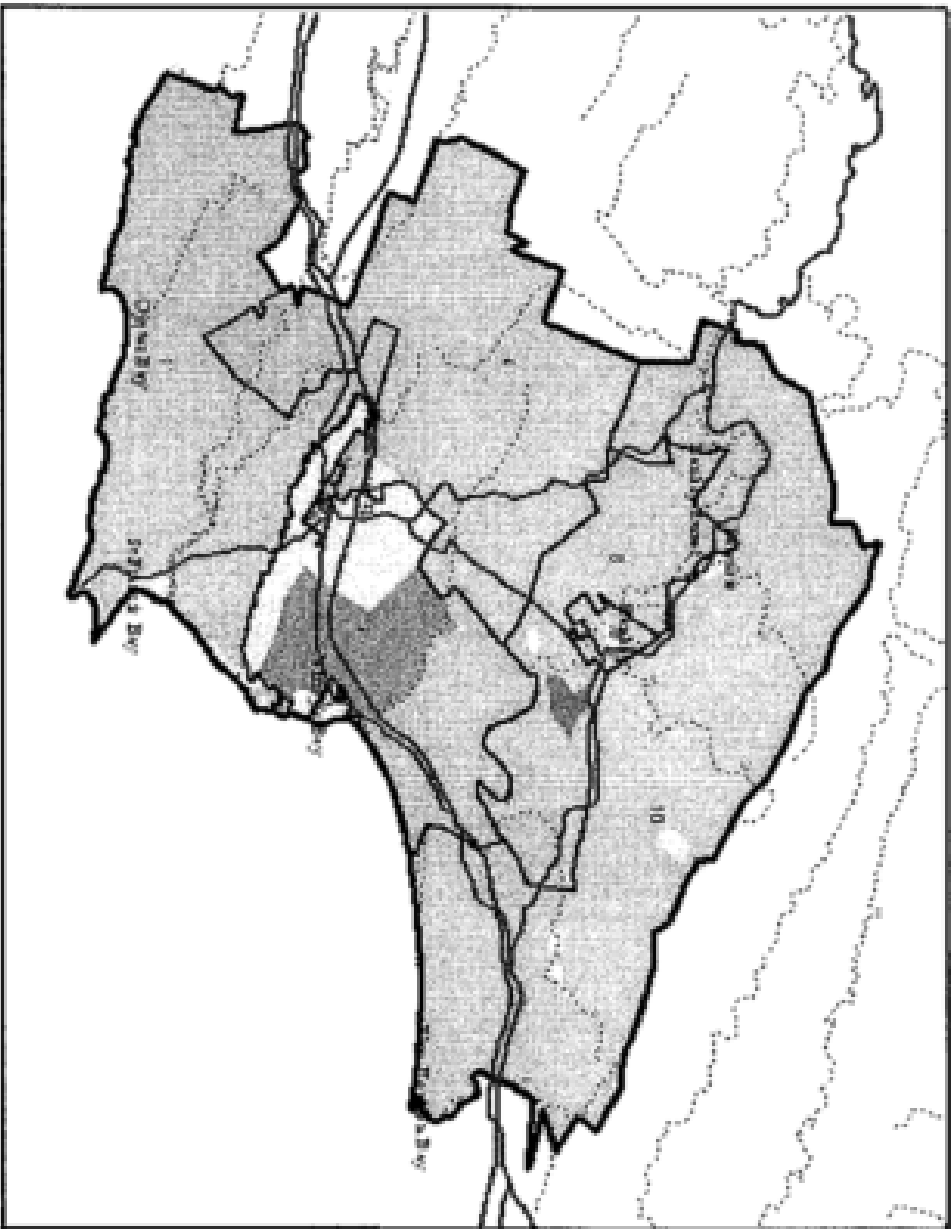


**Population
Density
Per
Electoral
Ward**

- Main Roads
- Rivers
- Municipality
- Wards

Population per km²

	0 - 10
	10 - 50
	50 - 100
	100 - 500
	> 500

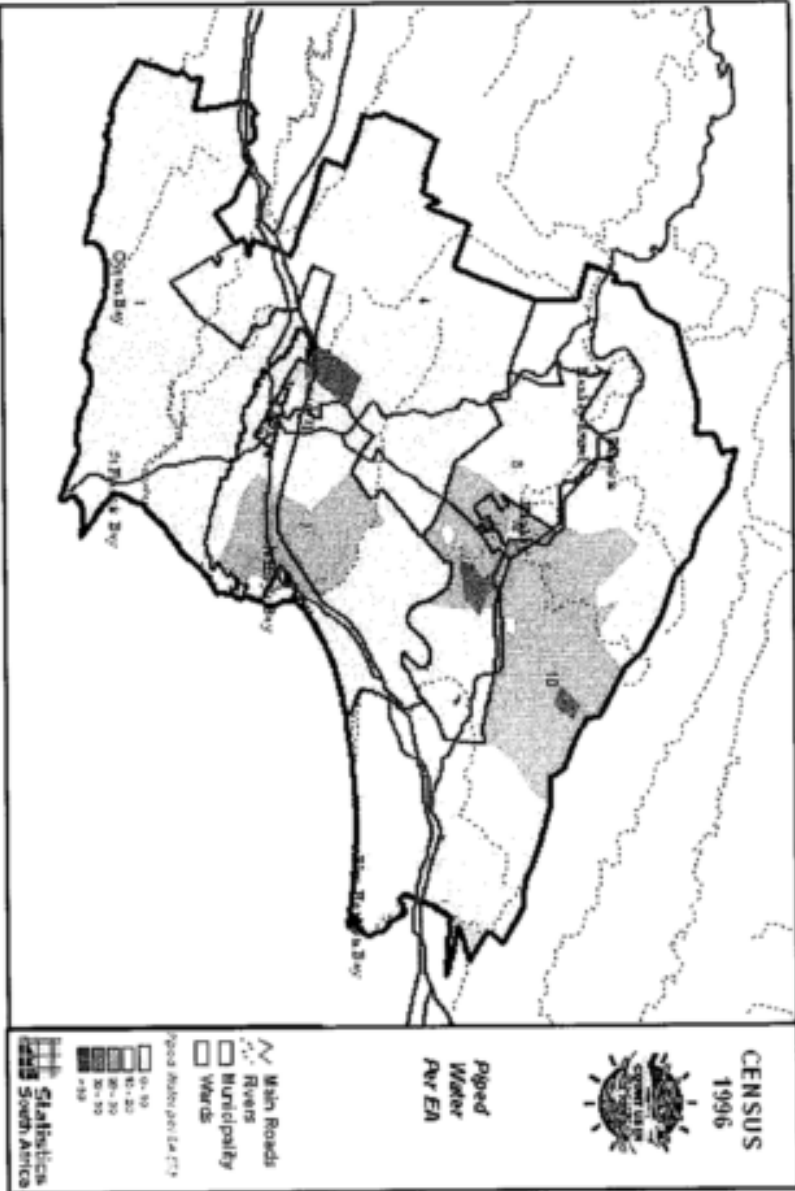


**CENSUS
1996**



*Households
with
Electricity
used for
Lighting*

- Main Roads
 - Rivers
 - Municipality
 - Wards
- Percentage of Households (%)
- 80-90
 - 60-70
 - 40-50
 - 20-30
 - 10

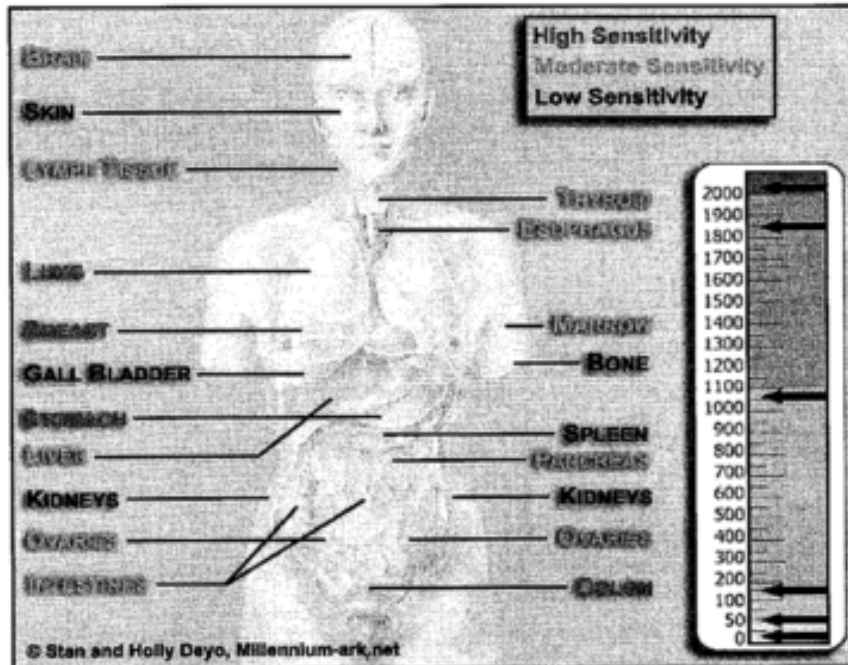


APPENDIX 6

Effects of nuclear Radiation on the human body

Effects of Nuclear Radiation on the Human Body

Here's a look at the effect of different doses of radiation on the human body after acute, whole-body exposure. Rad - radiation absorbed dose - is the amount of radiation that bombards a body



More than 2,000 rad:

Death is a certainty. At doses above 5,000 rad, the central nervous system (brain and muscles) can no longer control the body functions, including breathing and blood circulation. Everything happens very quickly. Death occurs within days or hours. Nothing can be done, and medical care is for comfort only.

1,000 to 2,000 rad:

The probability of death increases to 100% within one to two 2000 rad weeks. The initial symptoms appear immediately. A few days later, things get very bad, very quickly since the gastrointestinal system is destroyed. Once the GI system ceases to function, nothing can be done, and medical care is for comfort only.

150 to 1,100 rad:

Severe blood changes will be noted and symptoms appear immediately. Approximately two weeks later, some of those exposed may die. At 300-500 rad, up to one half of the people exposed will die within 30 days without intensive medical attention. Death is due to the destruction of the blood forming organs. Without white blood cells, infection is likely. At the lower end of the dose range, isolation, antibiotics, and transfusions may

provide the bone marrow with time to generate new blood cells, and full recovery is possible. At the upper end of the dose range, a bone marrow transplant may be required to produce new blood cells.

50 to 150 rad:

Slight blood changes including temporary drop in production of new blood cells will be noted and likely symptoms of nausea, fatigue and vomiting for one or two days.

5 to 50 rad:

Slight blood changes may be detected by medical evaluation

Less than 5 rad:

No immediate observable effects

APPENDIX 7

Chernobyl nuclear disaster: Extract from The Guardian.

guardian.co.uk

Hell on Earth

Chernobyl was the world's worst environmental disaster. Twenty years on, John Vidal reports on the clean-up, the false medical records, the communities that refused to leave and the continuing cost to people and planet

John Vidal

guardian.co.uk, Wednesday April 26 2006 01.33 BST
The Guardian, Wednesday April 26 2006

Twenty years ago today, Konstantin Tatuyan, a Ukrainian radio engineer, was horrified when Reactor No 4 at Chernobyl nuclear power complex exploded, caught fire, and for the next 10 days spewed the equivalent of 400 Hiroshima bombs' worth of radioactivity across 150,000 sq miles of Europe and beyond. He was just married, and he and his young family lived in the town of Chernobyl, just a few miles from the reactor.

Like 120,000 people, the family was evacuated, but Tatuyan volunteered to become a "liquidator", to help with the clean up, believing that his knowledge of radiation could save not just him but many of the 200,000 young soldiers and others who were rushed in from all over the Soviet Union. "We felt we had to do it," he says. "Who else, if not us, would do it?"

Tatuyan spent the next seven years in charge of 5,000 mostly young army reservists - drafted in from Azerbaijan, Lithuania, Chechnya, Kazakhstan and elsewhere in what was the Soviet Union - working 22 days on, eight days off, digging great holes, demolishing villages, dumping high-level waste, monitoring hot spots, testing the water, cleaning railway lines and roads, decontaminating ground and travelling throughout some of the most radioactive regions of Ukraine, Belarus and southern Russia.

He survived the worst environment disaster in history, he says, because he knew the danger and could monitor the radioactivity that varied from yard to yard and from

village to village depending on where the plume descended to ground level, and on where the deadly bits of graphite from the core of the reactor were carried by the wind.

He took precautions but he also kept meticulous - albeit illegal - records of his own accumulating exposure. Every year the authorities told him he was "fit for duty", and when he left Chernobyl they gave him a letter saying he had received just under the safe lifetime dose of radiation. He knew he had received more than five times that amount.

What he saw in those years, he says, appalled him: young men dying for want of the simplest information about exposure to radiation; the wide-scale falsification of medical histories by the Soviet army and the disappearance of people's records so the state would not have to compensate them; the wholesale looting of evacuated houses and abandoned churches; the haste and carelessness with which the concrete "sarcophagus" was erected over the stricken reactor; and, above all, the horror of seeing land almost twice the size of Britain contaminated, with thousands of villages made uninhabitable.

It was sometimes surreal, he says. He had people beg him to leave their homes or villages contaminated because that would guarantee them a pension; he recalls how several carriages of radioactive animal carcasses travelled for five years around the Soviet Union being rejected by every state, returning to Chernobyl to be buried - train and all. He helped fill a 4 sq mile dump with radioactive lorries, cement mixers, trains and helicopters. He knows where the Chernobyl bodies are buried, he says, because he was the grave digger. "We made up the response as we went along," he says. "It was hell."

Optimistic

Tatuyan has now retired, an invalid. He says he surely saved many lives and made great parts of the Ukraine semi-habitable, but the price is a heart condition, an enlarged thyroid, diabetes, pains in the right side of his body, breathing difficulties and headaches. But he is optimistic and, like several million people across Ukraine, Belarus and southern Russia, says he now looks at his life in terms of the time before and after Chernobyl. Most of his team of liquidators are dead; the rest, like him, are ill.

Tatuyan is now 56, and his children and country are proud of him. For him, the effect of the radiation on the environment was shocking. "The first thing we noticed was that many miles of trees in the forest turned red," he says. "They had to be cut down and buried. All the animals left. The birds did not come back for four years. It was strange not hearing them.

"In the winter of 1986/87, there was an infestation of mice because the crops had not

been harvested. So the population of foxes increased. Most of them had rabies, and hunters were called to come and kill them. The wild pigs came back first. Then the wolves. Because people were evacuated, thinking they would be gone for only a few days, they left their dogs. But the dogs then crossed with the wolves and were not afraid of humans. It was very dangerous."

Today, the forest is moving in on the modernistic town of Pripyat, built for the reactor workers just a few miles from the plant. According to ecologists, weathering, decay and the migration of radionuclides down the soil have already led to a significant reduction of the contamination of plants and animals. Some scientists are upbeat. Biodiversity, says the Institute of Ecology in the Ukraine, has increased due to the removal of human influence. Moose, wild boar, roe and red deer, beavers, wolves, badgers, otters and lynx have all been reported in the area, and species associated with humans - rats, house mice, sparrows and pigeons - have all declined. Indeed, of 270 species of birds in the area, 180 are breeding.

But it is not as simple as that. Other scientists report mammals experiencing heavy doses from internally deposited Caesium-137 and Strontium-90 radioactive fallout. One study has found mutations in 18 generations of birds; another that radioactivity levels in trees are still rising. Contamination has been found migrating into underground aquifers.

Levels of Caesium-137 are expected to remain high all over Europe for decades, says the United Nations. In parts of Germany, Austria, Italy, Sweden, Finland, Lithuania and Poland, levels in wild game, mushrooms, berries and fish from some lakes are well over a safe dose, as they are in all the most affected regions of Belarus, Ukraine and Russia. In Britain, there are still restrictions on milk on 375 hill farms, mainly in Snowdonia and the Lake District. Meanwhile, tens of thousands of square miles of agricultural land still cannot be used for farming until the soil has been remediated.

Humans have fared badly. In the past few weeks four major scientific reports have challenged the World Health Organisation (WHO), which believes that only 50 people have died and 9,000 may over the coming years. The reports widely accuse WHO of ignoring the evidence and dismissing illnesses that many doctors in Ukraine, Russia and Belarus say are worsening, especially in children of liquidators.

The charge is led by the Russian Academy of Medical Sciences, which last week declared that 212,000 people have now died as a direct consequence of Chernobyl. Meanwhile, a major report commissioned by Greenpeace considers the evidence of 52 scientists and estimates the deaths and illnesses to be 93,000 terminal cancers already and perhaps

100,000 deaths in time. A further report for European parliamentarians suggested 60,000 deaths. In truth no one knows.

More than 500km from Chernobyl, the peasant farmers of the village of Boudimca, one of the most affected in Ukraine, refuse to leave, despite the fact that many of their children are suffering from acute radiation diseases. Every child in Boudimca has a thyroid problem - known as the "Chernobyl necklace". The villagers are attached to the land. "We would prefer to die in our own land rather than go somewhere else and not survive," says Valentina Molchanovich, one of whose daughters is in hospital in Vilne with radiation sickness. "We understand the paradox, but we prefer to stay."

Though they live simple lives - each family has a cow, ducks and a few chickens - they suffer all the ailments of stressed out western executives: high blood pressure, headaches, diabetes and respiratory problems. They know that the berries and the mushrooms they have always lived on are contaminated. "We are just so used to living here," says Molchanovich. "My parents lived here. We build our houses together. We are a very tight community."

But others are, literally, dying to leave the village. Mikola Molchanovich, a distant relation, is the father of Sasha, a 12- year-old girl who this month was also being treated for constant stomach aches in a children's hospital in Rivne. He says: "My wife is in hospital giving birth, my son is in another hospital being treated for radiation sickness. My sister has 30,000 becquerels [units of radioactivity] in her body. Some people have 80,000, or more.

"This is our community; my parents lived and died here. We used to be able to collect 100kg of mushrooms a day - the whole village would collect them. Some of our cows have leukaemia. The people who moved away from the village are healthier and better. I would go if I had the chance. But I am trapped. I cannot sell my house because it is contaminated. People are becoming weaker. We cannot feel it, we cannot see it, yet we are not afraid of it.

Situation worsening

"Everyone who helped on the clean up is now ill," says Tatiana, a senior doctor at the Dispensary for Radiological Protection at Rivne. "The situation is worsening. In 1985, we had four lymph cancers a year. Now we have seven times that many. We have between five and eight people a year with rare bone cancers, when we never had any. We expect more cancers, and ill health. One in three pregnancies here are malformed. We are overwhelmed."

A doctor in the local region's children's hospital says: "The children born to the people who cleaned up Chernobyl are dying very young. We are finding Caesium and Strontium in breast milk and the placenta. More children now have leukaemias, and there has been a quadrupling of spina bifida cases. There are more clusters of cancers. Children are being born with stunted growth and dwarf torsos, without thighs. I would expect more of this over the years."

Tatuyan is now an environmentalist, convinced that nuclear power is no answer. "I go to the forest with friends to care for the deer," he says. Tonight, he and the other liquidators will meet and celebrate the 20 years. "When we meet we make the same toast. We say: 'Let's meet again alive.'"

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