The environmental impacts of land claim-discarded settlement development in Mamahule, Polokwane Local Municipality of Limpopo Province

by

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DECLARATION

I declare that The Environmental Impacts of Land Claim-discarded Settlement in Mamahule, Polokwane, Local Municipality of Limpopo Province dissertation hereby submitted to the University of Limpopo, for the degree of Masters of Administration in Development has not been submitted by me for any degree at this or any other university; that this is my work in design and in execution, and that all material contained herein has been duly acknowledged.

Mathabatha, LE 26 November 2013

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Dedication

I dedicate this dissertation to my brother Karabo Mathabatha, with much love and many thanks.

Abstract

Environmental impacts from a land claim-discarded settlement development are positive, negative and cumulative by nature, within the broad scope of environmental impacts there has been much focus on the physical environment neglecting the socio economic and other political factors of the environment. This study presents from a total environmental perspective the investigation of the environmental impacts of land claim-discarded settlement development in Mamahule ga-Matsaung.

Both primary and secondary sources of data were used for the purposes of this study. The study used the non-probability purposive sampling for the entire targeted population. The study used both thick descriptions and qualitative techniques to analyse the collected data. Thick descriptions were used to explain the environmental impacts of various temporal phases as well as processes settlement development and land claim, while quantitative (Leopold matrix and Cost Benefit Analysis) were used to evaluate environmental impacts and economic valuations of the land claim and the settlement development.

The study shows that the Environmental Impact Assessment should be conducted prior the development of any settlement to avoid multiple negative environmental impacts on the environment. The study also highlights the impact that land claim has on development activities and the way in which settlement development can delay the process of a land claim. The study arrived to a conclusions that both settlement development and land claim impacted differently on the environment.

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1. Chapter 1: Introduction and Background

1.1. Introduction

Settlement development has direct and indirect environmental impacts (Taffelson, and Winpond, 1998; Aucamp 2009; Parsa, Nakendo, Mc Cluskey and Page 2011) including other additive cumulative, physical, economic, social effects that could arise if the development is discarded by a land claim (O' Regan, Morrissey, Foley and Moles 2009). As much as having access to land is regarded as a principal source of natural capital and livelihoods (Roodt 2002; Clover and Eriksen 2008), development activities are inevitably associated with the use of land (Murray, Greer, Houston, Mckay and Murtagh 2009).

The corresponding impact of land-use is mutually reciprocal in the sense that it includes social, psychological, economic, political, cultural and other aspects beyond the physical changes of landscapes (Fuggle and Rabbie 2003). Inescapably, human activities for survival and development, including settlement development, would produce positive and adversarial direct, indirect and cumulative environmental impacts (Taffelson and Winpond 1998; O' Regan, Morrissey, Foley and Moles 2009). From a total environmental perspective this study investigates the environmental impacts of a land claim-discarded settlement development in Mamahule ga-Matsaung of Polokwane Municipality. This chapter presents the introduction and background of the study, the problem statement, research questions, aim and objectives. This chapter also has in it the definition of specialised terms, research design and methodology, significance of the study, ethical consideration and the structure of the study.

1.2. Statement of the Problem

Access to proper residential land for settlement development purposes has become a problem in many developing countries such as South Africa, India, china and Ghana (Pacione 2006) mainly caused by amongst others, the raising need for residential land and the high number of successful land claims (Pacione 2006; Ramutsindela 2006).

The recent high rates of urban expansion that may aggregate social and environmental problems are often associated with improper settlements and the need for residential land (Dubory, Sliuzas and Flake 2011). About 33% of residential land in South Africa has been claimed and restituted (Ramutsindela 2006), as a result land has turned to be more expensive than anticipated (Fuggle and Rabbie 2003). Approximately 1, 5 million (10%) of South Africa's population is residing in squatter settlements (Pacione 2006).

Residential land shortages in the cities of developing countries have often resulted in poor populations creating their own shelter on invaded land on the urban periphery (Willis 2009). Urban geography studies (see Nuissl, Haase, Lanzendorf and Wittmer 2009; Willis 2009) has demonstrated that the development of a settlement does not require only land but other interrelated secondary services such as finances to prepare the infrastructure, electricity cables, telephone grids sewage pipes, and etc. As such the development of a settlement has different environmental impacts and some of the impacts cannot be reversed (Aucamp 2009; Ma, Becker and Vanclay 2003, Kilgore 2009).

To respond to the rising need for proper settlement in the Polokwane Local Municipality, pieces of lands that were not in use including Mamahule were taken by the formerly known Polokwane Municipality under the less formal Township Establishment Act 113 of 1991. This Act provides for the establishment of towns or residential locations primarily for low income groups (Fuggle and Rabbie 2003). The land (Mamahule) had undergone major actions such as digging, deforesting, soil erosion and etc. in preparation for the settlement solely for the low income earners.

In 1998, the Mamahule community lodged a land claim under the Restitution of Land Rights Act 22 of 1994, the claim was successful and the settlement development and its activities were discarded. This study investigates the environmental impact of settlement development discarded through a successful land claim in Mamahule ga-

Matsaung, previously known as Ramathlodi Park in the Polokwane Municipality of Limpopo Province.

1.3. Research Questions

The general research question is formulated as follows: How does land claim-discarded settlement development impact on the environment? To clarify the central thrust of the study, specific research question are formulated as follows:

- What are the conceptions of environmental impacts?
- What are the principles of land claim?
- What are the forms of settlement development?
- What are the direct, indirect and cumulative environmental impacts of land claim-discarded settlement development?

1.4. Research Aim and Objectives

The aim of the study is to analyse the environmental impacts of the land claim-discarded settlement development. To experiment with this aim specific working objectives are formulated as follows:

- To study the conceptions of environmental impacts
- To examine the principles of land claims
- To study the forms of settlement development
- To examine the direct, indirect and cumulative environmental changes associated with the land claim-discarded settlement development
- To recommend measures that can lead to improved environmental impacts of land claim-discarded settlement development.

1.5. Definition of Terms

The study adopted the following definitions.

Environment using a total environmental perspective, the term environment refers to the surroundings within which human beings exist, including also a specific combination of human being's physical, biological, social, economic, cultural and political components, considering the psychology and all the aspects of human beings (Barrow 1999; Fuggle and Rabbie 2003). Those surroundings are made up of land, water and atmosphere of the earth, micro-organisms, plant and animal life any part of the above and the interrelationships among and between them (Sullivan and Wyndham 2001).

Cumulative environmental impacts are additive and interactive changes that may result from human activities, which are repeated over time and dispersed over space (Taffelson and Wipond (1998; Aucamp 2009).

Settlement Development is defined as a development of a spatial territorial pattern that intents to have in it structural patterns that has landscape and ecological significance based upon the importance of subsistence and the satisfaction of basic human needs (Pacione 2006; Nuissl, Haase, Lanzendorf and Wittmer 2009).

Land claim refers to legal declaration of desired control over areas of property including bodies of water, where the historically disadvantaged community or household that lost their property as a result of the past racial legislation is given the right to lodge a claim (Roodt 2002; Ramutsindela 2006). Given the definition of land claim, land claim-discarded settlement will therefore be defined as legal declaration of desired control, thrusting aside structural patterns that has ecological significance based upon the importance of subsistence and the satisfaction of human needs (Roodt 2002; Ramutsindela 2006; Pacione 2006; Clover and Eriksen 2009; Nuissl, Haase, Lanzendorf and Wittmer 2009).

1.6. Research Design and Methodology

Research design and methodology is the plan, structure and strategy for investigation. This study employed the techniques, and tactics as discussed in the research design, description of the study area, kinds of data required, target population, sampling design, data collection procedures and finally on data analysis techniques.

1.6.1. Research design

To analyse the environmental impacts of land claim-discarded settlement, this study employed quantitative and qualitative research methods to ensure that all environmental impacts whether adverse or beneficial are identified.

The study made use of quantitative matrixes such as the Leopold matrix, to identify environmental impacts and to consider each action on the environment and its potential to create an impact. The matrix was used to identify all the environmental impacts of land claim-discarded settlement in terms of their magnitude and their importance. The extensiveness of the impacts was then described by the assignment of a numerical value from one to six, with one representing a small magnitude and, six a large magnitude.

Qualitative methods were used to explain environmental impacts for various temporal phases associated with the settlement development; furthermore the method were used to describe the economic, social and psychological impacts associated with land claim-discarded settlement development. The method was also used to describe contexts on settlement development and land claim, the intentions behind the claim and the settlement development, and the processes of the claim and the settlement development. The combination of the two methods has been used in many studies and it has always proven to be successful as such it was prudent to adopt such a combination for the study.

1.6.2. Description of the study area

Mamahule is found on the R37 Tzaneen to Polokwane Road, the land claim-discarded settlement development lies between Dalmada on the west and Sand River of Polokwane. The land is about 8km from the Central Business District (CBD) of Polokwane. Mamahule is 431, 5751 hectors and is divided in to four villages being Mamahule, Ga Motokolo, Farm Kleinfontein 172 KS Mamahule Ga-Mojapelo and Mamahule Ga-Matsaung.

For the purposes of the study the focus was on Mamahule Ga-Matsaung, which was the taken by the former Polokwane Municipality with the intentions of developing a settlement development for the low income earning group. The settlement Development was then named Ramathlodi Park, after the then premier of formerly known Northern Province Ngwako Ramathlodi.The Mamahule Communal Property Association (CPA) lodged a land claim under the Restitution of Land Rights Act (22 of 1994) and regained the land, naming rights and changed the land from Ramatlhodi Park to Mamahule Ga-Matsaung. Majority of the land claims are for agricultural purposes and only a few for concrete development, such as settlement developments, commercial developments or town developments (Ramutsindela 2006).

Given this background an interview with the Development planner from the Polokwane municipality reassured that the settlement was a rural urban continuum for low income earners and was developed using the following criteria (see table 1.1 below). The table shows the criteria that was used to develop Ramathlodi Park looking at the economic criteria (cost of end product, infrastructure costs, maintenance costs an access to employment), social criteria (access to facilities, sense of community, social mix, affordable housing and local acceptability) and the environmental criteria (loss of land, energy-transport, energy- space heating, pollution levels, greening and Town cramming

effect. With focus at the economic criteria the development and infrastructure costs were going to be high because the settlement was new. Apart from the high development and infrastructure costs the settlement is linked to R71 meaning that the residents would have access to public transport and the other social and environmental factors are good.

Table 1.1 Criterion used for the development of Ramathlodi Park

Criteria	**Ramathlodi Park**
Economic	
Cost of End Product	High development costs
Infrastructure Costs	High infrastructure costs
Maintenance Costs	Minimal
Access to employment	Good
Social	
Access to facilities	Good: existing system (savannah mall and Polokwane CBD)
Social Mix	Usually good or moderate
Affordable Housing	Affordable (houses were developed for the same economic class)
Local Acceptability	Minimal disruption
Environmental	
Loss of land	Low the land is readily available from the Municipality
Energy transport	Connects to the R71
Pollution levels	Good
Greening	Good (from planning perspective)
Town Cramming Effect	Moderate

Looking at a number of land claims in Polokwane, the study area was perfect and suitable for the study.

1.6.3. Kinds of data needed

The study made use of factual, opinion and observational data to make judgments and conclusions on the environmental impacts of a land claim-discarded settlement development in Mamahule. Literature on the environmental impacts of land claim and settlement development and their relationship was surveyed. Other than that the study surveyed the theories on the direct, indirect and cumulative environmental impacts and their association with the land claim-discarded settlement development.

The study made use of expert opinions as a means of identifying and assessing environmental impacts, the severity of the environmental impacts, the costs and the benefits of the land claim-discarded settlement development. The visual presentations (overlays) of the area before settlement development, at the time of the settlement development activities, at the time of discarding settlement development activities and post land claim settlement. The identified environmental impacts of land claim discarded settlement development before the settlement development, at the time of the settlement development activities, at the time of discarding settlement development activities and post land claim activities and finally the relationship between land claim and settlement development.

1.6.4. Target population

The targeted population for the study consisted of 200 beneficiaries of housing in Ramathlodi Park, 12 Mamahule Communal Property Association (CPA) members, 5 Environmental and Development planners from Polokwane Municipality and 24 Project Planners from Limpopo Rural Development, Restitution and Land Claims Commission (RLCC). The beneficiaries of housing in Ramathlodi Park provided factual data on the

household conditions at the time of the settlement promise, at the time of the implementation of settlement development activities and post land claim settlement. The Mamahule CPA, provided information on the conditions of the household at the time of the claim and post land claim settlement. The Mamahule project planners from the Limpopo Department of Rural Development (RLCC) provided the information about the cost of the land claim and the processes and reasons behind the land claim. The Environmental Impact Practitioners and Development Planners from the Polokwane Municipality provided information about the development of Ramathlodi Park and the identified impacts before and after the settlement development activities.

1.6.5. Sampling design

The study made use of the non-probability purposive sampling for the entire targeted population. The design was appropriate for the study because it uses knowledge and skills to acquire participants. Although the probability sampling design has advantage over the other designs due to the fact that participants are already known, the design has at least one disadvantage that has been identified. The respondents might communicate with each other prior scheduled interview to give information that favours them. But many studies have used this design and it has proven to be reliable, as such the design was favourable and advantageous for this study. The sample of the study consisted of one (1) Project planner from Limpopo Department of Rural Development, one (1) environmental Practitioner from the Polokwane Municipality, Five (5) Mamahule CPA members, and fifty (50) intended residents of Ramathlodi Park.

1.6.6. Data collection techniques

The study made use of multiple sources for data collection in the form of textual data, consultative questionnaires, interview schedules, overlays and expert opinions. Textual data from the environmental impact, settlement development and land claim books and articles were used to survey pertinent literature on the conceptions of settlement development, the principles of land claim, the forms of settlement development and the

direct, indirect and cumulative environmental changes associated with land claim-discarded settlement development.

Self-administered questionnaires (see Appendix A and B) were employed to collect data on the demographic profile of the intended residents of Ramathlodi Park and the Manahule CPA their psychological, economic, cultural and economic changes and household conditions at the time of the resettlement promise, at the time of implementation of settlement development activities, at the time of abandonment settlement development activities, and post land-claim settlement. The questionnaire further sought from Mamahule CPA, the intentions and the processes behind the claim, the benefits of the claim and what they are currently using the land for.

Interview schedules (see Appendix C and D) were designed to solicit information from the Mamahule Project Planners at the Department of Rural Development on the cost of the land and the post settlement support that they are giving to the Mamahule CPA. The information on identified impacts before the settlement development and after the settlement development activities was collected from the Environmental and Development Planners from the Polokwane Municipality. The overlays were used to map the impacts before and after settlement development activities, and also after the successful land claim.

1.6.7. *Data analysis procedures*

The study analysed quantitative data using the Leopold matrix; this tool was used to group environmental actions with higher risk together and those with moderate risks together and the same was done for those with little or no risk at all. The matrix will assess the risk of the settlement development on the environment using the formula: Risk= *(frequency + probability) x (duration + extent) x magnitude* (Aucamp 2009).

The risk values will be assigned numerical values from 1-6, with 6 representing high risk and 1 representing low risk that will be used for the calculations. The matrix was

advantageous for the study because to some degree it evaluated some of the indirect and cumulative environmental impacts associated with the land claim-discarded settlement development.

Frequency is a measure of associated window during which the environment would be exposed to consequence as the result of the settlement development activities (Aucamp 2009) frequency will be measured using the properties of aspects (see table 1.2).

Table 1.2 Frequency of action happening

Value	Exposure	Description
6	Continuous	Once a day
5	Very frequent	Once a week
4	Occasional	Once a month
3	Unusual	Once in six months
2	Very rare	Twice a year
1	Remote	Once a year

Probability is the measure of the chance that the consequence of the activities of the settlement development could occur (Aucamp 2009) probability will be measured using the properties of aspects (see figure 1.3 below).

Figure 1.3 Probability potential

Value	Probability	Description	Frequency
6	Certain	Impact will occur regardless of any corrective actions	Daily
5	High Probability	It is most likely that the impact would occur	≥ 1/week
4	Likely	The impact may occur	≥1/month
3	Probable	The impact has occurred as the result of the same action	≥1/2 months
2	Unlikely/low probability	Conceivable but only in extreme circumstances	1/6 months
1	Rare/ improbable	Impact will not occur	1/1 year

Duration of the lifespan is the measure of the impact while geographic extent measures the impact of how widely the impact would occur (Aucamp 2009) duration will be measured using the properties of aspects (see table 1.4 below).

Figure 1.4 Duration

Value	Probability	Description
6	Permanent –no mitigation	No mitigation measures will reduce the impact after implementation
5	Permanent mitigated	Mitigation measures will reduce the impact
4	Project life	The impact will cease after operational life span of the project
3	Long-medium term	6 months to 1 year
2	Short term	Less than one month
1	Immediate	Less than one day

Geographic extent measures the impact of how widely the impact would occur (Aucamp 2009) extent will be measured using the properties of aspects (see table 1.5).

Table 1.5 Geographic extent

Value	Exposure	Description
6	National	Will affect the entire country
5	Provincial/region	Will affect the entire province/region
4	Municipal area	Will affect the whole municipal area
3	Local	Extending only as far as the development site area
2	Limited	Limited to the site and its immediate surrounding
1	Very limited	Limited to specific parts of the site

The degree of severity on society and the environment is determined by magnitude (Aucamp 2009), which will be measured using the properties of aspects (see table 1.6 in page 14).

Table 1.6 Magnitude

Value	Health and Safety	Natural environment	Social environment
6	Very serious irreversible injury to persons	Very significant impact on the environment (valued species, habitat or ecosystem).	Irreparable damage to highly valued items of great cultural significance or complete breakdown of social order
5	Significant irreversible injuries to persons	Significant impact on the environment (valued species, habitat or ecosystem).	Irreparable damage to highly valued items of great cultural significance or breakdown of social order
4	Severe irreversible disability to one or more persons	Very serious long term environmental impairment of ecosystem function that may take several years to rehabilitate	Very serious wide-spread social impacts. Irreparable damage to highly valued items of great cultural significance
3	Moderate irreversible disability or impairment to one or more persons	Serious medium-term environmental impacts. The damage can be reversed in less than a year	On-going serious social issues. Significant damage to structures/ items of cultural significance
2	Objective but reversible disability requiring first aid visit to medical station	Moderate, short term impacts but not affecting ecosystem function, Rehabilitation requires intervention with external specialists and can be done in less than a month	Minor medium-term social impacts on local population. Reparable damage to cultural functions and processes
1	Near misses or minor injury that does not require medical treatment	Limited damage to minimal area of low significance. Will have no impact on the environment.	Low-level repairable damage to common structures

Apart from the Leopold matrix the study also made use economic valuations of environmental interventions (Connely and Smith 1999). CBA was used as a common measure to represent increase or decrease in levels of individual utility, where all costs

and benefits are taken into account to validate overall loss or gain in social welfare. The benefits were weighed against the costs and expressed as Net Present Value (NPV) (Connely and Smith 1999; Aucamp 2009). The formula used to calculate NPV is as follows:

$$NPV = \frac{NPV = Total\ Costs}{Total\ benefits}$$

For the qualitative data, social modelling analysis was used, these enabled for the description of thick concepts of the environmental impacts, settlement development and land claim and also to describe cause-effect relationships. Furthermore qualitative data was used to describe the emotions and psychological well-being of the intended Ramatlodi park residents and Mamahule CPA after the settlement development has been discarded.

1.6.8. Validity and reliability

The study used reliable sources for the literature survey. The tactics and techniques used in the research design are reliable and they have proven to work in recent studies such as Posen, Hutchins, Lovett and Davies (2011) and Phillips (2011). The Leopold matrix was designed to identify, weigh and categories impacts (Phillips 2011). The matrix has been used over the years to identify and weigh impacts (Aucamp 2009), and it has proven to work without errors over the years. As such the results acquired through the Leopold matrix and CBA calculations are reliable and valid for the study.

The data analysis tools used in this study have not been invented solely for the study, they have been utilised in many successful environmental impact studies environmental impact, other settlement development and land claim studies, as such the results produced from them is valid for the study and extremely reliable.

1.7. Significance of the Study

Environmental impact studies highlight that on daily basis the environment suffers maltreatment from different human activities (Aguilar and Santos 2011). The study is significant because it investigated the environmental impact of land claim-discarded settlement. As part of the investigation the study intended to reveal the costs and benefits associated with the land claim and the settlement development in Mamahule. Furthermore, the study revealed some of the environmental, social, cultural, psychological and political changes.

The study attempted to add to the existing body of knowledge on the nature of settlement development activities and the environmental changes associated with the land claim-discarded settlement development. Practically the study tried put on the display way in which settlement development activities change environmental aspects. The results of the study will help the future researchers on environmental impact studies, where possible it will assist developers and project planners' and other private institutions in similar development cases.

1.8. Ethical Considerations

By nature the study sought to establish the truth on the environmental impacts of land claim-discarded settlement in Mamahule. The discomfort that arose in the study was the negligible and associated with emotive issues of apartheid land dispossessions. To minimize such harm the respondents were notified of the aim and objectives of the study. Their participation was on voluntary basis and the participants were given the right to discontinue with the survey or not to give their opinion on certain questions. Guarantees of anonymity were kept and the findings of the study are used for academic purposes only. Lastly, to consider and appreciate the respondents, the research results will be communicated back to the community, the municipality and the office of the land claims commission.

1.9. Structure of the Study

The study is divided into six main chapters inclusive of the introduction and background.

- **Chapter1: Introduction and Background**

  This chapter presented the introduction and background of the study, the statement of the problem, the research questions, aim and objectives. Additionally the chapter defined specialised terms used in the study, presented the research design and methodology, the significance of the study, ethical considerations and structure of the study.

- **Chapter 2: Conceptions of Environmental Impacts**

  This chapter presents the conceptualisation of environmental impacts, identification of impacts, characteristics and method of assessment. The chapter further provides a discussion on the environmental impacts of land claim-discarded settlement development.

- **Chapter 3: Principles of Land Claim and Settlement Development**

  This chapter presents the historical overview of South Africa, the process of Land Claim and settlement development and benchmarked with other countries on the principles and processes of land claims and settlement development. Within this chapter a discussion of land claims in Limpopo unfolded followed by the history of Mahaule Ga-Matsaung.

- **Chapter 4: Forms of Settlement Development**

  This chapter made a discussion on the forms of settlement development.

- **Chapter 5: Research Findings, Analysis and Interpretation of the Environmental Impacts of Land Claim-discarded Settlement Development in Mamahule ga-Matsaung**

This chapter presents the analysis and interpretation of acquired data and findings emanating from the study.

- **Chapter 6 : Conclusions and Recommendations**

This chapter draws conclusions based on the findings emerging from the study and also possible recommendations for improvement on issues related to environmental impacts, settlement development and land claims.

2. Chapter 2: Conceptions of Environmental Impacts

2.1. Introduction

Environmental impacts are spatial and temporal changes over a specified period resulting from a particular project or activity (Phillips 2011). Reference to Zobel, Altmroth, Bresky, and Buurman (2002); Ponder (2006); Ganggoles, Casals, Gasso, Forcada, Roca and Fuertes (2010); Phillips (2011) reveals that conceptualising environmental impacts is not an easy task. This is because many philosophies in field of environmental studies ignore important socio-economic environmental factors such as, but not limited to political factors, cultural factors and historical factors. According to Phillips (2011), the difficulty arises when socio-economic factors are considered part of the environment. Indeed evidence provided by Ponder (2006) supports the latter thesis when stating that initially socio-economic factors were not considered part of the environment until the dawn of 21st century.

A study by Loiseau, Janqua, Roux and Bellon-Maurel (2012) makes clear that scholars in the field of environmental management placed their attention on the biological focus of the environment and the ecological foot print which describes environmental impacts as changes on the biotic and abiotic factors of the environment such as the sea, plants and animals and the carrying capacity thereof. Indeed, Ganggoles, Casals, Gasso, Forcada, Roca and Fuertes (2010) and Cater (2007) support the latter thesis by bringing to attention to the fact that much focus has been placed on the natural environment and ecosystem.

A full discussion of ecological perspective is beyond the scope of this paper. The focus is therefore on the total environmental perspective which includes a specific combination of human being's physical, biological, social, economic, cultural and political components as well as the psychological aspects (Barrow 1999; Fuggle and Rabbie 2003; Loiseau, Janqua, Reux and Bellon-Maurel 2012).

One of the findings in the Millennium Ecosystem Assessment is the important relationship between human beings and the environment (Ma 2003). As Martino and Zommers (2006; ii) observes “the environment is a where we live; and development is all we do in attempting to improve a lot within that abode. The two are inseparable” Although environmentalists and naturalists alike are of the belief that human beings and their activities impact negatively on the environment (Ma 2003; Hecker 2005). Principle No.1 on recognising the integral part and interdependent nature of the environment proclaims that human beings are part of the environment as such they are the centre concern for sustainable development and they are entitled to healthy and productive life in harmony with the environment (UNEP 1992).

Admittedly, to live in harmony with the environment, environmental changes that are as a result of developments should be identified and assessed accordingly. This chapter provides a discussion of the on the conceptions of environmental impacts with focus on identification of environmental impacts, characteristics of environmental impacts and assessment of environmental impacts. As a contribution to the growing body of knowledge, this chapter further to provide a discussion on the direct, indirect and cumulative environmental impacts of land claim-discarded settlement development.

2.2. Identification of Environmental Impacts

Literature on environmental impacts overlooked the psychological, political and cultural aspects of human beings and how they relate to the environment. However, Taffelson and Winpond (1998); Rossouw, (2003); Tam, Tam, and Tsui (2004); Aucamp (2009) are of an understanding that environmental impacts may be direct, indirect and cumulative by their nature. The latter impacts can further be broken down according to their magnitude or severity, extend, impact duration probability significance and mitigation (Aucamp 2009; Parsa, Nakendo, Mc Cluskey and Page 2011).

Identification of environmental impacts is concerned with characterisation and baseline of environmental conditions. This ensures that all environmental impacts that can potentially occur, whether adverse or beneficial are identified (Glasson, Therivel and Chadwick 2005; Aucamp 2009; Phillips 2011). According to Loiseau, Janqua, Roux, Bellon-Maurel (2012) in order to prudently identify environmental impacts, different methods for assessment should be considered.

There are two methods of impact identification methodologies and they are either qualitative or quantitative. These methods have different types of impact identification tools and they are generally agreed amongst academics and practitioners (see Clark, Chapman, Bisset, and Walthern 1979; Wolfe 1987; Canter 1996; Asian Development Bank (ADB) 1997; Besset 1998; Glasson, Therivel and Chadwick 2005; Storey 2005; Aucamp 2009 and Phillips 2011) as:

- Checklists- It is an approach that is widely used in order to ensure that a prescribed and comprehensive list of potential impacts and effects associated with a development are considered within the EIA (Aucamp 2009)

- Matrices (Leopold matrix) -In essence, matrices are an expansion of checklists they operate using a comprehensive open cell with project actions along the horizontal axis and environmental conditions along the vertical axis (Storey, 2005; Aucamp 2009). Matrices are generally efficient and easy to use, they can be completed using a professional gut feeling. (Phillips 2011).

- Networks- these are flowcharts which illustrate the impact of projects from the conceptual to the hand over phase of a projects (Phillips 2011). The efficiency in networks is that they are able to show the cause effect relationships, link the impact to other related impacts and determine the relationships between impacts (Aucamp 2009; Phillips 2011).

- Overlays- the general purpose of overlays is to identify, predict and assign relative significance to and communicate impacts (Glasson, Therivel and Chadwick 2005; Aucamp 2009).

- GIS- this is a very effective tool in respect to spatial analysis and presentation, it has the ability to identify impacted areas through the overlay technique (Glasson, Therivel and Chadwick 2005). The use of GIS through remote sensing is of significant value.

- Ad-hocs- a typical approach through this methodology is where a team of experts are assembled to bring a unique combination expertise, training and intuition that is able to form conclusions (ABD 1997).

2.3. Types of Impact Assessments

Environmental impacts can be assessed once they have been identified and characterised (Aucamp 2009). Several studies (see Clark, Chapman, Bisset, and Walthern 1979; Wolfe 1987; Canter 1996; Asian Development Bank (ADB) 1997; Besset 1998; Glasson, Rossouw 2003; Therivel and Chadwick 2005; Storey 2005; Aucamp 2009; Polonen, Hokkanen, Jalava 2010 and Phillips 2011). Within the field of environmental management studies have demonstrated that there are different methods of assessing environmental impacts, such methods includes amongst others Environmental Impact Assessment (EIA), Social Impact Assessment (SIA), Health Impact Assessment (HIA), Economic Impact Assessment (EIA) and Cumulative Impacts Assessment (CIA) which are discussed for the purposes of this study.

2.3.1. Environmental Impact Assessment

On daily basis development activities impact differently on the environment, it is for this reason that different assessment tools are needed (Aucamp 2009). EIA is a well-known preventive environmental policy and management tool that intends to identify and evaluate the environmental impacts (both beneficial and adverse), of the proposed project before it can be given development consent (Rossouw 2003; Aucamp 2009; Polonen, Hokkanen, Jalava 2010). More often it is dominantly focused on the biophysical environment, but according to Walker, Bohlin, Hall and Kepe (2010) good practice should also addresses the interrelated socio-economic, cultural and human

health aspects. Legislation and practice vary from country to country and so are the steps in the EIA process (Aucamp 2009; Antunes, Santos, Jordao 2001). Aucamp (2009) is in agreement with most other environmental management practitioners (see Glasson, Therivel and Chadwick 2005; Rossouw 2003; Polonen, Hokkanen, Jalava 2010; Antunes, Santos, Jordao 2001) when stating that the most important phases used in EIA are screening, scoping, impact assessment, mitigation, reporting and public consultation and participation. Table 2.1 below describes the said phases of EIA.

Table 2.1 Description of EIA phases

EIA Phase	Description
Screening	An initial assessment to decide whether a project requires an EIA based on current legislation and/ significance of potential impacts
Scoping	All potential impacts are and alternatives are identified and those that are highly significant are addressed
Assessment of impacts	Impacts are identified using the methodologies in methodologies in section 2.2.
Mitigation	The development of measures in order to prevent, reduce or compensate for any adverse impacts created by the project
Reporting	The presentation of the results of EIA in the format of an EIS
Public consultation and participation	Public involvement should occur at all stages of the EIA in order to ensure continued quality, effectiveness and effectiveness of the EIA (Glasson, Therivel and Chadwick 2005), and in order to ensure that the views of the public are adequately taken into account (Phillips 2011).

Environmental management studies reveal that most EIA practitioners follow the below accepted steps when conducting EIA (Wathern 1995; Carroll, Turpin 2002; Aucamp 2009). Furthermore Aucamp (2009) mentioned that although these phases are internationally accepted and practised to some degree they have a weakness. United Nations (1992) states that the phases presented in table 2.1 do not have impact prediction and monitoring and evaluation. A recently detailed study provided Jalava (2010) indicates that there is a seamless link between the EIA and implementation phase, where monitoring, auditing and provision for closure are required. This then raises a question whether the time spent in conducting an EIA and costs of the process justify the benefits of the environment.

The view put forward above explains why Antunes, Santos, Jardo (2001) are of an idea that EIA is generally not complete if impact prediction, evaluation, mitigation and the design of monitoring system are not included in the EIA process. Polonen, Hokkanen, Jalava (2010) suggest that monitoring and evaluation system should be in place particularly because evaluations allows for the establishment of comparisons among alternatives and environmental components in order to support decision making. Indeed most current environmental management studies encourage prediction and evaluation of environmental impacts prior decision making because identification and assessment of environmental impacts alone does not provide the extent, magnitude, duration and significance (Enea, Salemi 2001; United Nations 1992; Haydar, Padiadiki 2010).

Realising the shortcomings of the generic EIA process, South Africa published under the National Environmental Management Act (Republic of South Africa 1998) the regulations that provides for two types of assessments. A basic assessment that is used for less complicated projects and a full EIA is required for more complex projects and involves more interactions with stakeholders and authorities.

2.3.2. Social Impact Assessment

Recently, societal matters are receiving increasing importance in EIAs (Aucamp 2009). The underlying reasons may be that social impacts were neglected as part of environmental assessments, forgetting that human beings are the end users of natural resources normally referred to as 'environment' by environmentalists (Barrow 1999). It is for this reason that SIA is developed as a special branch of EIA to bring about a more sustainable and biophysical human environment (Aucamp 2009; Walker, Bohlin, Hall and Kepe 2010; Pelton and Sairen 2010).

According to the International Association for Impact Assessment (IAIA) (IAIA 2007), as cited in Aucamp (2012), SIA is a process of analysing, monitoring and managing the intended and unintended social consequences, both positive and negative, of planned interventions (policies, programs, plans, projects) and any social change processes invoked by those interventions. In principle, the use of SIA could have a better role in addressing environmental justice and fairness (Connely and Richardson 2005; Walker, Bohlin, Hall and Kepe 2010). Although there has been arguments that EIA covers most important aspects of SIA which involve ethical and physiological issues of the practical society (Becker and Vanclay 2003), Walker, Bohlin, Hall and Kepe (2010) believes that SIA, when independently conducted it will directly cover the factors that affect the brain and heart of the society or human being.

The view put forward above explains that social impacts assessment of a land claim-discarded settlement development will look at the situation prior the promise, and post the land claim, economic and social impacts such as education and psychology of the beneficiaries for housing will be considered. It is clear therefore that, the aspects that should be included in the planning process of SIA should include but not be limited to (Pelton and Sarinen 2010):

- The ways in which people cope with life through their economy, social systems, and cultural values;

- The ways in which people use the natural environment, for subsistence, recreation, spiritual activities, cultural activities, and so forth;
- The ways in which people use the built environment for shelter, making livelihoods, industry, worship, recreation, gathering together, etc.;
- The ways in which communities are organised and held together by their social and cultural institutions and beliefs;

As noted already, Fuggle and Rabbie (2003) are of an understanding that if all the above mentioned social aspects are not included in the SIA statement. It's for this reason that most SIA's are not complete and ignore most important societal values (Fuggle and Rabbie 2003) Ma, Becker and Vanclay 2003, Kilgore (2009) further added and said SIAs provides for a realistic appraisal of possible social ramifications and suggestions for project alternatives and possible mitigation measures.

According to Becker and Vanclay (2003) SIAs should be done as part of the planning process of a proposed plan or project, and the assessment should therefore alert the planner and the project proponent (through the social assessor) the likelihood of social impacts. Like a biological, physical, or economic impact, social impacts have to be pointed out and measured in order to be understood and communicated to the impacted population and decision-makers (Jones, Clark and Tripidak 2011). In that case the SIA will look at the economic profile of the people who are going to be in that development, their tradition, and the availability of resources, transport terminals, and health (Aucamp 2009; Becker and Vanclay 2003). This is indeed supported by the South African Constitution (Republic of South Africa 1996), that everyone has the right to secure ecologically sustainable development and the use of natural resources while promoting justifiable economic and social development.

2.3.3. Health Impact Assessment

Environmental Health Impact Assessment (EHIA) provides a means of considering all health impacts of a planned activity, the purpose therefore, is to inform and influence decision-making on a planned activity so health protection and promotion are effectively integrated into planning (Carmichael, Barton, Gray, Lease and Pilkington 2011; Hebert, Wendel, Kennedy and Dannenberg (2012). It is for this reason that Aucamp (2009; 129) mentioned that “Human health should be seen in a physical social, behavioural and ecologically context. In this holistical model promotion of health plays a prominent part”. Although it is true that health plays a prominent part in the context of environmental impacts, EIA practitioners often concentrate their efforts on the biophysical environment and largely disregard the impact of their proposed project on human beings (Aucamp 2009; Carmichael, Barton, Gray, Lease and Pilkington 2011).

Bearing in mind that human beings are an integral part of the environment, their health and social well-being is crucial in a project. For this reason HIA attempts to assess the impact of a development on the health of a population (Perry and Kemm 2005; Aucamp 2009; Carmichael, Barton, Gray, Lease and Pilkington 2011). EHIA should be structured, solution-focused and action-oriented approach to maximizing the positive and minimizing the negative health impacts of new initiatives.

HIA has a single over-riding objective, which is to inform and influence policy development and implementation in order to maximize health gain and reduce health inequalities (Wendel, Kennedy and Dannenberg 2012). EIA most commonly will include a health assessment when there are concerns related to effects of pollutants (Carmichael, Barton, Gray, Lease and Pilkington 2011). However, other types of health impacts, such as occupational injury, mental health problems and communicable disease, are very often not considered in these assessments (Health Development Agency 2002; Hebert, Wendel, Kennedy and Dannenberg 2012). Notable studies (see Hassan, Birley, Giroult, Zghondi, Khan and Bos 2005; Hebert, Wendel, Kennedy and

Dannenberg 2012) have demonstrated that these kinds of effects are important mere especially for settlement development projects.

Recently published studies (see Carmichael, Barton, Gray, Lease and Pilkington 2011; Hebert, Wendel, Kennedy and Dannenberg 2012) shows that emotional mental and physical injuries and other health related impacts are starting to be seriously considered. It may be time that HIA should be a standalone principle within EIA, but Mindel and Joffe (2003) mentioned that health impacts need to be assessed as part of the social and environmental impact assessments, the project should include the health component as part of the Social Environmental Impact Assessment (SEIA) terms of reference (Hassan, Birley, Giroult, Zghondi, Khan and Bos, 2005). The proper integration of an HIA into its SEIA includes resolving boundaries, avoiding duplication, integrating mitigation measures, and integrating executive summaries (Aucamp 2009; Becker and Vanclay 2003).

2.3.4. Cumulative Impacts Assessment

Environmental impacts may be considered relatively insignificant when assessed in isolation as there are so many temporal phases with a huge collective impact (Aucamp 2009; Folkeson, Antonson, and Helldin 2012). According to the Council on Environmental Quality (Council on Environmental Quality 1997) as cited Aucamp (2009) cumulative impacts occur when changes on the environment take place so frequently in time and so densely in space that the effects of individual impacts could not be assimilated. As such it is necessary for cumulative assessment to identify significant cumulative effects and issues in determining what resources, ecosystems and human communities are affected by considering the direct and indirect effects of the proposed development (Aucamp 2009). Although the assessment of cumulative impacts has been ignored in most projects, in Canada and the United States of America the practice has been formalised under the term Cumulative Effects Assessment (Folkeson, Antonson, and Helldin 2012).

Determining the cumulative environmental consequences of an action is challenging and cost effective (Aucamp 2009; Folkeson, Antonson, and Helldin 2012) and requires delineating the cause-effect relationships between the multiple actions and the resources, ecosystems, and human communities of concern (Charles 2011). It is worthwhile to consider the history of the area in terms of identified environmentally adverse or beneficial impacts on the environment in this case CIA helps to determine such (Aucamp 2009).

According to Department of Environmental Affairs and Tourism DEAT (DEAT 2004) as sited in Aucamp (2009) it is necessary for cumulative assessment to identify significant cumulative impacts issues by considering the direct and indirect impacts of the development and determining what resources, ecosystems and human communities are affected. To determine such impacts the following questions may be asked (Aucamp 2009; 71):

- Is the proposed development action one of similar past, present or future actions in the same geographic area?
- Do other development activities in the region have environmental impacts similar to those of the proposed action?
- Will the proposed action affect any natural resources, cultural resources, social or economic units or ecosystem of local, regional or national concern?

In light of the above questions it is worthwhile to consider the history of the area before the proposed development could be given a developmental consent (Aucamp 2009). Some of the challenges respond to the cumulative impacts of resource use. However, a variety of approaches and methods were designed in the hope of addressing the concerns with the cumulative impacts. The complexity of dealing cumulative impacts has always been that they are additive and interactive changes that may be as a result

of human activities that are repeated overtime and space (Taffelson and Winpond 1998).

Aucamp (2009) makes it clear that expert opinions, overlays and matrices are recommended when assessing and identifying cumulative impacts. It is clear therefore that the successful analysis of cumulative impacts ultimately depends on the careful application of individual methods, techniques, and tools to the environmental assessment. The unique requirements of cumulative impact assessment (i.e., focus on resource sustainability, expanded geographic and time boundaries) must be addressed by developing an appropriate conceptual model using a suite of primary methods: questionnaires, interviews, and panels; checklists; matrices; networks and systems diagrams; modelling; trends analysis; and overlay mapping and geographic information systems (Rossow 2003; Phillips 2011).

The process of analysing cumulative effects is an enhancement of the traditional environmental assessment components: (i) scoping, (ii) describing the affected environment, and (iii) determining the environmental consequences (Aucamp 2009). Generally, it is also critical to incorporate cumulative effects analysis into the development of alternatives for an environmental assessment, since it is only by revaluating and modifying alternatives in the light of the projected cumulative impacts that adverse consequences can be effectively avoided or minimized (Phillips 2011).

In many ways, scoping is the key to analysing cumulative impacts as it provides the best opportunity for identifying important cumulative impact assessment issues, setting appropriate boundaries for analysis, and identifying relevant past, present, and future actions (Beker 2003; Aucamp 2009; Polonen, Hokkanen, Jalava 2010). By evaluating resource impact zones and the life cycle of effects, rather than projects, the boundaries of cumulative impact assessment can be properly defined (Aucamp 2009). A well-

orchestrated scoping process provides the best opportunity to identify important cumulative impacts assessment issues, setting appropriate boundaries for analyses and identifying relevant past, present and future actions for investigation (Polonen, Hokkanen, Jalava 2010).

2.4. Environmental Impacts of Land Claim-discarded Settlement Development

The corresponding impact of land-use is mutually reciprocal in the sense that it includes social, psychological economic, political, cultural and other aspects beyond the physical changes of landscapes (Fuggle and Rabbie 2003). Inescapably, human activities for survival and development, including settlement development, would produce positive and adversarial direct, indirect and cumulative environmental impacts, wherein the latter embrace the physical, economic, social and other attributes (Taffelson and Winpond 1998). In contrary, to even the economic and land ownership status in South Africa, during the first decade of democracy and on-going more than a thousand of land claims has been lodged by communities, families and individuals (Gray 2009; Ramutsindela 2006).

Evidence gained through observations demonstrates that most of the claimed and restituted land is not productively used but it is kept for ownership and ethnic pride (Ramutsindela 2006). Studies in rural development (see Ramutsindela 2006; Fay and James 2009; Gray 2009) have demonstrated that successful land claims have negative impact on the economy of a country. Such studies indicated that farm-collapse, early retrenchments and discarded developments are as a result of successful land claims. Within the context of land reform, particularly land claims, there has been much emphasis and concentration on the impacts of land claim on livelihood, economy and the consequences thereof. As notable studies in the field of environmental management (see Taffelson and winpond 1998; Aucamp 2009; Dubory, Sliuzas and Flake 2011) revealed that environmental impacts of a land claim-discarded settlement development may either be direct, indirect and cumulative by nature.

2.4.1. Direct and indirect environmental impacts

Human activities within the constraints of limited resources present unique opportunities to achieve a more balanced standard of living (Madunga 2007; Gray 2009). While there is an increasingly high demand for residential land, land claims on the other side makes it slightly difficult for society to attain vacant land for development of settlements and other land dependent developments (Madunga 2007). One of the major and more easily identified offenders of the ecological balance of the earth is the development of settlements, roads and commercial developments (Huxely 2009). Research has demonstrated that settlement development has direct and indirect environmental impacts and those impacts can either be socially, economically, psychologically and politically negative or positive (Aucamp 2009; Walker, Bohlin, Hall and Kepe 2010; Phillips 2011).

Direct impacts are caused by the settlement development itself, they includes building processes such as land consumption, removal of vegetation and severance of farmland (Aucamp 2009; Willis 2009). These impacts are generally easier to inventory, assess, and control than indirect impacts since the cause-effects relationship is usually obvious (Aucamp 2009; Pollen, Hokken, Jalava 2010; Phillips 2011). Indirect impacts (also known as secondary, tertiary and chain impacts) are usually linked closely to the project and may have more profound consequences on the environment than direct impacts. Indirect impacts are more difficult to measure, but they can ultimately be more important. Overtime they can affect larger geographic areas of the environment than anticipated. Settlement development is accompanied by widespread negative environmental transformation including air and water pollution and the deconstruction of ecosystem (Huxley 2009).

Although the general lifestyle of the 21st century is characterised by adverse and indirect environmental impacts Huxley (2009) and mentioned that the environmental impacts of

a land claim-discarded settlement development will have more than just direct and indirect environmental impacts.

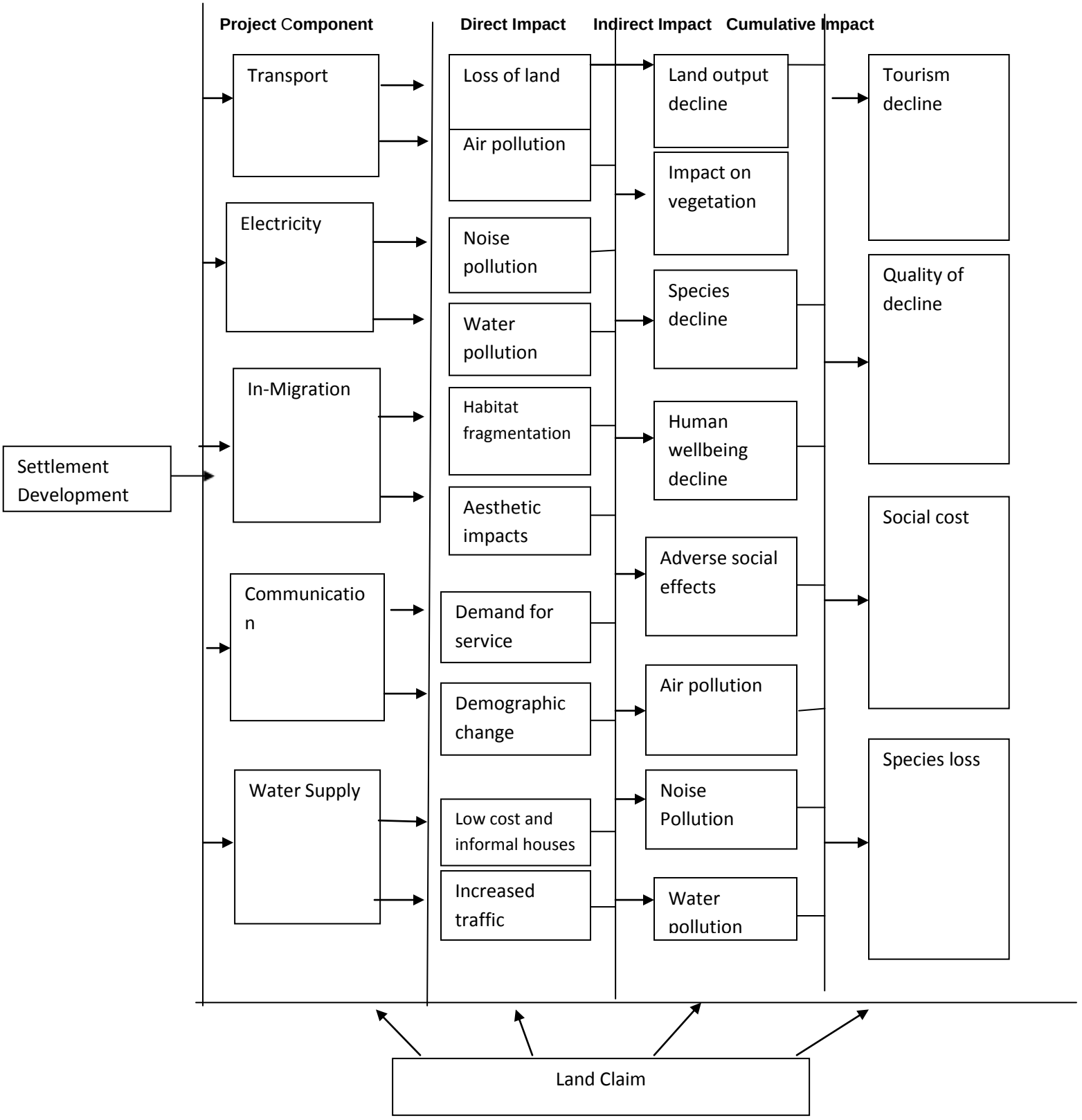
2.4.2. Cumulative impacts

It has been realised that settlement development has in many cases, small, independent actions that may lead to substantial and sometimes irreversible changes in the environment (Taffelson and Winpond 1998;). Such changes may be in the form of soil loss, declines in water quantity and quality (Taffelson and Winpond 1998; Huxley 2009). These are examples of adverse environmental changes that occur when settlement development takes place. Precisely when addressing impacts arising from a land claim-discarded settlement development (Sampson and Giffor 2010).

Research has demonstrated that cumulative impacts are also critical to the attainment of sustainable development (Aucamp 2009; Ma, Becker and Kilgore 2009). Assessing cumulative environmental impacts requires a sophisticated, comprehensive examination of how various activities, processes, and or effects interact with one another (Taffelson, and Winpond, 1998) Thus, “since the 1987 report of the World Commission on Environment and Development the concept of sustainability has continued to challenge society to develop new approaches for protecting the global ecosystems upon which our economic and social systems depend” (Taffelson, and Winpond, 1998;1). Even now, most environmental assessments continue to avoid cumulative impacts, because it is more challenging to determine them (Aucamp 2009).

When assessing cumulative impacts of a land claim-discarded settlement development the changes of the settlement development on air quality, water quality and ground water in the area of concern will have to be carefully considered (Aucamp 2009; Folkson Antonson and Helldin 2012).

Figure 2.1 Impact chain of land claim-discarded settlement development



Research has demonstrated that the assessment of cumulative impacts is different from that used in traditional EIA's and it is time and money consuming (Folkson Antonson and Helldin 2012). Furthermore a study published by Folkson, Antonson and Helldin (2012) makes it clear that the cumulative impacts of land claim-discarded settlement development can be described using the impact chain that describes the relationship between direct, indirect and cumulative impacts (Aucamp 2009). Figure 2.1 above demonstrated the relationships between direct, indirect and cumulative impacts of a land claim-discarded settlement development.

2.5. Conclusion

Environmental impacts may be conceptualised differently by different scholars and scope. This chapter has shown that conceptualising environmental impacts is the most important and most difficult part as different types of impacts and their relationship should be considered (Phillips 2011). This chapter touched on the importance of development and the relationship between human beings and the environment. The chapter discussed the importance of impact identification and methods and the tools impact assessment.

It has been realised that in the process EIA most environmental impacts are left out hence this chapter went forward to discuss the importance and need for SIA and HIA to standalone in that case impacts that were ignored in EIA will be considered (Walker, Bohlin, Hall and Kepe 2010; Pelton and Sairen 2010; Carmichael, Barton, Gray, Lease and Pilkington 2011). More importantly this chapter discussed types of environmental impacts and their relationship. The chapter presented that the lack of common understanding of the term cumulative impacts has led to most impacts beings ignored. It should be noted that since the environment affects the very basis of human well-being a total environmental perspective is not only important for human beings but has the best interest for the environment as well (Ma 2003).

3. Chapter 3: Principles of Land Claim

3.1. Introduction

Land is presently not only one of the most defining political and development issues, but also perhaps the most intractable (Obeng-Odoom 2012). It is of Obeng-Odoom (2012) that issues relative to land ownership and land rights have always been problematic to most countries. According to Ramutsindela (2006) a land claim process is formally based on legal concepts, land title and treaties furthermore it is intended to make economic and social adjustment between different societies.

According to Obeng-Odoom (2012), economists and sociologist alike believe in the desirability to secure land tenure for human development. Indeed, different scholars (see Ramutsindela 2006; Loehr 2012; Obeng-Odoom 2012) put forward the view that ownership or access to land is a recognized human right in rural areas and other urban areas and it is often essential for rights to livelihood and the achievement of other recognized economic and social rights. Although in many countries the main reason for land claims is to process reconciliation and even the injustices of the past, different countries have different strategies and principles for their land claim processes (Obeng-Odoom 2012). This chapter presents a discussion on the principles of land claims in South Africa.

3.2. Historical Overview of South African Land Rights

Land has for many years been the key tool for empowering and disempowering people in South Africa (Christopher 1995; Ramutsindela 2006; Fraser 2007; Barry 2011). It is indeed factual that South Africa has suffered a long history of colonisation, racial discrimination that resulted in bulk of land being owed by the white minority (Rugege 2004; Barry 2011). On this basis it may be inferred that inequalities on land ownership in particular were created by colonialism, particularly the apartheid system. Fay and James (2009) have indeed drawn attention to the fact that forced removals and dispossessions were the results of apartheid.

Although dispositions of black people initially took place through defeat and deception, it came to be a major policy of the state supported by a number of laws from the early days of colonisation (Rugege 2004; Fay and James 2009). Research reveals that land dispossessions by the state came into effect after 1913 (Peters 2009). According to the Native Land Act of 1913 8% of land was reserved for blacks and the remaining was for white people. In 1936 an increase of 5% was made available to blacks bringing the total to 13% of total area of South Africa. In this instance the white minority owed more than 80% of land while the black majority were entitled to only 13%. The extent of dispossession resulted in the low quality of land available in communal areas, coupled with the overpopulation that impacted more severely on South Africa's black population (Ramutsindala 2006; Peters 2009; Barry 2011). This then affected the economic conditions as well as settlement patterns of most black South Africans (Barry 2011).

To remedy the inequalities the South African government introduced land reform programme with three tiers (Ramutsindela 2006). All the tiers of land reform are claim driven processes that require basic evidence that people were deprived from their ancestral land or that people need people were discriminatorily deprived of land as such they need land and for what purpose (Ramustsindela 2006; Obeng-Odoom 2012).

3.2.1. South Africa's Land Reform Programme

The land reform programme in South Africa is viewed alongside the background of attempts by the African National Congress (ANC)-led Government of National Unity (GNU) to address the painful colonial and apartheid legacy of land dispossession and overcrowding experienced by the African people in particular (Department of Land Affairs (DLA) 1997; Chitonge and Ntsebeza 2012). Land reform was introduced soon after the landslide victory of the ANC in the first democratic elections in 1994 (Chitonge and Ntsebeza 2012). In its election manifesto, the Reconstruction and Development Programme (RDP) of the ANC identified land reform as key to rural development (Fay and James 2009; Barry 2011; Chitonge and Ntsebeza 2012). Land reform entailed the provision of "residential and productive land to the poorest section of the rural

population and aspirant farmers" (ANC 1994). Building on these views, the 1997 White Paper on Land Policy saw land reform as "a cornerstone for reconstruction and development," and argued that "a land policy for the country needs to deal effectively with: the injustices of racially based land dispossession of the past; The need for a more equitable distribution of land ownership; The need for land reform to reduce poverty and contribute to economic growth" (DLA 1997).

A study provided by Cardo Agrisystem Limited (CAL) (2008) indicates that the overarching aim of the land claim programme is to engineer the transfer of 30% of commercial farm land to black farmers by 2014. This objective is to be achieved through the land tenure reform, redistribution and restitution mechanisms all based on Section 25 (5), (6), and (7) of the South African Constitution of 1996. Although the process is defined by politicians as easy the procedure is complex, time consuming and it should be budgeted for (Anseeuw and Mathebula 2008). From the 1995 when the land reform programme kick started to 2010 the land reform has redistributed 3562378.0 hectors of land through the redistribution and tenure programme while 3238277 hectors were restituted.

Table 3.1 Land redistributed in South Africa through land reform programmes, 1995-2010

Year	Red &Ten* (Hectors)	Restitution (Hectors)	Total (Hectors)
1995-2008	2748766.0	226579.8	5014564
2007/08 FY*	346011.5	432226	778238
2008/09FY*	443600.5	394755	838356
2009/10 FY*	23999.0	145498	385489
1995-2010	3562378.0	3238277	6800656

*Red-Land redistribution; Ten- tenure reform; FY-Financial Year

Table 3.1 above shows the number of hectors that were redistributed through the land reform programme from 1995 to 2010 (DLA 2009; DRepartment of Rural Development and Land Reform (DRDLA) 2010, 2011; Chitonge and Ntsebeza 2012). Even though senior managers in the Department of Rural Development and Land Reform have repeatedly mentioned that over 90% of land transferred through the land reform programme is not economically productive, (Nkinti 2010; Phaahla 2010), contrarily Hofstater (2009) mentioned that land claimed and transferred for development of human settlements and commercial districts has improved the living conditions of most South Africans.

3.2.1.1. Land tenure reform

Land tenure reform is one of the three legs of the land reform programme as in the 1996 South African constitution. Tenure is directed towards two distinct objectives (DLA 1997; Chitonge and Ntsebeza 2012). First is to address the state of land administration in communal areas of former homelands and corloured reserves (Fay and James 2009; Chitonge and Ntsebeza 2012). According to Anseeuw and Mathebula (2008) these communal homelands make up to most of the land in former homelands and amount to approximately 17 million hectors.

The communal areas are a home to nearly one third of all South Africans and the site of the deepest concentrations of poverty in the country (Anseeuw and Mathebula 2008). The second objective is to strengthen the security of tenure of farm dwellers living on commercial farms (Chitonge and Ntsebeza 2012). It has been realized that most of the farm dwellers have access to residential land only, but a minority are labour tenants who have access to grazing land for their own live stock or arable land for cultivation, in return for which they have to provide labour to the landowner (Aliber, Maluleke, Manenzhe, Parandza and Cousins 2011; Chitonge and Ntsebeza 2012).

3.2.1.2. Land redistribution

The land redistribution sub-programme aimed to address the divide between 87% of the land, dominated by white commercial farming, and the 13% in the former homelands by way of diversifying the ownership structure of commercial farmland (Anseeuw and Mathebula 2008). The sub-programme was minimally successful, redistributing about 7% of the land to the land less poor, labour tenants, farm workers, and emerging farmers productive for uses as to improve their livelihoods and quality of life as well as simulate growth in the agricultural sector. The target of the land redistribution programme in the initial period, that is, between 1994 and 1999, was poor households that earned R1, 500 per month or less a grand named Settlement/Land Acquisition Grant (SLAG) (Chitonge and Ntsebeza 2012).

In 2001, following a review of the grand based mechanism named SLAG a new approach to land redistribution was introduced in the form of the Land Redistribution for Agricultural Development (LRAD) sub-programme. It was stated that “beneficiaries can access grants under LRAD on a sliding scale between R20 000.00 to R100 000.00 per household, depending on the amount of their own contribution” (DLA 2001). However, as with SLAG, most aspirant beneficiaries could not afford to buy farms individually and ended up forming groups to increase the “own contribution” that determined the size of grant a beneficiary received. The LRAD sub-programme targeted individuals, unlike SLAG which gave grants to households. Each household was to be given a grant of R15, 000 (later increased to R16, 000.00). However, given the fact that land redistribution in South Africa is market-led, it required a number of households to be put together into groups in order to meet the price of commercial farms, a phenomenon that some scholars have referred to as a “rent-a-crowd syndrome” (Hall 2009; Hall and Cliffe 2009).

3.2.1.3. Land restitution

The land restitution sub-programme of land reform has gained attention of most researchers and scholars science its inception in 1998. The Restitution of Land Rights Act 22 of 1994 was enacted in terms of the Interim Constitution of the Republic of South Africa Act 200 of 1993. The Restitution of Land Rights Act entitles communities and individuals to restitution if: (a) such a person (or direct descendant of such a person) or community was dispossessed of such rights; and (b) such dispossession was effected under the purpose of furthering the object of any law, which would have been inconsistent with the prohibition of racial discrimination contained in section 8(2) of the Constitution Act 1993, had that section been in operation at the time of such dispossession (Chitonge and Ntsebeza 2012).

The sub-programme gave effect to the constitutional provision that people unfairly dispossessed after the 1913 Land Act are entitled to restitution or to financial compensation (Chitonge and Ntsebeza 2012). The land restitution sub-programme was tailor made not only to provide historical redress for centuries of colonial settler dispossession, but also to resolve the he national democratic revolution in South Africa (Obeng-Odoom 2012). This is the case because it is through the mandate of land restitution that social and economic relations-embodied in property relations across the country are able to be transformed (Anseeuw and Mathebula 2008).

The land restitution process commences with a claim being lodged at the Regional Land Claims Commission (RLCC) for investigation in the prescribed manner (Maphoto 2012). It is aided in this by the Department of Rural Development and Land Reform which, simultaneously, is the main respondent in all claims on behalf of the South African government (CAL 2008). In addition to identifying the land that is claimed, the nature of the right that was dispossessed and what redress is sought should also be specified and this should be made in writing by the claimants (CAL 2008). A total of 2 802 668 hectors were claims were settled across South Africa by the end of 2012 (Maphoto

2012). Table 3.2 below shows the number of hectors by province of settled land claims through the land restitution programme (Maphoto 2012).

3.2 Total hectors claimed by province

PROVINCE	CLAIMS SETTLED	NO OF HOUSEHOLDS	FEMALE HEADED HOUSEHOLDS	NO OF BENEFICIARIES	NO OF HECTARES
E CAPE	16380	60370	28353	217340	129075
F STATE	2672	6598	2245	43765	51185
GAUTENG	13202	14030	5432	65715	16378
KZN	15081	78756	24698	465667	679092
LIMPOPO	3384	45643	17443	234628	556315
MPLANGA	2790	51197	15874	233723	428563
N CAPE	3708	19983	8240	105987	559634
N WEST	3718	37148	17487	171417	378588
W CAPE	15571	25356	10685	123857	3838
TOTAL	**76 506**	**339 081**	**130 457**	**1 662 099**	**2 802 668**

3.3. The Land Claim of Ramthlodi Park by the Mamahule CPA

To understand better the nature of the claim and its meaning for local people it is useful to briefly consider the area's settlement history and the changing position of the Mamahule people. Emanating from the interview with one of the CPA members, the Mamahule community from time immemorial and enjoyed the total rights of ownership of the land such as grazing and cropping which qualifies for beneficial occupation until the 16nth of March 1916 when they were disposed. The dispossession was effected on the 26th June 1967 in terms of Chapter IV of the Development Trust and Native Land

Act of 1936 (Act 18 of 1936) as part of the move to eradicate “black spots in White areas”.

The survey conducted amongst the CPA of Mamahule Ga-Matsaung (see Annexure B) indicates that, Mamahule was taken by the Polokwane Local Municipality under the less formal Township Establishment Act 113 of 1991 in 1996. This Act provides for the establishment of towns or residential locations primarily for low income groups (Fuggle and Rabbie 2003). In 1998 the Mamahule community lodged a land claim for Mamahule Ga-Matsaung (Kalkfontein) to claim the original Mamahule of Matsuokwane. This included Makegeng (Orange Groove, currently the headquarters of Mamahule), Matamolane (Balhambra), ga-Stholwana, Magobaneng, Motokolo, Tsweng, Sekuruwe (Kleinfontein) and Mahuma (Matjieskraal) (see Appendix E). But because the land Mamahule Ga-Matsaung was under preparations to become a settlement development, up to date the community is still struggling for its restoration.

The survey conducted amongst Mamahule CPA indicates that the message about restitution of land rights was heard through media. The then acting Chief Matsoakwane called a meeting nominating a task team to lodge the claim on behalf of the community. One of the driving forces towards the lodgement of the claim was the fact that they were called “bafaladi” and they were also denied privileges to do business as they were regarded as passers-by where they were staying. The task team filled the claim form and posted it to Pretoria, which was the office of Land Claims Commission. The community was represented by the legal unit of Nguzi Development Association as per necessary power of attorney. The claim was lodged as Mmahule Matsaung of Matsuokwane and the notice of the claim appeared in Government Gazette (See Annexure E).

At the time of the land claim proceedings the land was being prepared for a settlement development. The Polokwane Municipality suggested that the community get a financial

compensation but the Mamahule community did not accept the compensation because they were not formally notified about the settlement development and also because their ancestors were buried on that land. It was for these reasons that Ramathlodi Park was discarded pending discussions between legal representatives of the Polokwane Municipality and Nguzi Development Association.

3.4. Conclusion

The interim Constitution (Act 200 of 1993) provided the disposed persons with a constitutional principle to claim back their land (Roodt 2002; Ramutsindela 2006). The provisions for this are embodied in the Restitution of Land Rights Act (Act 22 of 1994). This chapter fulfilled its intended purpose by providing a discussion on the principles of land claim in South Africa. The chapter discussed the land reform programme and its sub programmes and the process of lodging a land claim. it has been realised that land reform is politically driven as such there are delays in most provinces including Limpopo Province (Lahiff, Maluleke, Manenzhe, and Wegerif, 2008). The chapter gave an overview of the Mamahule land claim, the history of the community and the status of the claim so far.

4. Chapter 4: Forms of Settlement Development

4.1. Introduction

Settlements are places where there are social interactions and economic activities take place (Wakesa, Steys and Oteo 2011). According to the Council for science Innovation and Research (CSIR) (CSIR 2006), the planning and design of settlements has been dominated by the political ideology of separate development and mordernisation. The evidence provided by CSIR (2006) seems to indicate that the modernism ideology have led to the development of mono-functional settlements that are often fragmented and environmentally sterile.

These settlements particularly those created for the disadvantaged members of the society while the multi-functional settlements in well were created for the better-off part of the society. It is for these reasons that Wakesa, Steys and Oteo (2011) made mention that settlements vary according to size, functionality and geographic location. Indeed Aguilar and Santos (2011) expressed a view that the complex interplay between these interactions determines how habitable settlements are, as well as their impact on the environment. Human settlements can be differentiated by many factors, such as topology, location, size, proximity, and management structure (CSIR 2006).

South Africa, for instance has a settlement patterns that comprises settlement of varying sizes and geographic locations (Aguilar and Santos 2011). The view put forward above explains why settlements are termed are urban, rural, planned, unplanned settlements and ect. (UNEP 2010; Aguilar and Santos 2011). This chapter intends to fulfil its purpose by providing a discussion on the forms of settlement development.

4.2. Criteria for Settlement Development

The science of ordering the use of land and the character and sitting of buildings and communication routes so as to secure the maximum practicable degree of economy, convenience and beauty is called settlement development (Murray, Greener J, Houston, Mckay and Murtagh 2009). Aguilar and Santos (2001) and CSIR (2006) support the latter by stating that the development of a settlement development requires the use of wide range of resources including land, money, building material, manpower, energy and water.

As noted already that settlements are either urban or rural, Picione (2006) points out that for a development of any settlement be it a new settlement, an extension or an infill, there is Settlement Development Criteria (SDC) that is followed. The criterion determines whether the settlement is rural or urban looking at the costs, environmental loss and damage and access to facilities and it is conducted whenever a settlement is developed (Pacione 2006). Knox (2009) asserts that this criterion can be used for formal settlements only and informal settlements need not to follow the criterion. As far as Pacione (2006) is concerned the SDC has three criteria being:

- Economic criteria (cost of end product, infrastructure costs, maintenance costs an access to employment),
- Social criteria (access to facilities, sense of community, social mix, affordable housing and local acceptability)
- Environmental criteria (loss of land, energy-transport, energy- space heating, pollution levels, greening and Town cramming effect).

4.3. Forms of Settlement Development

Settlements are unique by the way they are developed and by their nature (Murray, Greener, Houston, Mckay and Murtagh 2009). As far as Diachenko and Menotti (2012) are concerned any form of settlement is determined by the number of inhabitants in it and by the product of the settlement's relative density coefficient in relation to its area

(e.g. the average number of houses within the settlement) and the average number of in habitants per house. A study provided by Tian, Qiao and Zhang (2012) drawn attention to the fact that the distance between the conditional centres (such as shopping centres, hospital and schools) of the settlements is also crucial when developing a settlement. It is for this reason that Knox (2009) and Nuissl, Haase, Lanzendorf and Wittmer (2009) indicate that there are only two forms of settlements being the formal and the informal settlements. There is no doubt that the theory provided by (Knox 2009 and Nuissl, Haase, Lanzendorf and Wittmer 2009) is true but how ever literature, urbanisation and technology provide for the third form of settlement being rural-urban continuum which is a settlement development that has the characteristics of both the urban and the rural settlement (Redfield 1941 Tian, Qiao and Zhang 2012).

4.3.1. Formal settlements development

One popular form of settlement is the formal settlements which provide homes approximately 80% of the population (Knox 2009). Nuissl, Haase, Lanzendorf and Wittmer (2009) puts forward the idea that formal settlements take place within legal land tenure framework, and they are characterised by planned provision of services and infrastructure. Although the opposite is true in South Africa, where other formal settlements are without planned provision of services Knox (2009) puts forward the idea that there are different types of formal settlement development depending on affordability and geographic location.

As noted already that formal settlements are developed following a certain criterion, a formal settlement development follows the criteria below (Knox 2009). It should be mentioned prior the development that all the elements within the economic, social and environmental are good, poor and specific disruption that they will cause if any (Knox 2009; Nuissl, Haase, Lanzendorf and Wittmer 2009). Table 4.1 below is an example of the criteria used for formal settlement.

Table 4.1 Criteria for formal settlement development

Criteria	
Economic	
Cost of End Product	
Infrastructure Costs	
Maintenance Costs	
Access to employment	
Social	
Access to facilities	
Sense of community	
Social Mix	
Affordable Housing	
Local Acceptability	
Environmental	
Loss of land	
Loss of habits	
Energy transport	
Energy space heating	
Pollution levels	
Greening	
Town Cramming Effect	

4.2.1.1. Urban settlements

Although urban areas provide a home to 70% of the world population there is no universal definition used to describe them (Ayad 2011). Approximately 61% of the approximately 49 million South Africans live in urban areas. The average growth rate for urban areas (more so for metropolitan areas) has been consistently higher than the population growth rate during the period 1998 to recent (Ayad 2011). Due to security issues in the urban area security complexes have become the trend with a lot of the new developments (Knox 2009). These complexes have one or two gates where all residents gain access (Knox 2009; Ayad 2011). They comprise of one type of housing for example cluster houses, town houses, apartments or a combination of all. These units have their own numbering within the complex, which may be used for service

provision (Huxley 2009). The problem with this kind of developments is that the numbering is not necessarily official. The other problem may be that the smaller units and townhouses are situated on a single plot with one cadastral number (Wakesa, Steys and Oteo 2011).

Different settlement types in the urban areas require collection of different information. There is a need to break down the different types and identify the necessary information to collect for each standard field. Sub-types of urban settlements include individual plots (stand-alone houses), security villages, high-rise flats, town houses, institutions, central business district, industrial premises and recreational areas (Nuissl, Haase, Lanzendorf and Wittmer 2009).

4.2.1.2. Urban infill

Urban infills are developments that can involve either new building or conversion of existing property (Zhang and Wu 2012). Research conducted by Zhang and Wu (2012) indicates that infill developments can often make use of existing infrastructure, Nuissl, Haase, Lanzendorf and Wittmer (2009) affirms that urban infill's are higher density developments which in most cases require expansion of local systems. In addition to that, the expenses associated with such developments relatively are high due to on site house-building costs, as distinct from infrastructure costs (Nuissl, Haase, Lanzendorf and Wittmer 2009).

Current land planning policies and policies on land conservation and anti-deforestation activists do encourage urban infill as most people will be closer to shopping amenities and work places (Nuissl, Haase, Lanzendorf and Wittmer 2009), it is for this reason that most researchers in the field of Human Geography have admitted that infill's in a way replace the development of new settlements (see Knox 2006; Nuissl, Haase, Lanzendorf and Wittmer 2009; Zhang and Wu 2012). Urban infill does not only have low environmental effects they are also linked to existing structures and they have good social systems table 4.2 below indicate the criteria used when developing an urban infill (Knox 2006).

Table 4.2 Criteria for urban infill

Criteria	**Urban infill**
Economic	
Cost of End Product	High development costs
Infrastructure Costs	Low provision and use costs
Maintenance Costs	Connects to old system
Access to employment	Good
Social	
Access to facilities	Good: existing system
Sense of community	Good existing networks
Social Mix	Usually good or moderate
Affordable Housing	Can be negotiated depending on size
Local Acceptability	Minimal disruption
Environmental	
Loss of land	Low
Loss of habits	Moderate dependent on circumstances
Energy transport	Low depending on congestion
Energy space heating	Poor prospects
Pollution levels	Good
Greening	Poor
Town Cramming Effect	Poor

Urban infill may generate fewest social problems in terms of local acceptability and can represent a means of revitalising a run-down area, with the creation of an 'urban village' (Pacione 2006; Fien and Charlesworth 2012). However, large-scale infill in more established areas of a city can generate social conflict between in-comers and established residents, particularly where the social profile of the new population differs significantly from that of the existing community, (Fien and Charlesworth 2012), this can be seen mostly in urban areas of central Gauteng Such as Soweto, Medowlands, and Attradgeville. In environmental terms, more compact infill forms of development can be more sustainable, particularly if it is a mixed use development that reduces the need to travel, is well served by public transport, and requires less space heating with consequent energy saving (Pacione 2006). Conversely, intensification of development

can reduce open space and lead to congestion and poorer air quality if alternatives to the private car are unavailable.

4.2.1.3. Rural settlements

Over the years, rural settlements commonly known as farm settlements have been characterized by illiteracy, traditionalism, isolationism, and an agricultural economy (Manda 1979; Tian, Qiao and Zhang 2012). Furthermore rural settlements have provided homes to marginalised part of the population. In the late l990s, about half the world's population still resides in rural areas. Up to today about 45% of the population still resides in those areas (KNOX 2009). This is because the vast majority of humanity still farms the land, often in ways that have not changed significantly.

The form or layout of rural villages reflects historical circumstances, the nature of the land and economic conditions (Manda 1979). They range from linear and clustered to circular and grid pattern (Tian, Qiao and Zhang 2012). Each has something to say about the culture that built them. The forms, functions, building materials, and the spacing of rural dwellings reveal much about a region and its culture (Tian, Qiao and Zhang 2012). Shucksmith and Topson (2012) are of an idea that although culture is of importance in rural settlements stability, self-reliance and perhaps emblematic of national identities are the characteristics of inhabitants of rural settlements. Furthermore the society is united and human relation as considered important as compared to most urban areas (Ayad 2011).

4.2.1.4. Rural-urban continuum

Conventionally, rural-urban continuum proposes a linear depiction of contrasting natures of social relationships characteristics of both rural and urban settlements (Lin 2010).Research has suggested that in most developing countries new settlements are developed to give most residents, more especially those who were socially excluded during the Apartheid era the opportunity to live near their place of work and the CBD (Ramutsindela 2006; Thwala 2006; College and Oxford 2011; Wakesa, Steys and Oteo 2011). These settlements are a combination of the socio-economic characteristics of

both rural and urban settlements (Shucksmith and Topson 2012). *A* major cost element for rural-urban continuum residential development is the cost of land (Pacione 2006; Huxley 2009; Knox 2009; Mac Tavish and Salamon 2009; Wills 2009). The economic viability of a rural-urban continuum depends, to a large extent, on the scale of development, the need for the settlement and social status of the intended residents (Wakesa, Steys and Oteo 2011). Significantly, the development of a new settlement is cost effective and is not environmentally friendly, for a development of a new rural-urban continuum settlement trees will be cut off, the land will be dynamited and habitant will be lost (Aucamp 2006). A new rural-urban continuum settlements development is therefore assessed using the SDC as follows (see table 4.3. below) (Knox 2006).

Table 4.3 Criteria for new rural-urban continuum settlement development

Criteria	**Rural-urban Continuum**
Economic	
Cost of End Product	Can be cheapest
Infrastructure Costs	Will be high
Maintenance Costs	Low: all new systems
Access to employment	Moderate depends on local employment and distance to CBD
Social	
Access to facilities	Potentially good
Sense of community	Good/Moderate if planned
Social Mix	Moderate
Affordable Housing	Good through planning gain
Local Acceptability	Could be severe
Environmental	
Loss of land	High
Loss of habits	Moderate
Energy transport	Moderate
Pollution levels	Potentially high
Greening	Good
Town Cramming Effect	Good

4.1.2.5. Discarded settlement

Over the years, settlement development has always revolved around providing housing facilities interlinked with social activities to human being and or communities (Zang, 2011). Human Geography provided discussions and ample research on different forms of settlement but the concept of discarded settlements has been largely overlooked (Willis 2009). Study provided by Lavinal (2008) and Willis (2009) makes it clear that discarded settlements involves but not limited to the thrusting aside of structural patterns that has ecological significance based upon the importance of subsistence and the satisfaction of human needs.

It has always been acknowledged by scholars in the field of Human settlements that settlements are a prerequisite for social and economic development (College and Oxford 2011; Sampsson and Giffor 2010). Furthermore those studies have indicated that discarded settlements have adverse negative impacts on the physical environment, living conditions of the affected population, psychological wellbeing, and economic performance of the affected region (College and Oxford 2011). The latter is true as settlements are developed to better the lives of people, so if they are then discarded the principles of sustainable development are not only ignored but the society's right to live in a secured environment with access to amenities is infringed.

4.2.2. Informal settlements

Another category of settlement development is the Informal settlements, normally called squatter settlements (Willis 2009; Wakesa, Steys and Oteo 2011), which provide shelter to millions of poor urban dwellers in developing countries and for 10% of South Africa's 44 million people (Misselhorn 2010). There has been a growing concern among scholars and researchers to the concept of informal settlements which has been in the academic debate from the 1970's (Lupula 2002; Lavinal 2008).

Informal settlements are residential buildings built on "planned" and "unplanned" areas which do not have formal planning approval (Willis 2009). If one considers Willis's (2009) argument it is clear therefore that informal settlements are characterized mostly

by the low quality houses and the lack of, or inadequate infrastructure and social services. Recent work in the field of Human Geography has shown that although these settlements are as a result of poor planning and urbanisation they are perceived as a solution to housing needs in speedily growing cities of many developing countries (Todaro 1994; Srivinas 2005). This is true indeed when placing focus in South Africa which has more than 40% of its population in Informal settlements (Grimm, Hartgen, Klasen and Masselhorn 2008). Similar evidence can be found in India where almost 55% of the population are residing in informal settlements. Wakely (2008) shows that almost 50% of the world's population are in residing in underserviced informal settlements, the figures are growing at the speed of 8000 household per year and 160 new settlements are created per week.

Informal settlement developments are as a result of the lack of sufficient and affordable official market options and access to urban land and housing, especially serviced land thus leading to increasing land and property prices and excluding in the process a growing part of society (Sampsson and Giffor 2010). Although it seems logical to refer to the "lack of land" as being a problem, (Willis 2009; Dubory, Sliuas and Falck 2011; Zang 2011) the fact is that land itself is widely available, what is not fully and easily available is serviced land released into the market through legal processes (Dubory, Sliuas and Falck 2011; Zang 2011). On the other hand (Zang 2011), informal settlements have resulted from the nature of state action, in several ways. To begin with, the lack of a consistent social housing policy has certainly accounted for the fact that the urban poor live in informal settlements (Sampsson and Giffor 2010). In less developed countries, the recent high rates of urban expansion are often associated with the emergence of informal settlements that may exaggerate social and environmental problems and impede sustainable development. An enhanced understanding of informal development may, therefore, be a key for future success in its effective management (Dubory, Sliuas and Falck 2011; Auoly and French 2012).

At the centre of the informal settlement phenomenon lays the question of poverty (Satterthwaite and Mitlin 2012) With an average annual per capita income of less than

US$200, the majority of the population can be categorized as extremely poor. It is indeed factual that informal settlements are places where a high proportion of urban dwellers and most low and middle income earners reside (Harris 2012). To construct a house in a planned area one needs to have enough money to buy a plot and build a “decent house” (Dubory, Sliuas and Falck 2011).

On average a plot of 400 square metres is sold between R200 000 to R350 000, which is beyond reach for many residents. Therefore, to build a house is a life time project (Sampsson and Giffor 2010). People start constructing houses by using mud and thatch and these are gradually replaced over time by cement bricks and corrugated iron sheets (Zang, 2011). Admittedly, the only place that allows this common practice to take place is in an unplanned area where neither drawing nor building permits are required.

4.3. Conclusion

Settlements are differentiated by many factors such as topology, location size, proximity and management structure (Wakesa, Steys and Oteo 2011). This chapter fulfilled its intended purpose by providing a discussion on the forms of settlement development; the chapter discussed the criteria used when developing a settlement and the reasons for different types of developments (Auguilar and Santos 2011). Furthermore the chapter provided a discussion on the rural-urban continuum, which is a combination of the characteristics of both rural and urban settlements.

5. Chapter 5: Research Findings, Analysis and Interpretation of the environmental impacts of land claim-discarded settlements in Mamahule ga-Matsaung

5.1. Introduction

Ramthlodi Park was a settlement development developed for the low income earners within the Polokwane Municipality, the land went through excavations and clearing in preparation for the foresaid. During the process of the development Mamahule community lodged a land claim, as a result of the claim the settlement development was discarded. This chapter presents the environmental impacts of land claim-discarded settlement development in Mamahule-Ga Matsaung. The results discussed in this chapter emerged out of observations, assisted questionnaires and interview survey appended on this report.

5.2. Research Findings

A total of 41 respondents participated in the survey, from the 41, 5 were CPA household members and 37 were beneficiaries for housing in Ramathodi Park. Apart from that 1 project planner and 1 environmental officer participated in the survey. In order to determine environmental impacts of land claim-discarded settlement in Mamahule ga-Matsaung it is prudent to consider the responses of all the participants who partook in the survey. This section will analyse the economic, social and psychological conditions of the households at the time of the resettlement promise, at the time of abandonment of settlement development activities, post land claim as well as currently. This is done in order to determine the direct, indirect as well as cumulative impacts.

5.2.1. Demographic profile for intended beneficiaries of housing

A total of 37 households who were the intended beneficiaries of housing participated in the survey. The participants provided information on the psychological, cultural and economic changes and household conditions at the time of the resettlement promise, at

the time of implementation of settlement development activities, at the time of abandonment settlement development activities, and post land-claim settlement.

The right to adequate housing is enshrined in the Constitution (Act 108 of 1996) and it states that everyone has the right to have access to adequate housing and that the state must take reasonable legislative and other measures within its available resources to achieve the progressive realization of this right. In order to determine the impact of the land claim discarded settlement on the intended beneficiaries of housing it was then prudent to understand the household living conditions and employment status this helps to determine the economic standing and level of affordability of the household.

To respond to the question on household living conditions which generally focused on the type of dwelling and housing and the basic services that the respondents are entitled to, as well as room density, table 5.1 below provides such information. Currently majority of the participants (78.3%) are living in single detached houses, as opposed to the 8.1% of respondents living in RDP houses.

From a researchers' point of view the households have a good social welfare standing. All the households have access to water and electricity and (51.3%) have sanitation an addition of 18.9% has refuse removal services. As noted in table 5.1 above the household living conditions inclusive of type of dwelling, basic services that the household receives and room density. This then shows that currently the types of settlements that the respondents inhabit are well serviced and structured.

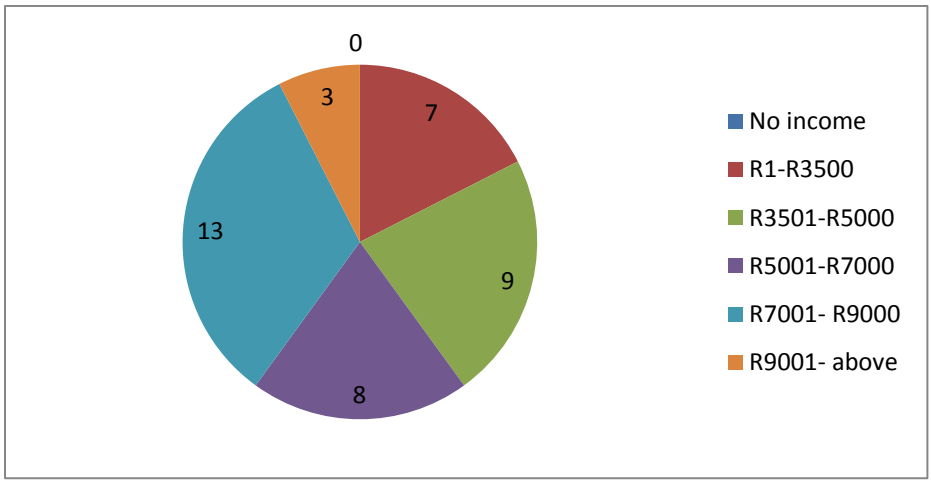
Table 5.1 Current household living condition for intended beneficiaries of housing

		Household Condition **N (%)**
Type of dwelling	**Mud house**	**0 (0)**
	Shack house	**0 (0)**
	RDP house	**3 (8.1)**
	Single detached house	**29 (78.3)**
	Shack house and RDP house	**5 (13.5)**
Basic services	**Water**	**37 (100)**
	Electricity	**37 (100)**
	Sanitation	**19 (51.3)**
Other services (refuse removal)		**7 (18.9)**
Room density (average)		**(4.6)**

Employment and household income plays a significant role in determining the economic status of the household, to understand the economic standing and conditions of the household figure 5.1 in page 59 is a pie chart indicating gross household income for the intended beneficiaries of housing for the settlement development in discussion, this then shows that 82.5% of the intended beneficiaries of housing are above the poverty line which is less than One American Dollar ($1). As a result most of the households do not qualify to reside in Ramathlodi Park because they are not classified as low income earners because the earn a gross income of or above R3500 per household, only 17.5% of the sampled households qualify for housing in the settlement development. According to the Department of Human Settlements (DHS) (2013) low cost settlements

are for individuals earning a combined salary of less than R3500 per month. This then poses a question “which criterion was used to apply for housing in Ramathlodi Park?”

Figure 5.1 Household incomes for intended beneficiaries of housing



5.2.2. Demographic Profile of Mamale CPA

As per the data sampling design, which is reflected in chapter 1 of this report section, 5 Mamahule CPA members were surveyed to provide information on the conditions of the household at the time of the claim and post land claim settlement. The participants also provided information on the psychological, cultural and economic changes and household conditions at the time of the resettlement promise, at the time of implementation of settlement development activities, at the time of abandonment settlement development activities, and post land-claim settlement. This information was provided to determine the impact of the settlement development on the CPA members and their representatives.

In order to identify the impact and to understand the reasons behind the land claim it is vital to understand the current situation and social welfare of the CPA as well as their economic standing. To respond to the question on household living conditions which

generally focused on the type of dwelling and housing and the basic services that the respondents are entitled to, as well as room density, table 5.2 below provides such information. Currently all the households (100%) are living in single detached houses inclusive of basic services such as water and electricity.

Table 5.2 current living conditions for Mamahule CPA

		Household Condition **N (%)**
Type of dwelling	**Mud house**	**0 (0)**
	Shack house	**0 (0)**
	RDP house	**0**
	Single detached house	**0 (0)5(100)**
	Shack house and RDP house	**0 (0)**
Basic services	**Water**	**5 (100)**
	Electricity	**5(100)**
	Sanitation	**4 (90)**
Other services (refuse removal)		**0 (0)**
Room density (average)		**(5)**

5.2.3. Impacts at the time of the resettlement promise

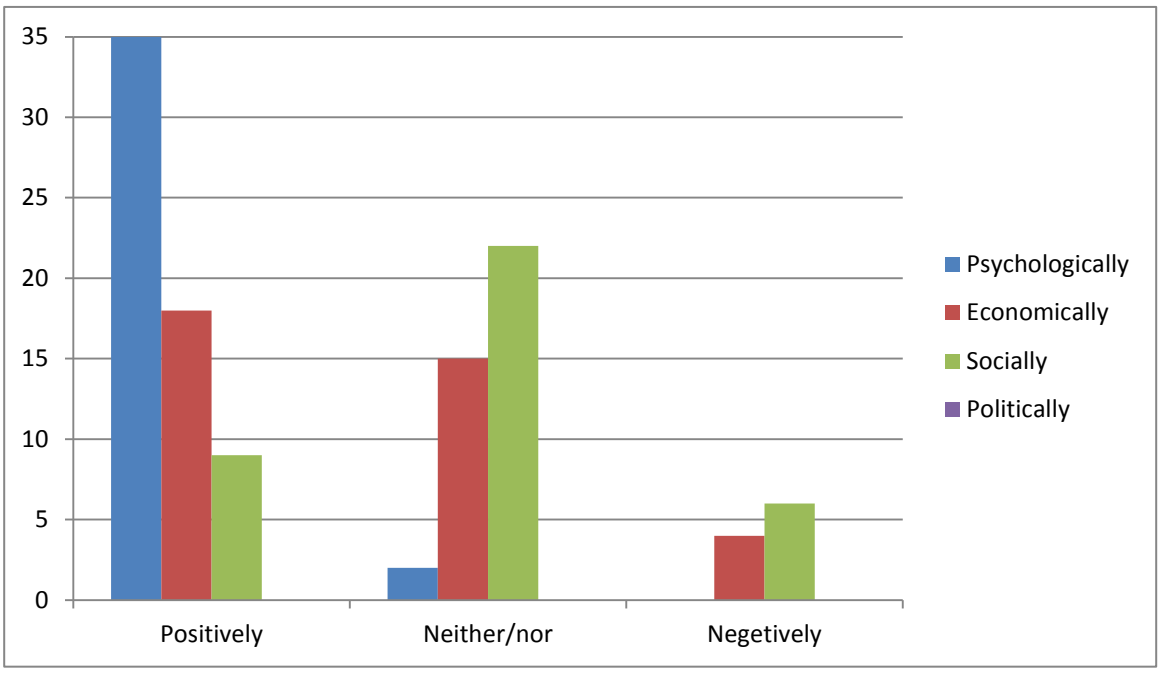
The resettlement promise was well advertised and announced in 1996 through media and word of mouth. The resettlement promise had negative, positive, as well as cumulative impacts on both the intended beneficiaries of housing and Mamahule CPA members. At the time of the resettlement promise most of the households representing both beneficiaries of housing and CPA members were residing at Ga-Maja, Ga-Molepo,

Ga-Mojapelo and Nobody (Ga-Mothapo and Ga-Mothiba). This subsection will provide a discussion of the impacts of on both the intended beneficiaries of housing in Ramathlodi Park and Mamahule CPA.

5.2.3.1. *Impacts at the time of the resettlement promise on intended beneficiaries of housing*

At the time of the resettlement promise most of the households applied both home loans from different financial institutions, apart from that most households prepared themselves psychologically to reside in a new and totally different environment with hope for better infrastructure, security and possible career advancements. Figure 5.2 below is a graph showing the impacts on the household at the time of the resettlement promise.

Figure 5.2 Impacts of the resettlement promise on the intended beneficiaries of housing



Majority of the respondents (94%) made mention that the resettlement promise impacted positively on their psychological wellbeing, as compared to 6% that were not sure how were they impacted. This indeed shows that most of the respondents

prepared themselves psychologically for the change that was promising to happen in their lives in the form of new homes, new neighbourhood as well as new neighbours. The resettlement had positive economic impacts on 48% of the respondents, the survey results shows that most of them started saving after the resettlement promise further than that 20% of the respondents had approved home loans in preparation to reside in Ramathodi Park. At the time of the resettlement promise respondents were not aware of any political action as such political it did not have any impacts.

5.2.3.2. Impacts at the time of the resettlement promise on the Mamahule CPA

The resettlement promise had negative impacts on the CPA members; majority of the CPA members did not understand the reasons for their ancestral land to be a settlement development that they were not consulted about. For this reason the CPA members called a number of meetings with the RLCC seeking clarity on why their land is turned into a settlement development while they were not informed but nothing was done for a period of a year. Figure 5.3 below is a bar graph indicating the impacts of the resettlement promise on the Mamahule CPA.

Figure 5.3 Impacts of the resettlement promise on Mamahule CPA

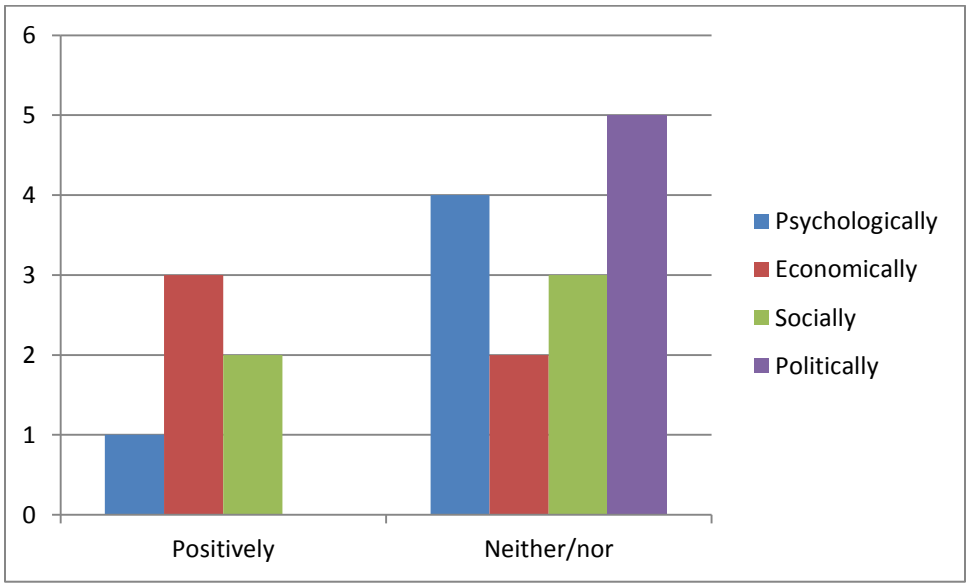


Figure 5.3 above shows that the CPA members were negatively impacted at the time of the resettlement promise. When asked if they were intended beneficiaries of housing in Ramathlodi Park, all of the surveyed members answered no stating that “we cannot buy our own land”. Although none of the surveyed CPA members were intended beneficiaries for housing but they made mention that most of the people who were beneficiaries of housing in Ramathlodi Park were part of the Matsaung and Matsoakwane community.

5.2.4. Impacts at the time of implementation of settlement development activities

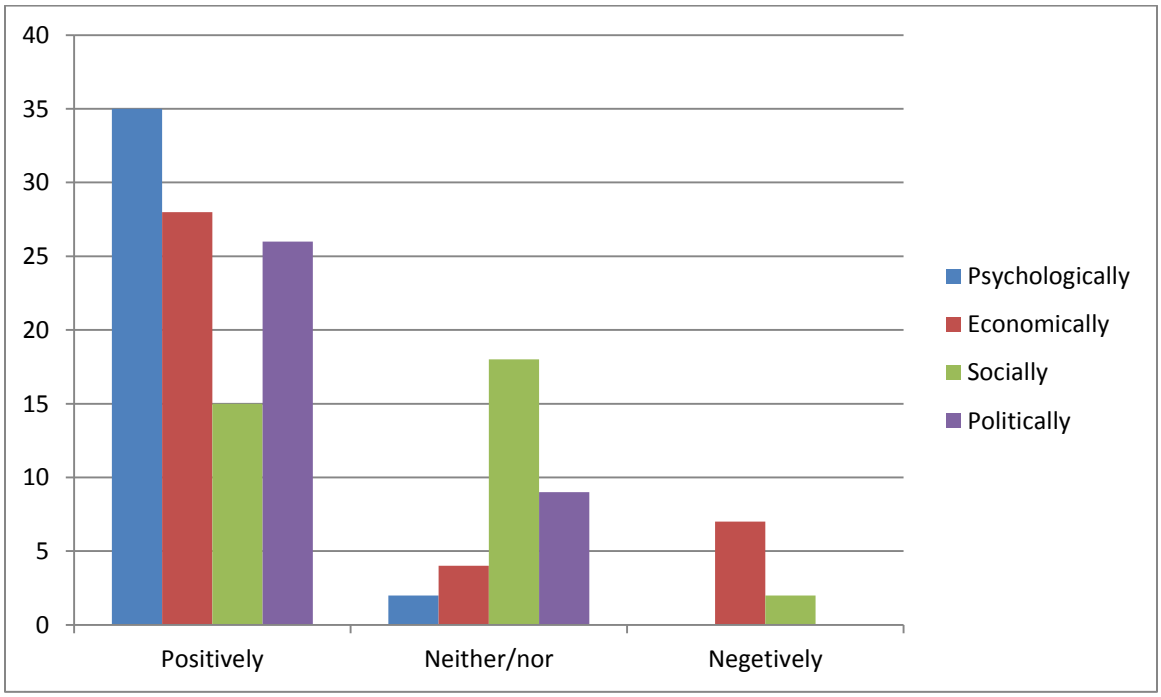
The implementation of settlement development activities commenced in 2001, at that time. The implementation of settlement development activities had negative and positive impacts on the environment as well as direct, indirect and cumulative impacts. This sub section will provide a discussion on the impacts at the time of implementation of settlement development activities.

5.2.4.1. Impacts at the time of implementation of settlement development activities on the intended beneficiaries of housing

It is in human nature to have expectations more especially when there is action that is taking place. Survey results shows that at the time of the implementation settlement development activities the community had high hopes about their new settlement and were extremely happy before they could even resettle.

The bar graph (figure 5.4 in page 63) shows positive and negative psychological, social, economic and political impacts of the fore said period. The graph indicates that most of the respondents (90%) had positive impacts at the time of the resettlement promise. In preparation to resettle in Ramathlodi Park most families were distorted because the breadwinners were about to relocate so said most of the respondents who socially were negatively impacted by the implementation of settlement development activities. In a nutshell the implementation of settlement development activities impacted positively on the intended beneficiaries of housing.

Figure 5.4 Impacts at the time of implementation of settlement development activities on the intended beneficiaries of housing



5.2.4.2. Impacts at the time of implementation of settlement development activities on Mamahule CPA

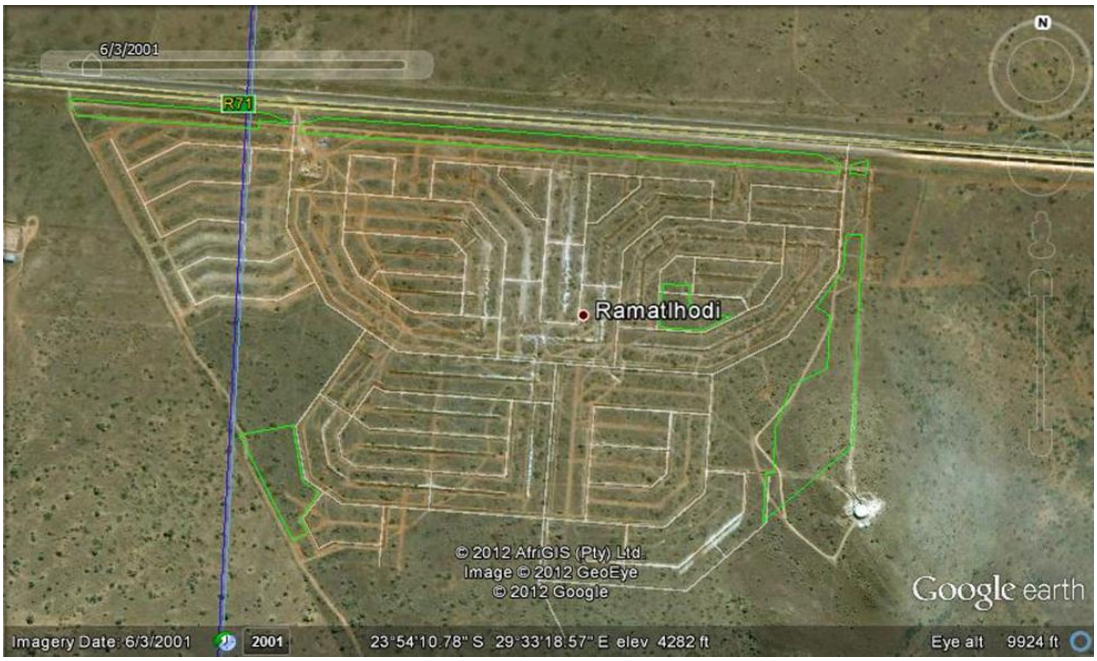
The CPA has always been against the development of the settlement in their ancestral land. As a result they were negatively impacted at the time of implantation of settlement development activities as they were at the time of the resettlement promise. Apart from that the CPA mentioned that they had already lodged a land claim as a result they were highly disappointed in the government as to why should the settlement development activities be implemented. One of the CPA member said: “government stresses the fact that land should be returned to the rightful owners but at the same time they reverse what was done by the apartheid government and take our land without our concern”. Contrary to the beneficiaries of housing the implementation of settlement development activities had negative impacts on the MAmahule CPA.

5.2.4.3. Impacts at the time of implementation of settlement development activities on the physical environment

To understand the impact on the physical landscape at the time of the implementation of settlement development activities it was of vital importance that the EIA practitioner be interviewed on the state of the environment at the time of implementation of settlement development activities (see Annexure D). According to the EIA practitioner the land was dynamited, excavated surface was cleared; the air and the nearby rivers were polluted. Apart from that several insects were killed and most birds lost homes, as such the physical landscape suffered severely in preparation for the settlement development.

Figure 5.4 below is an Arial photograph that was taken in 2001 when the settlement development activities commenced. The line in blue is the R71 road from Tzannen to Polokwane where the Ramathlodi Park lies. In green are the boarders of the settlement.

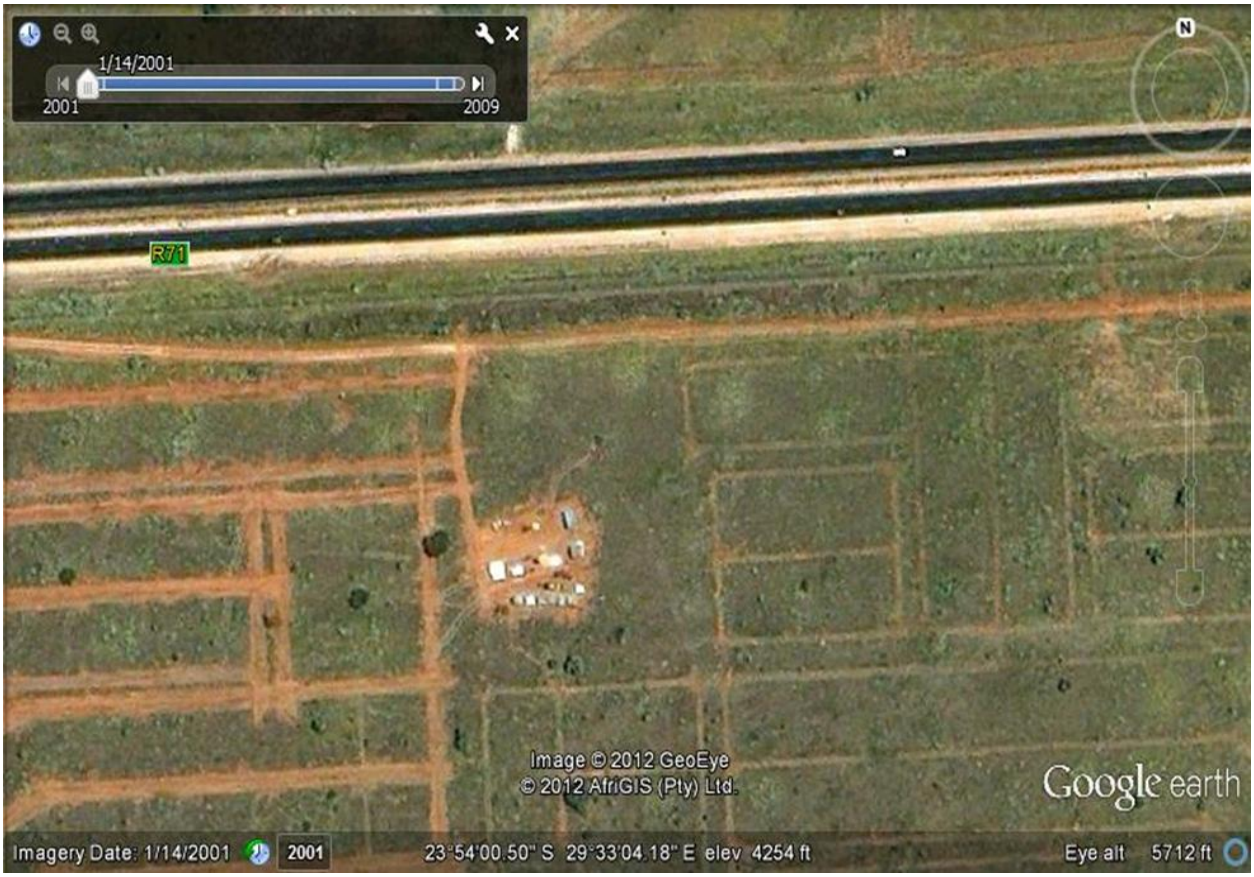
Figure 5.4 Arial photograph of Ramathlodi Park at the time of implementation of settlement development activities



development, the silvery white lines are the street lines for the settlement. Telephone and electricity lines were going to pass through the lines; as a result the land was excavated to make provision for the said lines. On the bottom right corner is a silvery white circle that was used as a temporary dumping site. The vegetation on the land was cleared to prepare for the said lines in preparation for the lines. The two white circles on the top right indicate the positioning of the aircraft when the picture was taken.

Figure 5.5 below is also an Arial photograph that shows the street plans as well as position of where each stand would be indicated by the lines in brown. The army green colour the vegetation that was not yet cleared, this indeed shows that the land was densely vegetated. The white objects at the centre of the photograph indicate the temporary residential area for the constructors.

Figure 5.5 Arial photograph of Ramthlodi park indicating vegetation and street plans and house stands



It is clear therefore that that the land suffered multiple and other additive impacts at the time of the implementation the settlement development in discussion. Looking at figure 5.4 and 5.5 respectively the implementation of the settlement development activities had direct negative and cumulative impacts on the physical land scape.

5.2.5. Impacts at the time of abandonment of settlement development activities

After the implementation of settlement development activities, when people had stand numbers and house loans were approved by different financial institutions. The land claim was then was gazetted in as Government Gazette Notice No. 1296 of 2003 (see Annexure E) as a result of the Gazette and due to the fact that the claim was still in court pending approval of tittle deeds the settlement development activities were abandoned. Mamahule community got the naming rights for the land and the land was renamed to Mamahule-ga Matsaung.

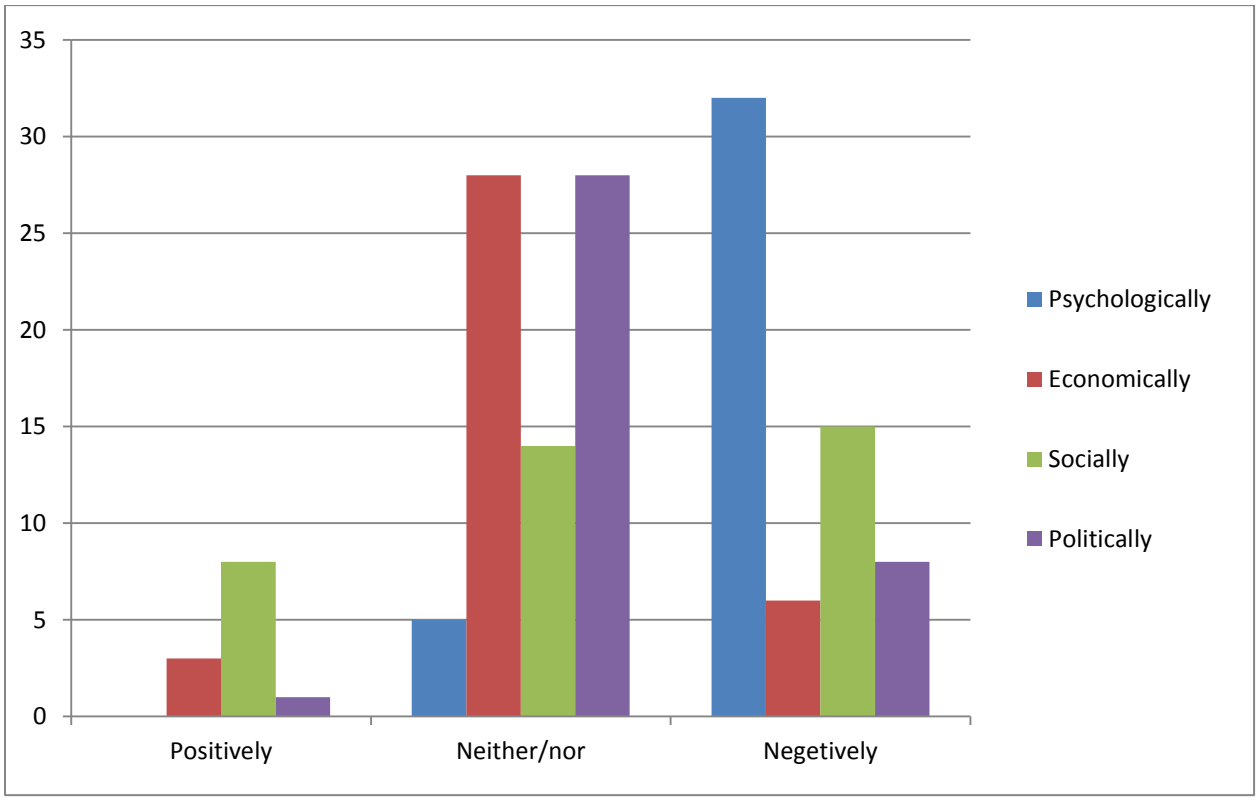
5.2.5.1. Impacts at the time of abandonment of settlement development activities on the intended beneficiaries of housing

The beneficiaries were never informed about the abandonment of settlement development activities most people were not even clarified as to what is the current status of the settlement development. It was through word of mouth that the land was claimed and the settlement development activities were abondoned, which indeed came through different people in different versions. Most intended beneficiaries of housing had already prepared themselves financially and otherwise to relocate.

The bar graph presented as figure 5.5 in page 66 shows the impacts that the abandonment of the settlement development activities had on the intended beneficiaries of housing. Survey results shows that most people's psychological wellbeing was negatively affected by the abandonment of settlement development activities. Also most

of the respondents were really bothered them was that there was no proper communiqué that was sent out. The bar graph indicates that the time of abandonment of settlement development activities psychologically (87%) most households were negatively impacted while the respondents were not sure (72%) of their political and economic impacts. This indeed shows frustrations as most people had already prepared themselves to reside in a new settlement. This clearly shows that the abandonment of the settlement development had negative impacts on the intended beneficiaries of housing.

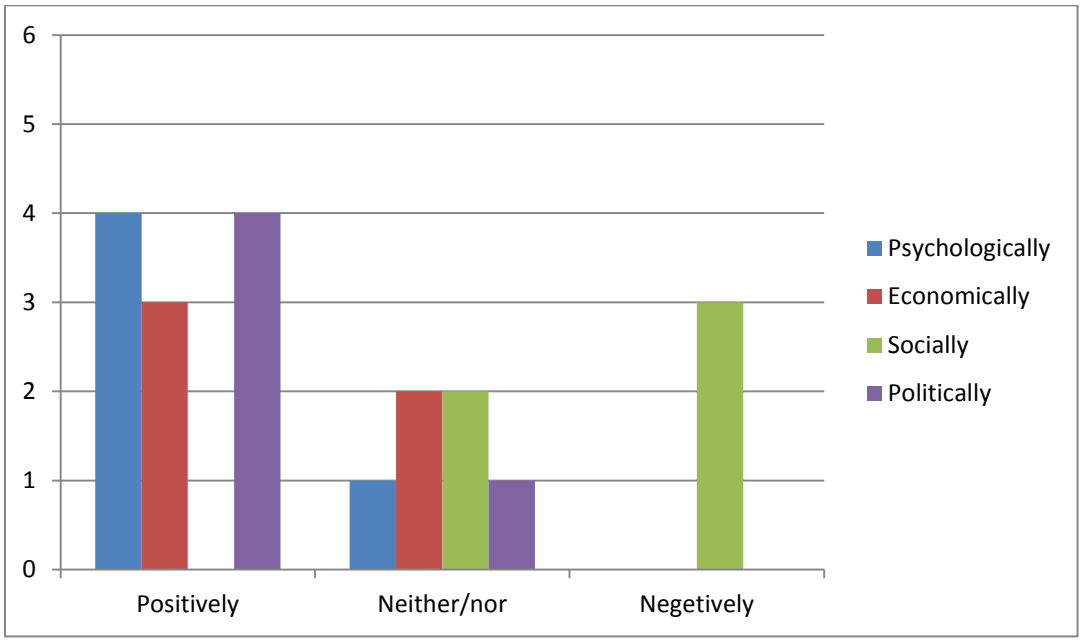
Figure 5.5 Impacts at the time of abandonment of settlement development activities on the intended beneficiaries of housing



5.2.5.1. Impacts at the time of abandonment of settlement development activities on Mamahule CPA

It was during the time of abandonment of settlement development activities when the claim was gazetted as Mamahule ga-Matsaung together with some of the Mamahule claims. During this period the CPA members had positive impacts and they also had the belief that their land will be restituted. Figure 5.6 as well is a bar graph indicating the impacts of the abandonment of settlement development activities on the Mamahule CPA. The CPA had positive psychological, economic and political impacts.

Figure 5.6 Impacts at the time of abandonment of settlement development activities on Mamahule CPA



The negative social impacts were as the results of social conflicts between some of the Mamahule community members who were the beneficiaries for housing in Ramathlodi Park and those who were not the beneficiaries of housing. Overall the CPA were positively impacted by the abandonment of settlement development activities, When comparing the impacts at the time of settlement development activities and at the time

of abandonment of settlement development activities, it is clear therefore that the Mamahule CPA were against the settlement development.

5.2.5.1. Impacts at the time of abandonment of settlement development activities on the physical environment

As already highlighted above that in 2003 the settlement development activities were abandoned as a result of the successful land claim. All the activities in preparation for the settlement development were discontinued as result vegetation grew on the grid lines and all the excavated areas. Figure 5.7 below is an Arial photograph from Google earth that was taken in 2009 (7 years) after the abandonment of settlement development activities. The picture shows clearly that even though vegetation was growing there is a difference between vegetation on the top area of the picture just below the tart road indicated in black and vegetation were there are brown soil area is not yet covered. The picture still has the shows the grid lines and street plans of the settlement this is because of the excavations that took place. This indeed indicates that the excavations were deep and have damaged the physical environment severely hence the land could not be covered by vegetation even after 7 years.

Figure 5.7 Arial photograph of Ramathlodi Park, seven Years after abandonment of settlement development activities

In 2012 as a pursuit to research the environmental impacts of land claim-discarded settlement in Mamahule ga-Matsaung, 10 years after the abandonment of the settlement development activities different pictures were taken to determine the impact (see figure 5.8 and figure 5.9 respectively). Figure 5.8 is a photograph that was taken in 2012 (10 years) as ten the abandonment of settlement development activities. The picture shows fallen electrical poles, which do not only have negative impacts on the growing of vegetation but also the budget that was used to put up the settlement that benefits no one after 10 years. The gridlines and street plans are no longer visible there is no indication that the land was in the process of being developed as a settlement.

Figure 5.8 Photograph of Ramathlodi Park 10 years after the abandonment of settlement development activities indicating fallen electric poles

Similar to figure 5.8 above figure 5.9 is a photograph that was also taken in 2012; the photograph shows cattle's grazing on the land that was supposed to be a settlement development. Taking a closer look on the bottom part figure next to the fence there is still an indication of some street plans and grid lines that were excavated; this is indicated by the soil brown linier patterns just before the fence. Then then shows that even if the land has tried to recover from the excavations ten years later it has not yet fully recovered.

Figure 5.9 Photograph of Ramathlodi Park 10 years after the abandonment of settlement development activities showing that the land has turned into a grazing land

5.3. Economic Valuations of the Land Claim and Settlement Development

As previously mentioned in chapter one of this report that economic valuation in the form of NPV will be used to determine if the costs of the settlement development outweigh the benefits and also if the costs of the land claim outweigh the benefits. NPV was calculated to determine net present value for the said using the formula below

$$NPV = \frac{\text{NPV = Total Costs}}{\text{Total benefits}}$$

5.3.1. Economic valuations for the land claim

According to the Project planner from the RLCC the total award for the claim was R12, 293.790.00 is the community getting their land back this is equivalent to R250 000 and ethnic pride which could not be accounted for in monetary term. This included court proceedings and purchasing the land from the precious owner. For the land claim all the social, psychological and political costs and benefits were put in monetary form do that NPV should be determined.

$$NPV = \frac{\text{R12, 293.790.00}}{\text{R250 000 + pride}}$$

NPV = R49 17516 +ethnic pride

For the Mamahule CPA the land claim was beneficial to them as the total benefits are not only monetary but inclusive of ethnic pride and restoration of ancestral land which had values of cultural significance in the form of their ancestors' graves. The benefits

outweigh the costs as a result the land claim is a gain in social welfare for the intended beneficiaries of housing

For the intended beneficiaries of housing NPV will be calculated as follows: The benefits for the intended beneficiaries of housing included savings in transport when going to work (R 600.00 per households *37 = R 22700, availability of good infrastructure (R500 per household *37 = R18500), improved living conditions (R2000 per household * 37 = R74 000), better living standards (R1500 per household *37 = R 55 500) and access to available job opportunities (R 2000 per household *9 = R 18000(only 9 households were in agreement to this) within the city.

$$NPV = \frac{R12,\ 293.790.00}{R22700 + R18\ 500 + R74000 + R55\ 500 + R18\ 000}$$

$$NPV = \frac{R12,\ 293.790.00}{R188\ 700}$$

NPV = R 65. 15

For the intended beneficiaries of housing the costs outweigh the benefits, as a result the land claim was a loss in social welfare.

5.3.2. Economic valuations for the settlement development

For the development of the settlement development all costs were taken into account, including contractual costs, as well as salaries that were already paid to the employees who were developing the settlements. According to the Development practitioner the total budget for the settlement was R7.5 million but at the time of the abandonment of settlement development activities only R2.5 Million including the first phase of payment to contractors was accounted for. The benefits for the intended beneficiaries are the same as those stated in section 5.3.1 of this report.

$$NPV = \frac{R2.5 \text{ million}}{R22700 + R18\,500 + R74000 + R55\,500 + R18\,000}$$

$$NPV = \frac{R2.5 \text{ million}}{R188\,700}$$

NPV = R13 248.5

It is clear that the costs for the abandoned settlement development outweigh the benefits of the intended beneficiaries of housing. The settlement development did not benefit the Mhamule CPA as such the costs for the settlement development outweigh the benefits as well. The abandoned settlement development is a loss in social welfare as many costs have been accounted for but there is no benefit, the claimants are not using the land and the settlement development is abandoned.

5.4. The Environmental Impacts of Land Claim-discarded Settlement Development in Mamahule ga-Matsaung

To determine the environmental impacts of the land claim-discarded settlement development in Mamahule ga-Matsaung different methods were used and they are discussed in Chapter 1 of this report. From a total environmental perspective the land claim had direct, indirect and cumulative negative impacts on the intended beneficiaries of housing. Psychologically and socially as well as economically the intended beneficiaries of housing were prepared the reside in Ramathlodi Park, they made necessary arrangement and had approved home loans so that their houses could be build, some had hope that they will get employment as their staying closer to the city. The resettlement promises as well as the implementation of settlement development activities gave them hope that their current state of living at that time would improve. The abandonment of settlement development activities as the result of the land claim impacted negatively on them.

Contrarily the successful land claim had direct positive impacts on the Mamahule CPA, for they finally received their ancestral land. The land claim also had indirect negative impact on the Mamahule CPA because currently they are not using the land for anything beneficial to them, in state the land has turned into a grazing land for livestock. The settlement development had negative impacts on the CPA members, it was at the time of the implementation of settlement development activities that the contractors threatened to remove their ancestors' graves, this indeed combined with other impacts was cumulative as the Mamahule are traditionally bound and they believe in ancestors, it is taboo for them and their ancestors to be reburied, it is also bad omen and they would not be protected going forward.

The settlement development had negative and cumulative impacts on the physical, was a result of implementation of settlement development activities. Table 5.3 in page 78 shows the activities that happened in preparation for the settlement in discussion. The

cumulative impacts were as a result of amongst others the constant digging, vegetation clearing and la later as the result of the claim which led to the abandonment of settlement development activities. The land could not rehabilitate to its original state even after 10 years of abandonment of settlement development activities this is an indicator of direct negative impact on the vegetation. To support the latter notion the risk matrix below was used. All the activities were ranked in descending order allocated with values of high risk, medium risk and low risk. Table 5.3 in page 77 indicates the risk matrix of the settlement development impacts on the environment. The risk was calculated using the formula below as describe in chapter 1 of this report.

Risk= (frequency + probability) x (duration + extent) x (magnitude)

On the left of the table are all the risk activities during the development of the settlement. Highlighted in green is frequency and probability, highlighted in red is duration and geographic extent, and highlighted in blue is magnitude, the product of the calculations is in the risk rating column and the risk probability column shows if the risk is high, medium or low. It is clear therefore that the settlement development had high risks that could not be mitigated as opposed to the material storage and contraction of temporary residential side that could have been avoided or easily mitigated.

Table 5.2 Risk matrix of the settlement development on the environment

					Magnitude							
Risk	Frequency	Probability	Duration	Geographical Extent	Air pollution	Water pollution/use	Soil pollution	Fauna/flora/ habitats	Social/cultural/heritage	Health and safety	Risk rating	Risk probability
Digging foundations	5	5	5	1	5	5	5	5	1	4	1500	H
Land excavating	6	6	6	1	1	1	3	4	1	3	1092	H
Dynamiting	4	6	6	1	3	1	3	4	1	3	1050	H
Clearing site vegetation	6	6	5	1	5	1	4	5	1	3	936	H
Erection of electric poles and telephone lines	4	5	4	1	2	1	2	3	2	4	630	M
Removal of graves	3	4	4	1	2	1	3	3	3	2	490	M
Oil from machinery and trucks	4	4	2	1	1	2	3	3	1	3	312	M
Material storage	3	2	2	1	2	2	2	2	2	2	180	L
Construction of temporary residential site	3	3	2	1	3	3	3	4	2	3	168	L

6. Chapter 6: Conclusion and Recommendations

The introduction of land claim particularly land reform as a programme, had different impacts and effects on different social and economic aspects. Different scholars (see Ramutsindela 2006; Obeng-Odoom 2012) in the field of social development conducted different studies focusing on land claims and its impact on agriculture, the economy, livelihoods and food security just to name a few. The findings of their research show that land claim has indeed negative impacts on most aspects of life. This may be because the land claim process and programme is emotionally and politically driven with the mandate “redressing the injustices of the past”. This chapter presents findings and recommendations of the investigation on the environmental impacts of land claim-discarded settlement development in Mamahule ga-Matsaung.

The findings from this study reveal that:

- Conception of environmental impacts is not easy, but how ever there are different tools and methods that can be used to identify, assess and manage environmental impacts as discussed in chapter 2 of this report.
- Land claims is embodied with the Land restitution which is one of the three tiers of the broad spectrum land reform programme. Land claim is used to facilitate the transfer of land to rightful owners who were forcefully removed from their land during the apartheid era.
- Human geography revealed that there are different forms of settlements depending on location and individual affordability, this study shows that there are two forms of settlement development being the formal settlement and the informal settlement. Ramathlodi Park was a rural-urban continuum which is one of the forms of forma settlements.

- Environmental impacts of land claim-discarded settlement development can be direct, indirect and cumulative by nature. The settlement development has direct and negative and cumulative impacts on the physical land scape as well as positive and negative direct, indirect and cumulative impacts to both the intended beneficiaries of housing in Ramathlodi Park and the Mamahule CPA members.

- The South African land claims policy is inefficient and it has a broad spectrum hence the land claims that were lodged in 1998 are not yet completed.

- Although land claims is a political mandate, politics should not play a major role in state the approach should be in a business-like manner where a clear long-term vision is defined and short and medium term objectives and strategies are adopted to realise that vision.

- From the interview with the project planner from the RLCC, one of the objectives of land claim process is to assist with and to contribute to the reconciliation process of South Africa.

- There should be clear communication channels between the Polokwane Municipality and the RLCC including other provincial government department. Had there been clear communication channels a settlement could have not been developed in a claimed land.

- The environmental practitioner at the time of the development of settlement development activities ignored cumulative impacts and focused on the negative and positive impacts. EIA studies demonstrate when cumulative impacts are considered the psychological, unnecessary economic costs and damage to the physical environmental could have been detected and remedial actions could have taken place (Aucamp 2009).

This section is made possible by reflecting on the entire research process reflected the generic and specific findings from the previous chapters. These recommendations are a mere suggestion for improvement. This section does not claim to have rereflected on all

the important possible recommendations. Reading through all the chapters additional findings and therefore further recommendations beyond these discussed here can be unraveled. Considering the sensitivity of having access to land and the political interest and attachment within the whole programme of land reform particularly land claim as well as the need for proper settlement as a basic right to all human beings as enshrined in the South African Constitution

- It is recommended that a full EIA be conducted prior any development so that environmental impacts whether adverse or beneficial can be identified before money is spent. Apart from that the EIA should be done by an in depended company not the practitioner from the Municipality in that case the report will be without limitation or fear of any senior management action.

- Apart from a full EIA being conducted, CIA and SIA should be conducted independently to identify other impacts that may not be identified in the EIA. Had a full CIA been conducted, the experts could have realised that the land is not a municipal land but private property subject to restitution to the lawful owners.

- It is recommended that the RLCC structure support that will favour the claimants taking into consideration the South African population and the biophysical environment as a whole.

- It is also recommended that the state and claimants should with the assistance of experts, consider whether restitution of rights on a specific piece of land is indeed the most appropriate option in the settlement of a particular claim.

- It is recommended that there be proper communication channels between responsible government departments and the communities, so that communities may not be kept in the dark about what is about to benefit them. This study indicated that the intended beneficiaries of housing in Ramathlodi Park were never informed about the land claim nor the abandonment of the settlement development.

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Annexure: A

Household Survey Questionnaire for the Intended Beneficiaries of Housing in Ramathlodi Park

This is a questionnaire survey that seeks to solicit information on the conditions of the household on the time of the resettlement promise in Ramathlodi Park as well as at the time implementation and subsequent adornment of settlement development activities. Also this questionnaire seeks to collect data on conditions of the household post land claim settlement.

The Research Project in question is purely academic and is registered with the Department of Development Planning and Management in the School of Economics and Management at the University of Limpopo, Turfloop Campus; and, is registered as follows:

The Environmental Impacts of Land Claim-discarded Settlement Development in Mamahule, Polokwane Local Municipality of Limpopo Province

The identity of the respondents will be kept confidential and the results of the survey will be used strictly for academic purposes. I sincerely trust that you will accept my request and participate in this survey.

Thank you

SECTION A: Demographic profile of the household

1. Please state in the appropriate cells the number of members of the household according to their age and gender.

Age	No. of Males	No. of Females	Total
Below 18 years			
18-30			
31-45			
46 and above			

2. Please provide the number of members of the household according to their educational status and gender.

Education Status	Number of Members	
	Male	Female
No formal education		
Primary education		
Secondary education		
Tertiary education		

3. Please provide the number of members of the household according to their employment status and gender.

Employment Status		Number of Members	
		Male	Female
Formal Employment	Public Sector		
	Private Sector		
	Farm		
	Domestic worker		
Self-employed	Formal Business		
	Informal Business		
Student			
Pensioner			
Others (Specify)			

4. **Please tick the total monthly income for the household**

No income	R1-R3000	R31001-R5000	R5001-R7000	R7001-R9000	R9001 & above

5. **How would you describe the household's living conditions?**

		Household Condition
Type of dwelling	Mud house	
	Shack house	
	RDP house	
	Single detached house	
	Shack house	
Basic services	Water	
	Electricity	
	Sanitation	
Other services		
Room density		

SECTION B: Conditions of the household at the time of the Resettlement Promise in Ramathlodi Park, Implementation and subsequent Abandonment of Settlement Development Activities, and Post-land Claim Settlement

6. When was your household promised a resettlement in Ramathlodi Park? ……
7. Where did your household stay before at the time of the resettlement promise? .....
8. How can you describe the impact of the resettlement promise on your household?

	Psychologically	Economically	Socially	Politically
Positively				
Neither/Nor				
Negatively				

8.1. Explain …….

9. What major changes did your household make in preparation to reside in Ramathlodi Park? .....

10. How can you describe the impact of the implementation of settlement development activities in Rmathlodi Park on your household?

	Psychologically	Economically	Socially	Politically
Positively				
Neither/Nor				
Negatively				

10.1. Explain …….

11. Were you notified about the abandonment of the settlement development?
    Yes [ ] No [ ]

12. Did the abandonment of the settlement development result in relocation?

Yes [ ] No [ ]

13. If yes, who incurred the costs? .....

14. How can you describe the impact of the abandonment of the settlement development on your household?

	Psychologically	Economically	Socially	Politically
Positively				
Neither/Nor				
Negatively				

9.1. Explain …….

15. How would you describe the household's living conditions?

		At the time of the resettlement promise	**At the time of implementation of settlement development activities**	**At the time of abandonment of settlement development**	**Post-land claim**
Type of Settlement	**Rural Settlement**				
	Urban Settlement				
	Farm Settlement				
	Informal Settlement				

Type of dwelling	**Mud house**				
	Shack house				
	RDP house				
	Single detached house				
	Shack house				
Basic services	**Water**				
	Electricity				
	Sanitation				
Other services					
Room density					

16. How would you compare the household living conditions before the Resettlement Promise and after the Settlement Development was discarded?

Improved [ ] Improved slightly [ ]

Remained the same [ ]

Deteriorated slightly [ ] Deteriorated [ ]

SECTION C: Plans and Changes of the household at the time of the Resettlement Promise in Ramathlodi Park, Implementation and subsequent Abandonment of Settlement Development Activities, and Post-land Claim Settlement

17. What plans did the household make once a Resettlement Promise was made? .....

18. What significant changes did the household make once a Resettlement Promise was made? .....

19. How would you describe the household changes associated with the Resettlement Promise?

Adversarial [ ] Neither/Nor [ ] Beneficial [ ]

20. What plans did the household make once Settlement Development Activities were implemented? .....

21. What significant changes did the household make once Settlement Development activities were implemented? .....

22. How would you describe the household changes associated with the abandonment of the settlement development?

Adversarial [ ] Neither/Nor [ ] Beneficial [ ]

23. What plans did the household make when the Settlement Development was abandoned? .....

24. What significant changes did the household make when the Settlement Development was abandoned? .....

25. How would you describe the household changes associated with the abandonment of the settlement development?

Adversarial [ ] Neither/Nor [ ] Beneficial [ ]

26. What plans did the household make in the post-land claim settlement? .....
.

27. What significant changes did the household make in the post-land claim settlement?
.....
.

28. How would you describe the household changes associated with the post-land claim settlement?

Adversarial [ ] Neither/Nor [ ] Beneficial [ ]

29. Overall, how has the abandonment of the Settlement Development impacted upon your household?

	Psychologically	Economically	Socially	Politically
Positively				
Neither/Nor				
Negatively				

29.1. Explain …….

SECTION D: Recommendations

30. What recommendations for improvement do you have for future land claims on settlement development……

Thank you for your participation

Annexure: B

Household Survey Questionnaire for Mamahule CPA

This is a questionnaire survey that seeks to solicit information on the conditions of the household on the time of the in Ramathlodi Park as well as at the time implementation and subsequent adornment of settlement development activities. Also this questionnaire seeks to collect data on conditions of the household at the time of the land claim and post land claim settlement.

The Research Project in question is purely academic and is registered with the Department of Development Planning and Management in the School of Economics and Management at the University of Limpopo, Turfloop Campus; and, is registered as follows:

The Environmental Impacts of Land Claim-discarded Settlement Development in Mamahule, Polokwane Local Municipality of Limpopo Province

The identity of the respondents will be kept confidential and the results of the survey will be used strictly for academic purposes. I sincerely trust that you will accept my request and participate in this survey.

Thank you

SECTION A: Demographic profile of the household

1. Please state in the appropriate cells the number of members of the household according to their age and gender.

Age	No. of Males	No. of Females	Total
Below 18 years			
18-30			
31-45			
46 and above			

2. Please provide the number of members of the household according to their educational status and gender.

Education Status	Number of Members	
	Male	Female
No formal education		
Primary education		
Secondary education		
Tertiary education		

3. Please provide the number of members of the household according to their employment status and gender.

Employment Status		Number of Members	
		Male	Female
Formal Employment	Public Sector		
	Private Sector		
	Farm		
	Domestic worker		
Self-employed	Formal Business		
	Informal Business		
Student			
Pensioner			
Others (Specify)			

4. Please tick the total monthly income for the household

No income	R1-R3000	R31001-R5000	R5001-R7000	R7001-R9000	R9001 & above

5. How would you describe the household's living conditions?

		Household Condition
Type of dwelling	Mud house	
	Shack house	
	RDP house	
	Single detached house	
	Shack house	
Basic services	Water	
	Electricity	
	Sanitation	
Other services		
Room density		

SECTION B: Conditions of the household at the time of the Resettlement Promise in Ramathlodi Park, Implementation and subsequent Abandonment of Settlement Development Activities, and Post-land Claim Settlement

6. Was your household part of the intended beneficiaries for housing in the settlement development?

Yes [ ] No [ ]

7. When was your household promised a resettlement in Ramathlodi Park? ……

8. Where did your household stay before at the time of the resettlement promise? .....

9. How can you describe the impact of the resettlement promise on your household?

	Psychologically	Economically	Socially	Politically
Positively				
Neither/Nor				
Negatively				

9.1. Explain …….

10. What major changes did your household make in preparation to reside in Ramathlodi Park? .....

11. How can you describe the impact of the implementation of settlement development activities in Rmathlodi Park on your household?

	Psychologically	Economically	Socially	Politically
Positively				
Neither/Nor				
Negatively				

11.1. Explain …….

12. What major changes did your household make at the time of the land claim? .....

13. What major changes did the household make when the claim was approved?

…….

14. How can you describe the impact of the land claim of Ramathlodi Park on your household?

	Psychologically	Economically	Socially	Politically
Positively				
Neither/Nor				
Negatively				

14.1. Explain …….

15. How would you compare the household living conditions before the land claim and post land claim settlement?

Improved [ ] Improved slightly [ ]

Remained the same [ ]

Deteriorated slightly [ ] Deteriorated [ ]

16. Were you notified about the abandonment of the settlement development? Yes [ ] No [ ]

17. Did the abandonment of the settlement development result in relocation?

Yes [ ] No [ ]

18. If yes, who incurred the costs? .....

19. How can you describe the impact of the abandonment of the settlement development on your household?

	Psychologically	Economically	Socially	Politically
Positively				
Neither/Nor				
Negatively				

19.1. Explain …….

20. How would you describe the household's living conditions?

		At the time of the resettlement promise	At the time of implementation of settlement development activities	At the time of abandonment of settlement development	Post-land claim
Type of Settlement	Rural Settlement				
	Urban Settlement				
	Farm Settlement				

	Informal Settlement				
Type of dwelling	Mud house				
	Shack house				
	RDP house				
	Single detached house				
	Shack house				
Basic services	Water				
	Electricity				
	Sanitation				
Other services					
Room density					

21. How would you compare the household living conditions before the Resettlement Promise and after the Settlement Development was discarded?

Improved [ ] Improved slightly [ ]

Remained the same [ ]

Deteriorated slightly [ ] Deteriorated [ ]

SECTION C: Plans and Changes of the household at the time of the Resettlement Promise in Ramathlodi Park, Implementation and subsequent Abandonment of Settlement Development Activities, and Post-land Claim Settlement

22. What plans did the household make once a Resettlement Promise was made? .....

23. What significant changes did the household make once a Resettlement Promise was made? .....

24. How would you describe the household changes associated with the Resettlement Promise?

Adversarial [ ] Neither/Nor [ ] Beneficial [ ]

25. What plans did the household make once Settlement Development Activities were implemented? .....

26. What significant changes did the household make once Settlement Development activities were implemented? .....

27. How would you describe the household changes associated with the abandonment of the settlement development?

Adversarial [ ] Neither/Nor [ ] Beneficial [ ]

28. What plans did the household make when the land claim was approved? .....

29. What significant changes did the household make when the land claim was approved? .....

30. How would you describe the household changes associated with approval of the land claim?

Adversarial [ ] Neither/Nor [ ] Beneficial [ ]

31. What plans did the household make when the Settlement Development was abandoned?

    .....

32. What significant changes did the household make when the Settlement Development was abandoned? .....

33. How would you describe the household changes associated with the abandonment of the settlement development?

Adversarial [ ] Neither/Nor [ ] Beneficial [ ]

34. What plans did the household make in the post-land claim settlement?

    .....

35. What significant changes did the household make in the post-land claim settlement?

    .....

36. How would you describe the household changes associated with the post-land claim settlement?

Adversarial [ ] Neither/Nor [ ] Beneficial [ ]

37. Overall, how has the abandonment of the Settlement Development impacted upon your household?

	Psychologically	Economically	Socially	Politically
Positively				
Neither/Nor				
Negatively				

37.1. Explain …….

38. Overall, how has the approval of the land claim impacted upon your household?

	Psychologically	Economically	Socially	Politically
Positively				
Neither/Nor				
Negatively				

30.1. Explain …….

SECTION D: Recommendations

39. What recommendations for improvement do you have for future land claims on settlement development……

Thank you for your participation

Annexure C:

Interview Schedule for Mamahule Project Planners

This is an interview schedule that seeks to solicit information on the associated costs of Ramathlodi Park land claim, the pre-settlement land claim support and post-settlement land claim support that the Mamahule community received from the Restitution of Land Claims Commission.

The Research Project in question is purely academic and is registered with the Department of Development Planning and Management in the School of Economics and Management at the University of Limpopo, Turfloop Campus; and, is registered as follows:

The Environmental Impacts of Land Claim-discarded Settlement Development in Mamahule, Polokwane Local Municipality of Limpopo Province

The identity of the respondents will be kept confidential and the results of the survey will be used strictly for academic purposes. I sincerely trust that you will accept my request and participate in this survey.

Thank you

Section A: The Impacts of Mamahule land claim on the claiments

1. How would you describe the process of the Mamhule land claim?.....
   .....
   .....
2. What were the total costs associated with the Mamahule land claim?.....
   .....
3. What advice did you give to the claimants prior the land claim?.....
   .....
4. Did the claimants receive pre-land settlement support?.....
   .....
5. How would you describe the impact of the approved land claim on the claimants?

	Psychologically	Economically	Socially	Politically
Positively				
Neither/Nor				
Negatively				

5.1 Explain ……..

Section B: Recommendations

6. What recommendations for improvement do you have for future land claims on settlement development……

Thank you for your participation

Appendix D:

Interview Schedule for Environmental Practitioners from Polokwane Municipality

This is an interview schedule that seeks to solicit information on the associated costs of Ramathlodi Park settlement development. Furthermore the interview will seek to information on the direct, indirect and cumulative impacts of the settlement development and the impacts after the abandonment of settlement development activities.

The Research Project in question is purely academic and is registered with the Department of Development Planning and Management in the School of Economics and Management at the University of Limpopo, Turfloop Campus; and, is registered as follows:

The Environmental Impacts of Land Claim-discarded Settlement Development in Mamahule, Polokwane Local Municipality of Limpopo Province

The identity of the respondents will be kept confidential and the results of the survey will be used strictly for academic purposes. I sincerely trust that you will accept my request and participate in this survey.

Thank you

Section A: The Environmental Impacts of Ramathlodi Park Settlement Development

1. What were the total costs associated with the settlement development? …….
2. How can you describe the state of the environment before settlement development activities? ……
3. How would you describe the state of the environment at the time of the settlement development activities? .....
4. How would you describe the state of the environment when settlement development activities were abandoned? .....
5. How would you describe the impact of the settlement development on the environment?

	Physically	Economically	Socially	Politically
Positively				
Neither/Nor				
Negatively				

5.1. Explain …….

6. How would you describe the impact of the abandonment of the settlement development activities on the environment?

	Physically	Economically	Socially	Politically
Positively				

Neither/Nor				
Negatively				

6.1. Explain ……

Section B: Recommendations

7. What recommendations for improvement do you have for future land claims on settlement development……

Thank you for your participation

Appendix E: The Land Claimed by Dr EL Matsaung on behalf of Mamahule Community

NOTICE 2025 OF 2003

GENERAL NOTICE IN TERMS OF THE RESTITUTION OF LAND RIGHTS ACT 22 OF 1994 AS AMENDED

Notice is hereby given in terms of section 11 (A) of the Restitution of Land Rights Act, Act No. 22 of 1994, as amended, that an amendment is hereby made to Gazette Notice No. 1296 of 2003 published on the 25th April 2003 to include Portions 5, 39, 42, 55 and the Remaining Extent of Portion 37 regarding the description of the claimed property. The claim for restitution of land rights has been lodged on the farm Kalkfontein 1001 LS (now subdivided into 221 Portion and Remaining Extent, situated in Polokwane District).

Dr E L Matsaung lodged a claim on the 31st December 1998 on behalf of Mamahule Community. The Mamahule Community who are now settled in various communities like Maboi, Mothapo and Mothiba or anyone who was part of this community during the time of dispossession will form part of this land claim.

Portion	Owner	Title Deed	Extent	Endorsements/ Bonds	Holder
Remain Extent	Kalkfontein 1001 Small holder Agri-village	T29882/2000	380,2214 h	None	None
R/E of Portion 2	Kalkfontein No. 2 Pietersburg Pty Ltd	T4165/1999	431.5751 h	B2414/1999 B35747/1999 K18/1966RM K1985/1983RM K3171/1976RM	ABSA ABSA No details McKechnie Gerard Smitheman Pauline Veronique
R/E of Portion 3	Oragrove Farm CC	T65740/1992	8,5305 h	K3182/1985RM B75636/2000	Smitheman Vera Mage Landbank
5	Maboi 6 Community Trust	T8970/2001	10.1342 h	B75637/2000 B47748/2001 K2371/1975S	Landbank Landbank Andrew Douglas McKecnie
6	Kuaho Moleko Ariel	T76200/1993	8,7955 h	B81748/1993	Nedcor Bank
7	Kuaho Moleko Ariel	T76200/1993	8,9744 h	B81748/1993	Nedcor Bank
8	Klopper Linnets & Willem Pieter	T101813/1994	8.9744 h	B105681/1994	Standard Bank
9	Venter Amanda	T3365/1993	8,9763 h	B31379/2002	Standard Bank
10	F A Ferns Familie Trust	T89477/2000	10,0642 h	None	None
11	Potgieter Jurgens Johannes	T30812/1987	8.9744 h	B41228/2001 B58185/2002	Standard Bank Standard Bank
12	Grobbler Hermanus Phillippus & Gertruida Catharina	T7618/1985	8.9744 h	B4047/2002 B41369/1990 B53045/1993	ABSA ABSA ABSA
13	Bronkhorst Willem Gerhardus	T18079/1984	8.9793 h	None	None
14	Stolp John	T9063/1970	21.5819 h	None	None

Portion	Owner	Title Deed	Extent	Endorsements/ Bonds	Holder
15	Van den Ande Irenee Emil	T51493/1987	11,3183 h	None	None
16	Klopper Linette	T38001/2002	8,5653 h	None	None
17	Jacobs Louis Andre & Amanda	T39608/1997	8,5674 h	None	None
18	Denga Naledzani Joyce & Daniel Muraga	T134653/1998	9,6585 h	B96463/1998	MLS Bank Ltd
19	Mampane Thesele Jacobs & Francinah Morongoe	T11236/1994	8,5653 h	B14117/1994	Nedcor
20	Medun Quinto Marsile	T20000/1981	8,5653 h	None	None
21	Taljaard Theodorus Jacobus	T57916/1981	8,5653 h	B20065/1995	ABSA
22	Minnaar Lourens Stephanus Daniel & Maria Susana	T67734/1997	12,3612 h	B110466/2002 B55439/1995	ABSA ABSA
23	Mphosi Sedipa John & Cynthia Motlatjo	T44320/1993	8,9565 h	None	None
24	Meyer Jan Sloon	T55216/1986	10,0973 h	B2776/1999	ABSA
25	Grimbeek Leon	T124036/2002	8,9544 h	B88907/2002	Standard Bank
26	Pent Sandro Guiseppe	T45461/1989	8,9544 h	B47496/1989	Land Bank
27	Pent Sandro Guiseppe	T45461/1989	8,9544 h	B47496/1989	Land Bank
28	Steenberg Hendrik Frederik	T2974/1966	10,3986 h	B21921/1989	FNB
29	Steenberg Hendrik Frederik	T2974/1966	9,0889 h	B21921/1989	FNB
30	Mphosi Cynthia Motlatjo Mphosi Sedipa John	T24042/1984	8,5653 h	None	None
31	Mahapa Sabina Mammelane Mahapa Sekgobokoane Shadrack	T49434/1997	8,9994 h	B41504/1997	Nedcor
32	Van Rensburg Thea van Rensburg Gert Stephanus	T10416/1994	8,5653 h	None	None
33	Scott Rose Maureen Scott Valjean Christopher Worrington	T98992/1998	8,5653 h	I302/2001AT	
34	African Bank Limited	T39308/2002	8,5353 h	None	None
35	Pent Sandro Guiseppe	T27959/1985	8,5898 h	B47496/1989	Landbank
R/E of Portion 36	Orange Grove Farms CC	T65740/1992	20,9385 h	B75636/2000 B75637/2000	Landbank Landbank
R/E of Ptn 37	Maboi 6 Community Trust	T8970/2001	397,1901 h	None	None
R/E of Portion 38	Van den Ende Irenee Emil	T37602/1970	700,2283 h	B49427/1979 K17/1966RM K1985/1983RM K3182/1985RM K3171/1976RM	No details No details McKechnie Gerard Smitheman Vera Megel Smitheman Pauline Veronique
39	Maboi 6 Community Trust	T8970/2001	324,5020 h	None	None
40	Halberg Harry John	T53923/1989	529,6544 h	None	None
41	Tebcon Developers Pty Ltd	T30027/2001	544,2008 h	B21738/2001 K3221/1982RM K996/1987RM	Tusk Construction Support Services Pty Ltd Smitheman Charles Murray B-E Davis Christopher Michael
42	Maboi 6 Community Trust	T10722/2001	366,0561 h	None	None
43	Jannie van Waveren Trust	T142059/1999	21,4133 h	K650/1969RM K5681/1999RM	No details Jannie van Waveren

Portion	Owner	Title Deed	Extent	Endorsements: Bonds	Holder
44	Tindle Malcom	T3830/1991	9,1601 h	B105788/1997 B56937/1995	ABSA ABSA
45	Tindle Gail Diana	T3831/1991	8.5653 h	None	None
46	Mabitsela Rabohale Mack & Ledile Lilian	T62767/1997	8.5653 h	None	None
47	Smith Andrian Zagarius Albertus	T28527/1984	8.5653 h	B33820/1984 B4340/1994 B50839/1987	SA Perm Nedcor SA Perm
48	Terra Nominees Pty Ltd	T9680/1996	8.5653 h	None	None
49	Terra Nominees Pty Ltd	T9680/1996	8,5653 h	None	None
50	Terra Nominees Pty Ltd	T9680/1996	9.9878 h	None	None
51	Stone Johannes Gerhardus Stephanus	T36274/1985	8,5974 h	B29254/1988 B46163/1999 B48543/1985 B9050/1991	ABSA ABSA ABSA ABSA
54	Jannie Van Waveren Trust	T142059/1999	42,8266 h	K5581/1999RM	Jannie van Vuuren Trust
55	Mobot 6 Community Trust	T8970/2001	144,5530 h	B47745/2001 K2371/1975S	Landbank Andrew Douglas McKechnie
56	Oragrove Farms CC	T136235/2000	552,7664 h	B75637/2000 B75636/2000	Landbank Landbank
59	Oragrove Farms CC.	T136238/2002	No details	B75637/2000 B75636/2000	B75637/2000 B76536/2000
60	Motupa Mapule Catherine Motupa Mogale Piet	T136239/2000	10,4766 h	B57628/2000	Coragrove Farms CCF
61	Oragrove Farms CC	T136235/2000	10,4741 h	B75637/2000 B75636/2000	Landbank Landbank
62	Oragrove Farms CC	T136235/2000	8,0031 h	B75637/2000 B75636/2000	Landbank Landbank
63	Oragrove Farms CC	T136235/2000	8,0000 h	B75637/2000 B75636/2000	Landbank Landbank
64	Oragrove Farms CC	T136235/2000	8,0000 h	B75637/2000 B76536/2000	Landbank Landbank
65	Oragrove Farms CC	T136235/2000	8,0000 h	B75637/2000 B75636/2000	Landbank Landbank
66	Oragrove Farms CC	T136235/2000	8,0000 h	B75637/2000 B75636/2000	Landbank Landbank
67	Oragrove Farms CC.	T136235/2000	8,0000 h	B75637/2000 B75636/2000	Landbank Landbank
68	Oragrove Farms CC	T136235/2000	9,0504 h	B75637/2000 B75636/2000	Landbank Landbank
69	Oragrove Farms CC	T136235/2000	10,7299 h	B75637/2000 B75636/2000	Landbank Landbank
70	Oragrove Farms CC	T136235/2000	8,0000 h	B75637/2000 B75636/2000	Landbank Landbank
71	Oragrove Farms CC	T136235/2000	8,0000 h	B75637/2000 B75636/2000	Landbank Landbank
72	Oragrove Farms CC.	T136235/2000	8,9597 h	B75637/2000 B75636/2000	Landbank Landbank

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73	Oragrove Farms CC	T136235/2000	8,0000 h	B75637/2000 B75636/2000	Landbank Landbank
74	Oragrove Farms CC	T136235/2000	14,1499 h	B75637/2000 B75636/2000	Landbank Landbank
75	Oragrove Farms CC	T136235/2000	16,0000 h	B75637/2000 B75636/2000	Landbank Landbank
76	Oragrove Farms CC	T136235/2000	8,0000 h	B75637/2000 B75636/2000	Landbank Landbank
77	Oragrove Farms CC	T136235/2000	8,0000 h	B75637/2000 B75636/2000	Landbank Landbank
78	Oragrove Farms CC	T136235/2000	8,1232 h	B75637/2000 B75636/2000	Landbank Landbank
79	Oragrove Farms CC	T136235/2000	9,9918 h	B75637/2000 B75636/2000	Landbank Landbank
80	Oragrove Farms CC	T136235/2000	8,0000 h	B75637/2000 B75636/2000	Landbank Landbank
81	Oragrove Farms CC	T136235/2000	8,0000 h	B75637/2000 B75636/2000	Landbank Landbank
82	Oragrove Farms CC	T136235/2000	9,1646 h	B75637/2000 B75636/2000	Landbank Landbank
83	Oragrove Farms CC	T136235/2000	8,0000 h	B75637/2000 B75636/2000	Landbank Landbank
84	Oragrove Farms CC	T136235/2000	8,0000 h	B75637/2000 B75636/2000	Landbank Landbank
85	Oragrove Farms CC	T136235/2000	8,0014 h	B75637/2000 B75636/2000	Landbank Landbank
86	Oragrove Farms CC	T136235/2000	8,1968 h	B75637/2000 B75636/2000	Landbank Landbank
87	Oragrove Farms CC	T136235/2000	8,0000 h	B75637/2000 B75636/2000	Landbank Landbank
88	Oragrove Farms CC	T136235/2000	8,0000 h	B75637/2000 B75636/2000	Landbank Landbank
89	Oragrove Farms CC	T136235/2000	8,0000 h	B75637/2000 B75636/2000	Landbank Landbank
90	Oragrove Farms CC	T136235/2000	8,0000 h	B75637/2000 B75636/2000	Landbank Landbank
91	Oragrove Farms CC	T136235/2000	8,0002 h	B75637/2000 B75636/2000	Landbank Landbank
92	Oragrove Farms CC	T136235/2000	8,0025 h	B75637/2000 B75636/2000	Landbank Landbank
93	Oragrove Farms CC	T136235/2000	8,0033 h	B75637/2000 B75636/2000	Landbank Landbank
94	Oragrove Farms CC	T136235/2000	8,0044 h	B75637/2000 B75636/2000	Landbank Landbank
95	Oragrove Farms CC	T136235/2000	8,0055 h	B75637/2000 B75636/2000	Landbank Landbank
96	Oragrove Farms CC	T136235/2000	8,0066 h	B75637/2000 B75636/2000	Landbank Landbank

Portion	Owner	Title Deed	Extent	Endorsements/ Bonds	Holder
97	Oragrove Farms CC	T136235/2000	8,0077 h	B75637/2000 B75636/2000	Landbank Landbank
98	Oragrove Farms CC	T136235/2000	8,0086 h	B75637/2000 B75636/2000	Landbank Landbank
99	Oragrove Farms CC	T136235/2000	8,0099 h	B75637/2000 B75636/2000	Landbank Landbank
100	Oragrove Farms CC	T136235/2000	8,0110 h	B75637/2000 B75636/2000	Landbank Landbank
101	Oragrove Farms CC	T136235/2000	8,0121 h	B75637/2000 B75636/2000	Landbank Landbank
102	Oragrove Farms CC	T136235/2000	9,4896 h	B75637/2000 B75636/2000	Landbank Landbank
103	Oragrove Farms CC	T136235/2000	9,1677 h	B75637/2000 B75636/2000	Landbank Landbank
104	Oragrove Farms CC	T136235/2000	8,0000 h	B75637/2000 B75636/2000	Landbank Landbank
105	Nkoana Tswele David	T136241/2000	8,0000 h	None	None
106	Oragrove Farms CC	T136235/2000	8,0000 h	B75637/2000 B75636/2000	Landbank Landbank
107	Oragrove Farms CC	T136235/2000	8,0000 h	B75637/2000 B75636/2000	Landbank Landbank
108	Oragrove Farms CC	T136235/2000	8,0000 h	B75637/2000 B75636/2000	Landbank Landbank
109	Oragrove Farms CC	T136235/2000	8,0000 h	B75637/2000 B75636/2000	Landbank Landbank
110	Oragrove Farms CC	T136235/2000	8,0000 h	B75637/2000 B75636/2000	Landbank Landbank
111	Masetla Maldi Dephney Masetla Matome Absolome	T136242/2000	8,0001 h	B75629/2000	Coragrove Farms CC
112	Oragrove Farms CC	T136235/2000	8,0001 h	B75637/2000 B75636/2000	Landbank Landbank
113	Oragrove Farms CC	T136235/2000	8,0000 h	B75637/2000 B75636/2000	Landbank Landbank
114	Oragrove Farms CC	T136235/2000	8,0001 h	B75637/2000 B75636/2000	Landbank Landbank
115	Oragrove Farms CC	T136235/2000	8,0644 h	B75637/2000 B75638/2000	Landbank Landbank
116	Oragrove Farms CC	T136235/2000	8,0001 h	B75637/2000 B75636/2000	Landbank Landbank
117	Oragrove Farms CC	T136235/2000	8,0000 h	B75637/2000 B75636/2000	Landbank Landbank
118	Oragrove Farms CC	T136235/2000	8,7417 h	B75637/2000 B75636/2000	Landbank Landbank
119	Oragrove Farms CC	T136235/2000	8,0964 h	B75637/2000 B75636/2000	Landbank Landbank
120	Oragrove Farms CC	T136235/2000	8,3094 h	B75637/2000 B75636/2000	Landbank Landbank

Portion	Owner	Title Deed	Extent	Endorsements/ Bonds	Holder
121	Oragrove Farms CC	T136235/2000	9.3551 h	B75637/2000 B75636/2000	Landbank Landbank
122	Oragrove Farms CC	T136235/2000	8.1421 h	B75637/2000 B75636/2000	Landbank Landbank
123	Oragrove Farms CC	T136235/2000	8.0293 h	B75637/2000 B75636/2000	Landbank Landbank
124	Oragrove Farms CC	T136235/2000	8.0001 h	B75637/2000 B75636/2000	Landbank Landbank
125	Oragrove Farms CC	T136238/2000	8.8427 h	B75637/2000 B75636/2000	Landbank Landbank
126	Oragrove Farms CC	T136238/2000	8.2740 h	B75637/2000 B75636/2000	Landbank Landbank
127	Oragrove Farms CC	T136238/2000	12.5927 h	B75637/2000 B75636/2000	Landbank Landbank
128	Oragrove Farms CC	T136238/2000	9.1800 h	B75637/2000 B75636/2000	Landbank Landbank
129	Oragrove Farms CC	T136238/2000	8.0000 h	B75637/2000 B75636/2000	Landbank Landbank
130	Oragrove Farms CC	T136238/2000	8.6371 h	B75637/2000 B75636/2000	Landbank Landbank
131	Bopape Mabodiba Emily Bopape Jacob Chuene	T136243/2000	9.4993 h	B75630/2000	Coragrove Farms CC
132	Lekalakala Kgauhelo Lekalakala Khomotso	T136244/2000	8.0000 h	B75631/2000	Coragrove Farms CC
133	Oragrove Farms CC	T136238/2000	8.0000 h	B75637/2000 B75636/2000	Landbank Landbank
134	Oragrove Farms CC	T136238/2000	8.0000 h	B75637/2000 B75636/2000	Landbank Landbank
135	Oragrove Farms CC	T136238/2000	8.0000 h	B75637/2000 B75636/2000	Landbank Landbank
136	Oragrove Farms CC	T136238/2000	8.0000 h	B75637/2000 B75636/2000	Landbank Landbank
137	Oragrove Farms CC	T136238/2000	8.1396 h	B75637/2000 B75636/2000	Landbank Landbank
138	Oragrove Farms CC	T136238/2000	12.9129 h	B75637/2000 B75636/2000	Landbank Landbank
139	Oragrove Farms CC	T136238/2000	15.6664 h	B75637/2000 B75636/2000	Landbank Landbank
140	R S C Inspection Services Pty Ltd	T136245/2000	11.5781 h	None	None
141	R S C Inspection Services Pty Ltd	T136246/2000	11.0191 h	None	None
142	Oragrove Farms CC	T136238/2000	8.6831 h	B75637/2000 B75636/2000	Landbank Landbank
143	Oragrove Farms CC	T136238/2000	8.2176 h	B75637/2000 B75636/2000	Landbank Landbank
144	Oragrove Farms CC	T135238/2000	10.2506 h	B75637/2000 B75636/2000	Landbank Landbank

Portion	Owner	Title Deed	Extent	Endorsements: Bonds	Holder
145	Oragrove Farms CC	T136238/2000	11,2425 h	B75637/2000 B75636/2000	Landbank Landbank
146	Mabina Mpoe Herman	T136247/2000	11,0302 h	None	None
147	Mabina Mpoe Herman	T136248/2000	8,0000 h	None	None
148	Elyra Import & Export CC	T136249	8,0000 h	B75632/2000	Oragrove Farms CC
149	Oragrove Farms CC	T136238/2000	8,1699 h	B75637/2000 B75636/2000	Landbank Landbank
150	Oragrove Farms CC	T136238/2000	13,8299 h	B75637/2000 B75636/2000	Landbank Landbank
151	Oragrove Farms CC	T136238/2000	9,1467 h	B75637/2000 B75636/2000	Landbank Landbank
152	Thosago Sewela Priscilla, Thosago Jerry Nkopodi	T136250	9,2037 h	None	None
153	Mabina Mpoe Herman	T136251/2000	12,0933 h	None B75633/2000	None Oragrove Farms CC
154	Modiba Tshitiwa Patricia, Modida Maropeng Dolleth Doyle	T136252/2000	8,1249 h	None	None
155	Tjale Sohwane Velry Tjale Kdadimonyane Hoseah	T136253/2000	8,1249 h	B75634/2000	Oragrove Farms CC
156	Dlomu Amukelani Garcia	T136257/2000	8,1249 h	B75637/2000 B75636/2000	Landbank Landbank
157	Oragrove Farms CC	T136238/2000	8,1249 h	B75637/2000 B75636/2000	Landbank Landbank
158	Oragrove Farms CC	T136238/2000	8,1249 h	None	None
159	Dlomu Amukelani Garcia	T136256/2000	8,1249 h	B75637/2000 B75636/2000	Landbank Landbank
160	Oragrove Farms CC	T136238/2000	8,1249 h	B75637/2000 B75636/2000	Landbank Landbank
161	Oragrove Farms CC	T136238/2000	8,1249 h	B75637/2000 B75636/2000	Landbank Landbank
162	Oragrove Farms CC	T136238/2000	8,1181 h	B75637/2000 B75636/2000	Landbank Landbank
163	Oragrove Farms CC	T136238/2000	8,1195 h	B75637/2000 B75636/2000	Landbank Landbank
164	Oragrove Farms CC	T136238/2000	8,1210 h	B75637/2000 B75636/2000	Landbank Landbank
165	Oragrove Farms CC	T136238/2000	8,5934 h	B75637/2000 B75636/2000	Landbank Landbank
166	Oragrove Farms CC	T136238/2000	9,6672 h	B75637/2000 B75636/2000	Landbank Landbank
167	Oragrove Farms CC	T136238/2000	8,1309 h	B75637/2000 B75636/2000	Landbank Landbank
168	Oragrove Farms CC	T136238/2000	8,0087 h	B75637/2000 B75636/2000	Landbank Landbank
169	Oragrove Farms CC	T136238/2000	8,0114 h	B75637/2000 B75636/2000	Landbank Landbank
170	Oragrove Farms CC	T136238/2000	8,9110 h	None	None
171	Matlala Tlou Paulina Pamel, Matlala Mamoloko John	T136255/2000	8,7271 h	B75637/2000 B75636/2000	Landbank Landbank
172	Oragrove Farms CC	T136238/2000	9,3962 h	B75637/2000 B75636/2000	Landbank Landbank
173	Oragrove Farms CC	T136238/2000	9,5213 h		

Portion	Owner	Title Deed	Extent	Endorsements/ Bonds	Holder
174	Oragrove Farms CC	T136238/2000	9.1053 h	B75637/2000 B75636/2000	Landbank Landbank
175	Mankweng Development Co Pty Ltd	T136254/2000	8.6320 h	B75635/2000 B75637/2000	Oragrove Farm CC Landbank
176	Oragrove Farms CC	T136238/2000	9.4112 h	B75637/2000 B75636/2000	Landbank Landbank
177	Oragrove Farms CC	T136238/2000	8.8211 h	B75637/2000 B75636/2000	Landbank Landbank
178	Oragrove Farms CC	T136238/2000	8.0000 h	B75637/2000 B75636/2000	Landbank Landbank
179	Oragrove Farms CC	T136238/2000	8.0000 h	B75637/2000 B75636/2000	Landbank Landbank
180	Lambrecht & Van Dyk Pty Ltd	T110987/2000	6.6155 h	None	None
181	Mabotja Ngoanatjale & Lebake Peter	T13954/2002	6.5958 h	B9760/2002	Nedcor
182	Mametja Mosari Adam & Hunadi Dorah	T139561/2000	8.8374 h	B77581/2000	Standard Bank
183	Mothibi Clement Hermans	T19366/2001	8.5177 h	None	None
184	Bopape Thulare Eric	T16766/2003	6.5187 h	B11691/2003	Nedbank
185	Motimele Malusi Stanley	T43387/2001	8.5198 h	None	None
186	Bopape Thulari Eric	T48486/2001	8.5210 h	None	None
187	Bopape Thulari Eric	T93349/2002	8.6220 h	B66585/2002	Nedcor
188	Kalkfontein 1001 Smallholder Agri-Village Trust	T29882/2002	8.6230 h	None	None
189	Kalkfontein 1001 Smallholder Agri-Village Trust	T29882/2002	8.6241 h	None	None
190	Choeu Modikone Christine & Mapheto Edwin	T140621/2001	8.5548 h	B91463/2001	Landbank
191	Choeu Modikone Christine & Mapheto Edwin	T140621/2001	8.4642 h	B91463/2001	Landbank
192	Corporate Prop Brokers CC	T136620/2000	8.8408 h	B91463/2001	Landbank
193	Minnar Lourens Stephanus Daniel & Maria Susanna	T158718/2002	8.2483 h	None	None
194	Mampa Seponono Raisibe, Mampa Seshwahla Phillip	T70257/2001	8.5478 h	B48458/2001	No details
195	Mardre Beleggings Trust	T141550/2001	8.5098 h	None	None
196	Mardre Beleggings Trust	T141550/2001	8.5063 h	None	None
197	Modiba Ephodia Pulana, Modiba Seloma Wilson	T123344/2002	8.5096 h	B86520/2002	ABSA
198	Mardre Beleggings Trust	T141550/2001	8.5097 h	None	None
199	Mbewe Moses, Mbewe Tryphinah Lokutsini	T7560/2003	8.5098 h	DC190/2003	Nedcor
200	Mardre Beleggings Trust	T141550/2001	8.5098 h	None	None
201	Kalkfontein 1001 Smallholder Agri-Village Trust	T29882/2000	10.2395 h	None	None
202	Kalkfontein 1001 Smallholder Agri-Village Trust	T29882/2000	10.3840 h	None	None
203	Modiba Ephodia Pulana, Modiba Seloma Wilson	T89092/2002	8.5100 h	B48190/2002	Nedcor
204	Maswuma Lwokhauwa Zacharia	T91115/2002	8.8100 h	B64980/2002	Firstrand
205	Kganyago Ephenia Mosadi	T125963/2001	8.5100 h	None	None