



# **USAID** | **SOUTH AFRICA**

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GENERAL MANAGEMENT ASSISTANCE CONTRACT (GMAC)

**Contract No: 674-C-00-01-00051-00**

**Land Restitution, Preservation and Sustenance Project**

Grant No. 0051-0402-G-GA20

**Kranspoort Development Trust**

This report was produced for review by the USAID. It was prepared as a performance milestone under Mega-Tech, Inc.'s prime contract. The contents of this report address activities performed under USAID/South Africa's Strategic Objective No. 6: Increased Access to Shelter and Environmentally Sound Municipal Services

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### **Activity Summary and achievements:**

The grant program sought to assist the Kranspoort Community, which had recently had their land restored to them, develop a detailed overall environmental and site development plan, specifically focusing on sustainable settlement and livelihood options. This entailed conducting an environmental scan that looked at the broader area and the opportunities available for future development of the site; engineering analysis on the availability, quantity, and quality of water; potential waste disposal and power generating options; implications of local climatic conditions; investigation of any archaeological sites; survey of the surrounding land uses and the implications; assessment of a future land tenure system and analysis of potential alternative sources of future funding for the project.

These analyses were complimented by an investigation of the socio-economic status of the different groups comprising the Kranspoort Community, including information on attitudes, perceptions and aspirations. A separate study was undertaken to establish an acceptable and practical institutional structure to build capacity and manage the development process for their area. The findings and recommendations of all these analyses and surveys were then incorporated into an overall development plan for the area.

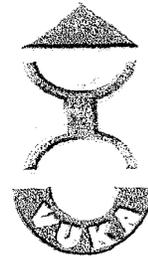
The attached Grant Final Report presents the program and its achievements in more detail.

### **Contents of this report:**

1. Grant Final Report (January 2005)



**MEGA TECH**



## FINAL REPORT

### SUSTAINABLE INTEGRATED DEVELOPMENT PLAN (TASK 4 : ECO-VILLAGE AND ECO-AGRICULTURE PROJECT)

### KRANSPOORT RESTITUTION PROJECT : USAID

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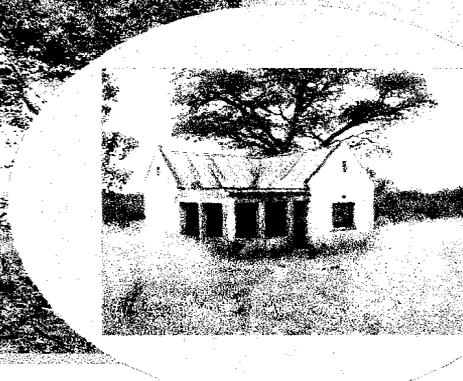
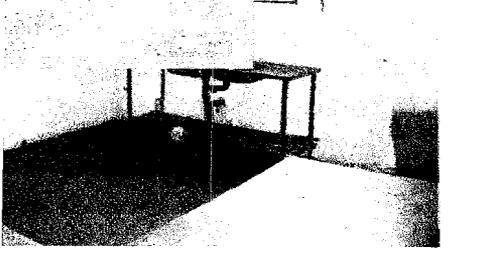
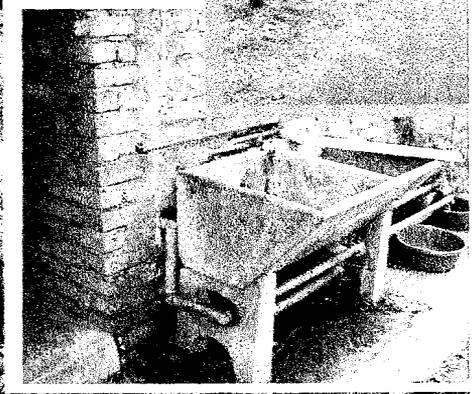
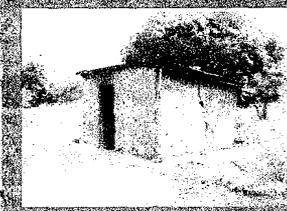
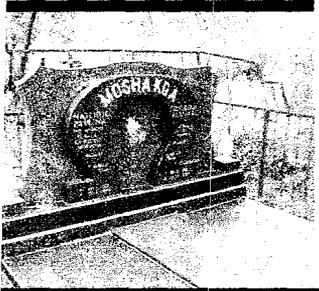
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## 1. INTRODUCTION

Vuka Planning Africa Inc., are appointed by Vuka Project Management Services (Pty) Ltd acting on behalf of the Kranspoort Communal Property Association (KCPA) as project managers and development partners to undertake Task Four (4): Eco-Village and Eco-Agriculture Projects of the "Land Restitution, Preservation and Sustenance Project" funded by the United States Agency for International Development (USAID) to implement the Kranspoort Restitution Programme.

Task Four (4) entails/relates to the preparation of a Sustainable and Integrated Development Plan for the farm Kranspoort (portion 2 and portion 3 of the farm Kranspoort No 48-LS), to ensure sustainable management of the settlement and community, and to prepare a Concept Plan for the establishment of a Settlement Village that is environmentally compatible and cost effective with the focus on promoting eco-tourism development opportunities and Eco-Agriculture practices.

## 2. PURPOSE OF THIS REPORT

The purpose of this report is to prepare a Sustainable Integrated Development Plan for the farm Kranspoort, and to develop a Concept Plan for the establishment of a settlement village as detailed in Task Four (4) of the Grant Implementation Agreement.

The report will incorporate, align and integrate previous and recent studies that formed part of the Kranspoort Restitution Programme, namely:

- **Socio-Economic Profile Assessment: Dr MJ Gaigher**

To identify the aspirations of the community in relation to the site's attributes and potential and to translate these into a practical and quantifiable brief for the preparation of a Development Plan and implementation strategy for the site.

- **Environmental Scan Report: Triviron Inc**

To investigate the status quo of the biophysical character of the area with the view to identify the potential for the establishment of an Eco-Village and assist in promoting the local economy.

- **Preliminary Services Report: Kwezi V3 Engineers**

To investigate the availability of existing civil infrastructure services (bulk and internal), to determine the level, capacity and standard of requirements to be provided, as well as propose the rehabilitation and or upgrading of services to support the proposed resettlement within the core area.

- **Sustainable Development Plan: Plan Practice Town Planners**

To formulate a plan to the satisfaction of the Land Claims Court for the development and use of the farm (i.e Kranspoort Sustainable Development Plan).

### 3. APPROACH TOWARDS SUSTAINABLE SETTLEMENT

#### 3.1 Underlining Principles

There is an increasing awareness of the need to build sustainable settlements and integrating the concept of sustainability into housing delivery and settlement management.

Sustainable human settlement can be associated with the following principles.

#### – Addressing Environmental Challenges

Habitation needs to be viewed as an opportunity for addressing the resource limits of our environment through efficient consumption of non-renewable resources and minimising pollution impacts on our environment. The key issues and sub-components are:

- ❖ Land conservation, integration and greening;
- ❖ Energy efficiency and renewable energy;
- ❖ Water conservation;
- ❖ Alternative sanitation and resource recovery;
- ❖ Waste management and resource recovery (recycling); and
- ❖ Materials efficiency.

#### – Generate Economic Empowerment

Poverty alleviation is undoubtedly the key developmental challenge of the developing world. This becomes even more daunting in view of job losses and growing unemployment due to retrenchment and restructuring in private and public sector organisations. The main sustainability responses include:

- ❖ Access to land and security of tenure, including informal settlement upgrade and rural land reform;
- ❖ Job creation, entrepreneurship and emerging contractor support;
- ❖ Affordability and alternative finance;
- ❖ Cost saving through appropriate location, energy efficiency and water conservation;
- ❖ Provision for transformation and home-based enterprises; and
- ❖ Empowerment for women and previously disadvantaged groups.

#### – Enhance Social Capital

Sustainable housing and settlement management should respond to the socio-cultural needs and practices of beneficiary communities. This needs to be addressed at household level to accommodate extended families, the aged and AIDS orphans. At community level, social amenities like schools, libraries, police stations, recreation centres and clinics need to be integrated into settlements, with due cognisance of the concepts of multi-purpose or one-stop centres.

#### – Build Institutional Capacity

Institutional sustainability relates to the need for stable, inclusive, transparent, accountable and efficient decision-making and implementation systems, which can optimise the limited resources for achieving sustainable housing and human settlements.

In conclusion, each of these principles interacts with the other in the development process. So, for example, economic and sustainability are interrelated and meet at the point of poverty alleviation. Whereas waste management clearly falls under the environmental principles, it also dynamically interacts with the economic and social principles to generate opportunities for job creation, entrepreneurship and empowerment through waste recycling and disposal services. Sustainable development thus requires complementary and integrated approaches. The notion that onamelyy houses need to be delivered needs to be traded for a focus on the creation of vibrant human settlements, built on the principles of sustainability outlined above.

### **3.2 Background**

The Land Claims Court in accordance with this provisions of the Restitution of Land Rights Act 1994 (Act 22 of 1994), has granted the restoration of the farm Kranspoort no 48-LS (Portion 2 and Portion 3) on the 13<sup>th</sup> of June 2001, to the Kranspoort community. The court ordered restitution subject to a number of conditions of which one in context of this report was:

*“to formulate a plan to the satisfaction of the court for the development and use of the farm”*

Messrs Plan Practice (Town and Regional Planners) was commissioned by the Regional Land Claims Commission (RLCC) Limpopo Province to prepare a Sustainable Development Plan for the Kranspoort Community.

The Kranspoort Sustainable Development Plan is more than a plan, it provides the Kranspoort Community with strategic guidance on sustainable development and management of Kranspoort (i.e management resources, development options, funding mechanisms, etc).

Refer to Annexure A, Extracts from the Kranspoort Sustainable Development Plan for more detailed.

## **4. SUSTAINABLE INTEGRATED DEVELOPMENT PLAN**

The preparation of a Sustainable Integrated Development Plan for Kranspoort from a planning point of view is to arrive at a decision-making process which is consultative, strategic and implementation orientated at the same time. The approach is based on the principle of exclusivity with representative consultation and/or participation of all communities, stakeholders and role players. In the case of Kranspoort, structured participation took place through organised, legitimate and representative structures i.e Kranspoort Development Trust (KDT) and Kranspoort Communal Property Association (KCPA). The strategic approach is to ensure optimal use of limited resources within context of current circumstances, legislation and policies. The approach go beyond providing a strategic framework for subsequent project planning but serves as a management and budgeting tool, which in turn leads to implementation.

A Development Vision was formulated for Kranspoort that serves as bases and point of departure in the preparation of the Sustainable Integrated Development Plan.

### ***Kranspoort Development Vision***

*“To develop Kranspoort as a tourist destination, through promoting eco-tourism opportunities and eco-agriculture practices, optimising its rich cultural heritage and bio-diversity in a manner that supports sustainable human settlement”.*

## 5. REGIONAL DEVELOPMENT PERSPECTIVE

### 5.1 Regional Context

The study area consists of Portion 2 and 3 of the farm Kranspoort No 48-LS measuring 1 542,8568 hectares in extent and falls within the Makhado Local Municipality Area of jurisdiction in the Limpopo Province.

Within its regional context the study area is located approximately 25km east of Vivo and approximately 45km west of Makhado (Louis Trichardt) along the Route R522. The said provincial road transverse through the Kranspoort farm with Portion 2 to the south and Portion 3 to the north.

### 5.2 Natural Environment

The farm is characterised by relatively flat plains in the south (Portion 2) to the Soutpansberg Mountain range to the north (Portion 3). The farms altitude ranges from 898m to 1241m above sea level. The Kutetsha River which has its origin in the Soutpansberg Mountains runs through the farm along its eastern boundary. Drainage lines tend north, north-west to east toward the Kutetsha River. Generally water is a scarce commodity within the region. Furthermore, the study area is characterised by indigenous forest in the north to disturbed mixed bushveld in the south.

(Refer to Annexure B: Environmental Scan Report prepared by Triviron Inc. for more detail).

### 5.3 Cultural-Historical Environment

The Soutpansberg area has a uniquely rich history of missionary endeavours with physical remnants of former mission station, cemeteries, schools, etc which formed the footprint of the core settlement area within the study area.

### 5.4 Existing Land Uses

The study area is predominantly agriculture with associated activities of grassing and cultivated areas with different levels of intensity. No land use exists in the core conservation area (environmental sensitive) with the exception of path ways/walking trails to cultural/historic sites.

To the north of the mayor road network (R522) is the footprint of the original core settlement with various individual land uses such as residential, educational, cemetery, places of public worship, etc.

(Refer to Annexure C: Series of Plans (Plan 1) for more details)

## 6. SPATIAL DEVELOPMENT FRAMEWORK

### 6.1 Overview

The Spatial Development Framework prepared for the study area is an extract and compilation of the framework prepared as part of the Sustainable Development Plan for Kranspoort undertaken by Plan Practice Town Planners.

## 6.2 Existing Land Use

The framework provides a synopsis of the existing land uses within a regional perspective outlining the environmental conservation and sensitive area, the footprint of the core settlement area, historical / cultural sites, walking trails, drainage basins and river system, etc. A development boundary line at a contour interval of 1000m above sea level is depicted to preserve and manage land use at the foot of the Soutpansberg.

(Refer to **Annexure C: Series of Plans (Plan 2)** for more details)

## 7. CORE SETTLEMENT AREA PERSPECTIVE

### 7.1 Local Context

The core settlement area is situated on Portion 3 of the farm Kranspoort with direct access of Mayor Road Network (Route R522). The core settlement area is characterised by the remnants of agricultural activities that took place on the farm and still exist that includes fruit orchards, cattle farming, plantation and irrigated land for purposes of a vegetable garden, as well as physical features of former mission station, residential buildings/structures, school, etc.

### 7.2 Existing Land Uses

The table below depicts the facilities, infrastructure and type of structures that do exist on the farm within the core settlement area.

Existing Land Use Analysis		
Activity / Facility	Type of Structure	Status
Residential (Habitat Structures)	<ul style="list-style-type: none"> <li>Seven (7) brick houses;</li> <li>Five (5) traditional houses made of mud and clay;</li> <li>Two (2) dilapidated houses with a roof (ruins);</li> </ul>	Residential structures currently host families that habitable reside on the farm.
Residential Dormitories	<ul style="list-style-type: none"> <li>Seventeen (17) rooms that provide overnight facilities;</li> <li>Kitchen;</li> <li>Two (2) ablution facilities;</li> </ul>	Some alterations have taken place and are currently in use.  The ablution facilities need to be upgraded and improved. The provision of water and sewerage disposal systems needs to be upgraded.
Church	<ul style="list-style-type: none"> <li>One (1) Brick House</li> </ul>	Although in use the church facility / structure is unstable.
School (Pre-primary)	<ul style="list-style-type: none"> <li>Six (6) class rooms and an office;</li> <li>Ablution facilities</li> </ul>	Onamely three (3) class rooms are occupied but the structure overall needs to be upgraded. The ablution facility is no longer in use and need to be upgraded.
Business (General Dealer)	<ul style="list-style-type: none"> <li>Spa-Shop (to support residents)</li> <li>Two (2) general dealer shops adjacent to the main road.</li> </ul>	The general dealer buildings are unoccupied and in good structural state.

### **7.3 Infrastructure Services**

The core settlement area is served with the following infrastructure services, namely:

#### **- Water**

The water source is one (1) boreholes within the area located next to the man house, as well as an abstraction point from the maintenance. The borehole is located in the vicinity of the main farm building was tested to determine the available yield of the borehole. From the results it is clear that the water quality from the borehole is not to an acceptable standard. The water from the mountain stream seems very good, but due to the fact that it is a natural stream, some filtering will still be required. The Storage reservoir is damaged beyond repair. The water reticulation comprises of two to three kilometres of pipelines to the orchard.

#### **- Sewerage**

The sewer infrastructure consists of two (2) ablution blocks and ablution facilities at the teacher's house. Drainage of the effluent is by means of septic tanks of which no details are available. These facilities are in a very bad state and need extensive upgrading before they can be utilized to accommodate people.

#### **- Streets**

The existing streets of Kranspoort consist of gravel (in most cases it is basically in situ soil that is graded) and are in general in a fairly accessible condition.

#### **- Storm Water Drainage**

No storm water drainage system exists within Kranspoort

#### **- Electricity**

No bulk electricity is available within the vicinity of the farm. The nearest Eskom power supply is located at Buysdorp. Electricity was previously provided by means of a generator situated in the proximity of the main residence of the farm.

#### **- Solid Waste**

No waste management/transfer infrastructure is available. Waste is being deposited of in pits dug in the vicinity of the existing houses.

(Refer to **Annexure B: Preliminary Services Report** prepare by Kwezi V3 Engineers for more details)

### **7.4 Proposed Land Uses**

The proposed land uses within the core settlement area is to retain the existing uses and associated facilities (i.e school and church building) and to cluster the area earmarked for hospitality related uses (i.e dormitories and guest houses). The area previously settled for residential purposes will remain, incorporating the existing residential structures.

Due to current intensive agriculture activities, the area will remain with the inclusion of a portion previously used as maize fields.

(Refer to Annexure C: Series of Plans (Plan 3) for more details)

## **8. SETTLEMENT PLAN**

### **8.1 Community Resettlement Aspirations**

A Socio-Economic Profile was undertaken by Dr MJ Gaigher to assess the composition, status needs and aspirations of the Kranspoort Community (Original Claimants) in relation to the resettlement at Kranspoort. Herewith some fundamentals that directly impact on the preparation of a Sustainable Integrated Development Plan.

- Average family size is 7 (varies from 2 to 18) with an even balance between male and female;
- High number of claimants (47%) are pensioners;
- Onamelyy 8% of claimants never had some formal schooling and 30% has a tertiary qualification;
- Almost 98% of the claimants belong to one church group;
- Estimated average income of claimants is R2200 per annum and only 24% earn more than R4000 per annum;
- 77% of claimant's intent to participate is some form of farming, with little showed interest in tourism.

From the above, it can be concluded that the returning Kranspoort Community is educated, with sustainable income and well skilled to contribute to the development of Kranspoort. Furthermore, many claimants are unrealistic in their expectations about the future of Kranspoort and therefore the community need to be workshopped on sustainable living, environmental awareness and conservation due to its location within proposed Biosphere.

Lastly the community need to understand the value of eco-tourism and associated opportunities as well as eco-agricultural practices to serve as "draw-card" to ensure sustainable human settlement (stimulate local economy).

(Refer to Annexure B: Socio-Economic Profile Assessment prepared by Dr MJ Gaigher for more details)

### **8.2 Development Concept Plan**

The key to a sustainable and efficient Eco-Village planning is the zone and sector placement of buildings/structures and infrastructure, agriculture facilities, tourism facilities, social services, etc. Zone planning means placing elements according to how much it will be used and or how often it needs to be serviced. To place elements in zones, one needs to start from a centre of activity usually the house or on a larger scale the entire village.

The schematic concept land use plan for the farm Kranspoort as put forward by Triviron Inc, indicates the relationship between intensity use and distance, categorised into five (5) zones with development guidelines. The general guidelines to be considered and recommended as part of the village design and preparation of a settlement plan are summarized below, namely:

- Respect the natural and cultural resources of the site and minimize the impact of any development;

- Community Facility: The proposed use relates to the clustering of all hospitality associated uses complementing the tourism opportunities/potential of Kranspoort.
- Agriculture: The remainder of the framework relates to various forms and intensity use for agriculture purposes.

The Conceptual Land Use Framework of the core settlement incorporates the existing and historic uses into a contained area with focal points interactive with the surrounding residential and agricultural uses.

(Refer to Annexure C: Series of Plans (Plan 4 and 5) for more details)

## **8.4 Settlement Plan/Detail Layout**

### **8.4.1 Planning Principles**

The following design rationale was taken into account during the preparation of the layout plan:

- Road network system incorporating existing roads as main structuring elements;
- Natural context of the site by identifying the implications of the natural characteristics (e.g topography, vegetation, etc) to bring the natural landscape visually into the settlement);
- Integrate the existing road network movement and land use pattern to improve interconnectivity and provide for increased opportunities;
- Facilitate efficient service provision and land utilization by optimizing the layout (i.e road length per erf, etc);
- The neighbourhood concept is conclusive to the development of social interaction and a community spirit. The layout promotes a sense of identity and of belonging to a specific area;
- The provision and incorporation of social facilities and supporting the neighbourhood concept within close proximity.

### **8.4.2 The Layout Plan**

The settlement Plan makes provision for 182 residential stands of 500m<sup>2</sup> (minimum) in extent. The existing residential buildings have been accommodated in the layout, each with its own stand. The existing and proposed land uses as discussed and described as part of the conceptual framework have also been accommodated on a stand i.e school, church, community facility, etc.

The layout plan is circular of nature creating a road network with varying widths of 10m to 13m reserves and provides access to each stand. Through fares of 3m have also been provided to allow for pedestrian circulation and access to the social facilities.

In addition, the layout plan includes an area as demarcated and represented as figure ABCDEFGHIJKLMWPA measuring 47,98ha in extent as the proposed settlement village. The existing land uses with specific reference to agriculture are retain and forms part of the layout and proposed village (township).

**Note: The existing settlement pattern i.e road system, houses, buildings and structures, fences, infrastructure as well as indigenous trees are accommodate and incorporated onto the layout.**

The proposed zoning and permitted uses are outlined in the table below:

<b>SUMMARY OF LAND USE TABLE</b>		
<b>Proposed Use</b>	<b>Proposed Zoning</b>	<b>Permitted Use</b>
Residential	Residential	Residential building and associated outbuildings.
Community Facility	Place of Worship	Church and associated uses
Institutional	Institutional	School/Education facility and associated uses
Multi-purpose Centre	Multi-purpose Centre	Library, community hall, meeting place, offices, information centre, post office and boxes, crèche, clinic, health care facility, curio shop, safety and security facility, general business dealer and tuck-shop.
Hospitality	Hospitality	Accommodation and recreation facility including guest house, dormitories, assembly hall, kitchen, picnic and braai facilities and day visitor's facility.
Historical House	Community Facility	To be determined
Business	Business	General business dealer, arts and craft centre and training centre.
Agriculture	Agriculture	Agriculture and associated uses, e.g tool shed, wood lots, processing plant, etc.
Place of Burial	Cemetery	No other uses

(Refer to **Annexure C: Series of Plans (Plan 6)** for more details)

### **8.5 Architectural Guidelines**

The layout plan is designed to create and establish a settlement that is circular and surrounds common usage facility as focal point. The residential stands adjacent to the proposed multi-purpose centre facility are to be developed as an Eco-Village demonstration project. The main purpose thereof is to train and skill the potential beneficiaries in building techniques, methods, material options, etc for when constructing their own homes.

The community accepted the value of developing the settlement into that of an Eco-Village through the use of various building techniques linked to individual requirements and specifications. The above lead to the approval of an Eclectic Style with architectural guidelines adopted and to be applied to ensure a common but, varying house product in support of eco-tourism.

The above approach will allow for labour based construction methods, use indigenous material and development of skill during the application thereof and in turn ensure a sustainable human settlement approach within Kranspoort.

The internal configuration/house layout is the responsibility of the individual household and need to be expandable to allow for extensions.

(Refer to **Annexure D: Architectural Guidelines** for more details)

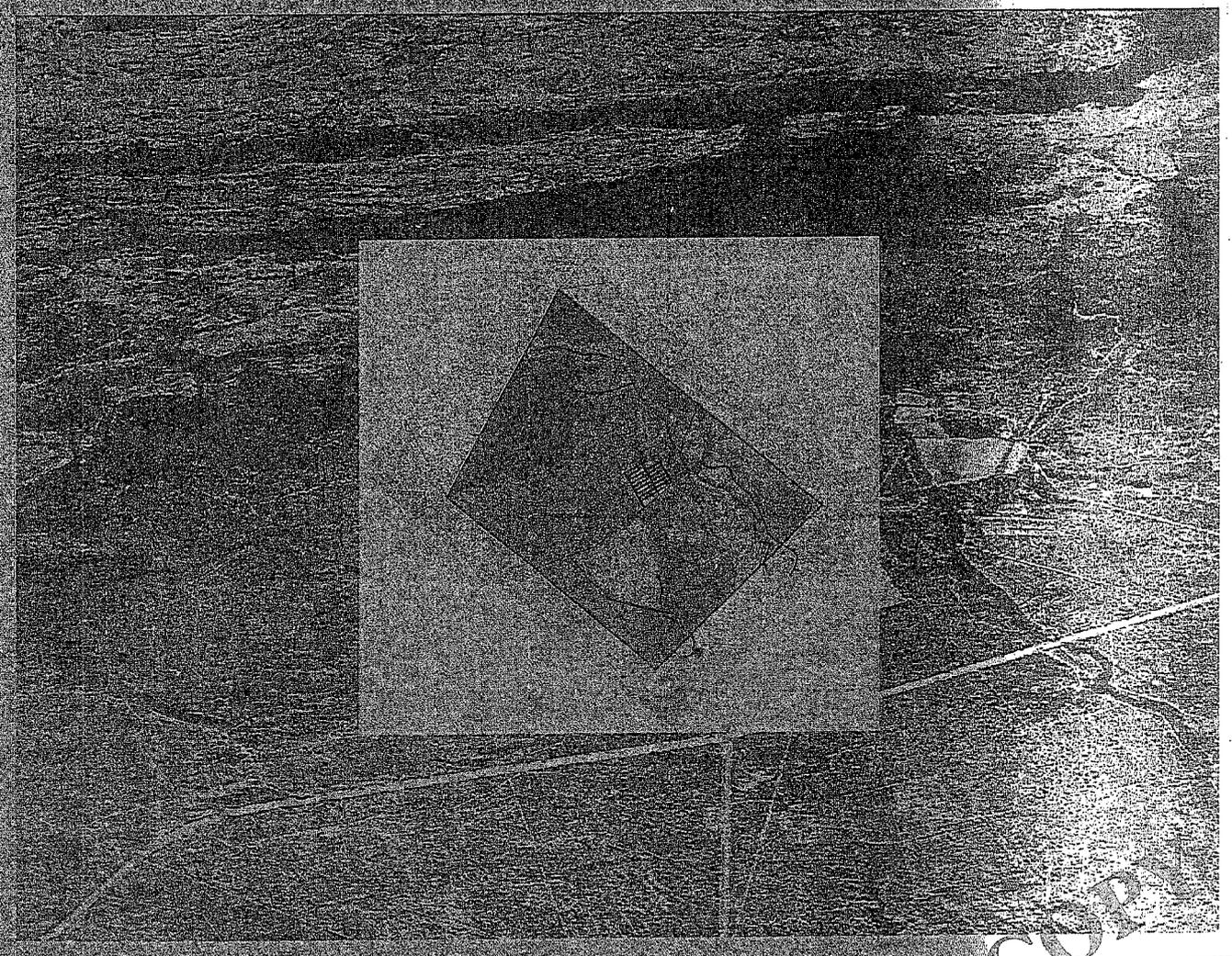
## **ANNEXURE A**

# KRANSPOORT

THE FARM KRANSPOORT 48 LS PORTION 2 (A PORTION OF PORTION 1) AND PORTION 3

## ● SUSTAINABLE DEVELOPMENT PLAN ●

A Guideline Document  
for the  
Sustainable Utilisation and Management  
of the  
Farm Kranspoort  
by the  
Kranspoort Community



MAY 2001

# KRANSPOORT

● SUSTAINABLE DEVELOPMENT PLAN ●

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## PART ONE

### ● INTRODUCTION ●

#### 1.1 BACKGROUND

The Land Claims Court (hereafter referred to as the Court) ordered the restitution of Portion 2 (a Portion of Portion 1) and Portion 3 of the farm, Kranspoort 48 LS (hereafter referred to as Kranspoort), to the claimant community on 10 December, 1999, in terms of the Restitution of Land Rights Act, 1994 (Act 22 of 1994). The Court ordered restitution subject to the following conditions:

"2. The claimant community must apply to the Court in terms of rule 37 of the Land Claims Court rules within 6 months of the date of this order (or such extended period as the Court may on good cause allow), for an order confirming compliance with the following conditions -

2.1 the claimant community must form and register a communal property association in terms of the Communal Property Associations Act, 1996 (Act 28 of 1996) on the basis of a draft constitution and list of initial members which complies with this order and which has received the prior approval of the Court in chambers;

2.2 the communal property association referred to in paragraph 2.1 must ratify the decision to seek restoration of the farm referred to in paragraph 5 as the appropriate form of relief, at a properly convened general meeting of the initial members of the communal property association;

2.3 the claimant community must formulate a plan to the satisfaction of the Court for the development and use of the farm and provide sufficient proof of -

2.3.1 community participation in the planning process; and

2.3.2 its commitment to the proper implementation of the plan."

Pursuant to the order, the claimant community applied to the Court on the 7 September, 2000, for an order confirming compliance with the conditions imposed. The application was supported by a founding and supplementary affidavit by Mr EM Serumula, the chairperson of the Kranspoort Communal Property Association (hereafter referred to as the Kranspoort CPA), formed by the claimant community. The *Kranspoort Sustainable Development Plan* and a *Settlement Establishment Project Proposal* were annexed to the affidavits, various resolutions and other supporting documents. On the basis of the latter documents, it was contended by the claimant community that paragraph 2.3 of the order was complied with.

The Court made the following order during a conference, held in chambers on 7 September, 2000, to consider the application:

"1 The Court confirms that the claimant has complied with paragraphs 2.1 and 2.2 of the order, dated 10 December, 1999, in the above matter.

2 The Court makes no order in respect of the application for an order that the plaintiff has complied with paragraph 2.3 of the order, dated 10 December, 1999.

3 The claimant is given leave to renew the application, referred to in paragraph 2 on the same papers, duly supplemented.

4 For purposes of paragraph 3, the period of six months, referred to in paragraph 2 of the order, dated 10 December, 1999, in the above matter is extended to a period ending 5 February, 2001.

5 No order is made in respect of prayers 2 or 3 of the notice of motion, subject to the possibility of the application for condonation of late opposition, referred to in these minutes"

The Court handed down a brief judgement setting out the reasons for this order (paragraphs 5 to 13).

Extension was granted by the Court to allow sufficient time for an appropriate response to the judgement. A new date was set for the 8 June, 2001.

## 1.2 CONTENTS OF SUBMISSION

This submission represents an attempt to respond to the respective judgements and, in particular, the assessment of the assessor, T Plewman, a qualified development planner, in the most appropriate manner.

The submission is informed by:

- The initial project brief;
- A theoretical interpretation of the terms, *sustainable development* and *sustainable development plan*;
- The community participation and technical consultation process; and
- The judgments by the Court, the assessment of the assessor, and comments, received from various role-players throughout the process.

### 1.2.1 INITIAL PROJECT BRIEF

The interpretation of the initial project brief by PlanPractice Town Planners (hereafter referred to as PlanPractice) determined the nature and contents of the *Kranspoort Sustainable Development Plan*. PlanPractice was commissioned by the Regional Land Claims Commissioner: Mpumalanga and Northern Provinces, Commission on Restitution of Land Rights (hereafter referred to as the Commissioner), on behalf of the claimants (hereafter referred to as the Kranspoort Community), to draft a Sustainable Development Plan for the farm, Kranspoort 48 LS, Portion 2 (a Portion of Portion 1) and Portion 3 (hereafter referred to as the *Kranspoort Sustainable Development Plan*).

It should be noted that PlanPractice was not commissioned to:

- Determine the financial costs or feasibility of alternative development options;
- Prepare applications, on behalf of the Kranspoort Community, for submission to the respective authorities to allow the establishment of a formal settlement and allow the orderly re-settlement of the Kranspoort Community; and

- Prepare applications, on behalf of the Kranspoort Community, for submission to the respective authorities to secure funds for the establishment of a formal settlement and allow the orderly re-settlement of the Kranspoort Community.

PlanPractice views the above as part of the subsequent phase, which is to progress from strategic planning to implementation of the preferred alternative development option, informed by the developmental needs, priorities and preferences of the Kranspoort Community, as well as the availability of sufficient funds. The implementation phase implies the initiation of certain legal processes, pertaining to the formal establishment of the settlement, attending other relevant legislation, for example environmental legislation and regulations, as well as the preparation of applications for funding.

A mandate (power of attorney), from the legal landowner(s) of the property on which the actions are proposed, as well as funding, is required to prepare, submit and manage the mentioned applications and processes. The fact that the CPA is, as yet, not the legal landowner of Kranspoort, prevents:

- The preparation and submission of the mentioned applications to the relevant authorities;
- The issuing of official approvals by the respective authorities for the establishment of a formal settlement and the orderly settlement of the Kranspoort Community; and
- The restitution process to reach a point where an informed and responsible decision can be taken on the sustainability of re-settling the Kranspoort Community or Kranspoort.

## 1.2.2 INTERPRETATION OF THE TERMS, SUSTAINABLE DEVELOPMENT AND SUSTAINABLE DEVELOPMENT PLAN

The interpretation of *What is sustainable development?* and *What is a Sustainable Development Plan?* by PlanPractice determined the nature and contents of the *Kranspoort Sustainable Development Plan*. Providing a theoretical framework for the *Kranspoort Sustainable Development Plan* is of critical importance. In order to attend to the latter effectively working definitions of the terms, *sustainable development* and *sustainable development plan*, is of critical importance.

*Sustainable development* is conventionally associated with three fundamental principles:

- First, the *principle of inter-generational equity, or futurity*, implies that one generation should hand on the earth to the next generation in at least as good a condition as it inherited it. This is merely a technical expression of a long-standing sentiment. It is neatly summed up in the proverb that *we have not inherited the earth from our parents, we have borrowed it from our children*. It is also reminiscent of the archaic legal term *usufruct*, which was used in this context by the seventeenth-century diarist John Evelyn, requiring that a borrower of an item returns it to the lender in its original condition;
- Second, the *principle of intra-generational equity, or social justice*, requires that sustainable development contains within it a principle of human needs. The Brundtland Report, for example, had particular regard to the needs of the world's poor, to whom it was argued that an overriding priority should be given; and
- Finally, the *principle of transfrontier responsibility* states that sustainability in one locality cannot be achieved at the expense of environmental conditions elsewhere. Thus, we must accept responsibility for any impacts that our activities may have on the water and air quality, biodiversity and the condition of the natural resource stock in other areas. Often, these areas may be very distant, and their environmental deterioration may be unrecognised.

The latter principles are succinctly encapsulated in the most widely adopted definition of *sustainable development* (the Brundtland definition): "... development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development 1987).

For the purposes of this document the above definition is accepted as a working definition of the term, *sustainable development*. The latter definition, therefore, provides the broad framework for the nature and contents of the *Kranspoort Sustainable Development Plan*.

PlanPractice views the drafting of a Sustainable Development Plan for the Kranspoort Community as of critical importance, not only to comply with the order of the Court, but also to provide the community with information on:

- The current realities (opportunities and challenges), facing Kranspoort, the area of jurisdiction of the Louis Trichardt Local Municipality, and the area of jurisdiction of the Vhembe District Municipality;
- The alternative development options, pertaining to settlement and sustainable development;
- The alternative development options, pertaining to land use and activity arrangements;
- The alternative development options, pertaining to facilities and services, including housing, engineering facilities and services (water, sewer, electricity, roads, stormwater, and waste management), as well as social facilities and services (educational, health, and skills training). Information on the level of services available, appropriateness, acceptability and the financial impact of the latter, are also provided;
- The alternative funding options, available funds and contact particulars; and
- The way forward to ensure the orderly re-settlement of the Kranspoort Community and the establishment of a sustainable settlement and community.

and technical capacitation and guidance to ensure:

- Informed decision-making; and
- The establishment of a sustainable settlement and community, committed to the conservation of their natural and cultural heritage and the initiation of viable economic activities that will enable the Kranspoort Community to improve their quality of life.

The *Kranspoort Sustainable Development Plan* is more than a plan – it is a management resource, comprising information, development options, proposed processes, possible funders, critical contacts and a way forward, that provides the Kranspoort Community with strategic guidance on the sustainable development and management of Kranspoort. It is, however, recommended that technical assistance be provided to the Kranspoort Community in the implementation of the *Kranspoort Sustainable Development Plan* and that a detailed *Sustainable Development Manual* for Kranspoort be developed with and for the Kranspoort Community to assist them with the hands-on development and management of the settlement. The latter document should be realistic, practical and user-friendly.

### 1.2.3 COMMUNITY PARTICIPATION AND TECHNICAL CONSULTATION PROCESS

(For more detailed information, refer to **Part Three: Public Participation and Technical Consultation Process**)

An extensive community participation and technical consultation process was conducted to ensure that an informed and optimum sustainable development plan is drafted for Kranspoort. This submission was informed by extensive community consultation, pertaining to the needs, priorities and preferences of the Kranspoort Community, technical consultations and current realities and, in particular, by the following processes, events and outcomes:

- The decision of the Kranspoort Community to re-settle on Kranspoort;
- The planning process that were engaged upon by the Kranspoort Community, prior to the commissioning of PlanPractice and the developmental ideas that were explored – feasible practices or development options on the land, contained in the *Kranspoort Development Plan*, including:
  - Business development, for example tourism initiatives, a petrol station, brick works, factories for jam, a chaar and peaches, shops and banks;
  - Recreational facilities, for example tennis courts, a golf course, a stadium and a cricket court;
  - Health facilities and services, for example clinics;
  - Educational facilities and services, for example primary and secondary schools with comprehensive technical subjects, as well as an adult literacy and sewing school;
  - Mixed agricultural activities, for example cattle grazing, wild animals and orchards with bananas, oranges and vegetables and
  - The *Kranspoort Development Plan* compiled by the Kranspoort Community, indicating proposed locations for respective facilities, activities and infrastructure components.

The latter was accepted as a starting point for discussions with the Kranspoort Community to determine what type of uses and activities are actually viable, taking cognisance of developmental needs, priorities and preferences of the Kranspoort Community, the challenges and opportunities inherent in the land and the external, regional and provincial environment.

- The Current Reality that was compiled for the physical (natural and built), social, and economic environment to determine the strengths, weaknesses, opportunities and threats of the site, and the site in relation to the region and the Northern Province (refer to **Part Four: Current Reality**);
- The Community Profile Survey that was conducted to determine the developmental needs, priorities and preferences of the Kranspoort Community, making use of an extensive questionnaire as a research tool (refer to **Part Four: Current Reality**);

- The extensive community participation and technical consultation process that was conducted with all the relevant role-players, comprising the following (refer to **Part Three: Community Participation and Technical Consultation**):
  - Consultations;
  - Discussions;
  - Telephone conversations;
  - Letters;
  - Written responses; and
  - Verbal undertakings.
- The research and technical investigations that were conducted and the technical reports that were consulted (refer to **Part Three: Community Participation and Technical Consultation**).

#### 1.2.4 RECOMMENDATIONS

(For more detailed information, refer to **Part Two: Recommendations**)

The recommendations are informed by the participation of the Kranspoort Community in the planning process, pertaining to the re-settlement of the Kranspoort Community on Kranspoort and, in particular, information made available throughout the process by the Kranspoort Community and various other role-players, including:

- Information, pertaining to the needs, priorities and preferences of the Kranspoort Community, obtained through discussions with individual members of the Kranspoort Community, meetings conducted with the Kranspoort Community (refer to **Part Three: Community Participation and Technical Consultation**), as well as a questionnaire that was completed by each claimant or claimant household;
- Information, pertaining to the current realities and in particular, the current developmental challenges that the Kranspoort Community faces (refer to **Part Four: Current Reality**); and
- Information, pertaining to the developmental potential of and options for Kranspoort and the Kranspoort Community, and the developmental support (technical assistance and/or financial support), available from a wide range of role-players, including individuals, the private and public sector.

The nature and content of the recommendations were, in particular, informed by:

- The decision of the Kranspoort Community to re-settle on Kranspoort;
- The planning process that were engaged upon by the Kranspoort Community, prior to the commissioning of PlanPractice and the developmental ideas that were explored as feasible practices or development options on the land, contained in the *Kranspoort Development Plan*.
- The Current Reality that was compiled for the physical (natural and built), social, and economic environment to determine the strengths, weaknesses, opportunities and threats of the site, and the site in relation to the region and the Northern Province (refer to **Part Four: Current Reality**);
- The Community Profile Survey that was conducted to determine the developmental needs, priorities and preferences of the Kranspoort Community, making use of an extensive questionnaire as a research tool (refer to **Part Four: Current Reality**);
- The extensive community participation and technical consultation process that was conducted with all the relevant role-players, comprising the following (refer to **Part Three: Community Participation and Technical Consultation**):
  - Consultations;
  - Discussions;
  - Telephone conversations;
  - Letters;
  - Written responses; and
  - Verbal undertakings.
- The research and technical investigations that were conducted and the technical reports that were consulted (refer to **Part Three: Community Participation and Technical Consultation**).

In summary, the recommendation is that the re-settlement of the Kranspoort Community on Kranspoort should be granted, subject to the adherence of the following:

- The Acceptance of the Spatial Development Framework for Kranspoort  
The acceptance of the general content and, in particular, taking ownership of the settlement and community development proposals and recommendations, contained in the Spatial Development Plan for Kranspoort.
- The Establishment of a Sustainable Settlement and Community
  - The authorization and approval of the formal establishment of a settlement on Kranspoort;
  - The securing of sufficient funds to ensure the establishment of a sustainable settlement and community, and secure an acceptable quality of life for the Kranspoort Community;
  - The securing of sufficient funds to ensure the complete installation and maintenance of acceptable and affordable levels of engineering services (water, sewer, electricity, roads, stormwater and waste removal); and
  - The securing of sufficient funds to ensure the provision of acceptable and affordable levels of social facilities and services (education, health and skills training).
- The Sustainable Development of the Natural Resources  
The securing of sufficient funds to ensure the sustainable development of the natural resources of Kranspoort.
- The Sustainable Development of the Human Resources  
The securing of sufficient funds to ensure the sustainable development of the human resources of the Kranspoort Community.
- The Sustainable Development of the Economy  
The securing of sufficient funds to ensure the sustainable economic development of the Kranspoort and the Kranspoort Community.
- The Sustainable Management of the Settlement and Community  
The securing of the sustainable development of the Kranspoort Settlement and Community by providing sound and sustainable management objectives.

The implementation of the recommendation should be driven by the Kranspoort CPA, its partners and appointed agents. The monitoring of the progress should be the responsibility of the Kranspoort CPA. The Kranspoort CPA should be assisted by their partners and agents in devising remedial action and/or alternative strategies if progress are not satisfactory in a particular instance.

### 1.3 COMPONENTS OF SUBMISSION

The submission comprises the following:

- Part One: Introduction;
- Part Two: Recommendations;
- Part Three: Community Participation and Technical Consultation Process;
- Part Four: Current Reality;
- Part Five: Concluding Remarks; and
- Annexures.

The latter constitutes the content of the document, titled the *Kranspoort Sustainable Development Plan, May 2001*.

### 1.4 CONCLUDING REMARKS

The planning process for the re-settlement of the Kranspoort Community on Kranspoort resulted in a Sustainable Development Plan for Kranspoort and a resolution, taken by the Kranspoort Community at a general meeting of the Kranspoort Community, conducted at Kranspoort, on Saturday, 26 May, 2001, which reads as follows:

The meeting resolves as follows:

- That the community accepts the revised Sustainable Development Plan for Kranspoort, as presented by PlanPractice Town Planners at this meeting; and
- That the community commits itself to the proper implementation of the accepted revised Sustainable Development Plan for Kranspoort.

The latter resolution was signed in the presence of the Kranspoort Community, by the Mr EM Serumula, Chairperson of the Kranspoort Community Property Association (CPA).

## **ANNEXURE B**

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## **EXECUTIVE SUMMARY**

### **A SOCIO-ECONOMIC PROFILE OF THE KRANSPOORT COMMUNITY.**

Ninety two claimants were interviewed at locations in eight different wards extending from Diepkloof in the south to Musina in the north. Demographic information was gathered about respondents as well as dependents that plan to return. Focus group discussions were also held to establish expectations and attitudes towards the proposed resettlement plan.

Although only 111 claimants were originally involved, the study estimates that close to 600 people will return to the farm. This population is for the larger part, young, unemployed and poor and places a high priority on training and job creation.

The average family size of respondents is 7 but varies from 2 to 18 with slightly more males than females. Sixty one percent of the respondents are married and 59% of the females are single.

A high number of respondents (47%) are pensioners. Only 8% of respondents never had formal schooling and 30% has a tertiary qualification.

The estimated average income of respondents is R2200 per annum and only 24% earn more than R4000 per annum. The family members that plan to return are even less affluent.

Almost 98% of the respondents belong to one church group.

Respondents presently occupy houses with an average of 7 rooms. Some (18%) will be satisfied with a smaller house at Kranspoort but the majority would like to have houses of the same size or larger.

Most (77%) of respondents intend to participate in some form of farming at Kranspoort, 27% are interested in a business and only 9% showed a particular interest in tourism.

The returning population is well skilled, particularly in the building industry. A variety of skills also exist that could be applied in tourism, teaching and nursing.

The focus group discussions revealed concern about the relationship between the resident people at Kranspoort and the returning population, security and discrimination against Sotho speaking people by the Makhado Municipality. Many respondents were unrealistic in their expectations about the future of Kranspoort and only a few have a good perception of sustainable living. A high priority is placed on the re-establishment of the school and church. All expect some form of financial assistance.

The following is recommended:

- The executive committee should adopt an integrated management approach that is based on a common vision and that is sensitive to the needs and aspirations of the whole community.
- The community should be workshopped on sustainable living and to create more realistic expectation about the potential of available resources.
- A structure for conflict resolution should be in place before resettlement.
- A demonstration eco-village unit should be built and the community should be workshopped on the advantages of such an approach within the Kranspoort context.
- The community should be workshopped to create more realistic agricultural expectations and attention should be given to more sustainable forms of agriculture such as bee keeping, herb production, etc.
- An environmental awareness programme should be initiated so that Kranspoort can become an active partner in and beneficiary of the biosphere reserve programme and other conservation initiatives in the region.
- The skills of community members should be utilised for construction, rehabilitation, teaching, nursing, etc.
- Training and wealth creation should receive high priority in planning.

- The envisaged arts and crafts training centre should aim to produce items of exceptional quality and should include a technical component for training in IT technology.
- Training in tourism management is important and the assistance of the National Development Agency should be obtained for training on the managerial and financial level.
- Careful attention should be given to the optimal utilisation of the existing buildings for income generation.
- The establishment of a geriatric care centre should be considered.
- Harvesting and cultivation of traditional medicinal plants should be investigated.
- The existing hall could be utilised as a one-stop community service centre.

The study revealed that the original claimants (apart from the larger family group) is a group of highly qualified and skilled people with a strong in-group feeling - elements that can contribute to a successful settlement. They will, however, still need government and the private sector as committed partners to achieve the goal of sustainable living at Kranspoort.

# A SOCIO ECONOMIC PROFILE OF THE KRANSPOORT COMMUNITY

## 1 INTRODUCTION:

The brief of this investigation was:

- "A study of the characteristics and aspirations of the Kranspoort Community, with the objective of work-shopping these findings.
- The aim is to identify the aspirations of the Community in relation to the site's attributes and potential and to translate these into a practical and quantifiable brief for the preparation of a Development Plan and implementation strategy for the site".

Kranspoort is situated on the western slopes of the Soutpansberg mountain range. It has a high agricultural potential but also forms part of a sensitive conservation area with exceptional scenic beauty and thus a high tourism potential. The main challenge is to integrate resettlement, farming, tourism and other wealth creating activities in a viable and sustainable manner.

This resettlement is of particular significance because it is the first of its kind in this sensitive area and could form a blueprint for other successful land claims in the Mountain.

The "Kranspoort Community" originally consisted of about 111 claimants and their families plus a group of residents who are descendents of people who had not been evicted.

The subjects of the study are at the moment living in towns, townships and villages stretching from Diepkloof in Gauteng to Musina in the Limpopo Prov. They are not homogenous but are still recognisable as '*Kranspoort people*' as they have kept close contact and know each other well. These groups, namely that of Diepkloof, Mamelodi, Tzaneen, Mangweng, Seshego, Indermark, Kranspoort and Musina, provided the sample for the study. The fieldwork was done during October 2003.

## **2 METHODOLOGY AND PROBLEMS EXPERIENCED:**

### **2.1 Sampling technique:**

The only sampling frame available was the original list of claimants. However, this was not reliable any more as the actual returning group includes extended families whose demographic information was not represented by the list. Respondents were consequently listed by convenors or executive members of each branch. This can be assumed to be a representative sample as all original claimants and family members were invited to participate. A sample of 92 respondents attended the interview sessions and cooperated in the study. This represents a response rate of 83% (92 of the original 111 claimants) which is in scientific terms large enough to provide valid and reliable data.

Members of each ward were interviewed separately. To get people together in one setting created some logistical problems as it had to be done after hours. In some instances, respondents had to travel long distances to one meeting point with the result that two of the branches were not well presented. The study was also complicated by the fact that the data collection and the report had to be presented in a limited period of six weeks. This had the effect that people were given short notice of interviews and could not always cooperate in a relaxed manner. In spite of this I received excellent cooperation from convenors and respondents.

### **2.2 Research instruments:**

An interview schedule was used to collect socio-demographic information through predominantly close-ended questions (see appendix 1). That was followed by a focus group discussion that provided respondents with the opportunity to express their opinions and attitudes about the resettlement process and to ask questions. The discussions presented the interviewer with valuable information, creating a more qualitative background against which the quantitative data could be interpreted. The meeting of respondents at their places of residence provided me with an opportunity to obtain first hand experience of how and where people are living thus providing valuable contextual information about future expectations.

### 3 PRESENTATION AND DISCUSSION OF RESULTS:

The discussion of the results do not necessarily follow the numerical order of questions in the schedule but are in some cases grouped and presented in tables or graphs to present a clear and more comprehensive profile of a particular issue or characteristic. Because the sample is relatively small, numerical values rather than (but not exclusively so) percentages are presented. Also because this method of presentation would be easier to understand by those community members who are illiterate or research-unsophisticated.

#### 3.1 Returning population :

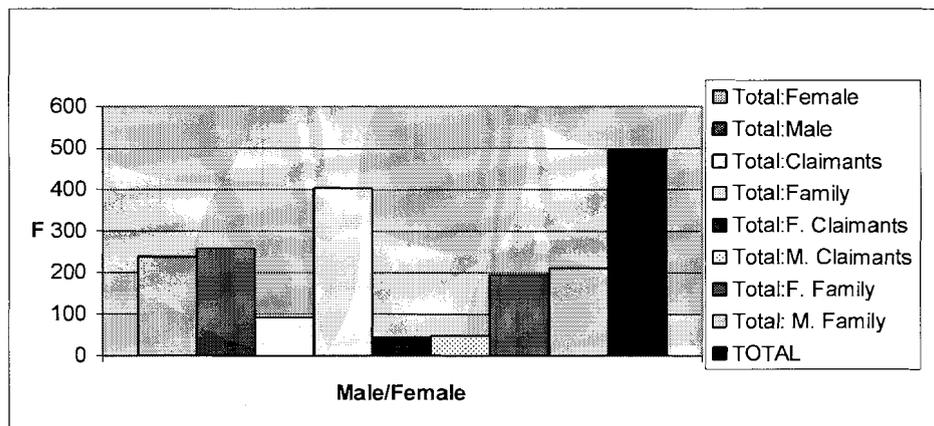


Fig.1. Gender composition of returning population

Figure 1 presents the gender composition of respondents as well as family members whom, according to them, must also resettle on Kranspoort. Based on this, a total of 92 respondents and a further 405 family members are to resettle on Kranspoort. This number does not represent the total of the returning population as not all claimants took part in the study. If the information of the 19 claimants who did not

take part in the study is added, an estimated total of 600 people will return to Kranspoort. The exact number of returning people had to be estimated as some claimants were uncertain whether they will return in person and of the exact number of returning family members.

The average family size as represented by the data is between 5 and 6 members with a range from 2 to 18. The size of a particular family will have to be taken into consideration when planning the size of the residential stands and houses.

Fig. 1 indicates that 238 females and 259 males (respondents and family members) plan to return. The claimants themselves represent 44 females and 48 males while family members are divided into 195 females and 210 males. The gender composition is consequently almost equal, presenting a positive demographic characteristic.

### 3.2 Marital status: respondents:

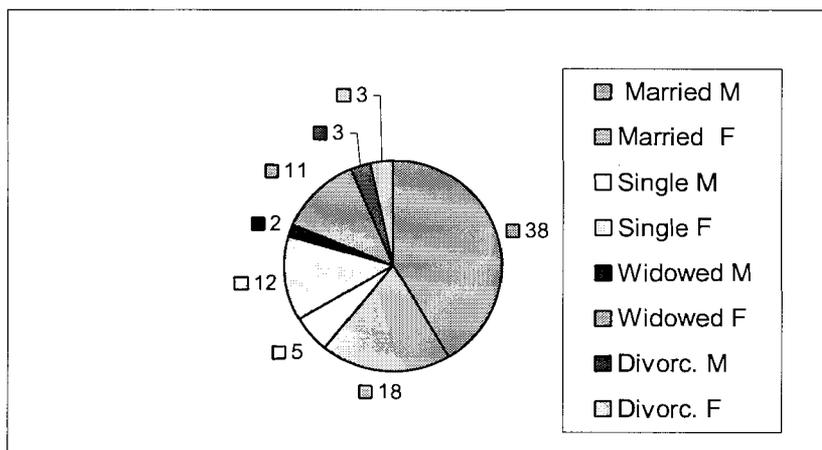


Fig.2 Marital status of respondents

The largest segment (56 or 61%) of respondents is married people with males in the majority (38). Single status inclusive of widowed and divorced respondents is the highest amongst women -26 in total. This will result in 28% of female-headed households at Kranspoort. While this is not unique in South Africa, it still poses a challenge in terms of infra -structure - particularly that of security.

A personal observation during interviews revealed stable relationships amongst married couples - an aspect which is in any community positively related to social stability and equilibrium.

### 3.3 Gender and age composition of returning family:

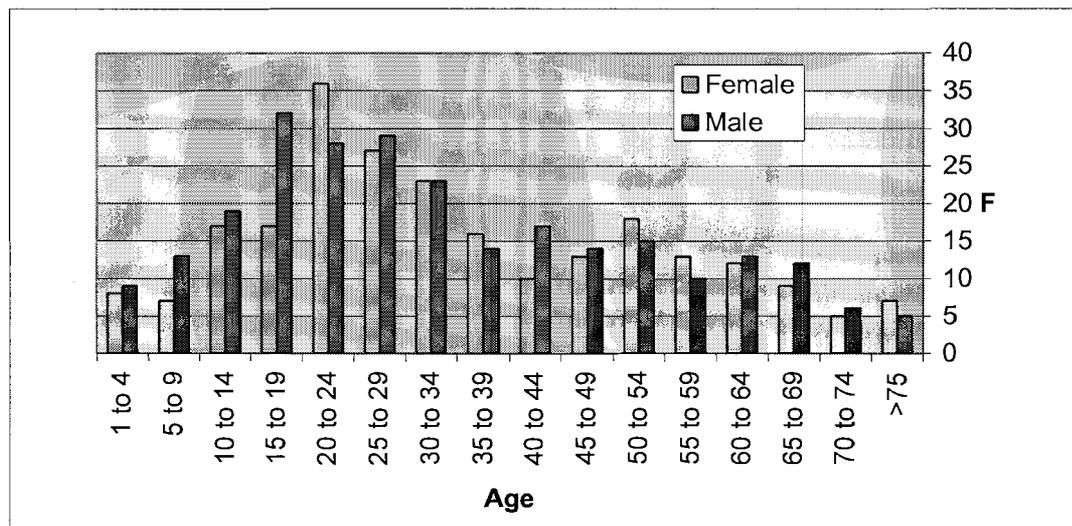


Fig.3 Gender/age composition of returning families

Fig. 3 shows that the returning population is a relatively young one peaking between 15 and 35 years of age for both sexes. The majority of respondents were between 60 and 75 years old while their returning

family members are mainly responsible for the youthful profile. The average age is 35 and the population includes with 122 children younger than 19 years of age. The youthfulness of this population present a particular challenge in terms of the provision of livelihoods

### 3.4 Educational and employment profile of respondents:

Educ/gender	Employed	Unemployed	Pension
Never. Male		1	1
Never. Female	1	2	2
Primary. Male	1	2	5
Primary. Female	2	1	8
Secondary. Male	3	4	7
Secondary, female	2	5	2
Matric. Male	3		4
Matric. Female	2	1	5
Univ/col. Male	9	2	7
Univ/col. Female	6	2	2
<b>TOTAL</b>	<b>29</b>	<b>20</b>	<b>43</b>

Table 1. Education/employment: respondents

Table 1 shows the educational level of the 92 respondents as it correlates with gender and employment status. This information could not be obtained for the family members as respondents were not sure about their particulars. Only 7 respondents never attended any formal school while 66 have some form of secondary or tertiary education. Eighteen males and 10 females have a university or some form of college education. This high level of education may to some extent be contributed to the good schooling provided by the Kranspoort missionaries. A significant difference between urban and rural respondents occurs on the educational level. The two urban groups have a higher tertiary profile than the rural ones probably because they had easier access to tertiary institutions. Fifteen or 75% of unemployed

people do not have a matric qualification. This is valid for both genders. Twenty (69%) of the 29 employed respondents, possess a matric or higher education. Twenty (41%) unemployed respondents (excluding pensioners) require serious attention in terms of job creation at or around Kranspoort. When the employment figure (Table 2) for the returning the families is included in this profile, it presents an even bleaker picture.

### 3.5 Employment status: Returning family:

Status	Number
Employed	113
Unemployed	163
Pensioner	20
Pupil/student	109
<b>TOTAL</b>	<b>405</b>

Table 2. Employment: Families

Table 2 shows that 163 (40%) of the returning family members are also unemployed. Table 1 and 2 combined, portray an unemployment figure of 37%. This type of profile provides a challenge for job creation in any community: in the case of Kranspoort it is even more acute given its relative geographic isolation and the distance from major towns like Makhado and Polokwane. When employed respondents were asked whether they would leave their occupations (in some cases highly paid ones) for an uncertain job situation at Kranspoort, they were quite reluctant to confirm or deny it. This aspect may also influence the number of returning people but not necessarily the number of stands. The urgency of building a house may, however be highly correlated to this decision.

The 109 pupils or students display the number of family members now at school or college. The 122 children under 19 years of age (Table 1) include also pre-school and young people not attending school. All of the pre-school children will, however, be of school-going age when their parents return to Kranspoort. Respondents expressed a strong desire that accompanying children and grand children should go to school at Kranspoort. The re-establishment of the resident school is consequently a high priority. Pupils at secondary level will have to attend neighbouring schools, necessitating some form of transport.

### 3.6 Financial status : Respondents

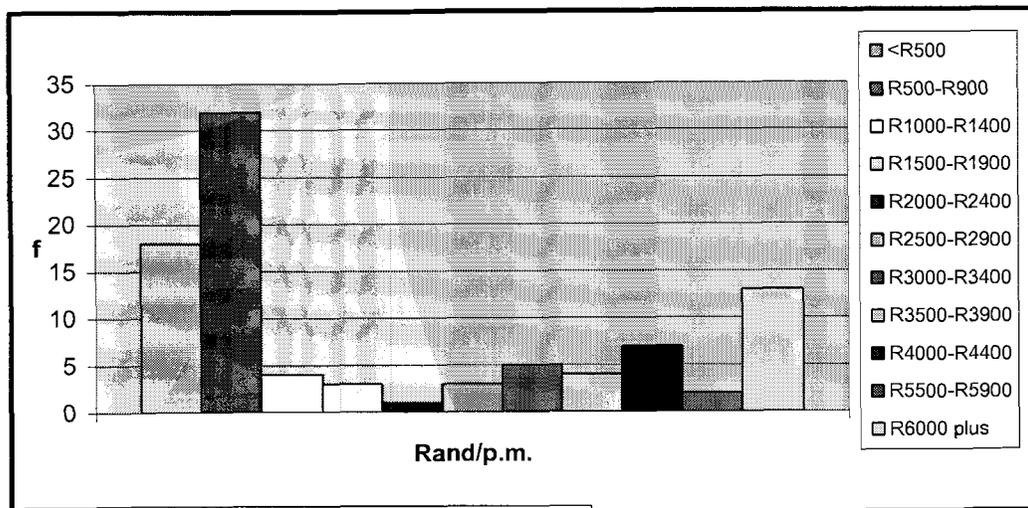


Fig. 4. Financial status of respondents

Forty three of the respondents are pensioners (Table 1), of which 32 receive an old age pension (Fig.4). When the 18 respondents who earn less than R500 per month are added to this, it means that 54% of the returning population presently survive on less than a R1000 per month. Twenty two people earn between R4000 and >R6000. This group will receive a large enough pension to sustain them if they are to retire to Kranspoort. The group of 92 respondents will have an average monthly income of about R2200 but this figure is theoretical. It is, however,

evident that the returning Kranspoort population is by no means an affluent one given the low income of most working people, the high level of unemployment and the large number of people dependent on state pensions.

### 3.7 Religious affiliation:

Almost 98% of respondents (not families) belongs to the Uniting Reformed Church. From a sociological (not spiritual..) perspective, this is a positive aspect as the claimants all seem to be religious people with a strong attachment to the church which can serve as a social supporting mechanism in the resettling scenario.

### 3.8 Housing:

Existing house			Kranspoort house	
Average nr. rooms	7		Smaller	17
Electricity	64		Bigger	38
Water	46		Same size	37
Flush toilet	49		Electricity	92
Telephone	45		Water	92
			Flush toilet	92

Table 3. Housing preferences:respondents

The left hand columns of Table 3 contain particulars of the type of houses which claimant are at present occupying. I have not come across any claimant that live in squatter environments or in any form of chronic poverty i.e. in terms of housing. Their existing houses have an average of 7 rooms with the smallest one consisting of two and the largest of 13 rooms. Almost 70% of houses do have electricity although there is a

difference between urban and rural dwellings with urban houses being almost 100% electrified. All urban houses have water installed in the houses with flush toilets. This is significantly different from the rural areas where about 30% of houses do not have taps in the houses and very few have flush toilets.

Thirty seven respondents are content to have a house similar in size to the one they are occupying now -on average 7 rooms. Seventeen respondents are prepared to have smaller houses. Most of them live in larger than the average seven bed roomed house. Thirty eight respondents who have smaller than the average house, would like to have a bigger one at Kranspoort. All of the respondents want to have electricity, running water and flush toilets at Kranspoort. They will also need telephones -either public or private ones.

During the focus group discussions it was obvious that respondents are more concerned about the housing arrangement at Kranspoort than about anything else. They were anxious to have information about the type of housing, the cost, who is going to pay and who will build the house.

### 3.9 Health status and health care needs:

<b>Disease</b>	<b>Nr</b>
Cardiac	4
Diabetes	11
Hypertension	52
Mental disab.	3
Arthritis	19
Blind	1
Skin	1
Respiratory	14
TB	1
Ulcer	1
<b>Total</b>	<b>107</b>

Table 4. Chronic diseases

Table 4 provides information about the chronic diseases that respondents are suffering from. The incidence of these may be considerably higher for the whole returning population. The diseases displayed, are characteristic of an aging population with a typical high incidence of e.g. hypertension. This profile of chronic health and disease, will necessitate some form of geriatric care. In addition, there is the group of very young children returning to Kranspoort. This group usually displays an acute disease profile with a high incidence of infectious diseases. This will in turn necessitate available preventive care at Kranspoort.

Both these groups are also highly dependent on a clean, unpolluted environment, proper nutrition and a healthy life style.

### 3.10 Sustainable living at Kranspoort

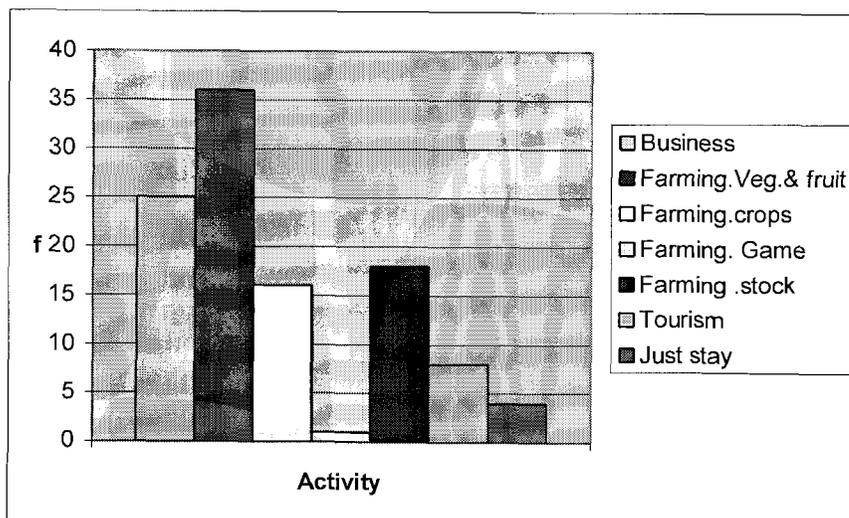


Fig. 5. Future livelihoods at Kranspoort

The question on how people plan to make a sustainable living at Kranspoort, created some discomfort amongst respondents. Very few of

them have given this a serious thought - as if the future will sort itself out. This may be as a result of the long waiting period - that people find it difficult to position them selves in reality - making a living at Kranspoort. It can also be that the respondents are for the larger part pensioners or will be retired at the time of resettlement in which case they only plan to "stay" at Kranspoort. Most (71) respondents showed an interest in one or other form of farming whether fruit, vegetables, game or cattle. Twenty five respondents plan one or other form of business but they are not sure about which type. Only eight people showed a particular interest in tourism, maybe because most respondents do not have any knowledge about it (Table 4).

It is clear is that the population will have to start thinking and planning for their future at Kranspoort - based on realities and with a firm commitment to a sustainable existence.

### 3.11 Available skills:

Builder/brick.	10
Painter	14
Thatcher	2
Plumber	4
Carpenter	7
Electrician	7
Sewing	20
Knitting	14
Other	8

Table 5. Available skills

The returning population bring with them a variety of useful skills (Table 5). Fourty four people have one or other skill that can be used in the building industry. This is particularly encouraging as the buildings and

infra-structure at Kranspoort are in an advanced state of disrepair and will need extensive restoration. It is also of psychological value: retired people need to feel useful and if they are involved in rebuilding their own land it will give them a feeling of belonging and pride creating a true sense of ownership. In the 'other' section, respondents mentioned managerial, nursing, teaching, florist and policing experiences.

### 3.12 Tourism

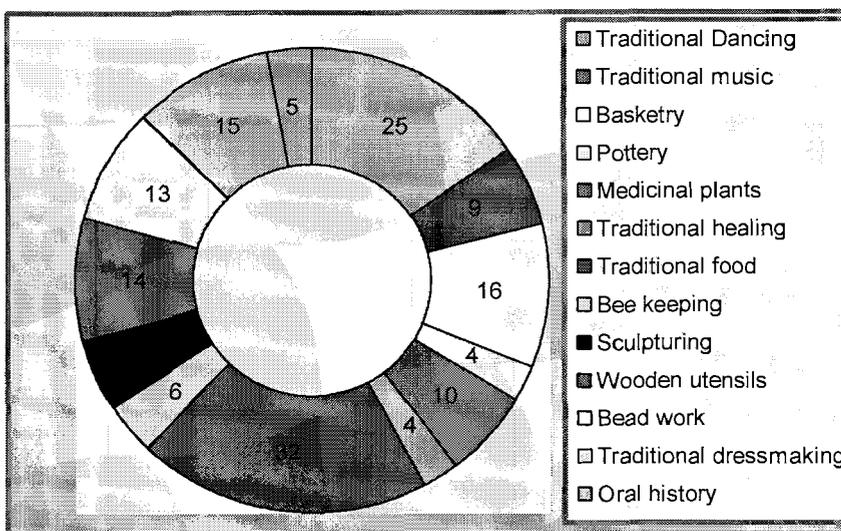


Fig.6: Skills for tourism

Although only 4 respondents have had any experience in tourism as a business, there is general agreement that Kranspoort should be a tourist destination. Many respondents said that they have one or more of the tourism related skills listed in Fig. 6, but it is not certain how well developed these skills are. In quite a few cases, particularly in the field of handicrafts, expertise may be rather rudimentary. If these skills are to be utilised as a form of income within tourism, it needs to be developed. The sad story about handicrafts in most of the developing

world is that the products are too expensive for the local population and not of such a standard that tourists want to buy it. The envisaged centre for the development of arts and crafts could be utilised to develop the existing skills to produce products of excellence, sought after by tourists. Kranspoort does have natural resources like reeds for basketry, medicinal plants and exotic wood for sculpturing and wood carving. Used in a sustainable manner it can provide valuable resources for the tourist industry. The tradition of oral history (telling stories next to the campfire) is almost extinct amongst certain ethnic groups. There is, however, a renewed interest in the fables and legends of the past and it is very popular amongst tourists from abroad. Five respondents, mainly older women, are still in possession of this skill. A combination of eco-and cultural tourism is ideally suited for Kranspoort with its unique natural scenery and a combination of Sotho, Venda and Shangaan cultures.

### 3.13 MAIN RESULTS OF THE FOCUS GROUP DISCUSSIONS :

- In 6 of the 8 branches people expressed concern about the **relationship** between the people who stayed behind at Kranspoort and the returning community. Although respondents agreed that residents have the right to stay, they are apprehensive about future integration. There is little tolerance for reciprocal adaptation - the demand is for the residents to integrate and become part of the major culture - that of the Sotho speaking community. The residents at Kranspoort are for the most part from Venda and Shangaan origin and although not part of the group of claimants see themselves in many ways as the legitimate owners of Kranspoort.

- A second issue raised was that of security. At two of the branches people were concerned about possible 'invasion' by foreigners once Kranspoort was well established. They actually want a police station on Kranspoort to take care of this fear. Connected to this was that all the respondents, except for those presently residential at Kranspoort, were adamant that nobody except claimants and families should be granted ownership of land on Kranspoort.
- Respondents doubted whether the Makhado and Polokwane municipalities will be of much assistance to them as a Sotho-speaking community.
- Asked how they would like to see Kranspoort in 10 years time, respondents were for a large part unrealistic in their expectations. Many of them want to see a city with big shopping centres, hospitals, petrol stations etc. The concept of an eco-village with sustainable use of natural resources is not understood, neither have they any mental image of such a concept. They are however not opposed to the idea - only that they want to see such a house...
- Only a few people have a good perception and ideals about eco-tourism and how the farm should be used in this regard. Despite this, almost all of them are enthusiastic about tourism and have high (sometimes unrealistic) expectations about how the community will benefit from it.
- A high priority is the re-establishment of the school and thereafter the church. People are prepared to do a substantial amount of the renovation themselves provided they get financial assistance. All of them expect some form of financial assistance

from government. Respondents were particularly concerned about the kind of assistance they will receive in terms of housing.

## **4 RECOMMENDATIONS:**

### **4.1 Recommendations for workshops:**

#### **Integrated management**

A general but very important recommendation is that the executive committee need to follow an integrated management approach in planning the future of Kranspoort. This is a particular skill and committee members will probably need to obtain this in a workshop.

The first step in such an approach would be to formulate a common vision through negotiation for consensus. To most people negotiation means reaching compromises on solutions to different parties' problems. Such negotiation for compromise leads to pragmatic but short term solutions. They are value neutral and are not durable beyond the specific negotiation circumstances. The alternative approach, recommended here, focuses on developing a **common understanding** among different parties of the values and needs which the future may hold. This approach is better suited for **conflict resolution**, and it forms a firm foundation for value based decision- making. The procedure in this approach to negotiation is to have all parties lay their values, needs and problems on the table at the start of the exercise. Through workshopping consensus is reached on common problems, values and future needs and a common vision

is formulated. The management model then proceeds through the following steps, bearing the agreed-upon vision in mind:

- Document the strengths of the system
- Record the determinants, constraints and threats to the strengths
- Formulate objectives to ensure the maintenance of the strengths
- Subdivide the objectives into goals
- Formulate a strategy with appropriate actions and tasks needed to achieve the goals
- Evaluate the actions, select appropriate tasks and milestones, implement the tasks and actions
- Monitor the success of management actions and communicate the results to stakeholders.

### Example

The Kranspoort community is a diverse group of people with different expectations and needs. Instead of trying to negotiate a means of satisfying all the expectations separately, all the needs and problems are placed on the table and then become common problems and needs. A common vision for all the members is then developed through workshopping. For example, a common vision could be to establish an environmental friendly settlement and to develop sustainable agriculture, eco-tourism and other wealth creating activities in an integrated manner.

A **strength** could be: A beautiful mountain environment with a remarkable diversity of plants and animals that is ideally suited to eco-tourism.

Constraints could be: A lack of expertise in tourism management, lack of environmental awareness amongst the community, exotic invasions, noise pollution, etc.

Threats could be: Changes in tourism demand, quality of roads, lack of proper communication channels, etc

The following objective could follow from this: To develop sustainable eco-tourism on Kranspoort by involving all components of the development process.

Goals: To establish tourism accommodation, hiking trails, etc., to train staff in tourism management, to initiate an environmental awareness campaign, to ensure that other activities does not impact on the wilderness character of the mountainous section of Kranspoort, to develop skills in arts and crafts, to develop the settlement in such a way that eco-tourism could extend into the community, etc.

Strategies will then have to be formulated with appropriate actions and tasks needed to achieve the goals. After an evaluation of these actions they are implemented and monitored.

#### 4.1.1 Sustainable living:

It is obvious that a significant section of the population is not sure how sustainable living at Kranspoort is to be ensured. Neither do all of them share a common vision about the future of the farm. With such a high level of unemployment it is to be expected that many may reason that *'something is better than nothing'* - that Kranspoort offers something better than the circumstances presently experienced. People will have to know exactly what sort of resources and what sort of financial benefits (or lack of it) a life at Kranspoort entails. Many people expect Kranspoort to become a city with hospitals, colleges, petrol stations and the like. For these things to be economically viable, it needs a much larger population than Kranspoort will ever be able to sustain. These unrealistic expectations need to be translated into realistic ones: a well-run clinic and ambulance service in the place of a hospital; bursaries to allow students to study at nearby schools and colleges rather than trying to get one at Kranspoort, etc. Only then can they take an informed decision about a future move.

#### 4.1.2 Conflict resolution:

A structure for conflict resolution will have to be in place before people move to Kranspoort and will probably have to function on a permanent basis. Residents and claimants, e.g. will have to share a common vision about life on the farm or must at least come to some agreement about peaceful co-existence.

#### 4.1.3 Eco/culture-tourism:

Although the community agrees on the need for tourism, they need clarification and demonstration of these concepts. People are in favour of the idea of living in an eco-village, or about the advantage of having a

cultural village for tourism, but they first want to see what it looks like. It is therefore necessary that a demonstration model be build so that people can then decide for themselves whether they would like to stay in such houses. An eco-village brings with it sustainable living through social cohesion. People need to be informed about the advantages of living in an eco-village: that they will be more healthy because they breathe clean air, drink clean water, eat organic food and live in houses which protects them best against climatic extremes. At the moment all of these are foreign concepts to the majority of people.

#### 4.1.4 Kranspoort as a farming enterprise:

During the focus group discussions it was obvious that some people have unrealistic farming expectations of Kranspoort. The department of Agriculture estimates that the farm cannot carry more than 100 head of cattle and may be better suited for game farming. Because Kranspoort receives water from a small river, people plan big crops including fruit and vegetables. This is a viable option but needs to be seen in conjunction with conservation ideals and a scientific estimation of how much water will be available for farming after household water is provided for the returning community. If people start clearing the land indiscriminately, it may jeopardize the fragile eco-system. Coupled with this is the fact that Kranspoort does have its share of wild life that may claim their share of available food. A proper estimation of fencing costs needs to be done before big scale fruit and vegetable farming are embarked upon. The only other alternative is to eradicate the wild life, which will, in turn, impact negatively on tourism. The community will have to decide how they can realize their farming ideals within these constraints.

The community may think about less orthodox ways of farming which will probably be more profitable and have less impact on the environment. The following are examples:

- Bee-keeping: There are about 7 respondents who are knowledgeable about bee-keeping. Kranspoort is ideally suited for this type of farming. Both for the production of honey which is country-wide in short supply as well as for pollination purposes for the fruit farmers at Levubu.
- Herb-farming: Herbs have become world-wide very popular for culinary purposes but also for different types of therapies and as products for nature healing practices.
- The production of natural and aromatic oils are in short supply in South Africa and a very profitable type of farming. The Univ. of Venda may be able to help in this regard.
- Foliage production for the florist trade. To produce flowers is a highly competitive and technical exercise and should not easily be embarked upon. Foliage, however, is very attainable (plants like leather ferns grow very well in this area and are always in demand) and easy to propagate.
- Free-ranging poultry and egg production rather than battery production. With a small capital outlay and less animals and, the same income can be achieved because free range and organically produced products fetch higher prizes.

All these types of farming are labour intensive - addressing the unemployment problem.

#### 4.1.5 Conservation and development:

As a result of the top-down and unilaterally policy-making of the past, conservation is still being seen as a 'white man's toy' who has little consideration for the human element and poverty eradication. This negative concept needs to be changed and the Kranspoort community needs to be consulted and becomes active partners in any conservation activities. The Department of Economic Affairs and Development recently started a UNESCO Biosphere reserve initiative in the Soutpansberg. This project will be coordinated by a steering committee elected from stakeholders. Kranspoort will be an important component in the development leg of the Biosphere reserve. This will however not be achieved without the informed cooperation and participation of the community and needs to be discussed with them. Indigenous conservation methods also need attention and should be explored and re-introduced.

#### 4.2 RECOMMENDATIONS ON A PRACTICAL LEVEL:

##### 4.2.1 Infra Structure/eco-village

Roads, housing, water and power provision, etc. will have to be planned within the ideals of an eco-village if that is what the community decides upon. Because money may be in short supply, it is advisable that where possible the Kranspoort community should do the work themselves. The data indicates a considerable pool of technical skills that can be implemented in building the village. It may be possible to finance part of it through the **poverty relief and RDP housing programmes from national government**. In this manner, very necessary jobs will be created, people can get further experience and in the process develop a sense of ownership.

#### 4.2.2 Job creation:

Apart from the above, jobs need to be created on a more sustainable basis. This will be crucial for a successful resettlement. If it was only pensioners and retired people returning to Kranspoort it would have been easy to just establish it as a peaceful, rural retreat for people who can sustain themselves. The data shows a different picture - one of a young and mostly unemployed and poor community who needs to eke out some sort of living on the farm. Farming will occupy some people while a few will start small businesses. The majority will need some or other job on or near the farm. If they get jobs in the cities, the migratory job situation will be perpetuated. This will just add to the many female- and child-headed household, bringing with it a whole range of social problems. The following may provide some jobs, but this will by no stretch of the imagination solve the total unemployment problem:

- If the school, pre-school, day care centre, clinic and church are re-established, the involved departments and authorities should be requested to appoint people from the community and not from outside. This will need formal negotiations and a committee to take on this task should be appointed well in time. There are several well-qualified nurses, teachers, pastors, policemen and the like who can fill these positions.
  
- When the envisaged arts and crafts training centre is established, people with rudimentary skills in beadwork, sculpturing, sewing, pottery etc. should receive training to produce articles of high quality and unique design which can be sold to local tourists as well as on the broader market. There are few things

more demoralising than spending money and time on articles which nobody wants to purchase. I have investigated this problem over the years to try to find an answer - I found a good one in Greece, but subsequently also in South Africa. In Greece they have retrained local crafts people to produce folk art items of such exceptional quality that it has become collectors items for overseas tourists. I have no idea what Sotho folk art looks like, but there must be people who have knowledge about this -knowledge that can be coupled with technical expertise to produce these articles. The Venda traditional dress is particularly popular with tourists and the material can be used for imaginative articles. On the neighbouring farms there are people who are professional potters, leather workers, sculptors, dress makers etc. who can provide the training at the centre. Such articles can provide some income to otherwise jobless people. It may be a good idea to send a group of Kranspoort people to one or more of these successful projects to encourage them to explore these possibilities.

We are living however, in a technological era and with such a large group of unemployed, young people, the envisaged training centre should ideally also have a **technical component**. While only a few of the returning people are illiterate, many of them will suffer from the new illiteracy i.e. IT illiteracy. Not only can the centre provide computer training but may also embark on training young people in aspects like GIS technology, (Geographic Information System), soil analysis and other hands-on qualifications that will provide the trainees with better job opportunities. The

Department of Environmental Studies at the University of Venda offers such courses and can be contacted in this regard. One of the buildings may even be used for an internet café to provide access to the internet for the youth at Kranspoort and nearby communities. This can at the same time render a good income.

- **Tourism** will bring financial benefits to the community but the data shows that the returning group have no experience in running a tourism business and that can be the downfall of the whole exercise. One advantage is that Kranspoort is neighboured by several well-established tourism farms, most of whom who will be prepared to provide advice and assist people in starting and running the business. People will however need managerial skills to run the projects in a way that the whole community and not just a few individuals will benefit from it. This aspect of sharing, is the downfall of many community development projects and needs careful consideration. It is recommended that the assistance of **The national Development Agency** be obtained to assist in the training of people on the managerial and financial level. They finance a variety of NGO's which can provide such services.

Another possibility is to go into a partnership with **corporate tourism** who will then develop the total tourism infra-structure and share the profits with the community. The focus groups revealed that people are not opposed to this idea provided they are not exploited by big business without getting their fare share of the deal.

- Careful attention should be given to **the optimum use of the existing buildings**. Kranspoort can accommodate almost a 100 individuals in the existing structures which had been build by the Dutch Reformed Church to house mainly groups of children. Properly restored this can be used to accommodate people for workshops, environmental education, team building exercises and local functions. These buildings together with the hall and the church restored to its former charm can e.g. be used for local weddings which will provide the community with an income not only through renting out the buildings but also for catering for these functions. Kranspoort is of particular historical importance and despite the unfair eviction of people in the past, the community look back to it with a lot of nostalgia and goodwill. Kranspoort may become a popular attraction in the establishment of a missionary route.
  
- As a medical sociologist, I have an additional idea for some of the existing buildings - **that of a geriatric care centre**. The painful neglect of the elderly in all societies, but particularly amongst the black population, confronts one on a daily basis. With a well-established clinic, a good ambulance service and several well-trained nurses, one of the buildings may well be transformed into a type of retirement village where pensioners can come to live in a peaceful environment and be taken care of by dedicated people. It will however need some support from the Department of Health and Welfare specifically in terms of subsidies of people on welfare

grants. It may in addition become a safe haven where HIV-Aids victims can be looked after in a compassionate manner and die in comfort. There is funding available to deal effectively with the HIV-AIDS crisis.

It can become financially profitable if it allows the aged who are financially independent and can pay for their stay. Apart from rendering a widely-needed service it can also provide a good income for the community. The problem with such an undertaking is that the Kranspoort community will have to be prepared to share the farm with the elderly of 'outside' communities.

- The propagation and harvesting of medicinal and other indigenous plants should be investigated. The 'muti' trade runs into billions of rands in South Africa and while it can be a source of income at Kranspoort it should be carefully monitored to prevent over exploitation. Because it is so profitable, local communities in some cases remove and destroy the plants indiscriminately. To be used in a sustainable manner and produce a long-term income, an indigenous nursery can be created by the respondents who have indicated that they have knowledge of indigenous medicinal plants. It will also be popular with tourists. 'Food and Trees for Africa' may be of assistance in this regard.
  
- The existing hall should be optimally used. The establishment of a one-stop community service centre to interact with Provincial and National health and welfare services, private business, NGO's and whoever wants to assist the community or deliver a service, can do






**6 Occupation (you) Your returning family**

Employed (describe)	1		1
Unemployed	2		2
pensioner	3		3
Pupil/student	4		4

**7 Income per month**

Less than R500	1	R2500-R2900	6
R500-R900	2	R3000-R3400	7
R1000-R1400	3	R3500-R3900	8
R1500- R1900	4	R4000-R4400	9
R2000-R2400	5	R5500-R5900	10
R2500-R2900	6	R6000+	11

**8 Religious affiliation**


**9 Do you expect them to go to school at Kranspoort or nearby school?**

Yes at Kranspoort	1
Nearby school	2

**10 What does the house you are living in now have:**

Number of rooms	Electricity	Taps inside	Flush toilet	Telephone

**11 Which type of house do you want at Kranspoort?**

	yes	no
It can be smaller		
A bigger one		
At least the same size		
Must have electricity		
Must have water in the house		
Must have a flush toilet		

**12 Which type of chronic diseases do you or your family members suffer from?**

Disease	Nr. people	
		1
		2
		3

**13 Transport**

Own car	1
Public transport	2

**14 What are you going to do on Kranspoort?**

	1
	2
	3
	4
	5
I don't know	6

**15 Have you ever worked within tourism? ( Explain)**

--

**16 Which type of gov.assistance do you expect on Kranspoort? (which**

	1
I do not expect gov. assistance	2

**17 Do you have of the following skills that can be used at Kranspoort.**

Builder/bricklayer	1
Painter	2
Thatcher	3
Plumber	4
Carpenter	5
Electrician	6
Sewing	7
Knitting/crocheting	8
Other(x)	9

### 18 Skills that can be used for tourism

Traditional dancing	1
Playing a traditional musical instrument	2
Basketry (mats/baskets from reeds)	3
Pottery	4
Knowledge of Medicinal (muti) plants	5
Traditional healing (sangoma/nyanga)	6
Traditional food	7
Bee keeping	8
Sculpturing	9
Making of wooden utensils	10
Bead work	11
Traditional dress	12
Singing/telling of folk tales (camp fire)	13

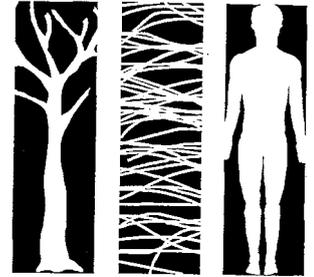
### 19 How would you like to see Kranspoort in 10 years time?

	1
I don't know	2

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# ENVIRONMENTAL SCAN REPORT

An Environmental Opportunities & Constraints Report including  
"Eco-Village" Development Guidelines

## KRANSPOORT : LAND RESTITUTION, PRESERVATION AND SUSTENANCE PROJECT

The Farm Kranspoort 48 LS (Portion 2 and  
Portion 3), Limpopo Province

Prepared for

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Reference No. 001.11.03 KRA

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## 1. INTRODUCTION

The Land Claims Court, in accordance with the provisions of the Restitution of Land Rights Act, Act 22 of 1994, has granted the restoration of the farm Kranspoort 48 LS (Portion 2 and Portion 3) on the 13<sup>th</sup> of June 2001, to the Kranspoort Community.

The Department of Environmental Affairs and Tourism (DEAT), with support from the Department of Land Affairs, the Limpopo Province Department of Agriculture and the U.S. Agency for International Development (USAID)/South Africa has initiated and funded a **land restitution, preservation and sustenance project** for the **Kranspoort Community**.

The "Land Restitution, Preservation and Sustenance Project" will assist the Kranspoort Community to implement the Kranspoort Restitution Programme. The primary objective of the programme is to develop and promote a local economy based on sustainable **eco-agriculture** and **eco-tourism** development.

One way of ensuring the sustainability of a land restitution, preservation and sustenance project is firstly to determine the socio-economic needs and aspirations of the whole community and, simultaneously, to assess the environmental capability of the area in which development will take place. Using environmental data categories (climate, geology, hydrology, flora, etc.) in an environmental evaluation exercise will ensure that all environmental consequences are recognised early on and taken into consideration in the planning of an area. After such an evaluation exercise, a concept land use plan, that takes cognisance of the environmental characteristics of the area, can be formulated which realises in development opportunities and constraints.

## 2. PURPOSE OF THIS DOCUMENT

The overall terms of reference for this environmental scan report is to assist the Kranspoort Community and planning team in their planning of the Kranspoort farm so as to ensure environmentally efficient and socially acceptable land uses and activities.

The main goal of this study is to outline the existing **biophysical conditions** of the Kranspoort farm, which is an essential precursor to the formulation of development guidelines and a concept land use plan for the area.

This document is a report which will serve to familiarise the Kranspoort Community and relevant planning team with the extent of available environmental information and the most obvious potential planning and **environmental opportunities** and **constraints**, which will form the basis for the indicative land use plan. The concept land use plan will provide an indication of "zones" where, from a spatial perspective, land uses that will support the proposed development option can be planned for.

The following **objectives** form the basis of the study:

- Establish an understanding of the intended development option;
- State of the Environment - The collection and synthesis of baseline environmental data;
- The determination of environmental / development opportunities and constraints; and
- The formulation of sustainable development guidelines, principles and criteria which will guide the intended development option.

### 3. METHODOLOGY

#### 3.1 Project Orientation & Planning

Relevant reports and other sources of information were reviewed as background orientation and the area was visited to ensure a full understanding of the farm in its current form, as well as all the critical issues that may affect the project. This also assisted the environmental team in defining the "reality" with respect to the development potential of the project and allowed for identification of additional research that may need to take place in future planning processes. The findings of this step also informed the environmental consultants of the potential boundaries of the proposed area and assisted in identifying critical issues.

#### 3.2 Situation Analysis

The extent of the physical infrastructure and the natural and social resource base was broadly assessed. The aim of this phase was to develop an information base that could guide the development of a land use concept. The information was used to generate answers to issues such as the ideal extent and location of a variety of land uses, infrastructure requirements, service needs, expected environmental impacts and the potential environmental legal requirements.

#### 3.3 Sources of Data

This study is aimed at data assimilation and evaluation rather than the collection of base data, consequently, the following sources were identified to furnish relevant information within the area of study.

- **Climate Statistics:** South Africa Weather Bureau (SAWB): MARA - AGR Station Data-Number: 07220991, 23° 9' S, 29° 34' E, HT: 894 m, Period: 1961-1990.
- **Engineering Geology:** DE VILLIERS, D. J., 2003. Kranspoort Development - Engineering Geological Evaluation, Phase 1: Desk Study, De Villiers, Cronje & Assoc. Consulting Engineering Geologists, 9 pp.
- **Socio-Economic Information:** GAIGHER, M.J., 2003. A Socio-Economic Profile of the Kranspoort Community.
- **Biophysical Information:** MACDONALD, A. W., GAIGHER, I., GAIGHER, R., BERGER, K. (ed.), 2003: A First Synthesis of the Environmental, Biological & Cultural Assets of the Soutpansberg, [www.soutpansberg.com](http://www.soutpansberg.com), Lajuma Synthesis Workshop, 9–10 May 2003.

This workshop was aimed at producing brief syntheses on as many of the components of the area's cultural and natural assets as was possible.

- **Background Information:** PlanPractice Town Planners. Kranspoort Sustainable Development Plan, 2001, A Guideline Document for the Sustainable Utilisation and Management of the Farm Kranspoort by the Kranspoort Community.

### 4. DEVELOPMENT OPTIONS

Developmental options or ideas that were recommended or explored as feasible uses or activities on the land, based on the developmental needs, priorities and preferences identified by the community/socio-economic profile investigation that was conducted, are interpreted as follows:

## 4.1 Developmental Needs, Priorities and Preferences

### 4.1.1 Settlement (Housing)

A total of 92 respondents and a further 405 family members are to resettle on Kranspoort. This number does not represent the total of the returning population as not all claimants took part in the socio-economic profile study. If the information of the 19 claimants who did not take part in the study is added, an estimated total of 600 people will return to Kranspoort. The exact number of returning people had to be estimated as some claimants were uncertain whether they would return in person and of the exact number of returning family members.

The average family size as represented by data is between 5 and 6 members with a range from 2 to 18. The size of a particular family will have to be taken into consideration when planning the size of the residential stands and houses.

### 4.1.2 Business Development

The following potential business development options were identified:

- **Eco/Culture-Tourism:** Lodge accommodation, game and bird viewing, hiking trails on cultural-historical, archaeological and natural trails, game farming etc;
- **Arts and Crafts Centre**
- **Accommodation:** Kranspoort can accommodate almost a 100 individuals in the existing structures which had been built by the Dutch Reformed Church to house mainly groups of children. Properly restored, this can be used to accommodate people for workshops, environmental education, team building exercises and local functions. These buildings together with the hall and the church restored to its former charm can e.g. be used for local weddings which will provide the community with an income not only through renting out the buildings but also for catering for these functions. Kranspoort is of particular historical importance and despite the unfair eviction of people in the past, the community look back to it with a lot of nostalgia and goodwill. Kranspoort may become a popular attraction in the establishment of a missionary route.
- **Indigenous nursery:** The propagation and harvesting of medicinal and other indigenous plants should be investigated. The 'muti' trade runs into billions of rands in South Africa and while it can be a source of income at Kranspoort, it should however be carefully monitored to prevent over exploitation. To be used in a sustainable manner and produce a long-term income, an indigenous nursery can be created by the respondents who have indicated that they have knowledge of indigenous medicinal plants.

### 4.1.3 Health Facilities

- **Geriatric Care Centre:** The painful neglect of the elderly in all societies, is a major problem. With a well-established clinic, a good ambulance service and several well-trained nurses, one of the buildings may well be transformed into a type of retirement village where pensioners can come to live in a peaceful environment and be taken care of by dedicated people. It may in addition become a safe haven where HIV-Aids victims can be looked after in a compassionate manner and live out their last years.

### 4.1.4 Educational Facilities and Services

For example:

- If the school, pre-school, day care centre, clinic and church are re-established, the involved departments and authorities should be requested to appoint people from the community and not from outside. There are several well-qualified nurses, teachers, pastors, policemen and the like who can fill these positions.
- When the envisaged arts and crafts training centre is established, people with rudimentary skills in beadwork, sculpturing, sewing, pottery etc. should receive training to produce articles of high quality and unique design which can be sold to local tourists as well as on the broader market.
- The existing hall should be optimally used. The establishment of a one-stop community service centre to interact with Provincial and National health and welfare services, private business, NGO's and whoever wants to assist the community or deliver a service, can do it there in a community-appropriate manner. Adult education, a small library (with donated books), community health programmes, cultural activities, entertainment etc. can be housed in this building.

#### 4.1.5 Mixed Agricultural Activities

For example:

- **Bee-keeping:** There are about 7 respondents who are knowledgeable about bee-keeping. Kranspoort is ideally suited for this type of farming. Both for the production of honey which is country-wide in short supply as well as for pollination purposes for the fruit farmers at Levubu.
- **Herb-farming:** Herbs have become very popular world-wide for culinary purposes but also for different types of therapies and as products for nature healing practices.
- The production of **natural** and **aromatic oils** are in short supply in South Africa and can be a very profitable type of farming. The Univ. of Venda may be able to help in this regard.
- **Foliage production** for the florist trade. To produce flowers is a highly competitive and technical exercise and should not easily be embarked upon. Foliage, however, is very attainable (plants like leather ferns grow very well in this area and are always in demand) and easy to propagate.
- **Free-ranging poultry** and **egg production** rather than battery production. With a small capital outlay and fewer animals, the same income can be achieved because free range and organically produced products fetch higher prices.
- The department of Agriculture estimates that the farm cannot carry more than 100 head of cattle and may be better suited for **game farming**. Because Kranspoort receives water from a small river, people plan big crops including fruit and vegetables. This is a viable option but needs to be seen in conjunction with conservation ideals and a scientific estimation of how much water will be available for farming after household water is provided for the returning community. If people start clearing the land indiscriminately, it may jeopardize the fragile eco-system. Coupled with this is the fact that Kranspoort does have its share of wild-life that may claim their share of available food. A proper estimation of fencing costs needs to be done before big scale fruit and vegetable farming are embarked upon. The only other alternative is to eradicate the wild-life, which will, in turn, impact negatively on tourism. The community will have to decide how they can realise their farming ideals within these constraints.

#### 4.2 Proposed Eco-Village / Eco-Agriculture Village

As a first phase development, a natural environment sensitive concept, an "**Eco-Village**" and/or "**Eco-Agriculture Project**" is proposed. The intention behind an eco-agriculture village is to create a **permaculture** industry that can assist the Kranspoort community and local economy by creating jobs but also help in the responsible management of natural resources.

## 4.2.1 Permaculture

Permaculture is an integrated design system for creating sustainable human environments. The word itself is a contraction not only of **permanent agriculture** but also of **permanent culture**, as cultures cannot survive for long without a sustainable agricultural base and land use ethic. On one level, permaculture deals with plants, animals, buildings, and infrastructure (water, energy, communications, etc). However, permaculture is not about these elements themselves, but rather about the relationships we can create between them by the way we place them in the landscape.

The aim is to create systems that are ecologically-sound and economically viable, which provide for their own needs, do not exploit or pollute, and are therefore sustainable in the long term. Permaculture uses the inherent qualities of plants and animals combined with the natural characteristics of landscapes and structures to produce a life-supporting system for a house and/or village, using the smallest practical area. Permaculture is based on the observation of natural systems, the wisdom contained in traditional farming systems, and modern scientific and technological knowledge.

In brief, it is a philosophy of working with, rather than against nature; of protracted and thoughtful observation rather than protracted and thoughtless labour; and of looking at plants and animals in all their functions, rather than treating elements as a single-product system.

The permaculture system also has a basic life ethic, which recognises the intrinsic worth of every living thing. A tree is something of value in itself, even if it has no commercial value for us. That it is alive and functioning is what is important. It is doing its part in nature; recycling biomass, providing oxygen and carbon dioxide for the region, sheltering small animals, building soils, etc.

When the needs of a system are not met from within the system, we pay the price in energy consumption and pollution.

### 4.2.1.1 Permaculture Principles

There are two basic steps to good permaculture design. The first deals with laws and principles that can be adapted to any climatic and cultural condition, while the second is more closely associated with practical techniques, which change from one climate and culture to another. The principles come from various disciplines: ecology, energy conservation, landscape design and environmental science, and are briefly as follows:

- Relative Location: every element (such as house, garden, dam, road, etc.) is placed in relationship to another so that they assist each other;
- Each element performs many functions;
- Each important function is supported by many elements;
- Efficient energy planning for house and settlement (zones and sectors);
- Emphasis on the use of biological resources over fossil fuels;
- Energy recycling on site (both fuel and human energy);
- Using and accelerating natural plant succession to establish favourable sites and soils;
- Polyculture and diversity of beneficial species for a productive, interactive system; and
- Use of natural patterns for best effect.

Ways the Kranspoort Community and planning team can implement these earth-care ethics in Kranspoort are as follows:

- Think about the long-term consequences of your actions. Plan for sustainability;
- Cultivate the smallest possible land area. Plan for small-scale, energy-efficient intensive systems rather than large-scale, energy-consuming extensive systems;
- Be diverse, polycultural (as opposed to monocultural). This provides stability and helps to be ready for change, whether environmental or social;
- Use low-energy environmental (solar, wind, and water) and biological (plant and animal) systems to conserve and generate energy;
- Bring food-growing back into the homes and villages, where it has always traditionally been in sustainable societies;
- Assist people to become self-reliant, and promote community responsibility;
- Reforest the earth and restore fertility to the soil; and
- Use everything at its optimum level and recycle all wastes.

5. THE STUDY AREA

5.1 Regional Setting and Local Setting

The farm, Kranspoort, is situated in the **Western Soutpansberg** in the north-western Limpopo province, approximately 21 km east of Vivo and 45km to the west of Louis Trichardt. The Louis Trichardt-Vivo Road (Road R522) traverses the farm.

The Soutpansberg is the northernmost mountain range of South Africa. The Soutpansberg topographical zone lies between 23° 05' S & 29° 17' E and 22° 25' S & 31° 20' E. From east to west, the Soutpansberg spans approximately 210 km, and from north to south it is 60 km at it's widest and 15 km at it's narrowest. Its altitude ranges from 250 m above sea level to Hangklip 1719 m (second-highest peak) and Letjuma 1748 m [the highest peak] on the western half of the mountain. However, Letjuma is not the highest point in the area. About 40 km to the west of it lays another mountain range, the Blouberg, with a maximum altitude of 2050 m. Blouberg belongs to the same geological system as the Soutpansberg, but they are referred to as separate geographical entities.

**Figure 1: Regional Locality Plan**

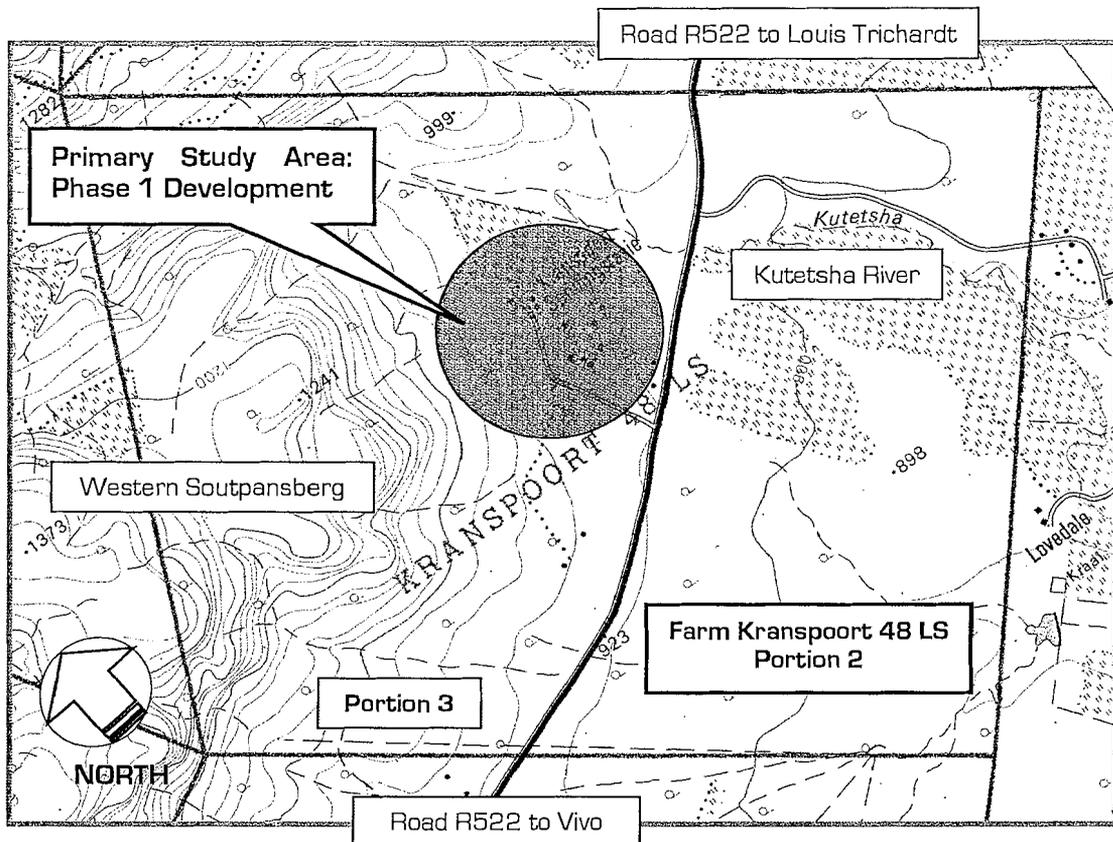


5.2 Primary Study Area

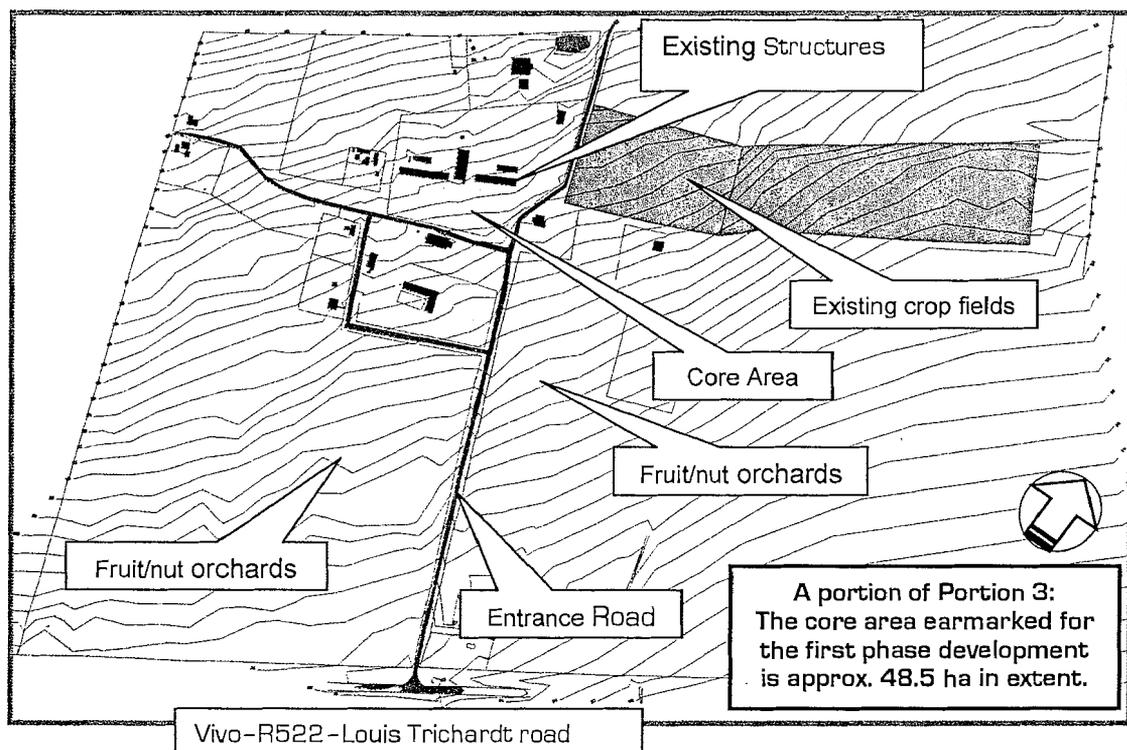
An exclusive resettlement use area, just north of the Louis Trichardt-Vivo Road (Road R522), arranged along and either sides of the existing main entrance road were earmarked

as the area for the first phase of development. This area represents the residential core of the settlement and is the primary study area for this environmental scan investigation.

**Figure 2: Primary Study Area Locality Plan 1:50 000 2329 AB Vivo**



**Figure 3: Phase 1 Development Study Area**



### 5.3 Description of Property and Extend

The farm Kranspoort 48 LS, measuring 1 542.8568 ha in extent, comprises two portions, namely:

- **Portion 2** (a Portion of Portion 1), measuring 645.2589 ha; and
- **Portion 3**, measuring 897.5979 ha.

### 5.4 Existing Land Use

A small portion of the Kranspoort Community is resident on the farm. Remnants of agricultural activities that did take place on Kranspoort still exist - a citrus orchard and a few mango trees. The citrus orchard is not well-established. The following facilities / buildings do exist on Kranspoort:

- **Residential**
  - Seven (7) brick houses;
  - Five (5) traditional houses; and
  - Two (2) brick houses without roofs (ruins).
- **Engine room**
  - One (1) engine room with an engine for electricity.
- **Business facilities**
  - Two (2) shops, of which one is operational, were found on Kranspoort.
- **Infrastructure**
  - There are two boreholes. One is equipped with an engine and a pump. The other borehole is not equipped at all (the windmill collapsed);
  - There are four water tanks. One of the water tanks has a filter system. The other three water tanks are built with bricks. The reticulation system comprises two to three kilometres of pipe to the orchard;
  - A micro-irrigation system, with a filter, was found on Kranspoort;
- **Agricultural and farming activities**

The agricultural and farming activities that do occur include:

  - Fruit orchards and cattle farming on Portion 2 of Kranspoort;
  - Cattle farming on Portion 3 of Kranspoort;
  - The largest part of the Kranspoort is used for grazing. Six (6) fenced grazing areas exist and four (4) cattle lodges are found on Portion 3 of Kranspoort and twelve (12) fenced, grazing areas are found on Portion 2 of Kranspoort;
  - Dry land - Forty five (45) hectares of dry land exist on Portion 2 of Kranspoort;
  - Irrigated land - Twenty to thirty (20 to 30) hectares of irrigated land do exist on Portion 2 of Kranspoort;
  - Fruit Trees - Orange, naartjie, mango, grapefruit and nut trees exist on Portion 3 of Kranspoort; and
  - Plantations - Three (3) plantations are found on Kranspoort.
- **Other**
  - A kitchen;
  - Two (2) ablution blocks;
  - Seventeen (17) rooms that provide for overnight facilities;

- A church;
- A school consisting of six rooms (classrooms and an office); and
- Ablution facilities in the teacher's house.

These facilities are in a very bad state and need extensive upgrading before they can be used to accommodate people.

## **6. THE NATURAL ENVIRONMENT**

### **6.1 Climate**

The climate of the Soutpansberg area is strongly influenced by the east-west orientated mountain range. It represents an effective barrier between the south-easterly maritime climate influences from the Indian Ocean and the continental climate influences (predominantly the Inter-Tropical Convergence Zone and the Congo Air Mass) coming from the north. The mountains give rise to wind patterns that play an important role in determining local climates. These wind effects include wind erosion, aridification and air warming.

In summary, the range ends up giving rise to three distinctive climatic regions:

- Humid on the southern and eastern slopes of the higher peaks,
- Sub-humid to the south of the range and
- Semi-arid to the north of the Soutpansberg.

In terms of seasonality, the region has only two clearly differentiated seasons:

- the cool, dry season (May to August) and
- the warm, wet season (October to March) — with April and September being transition months.

#### **6.1.1 Temperature**

[Refer to Table 1]

- In the Soutpansberg temperature is strongly associated with seasonal conditions and topography.
- Warm Wet Season (WWS) — Dec–Feb. Temperatures are relatively warm, ranging from 16 degrees Centigrade to 40 °C.
- Cool Dry Season (CDS)—May–Aug. Temperatures range from 12–22 °C. Cool and sometimes chilly cold.

#### **6.1.2 Rainfall**

[Refer to Table 2]

The area receives one cycle of rainfall that extends from October of the previous year and ends in March of the following year (approximately 182 days). The dry season runs from April to October. Rainfall distribution is greatly influenced by the Soutpansberg. In the middle of the Soutpansberg's annual rainfall can reach 2 000mm (Entabeni) and in the western part of the Soutpansberg rainfall can be as low as 340 mm. Rainfall peaks during January and February. Average yearly rainfall at Kranspoort is 449 mm.

**TABLE 1 - AIR TEMPERATURE IN DEGREES CELSIUS**

	AVERAGE OF DAILY				MAXIMUM [TX] P = 28 Years											MINIMUM [TN] P = 28 Years													
	MAX	MIN	MEAN	RANGE	HIGHEST (TXX)		AVERAGE NUMBER OF DAYS WITH TX					LOWEST (TXN)				HIGHEST (TNX)		AVERAGE NUMBER OF DAYS WITH TN					LOWEST (TNN)						
	TX	TN	(TX+TN)/2	TX-TN	MAX	YY/DD	MEAN	>=35	>=30	>=25	>=20	>=15	<10	MEAN	MIN	YY/DD	MAX	YY/DD	MEAN	>=20	<15	<10	<5	<0	<-5	MEAN		MIN	YY/DD
J	30,4	18,0	24,2	12,4	39,5	66/06	36,3	3,8	18,1	28,1	30,8	31,0	0,0	22,2	17,0	72/23	24,3	84/30	21,5	5,3	2,5	0,0	0,0	0,0	0,0	13,7	10,2	79/25	J
F	29,6	17,7	23,6	11,8	39,7	80/15	34,8	1,7	12,9	25,5	28,1	28,2	0,0	22,6	15,4	76/12	23,7	69/03	21,0	3,6	2,5	0,0	0,0	0,0	0,0	13,4	10,4	71/20	F
M	28,7	16,2	22,5	12,6	38,0	84/03	34,6	1,7	11,6	26,6	30,5	31,0	0,0	21,5	17,4	75/18	23,4	65/06	20,1	1,4	8,7	0,4	0,0	0,0	0,0	11,0	7,4	86/28	M
A	26,8	12,9	19,9	14,0	36,9	87/04	32,9	0,1	6,1	21,1	28,8	30,0	0,0	19,3	15,4	74/03	20,2	88/04	18,1	0,0	21,1	5,5	0,2	0,0	0,0	6,9	0,4	80/21	A
M	24,9	8,1	16,5	16,8	35,0	87/14	30,5	0,0	2,0	15,3	29,0	30,8	0,0	17,7	12,4	82/02	17,5	83/15	15,0	0,0	30,1	21,2	5,4	0,1	0,0	2,4	-1,5	81/31	M
J	22,4	4,6	13,5	17,8	30,6	72/01	27,8	0,0	0,1	6,7	23,9	29,5	0,0	15,9	10,2	68/03	15,0	62/22	12,0	0,0	29,9	26,9	17,7	2,3	0,0	-0,8	-4,0	81/11	J
J	22,6	4,6	13,6	18,0	30,4	83/15	28,0	0,0	0,1	7,5	25,1	30,6	0,0	15,9	10,7	73/29	15,0	90/30	11,9	0,0	31,0	28,2	18,7	2,1	0,0	-0,3	-3,0	79/26	J
A	24,6	7,1	15,9	17,5	34,4	68/31	31,6	0,0	3,2	15,7	27,0	30,4	0,0	15,9	10,3	74/12	18,5	74/21	14,5	0,0	30,6	23,1	9,3	0,5	0,0	1,2	-4,2	72/02	A
S	27,3	10,9	19,1	16,4	38,0	79/23	35,4	1,3	10,5	21,1	27,0	29,4	0,1	15,8	8,0	74/04	20,2	70/29	16,9	0,0	26,1	11,3	1,2	0,0	0,0	4,5	1,1	81/07	S
O	28,2	14,1	21,1	14,1	39,2	79/02	36,4	2,7	13,3	22,3	28,4	30,6	0,0	16,8	11,9	73/16	23,1	68/27	19,2	0,4	18,1	2,6	0,1	0,0	0,0	8,4	3,4	87/05	O
N	28,9	16,1	22,5	12,8	40,6	81/08	36,5	2,9	14,3	23,6	27,8	29,8	0,0	18,1	10,1	68/11	24,1	87/20	20,6	1,8	9,5	0,6	0,0	0,0	0,0	10,7	7,4	72/20	N
D	29,6	17,3	23,5	12,3	39,5	82/23	35,9	2,8	16,0	26,6	30,4	31,0	0,0	20,3	14,4	61/02	25,8	70/17	21,3	3,5	4,7	0,1	0,0	0,0	0,0	12,2	9,8	86/12	D
YR	27,0	12,3	19,7	14,7	40,6	81/08	38,3	17	108	240	337	362	0	13,0	8,0	74/04	25,8	70/17	22,5	16	215	120	53	5	0	-1,6	-4,2	72/02	YR

**TABLE 2 - PRECIPITATION (and FOG), DRY- AND WETBULB TEMPERATURES, RELATIVE HUMIDITY and CLOUD COVER**

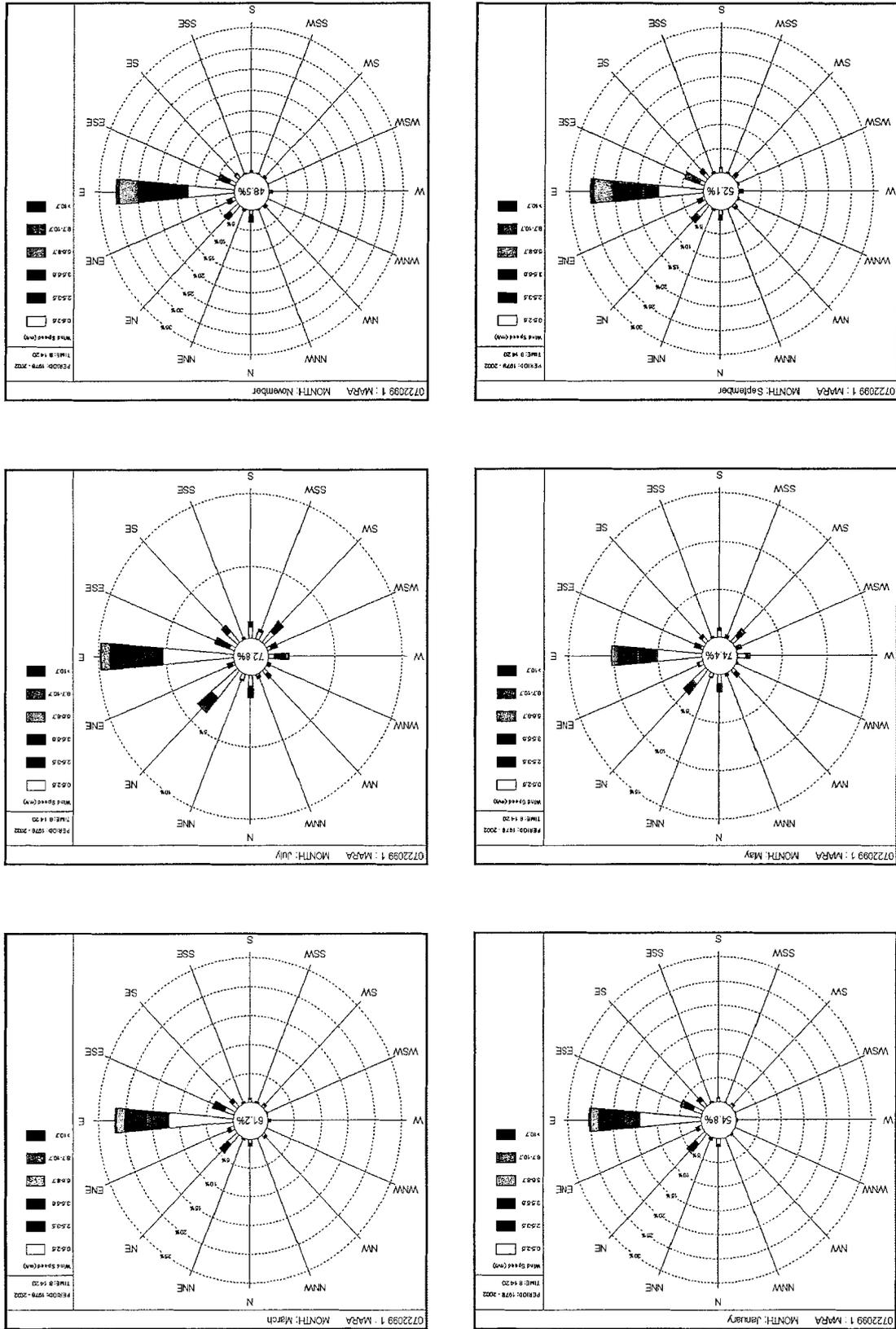
Mth	24 HOUR MAX	TOTAL PER MONTH / YEAR			PRECIPITATION {R (mm)} P = 29 Years										TEMPERATURE {°C} REL. HUM. (%) CLOUD									
		YR/ DD	MAX	YEA R	AVE		1		5		10		30		P = 24 Years		WET BULB P = 29 Years		REL. HUM. (%) P = 29 Years		CLOUD			
TOT	RXX	DD	YEA R	YEA R	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	TH HA	SN FOG	AVE NO. OF DAYS WITH	DRY BULB P = 29 Years	WET BULB P = 29 Years	REL. HUM. (%) P = 29 Years	CLOUD		
J	81	97	76/	237	1981	1	8,7	22	3	6,4	3,7	2,4	0,7	5,4	0,0	0,0	0,0	21,8	28,6	23,9	19,7	78	48	
F	56	120	80/	16	1980	2	191	1984	8,0	15	2	5,3	2,8	1,9	0,4	0,0	0,0	20,9	28,0	23,2	19,4	82	65	
M	54	194	77/	06	1977	0	236	1964	6,5	12	0	4,8	2,1	1,3	0,4	0,0	0,0	19,6	27,4	21,8	18,4	84	47	
A	36	53	06	71/	1987	1	115	1986	4,4	11	1	3,0	1,6	1,1	0,4	0,0	0,0	16,6	25,8	18,9	15,2	87	44	
M	11	48	85/	13	1985	0	59	1985	2,3	7	0	1,4	0,6	0,3	0,1	0,0	0,0	12,5	24,1	15,5	12,4	85	61	
J	5	32	88/	29	1988	0	57	1988	1,4	5	0	0,8	0,3	0,1	0,0	0,0	0,0	8,6	21,7	12,8	9,5	85	35	
J	5	32	88/	29	1988	0	57	1988	1,4	5	0	0,8	0,3	0,1	0,0	0,0	0,0	8,6	21,7	12,8	9,5	85	35	
J	2	16	84/	11	1984	0	30	1984	0,7	4	0	0,4	0,1	0,1	0,0	0,0	0,0	8,5	21,7	13,1	9,5	84	34	
A	3	47	79/	26	1989	0	52	1979	1,1	5	0	0,4	0,1	0,0	0,0	0,0	0,0	11,5	23,8	16,0	11,4	77	34	
S	17	101	85/	04	1989	0	118	1985	2,3	6	0	1,5	0,6	0,5	0,2	0,0	0,0	15,9	26,5	19,3	13,9	71	47	
O	39	70	73/	16	1975	2	129	1988	5,3	11	2	3,8	2,0	1,1	0,2	0,0	0,0	18,9	27,0	21,0	16,0	71	40	
N	67	87	67/	17	1980	7	136	1977	8,1	15	3	6,1	3,8	2,1	0,4	0,0	0,0	20,6	27,4	22,0	17,7	72	45	
D	78	127	62/	12	1975	11	189	1984	8,9	19	4	6,0	3,2	2,1	0,6	0,0	0,0	21,4	28,0	23,0	18,9	76	48	
R	449	194	77/	06	1980	7	136	1977	8,1	15	3	6,1	3,8	2,1	0,4	0,0	0,0	20,6	27,4	22,0	17,7	72	45	
Y	449	194	77/	06	1980	7	136	1977	8,1	15	3	6,1	3,8	2,1	0,4	0,0	0,0	20,6	27,4	22,0	17,7	72	45	
Y	449	194	77/	06	1980	7	136	1977	8,1	15	3	6,1	3,8	2,1	0,4	0,0	0,0	20,6	27,4	22,0	17,7	72	45	

Period = years covering the data for all the columns of both  
 P = Average number of years covering the data in the columns  
 TN = Average minimum air temperature  
 TX = Average maximum, in P years.  
 TNN = Lowest minimum, MILN = lowest in P years.  
 TXX = Highest maximum, MAX = highest in P years.  
 TXN = Lowest maximum, MILN = lowest in P years.  
 TNX = Highest minimum, MAX = highest in P years.  
 AVERAGE e.g. 08, 14, 20 = MEANS of observations which were made on these hours (SAST).  
 TH = Thunder, HA = Hail, SN = Snow, FOG = fog.  
 (Number of days (NOD) with TX >= 10) = (NOD in the month - NOD with TX > 10).  
 (Number of days (NOD) with TN < 20) = (NOD in the month - NOD with TN >= 20).  
 > signifies greater than, < signifies less than or equal to.  
 > signifies greater than, < signifies less than or equal to.

6.1.3 Wind

The bi-monthly wind direction and speed is illustrated below.

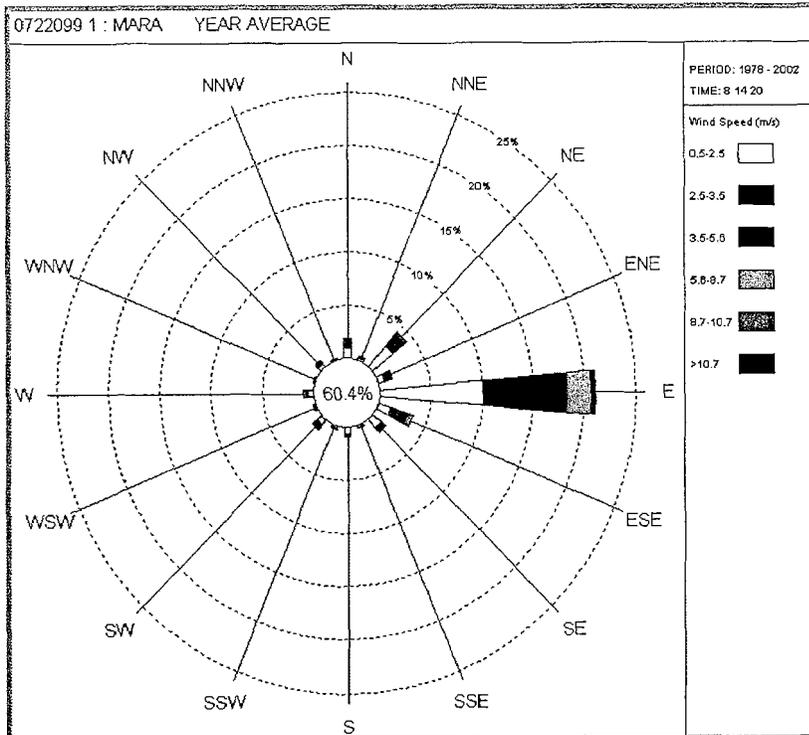
Figure 4: Wind Direction and Speed



### 6.1.3.1 Wind Year Average

The average yearly wind direction and speed is illustrated below. The local prevailing wind direction is dominant **east**.

**Figure 5: Year Average Prevailing Wind**



### 6.1.4 Cloud Cover

The Warm Wet Season is associated with convective clouds that occur due to both intense insolation because of the prevailing sun in the southern hemisphere, and also due to the orographic lifting of moist air over the Soutpansberg. The Cool Dry Season is mainly associated with clear skies except on top of the high ground where cloud, fog or mist are common, especially during the morning, before the sun is intense enough to dissolve the clouds.

### 6.1.5 Influence of the Soutpansberg on Rainfall and Wind

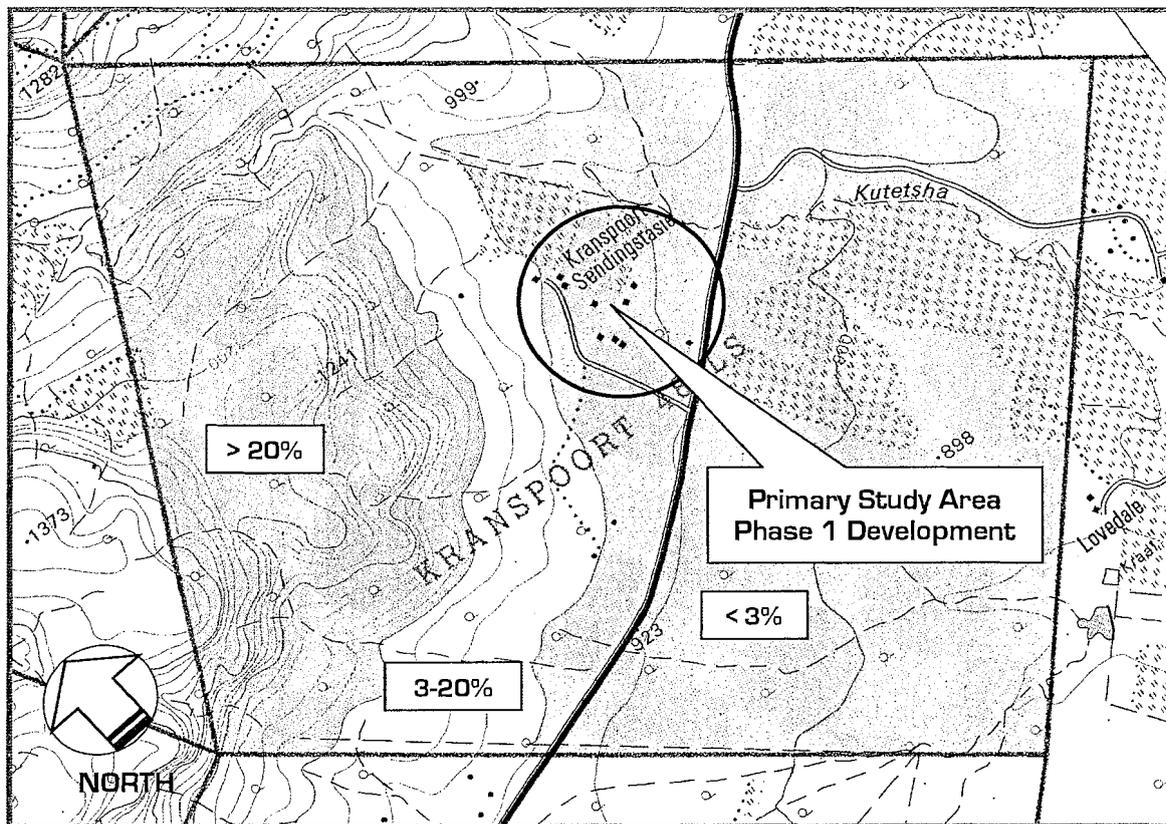
- When moist air is forced to rise by a mountain barrier, it results in the dry adiabatic cooling of the ascending air. When saturated, it cools at the saturated adiabatic lapse rate until it crosses the mountain. This process can result in precipitation.
- The mountain configuration also creates funnelling, large-scale divergence and convergence of wind velocity.
- These effects in turn can create descending motion which will result in dissolving clouds or vertical motion creating deep cloud.

**All these different forms of effects of orography on rainfall and wind create diverse micro-climates in the study area and result in diversity of fauna and flora.**

### 6.2 Geomorphology and Slope

The dominant geomorphological feature of the study area is the Soutpansberg mountain range to the north (Portion 3) and the relatively flat plains to the south (Portion 2). The remainder of the terrain is characterised by gently sloping midslopes and footslopes linking the plains to the mountain. The farm's altitude ranges from 898 m above sea level (Portion 2) to 1 241m on the northern portion of the farm (Portion 3). The only excessively steep gradients are those encountered above the 1 000m contour line where slopes greater than 20% are common. Refer to Figure 4.

**Figure 6: Slope Analysis**



**Table 3: Legend - Slope**

Legend		
	Characteristic	Slope
	Plains-Footslope	< 3%
	Footslope-Midslope	3-20%
	Midslope-Crest-Cliffs-Plateau	> 20%

### 6.3 Geology and Geography

*An Engineering Geological Evaluation - Phase 1: Desk Study by De Villiers, Cronje & Assoc. Consulting Engineering Geologists.*

### 6.3.1 General Geology

#### References:

- Geotechnical Report : G. Brand I, Council for Geoscience, Pietersburg. Also : Geology of the Soutpansberg Group, Waterberg Supergroup.
- Geological Map 2328 PIETERSBURG, to scale 1 : 250 000, and Explanation.

The Soutpansberg Group occupies a graben within the Limpopo belt situated on the northern rime of the Kaapvaal craton. The Soutpansberg geological system has an approximate age of 1,7 giga-years. The mountain was created by successive ESE–WSW faulting, ranging over a distance of 560 km. This faulting was caused by the action of the Limpopo mobile belt (2,7 giga-years old) (Truswell 1977) — a weak zone in the earth's crust where there is seismic movement. Through the action of the mobile belt, parallel faulting occurred to the north and south, giving rise to the Soutpansberg fault zone. This faulting caused the strata to dip to the north, and rise in the south, thus forming the main cliff lines which are south-facing with the northern side dipping at an incline of approximately 45°.

The main rock formations of the mountain comprise of sandstone, quartz sandstone and quartzite, with a couple of igneous intrusions consisting mainly of dolerite. The main soils of the area are derived from weathered sandstone and quartzite, giving rise to sandy soils. In general these soils are relatively acidic and nutrient poor. The weathered lava gives rise to rich clay soils.

Mineral rich areas are to be found both north and south of the mountain, whereas the mountain itself is relatively poorly mineralized. The most abundant mineral is quartz, but of poor quality. Other minerals are: iron, copper, refractory flint, salt, sillimanite, gold and coal.

A study of above Geotechnical report as well as the published **Geological map** indicates the Stratigraphic sub-division of the rocks and rock types found occurring on the terrain to be as follows:

- A pinkish grey to grey **Gneiss** of the Hout River Gneiss granitoid rocks.
- A **volcanic succession** rocks in the form of basalt with rare discontinuous intercalations of clastic sediments in the form of quartzite, shale and minor conglomerates.
- A **clastic succession** comprising mainly Quartzite, and Sandstone with minor pebble washes.
- **Dykes and sills of Diabase** intruded into the Soutpansberg rocks.
- **Quaternary deposits** in the form of unconsolidated soils and hillwash scree.

#### Gneiss and Granitoid Rocks

The Geological map indicates a small portion of the farm to be underlain by Granitoid type rocks. These rocks comprise the Hout River Gneiss consisting of grey biotite gneiss and pegmatitic rocks. Indications are that some rock outcrops occur as exposed under the Basalt at the foot of the northern mountain range. The Gneiss largely underlies the flat country side on the southern portion of the farm and is here poorly exposed as rock outcrops.

#### Soutpansberg Group

The Soutpansberg rocks rests un-conformably on Gneisses of the Limpopo Belt and Bandelierskop Complex. The rocks give rise to a mountainous, wedge-shaped terrain, which extends from the Kruger National Park in the east to the Blouberg in the west.

This group of rocks is represented on the farm Kranspoort 48 by:

- The **Sibasa Formation** that is dominantly a volcanic succession consisting of Basalt that are amygdaloidal and massive in structure. Some minor intercalated Quartzites and Shales may be present.
- The **Wylie's Poort Formation** comprising mainly resistant pink Quartzite and Sandstone with minor pebble washes. These rocks form the massive mountains on the northern boundary of the farm.

The Soutpansberg strata are tilted gently towards the north and are truncated by numerous Faults. The rocks are unaffiliated, but are in places strongly fractured.

#### **Diabase Intrusives**

Diabase intrusive rocks in the form of dykes and sills are expected to be present as:

- Dykes that are intruded often along fault planes.
- Sills that were mainly emplaced along the interface of Shale and the competent Quartzite.

#### **Quaternary Deposits**

These sedimentary deposits were found to consist of:

- Thick deposits of transported hillwash in the form of dark red silty to clayey SAND to sandy Clay.
- Colluvial soils derived from the decomposition of the Diabase and Basalts consisting of dark red silty to sandy CLAY.
- Transported talus scree material comprising rounded and sub-rounded Quartzite and Sandstone boulders, cobbles, pebbles and gravel in a matrix of the above soils.

### **6.3.2 Site Geology**

(Refer to Figure 7).

The study area is mainly covered by

- Surficial transported soils, overlying
- Residual decomposed Sedimentary and volcanic rocks, overlying
- Gneiss.

The area inspected was underlain by thick deposits of transported Hillwash and colluvial soils overlying transported scree material.

**No rock outcrops were found to be present on the inspected site.**

### **6.3.3 Soil Types**

The nature of the transported soil horizons is strongly controlled by topography, as is the degree of weathering in the residual material. Various soil types are expected to occur on the site and can be grouped under the following: -

- Transported soils for depths of more than 2 to 3 metres.
- Insitu residual soils from weathered bedrock at depth.

These soils are expected to comprise mainly the following types:

- Transported materials consisting of hillwash and colluvium.
- Transported Sedimentary soils (coarse and medium grained clayey Sands to sandy Clay).
- Transported scree material in the form of rounded and sub-rounded Quartzite and Sandstone boulders, cobbles, pebbles and gravel in a matrix of the above soils.
- Residual soils comprising decomposed and highly weathered Quartzite, Sandstone, and Shale, as well as weathered Diabase and Basalt.

#### 6.3.4 Transported soils

No backactor excavated trial pits were dug during the site inspection. Open excavated holes are scarce on the farm at present and old excavated pit latrine holes were inspected.

A representative soil profile that is thought to be indicative of the terrain soil morphology can be given as:

- 0,0 – 1,0 m. Dark red medium dense to stiff, silty to sandy CLAY. Transported Hillwash and Colluvium.
- 1,0 – 1,5 m. Abundant Quartzite and Sandstone boulders, cobbles and pebbles in a matrix of dark red medium dense to stiff, silty to sandy CLAY. Transported Scree material.
- 1,5 – 2,0 m+ Dark red brown, transported sandy CLAY.

**The above is however only an indicative evaluation of what can be expected on the terrain. This data must be proven by detailed soil investigations to determine the actual soil properties and lateral distribution of the soils that occur on the terrain.**

#### 6.3.4 Anticipated Engineering Geological Properties

##### 6.3.4.1 General soil conditions

The following conditions are expected to be present on the terrain but are only indicative in this desktop study appraisal:

- Transported soil cover to be moderately to extensively thick (0,5 m to 3m).
- Transported Scree material of variable thicknesses.
- Soils are mainly sandy to silty Clay becoming possibly Ferruginised with depth.
- Scattered rock outcrops or shallow sub-outcrops are expected to be located more towards the north at the foot of the mountain range.

##### 6.3.4.2 Permeability

The permeability is expected to

- Be moderate to poor within the clayey subsoil (K values in the order of 10<sup>-6</sup> to 10<sup>-8</sup> cm/sec),
- to improve where sandy soils are present, possibly towards the north (K values in the order of 10<sup>-4</sup> to 10<sup>-6</sup> cm/sec).

### 6.3.4.3 Soil Reactivity

- Possible **expansivity of a Moderate to High degree** is expected to be present in the soil structure in the upper sandy clay soil horizons. This could present a problem for house foundation which is normally 500 mm below ground surface.
- The reddish brown Diabase derived soils in the vicinity of Diabase dykes are expected to be subject to seasonal moisture change movements.
- The sandy soils that could be present more to the north at the mountain slopes, are expected to exhibit some collapse settlement reactivity.

The soils underlying the inspected terrain that is to be developed in the initial stages of the development project, comprises mainly the thick, sandy CLAY soils. Cracks in the existing buildings are indicative of potential **Moderate to High Expansivity**.

**Detail Soil testing during the design stage for structures and houses are strongly recommended.**

### 6.3.4.4 Excavations

- Easy to moderate excavations in the upper top soil layers but becoming harder with depth.
- Excavations are usually possible by means of mechanical tools, eg. Jack-hammers, etc., to expected depths of up to 3 meters below ground surface.
- Moderate to hard excavations where Basalt or Quartzite bedrock is shallow. Blasting is usually required when excavations for foundations, service trenches, basements, etc. are to be made where hard rock occurs.

### 6.3.4.5 Erodibility of the Soils

- The transported colluvial soils, as well as the decomposed bedrock materials are expected to be susceptible to erosion should they be exposed to runoff water at a high velocity.
- This factor is important within a built-up area where storm water must be discharged.
- Erosion often takes place rapidly and is very difficult to control once the organically enriched topsoil has been lost.
- It can therefore adversely affect the quality of the environment within the planned development.
- Erodible soils include strongly dispersive materials, fissured clays, thick mantles of fine colluvium and duplex paleo-soils.
- The highest erosion hazard will obviously exist on steep gradients.

The erosion potential for this terrain is expected to be very high where the Masocheni formation materials are present and donga formation is most likely to be present. Surface runoff is expected to be by means of sheetflow.

**It is none the less advisable to protect all storm water channels as well as road surfaces where possible.**

### 6.3.4.6 Foundation Conditions

Sub-surface conditions on site where foundations of structures are concerned are expected to be as follows:

- **Potential expansiveness** for all clayey soil layers is expected to be **Medium to High**.
- The apparent extensive thicknesses of transported mountain scree material in the form of boulders, cobbles and pebbles in a sandy clay matrix, that underlies the upper transported hillwash materials could serve as a basis for structure foundations except where such a layer occurs at depths deeper than 500 mm below ground surface.
- Weathered GNEISS bedrock is expected to be present at fairly variable but often extensive depths below ground surface.
- The cemented Ferricrete that is expected to occur within the transported and residual materials should provide a good foundation base for residential structures.

It is therefore anticipated that foundation design for normal residential dwellings

- will be of a moderately problematic type,
- will require attention to accommodate expected differential heave problems where foundations are placed on the clay soils.

#### 6.3.4.7 Pit Latrines

Problems with conventional Pit latrines are anticipated where:

- Shallow rock outcrops and sub-outcrops occur. (This is not expected to occur on the major portion of the terrain).

It is suggested that Improved Ventilated Pit latrines be considered for this terrain as an interim measure before proper waterborne sewage implementation is established. It will improve the life and stability of the I.V. Pit latrines if they could be lined.

#### 6.3.4.8 Construction Materials

Construction materials for roads, streets and paved areas are not expected to be available on the development site and will have to be imported from a borrow source outside the terrain.

### 6.3.5 Proposed Further Terrain Investigation

We recommend that the terrain be further investigated by means of Phase II Terrain Survey. This will entail a detail Geotechnical Terrain investigation to ascertain the thickness of the soil horizons and the qualitative soil mechanic parameters of the various soils present.

#### 6.3.5.1 General Guidelines:

A desk study of all available information will be followed by a detail site investigation. This should be followed by:

##### Fieldwork:

- An over-walk reconnaissance of the mapped area to check and confirm the mapped data and air photo-interpretation.
- The excavation of limited backactor trenches to determine the thickness of weathering, the sequence of soil horizons and the depth to bedrock. This will include detail descriptions of soil and rock profiles where applicable.
- The amount of test holes and trail pits to be excavated will be dependent on the complexity of the geology and soil types.

- In-situ tests on the soil to determine soil permeability where applicable (and where possible).
- The taking of representative soil samples for laboratory testing and analysis. The testing will comprise of the following where applicable:
  - Grading and Atterberg Limits.
  - Relative density
  - In-situ density and percentage soil moisture.
  - Settlement potential
  - Clay type and reactivity.
  - Limited CBR Tests (If required).
  - Sophisticated testing where necessary (Shearbox, double odometer, etc.).
  - Penetration testing where necessary (Dynamic Cone Penetrometre tests, Standard penetration test, etc.).

**A comprehensive Geotechnical Phase II Report** will then be prepared, and will address the Geotechnical aspects in sufficient detail to enable the Town planners to produce meaningful layout plans for the area. The Geotechnical data will also be of sufficient detail to conform to NHBRC requirements and standards.

#### 6.3.6 General

All Phases of the detail terrain investigation must be conducted in close liaison with the appointed town planners and project coordinators who will also monitor the data as it becomes available.

### 6.4 Hydrology

The Western Soutpansberg is an important water catchment area, serving as a sponge for water supply to important surrounding agricultural areas. A deep and rocky kloof is the origin of a perennial river, the Kutetsha River, which traverses Kranspoort, with several waterfalls in the mountainous area. A water channel originates at the Kutetsha River, on Kranspoort, and provides water to adjacent farms. Kranspoort also has two fountains. Drainage lines tend north, northwest to east towards the Kutetsha River. Generally, water is a scarce commodity within the region, which is renowned for its severe periodic droughts. {Refer to Figure 7}.

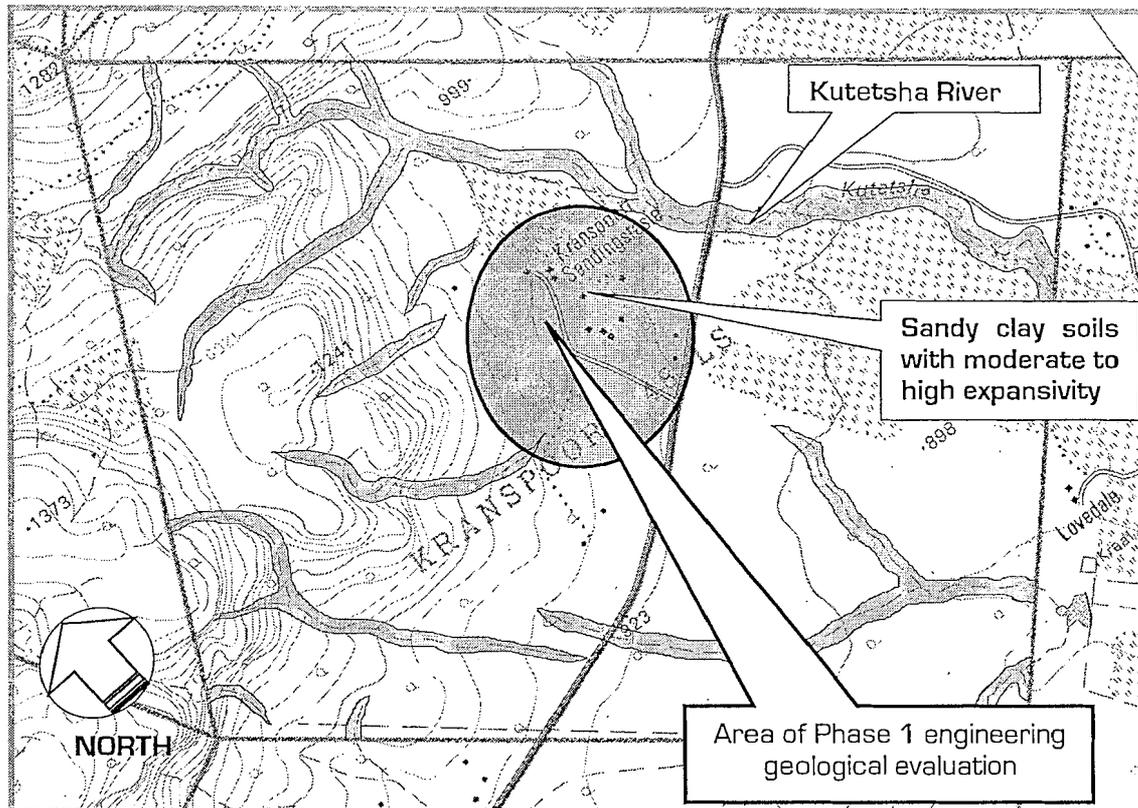
Ground water was encountered in one of the boreholes used for domestic purposes on Portion 3. The depth of a permanent water table, if any, is not known.

### 6.5 Vegetation

#### 6.5.1 Indigenous Forests

Within the Western Soutpansberg, various indigenous forests can still be found. These forests differ significantly from other South African montane forests, and to this extent, are relatively unique. They are an important home to many rare plant species, birds, mammals and invertebrates. There is a dire need to conserve these forests as only 0.2% of South Africa is still covered by indigenous forests. If one considers that at the time of the founding of Schoemansdal indigenous timber was an important economic commodity. The forests are still under threat from exploitation, fires, land development and the like, and need to be protected.

Figure 7: Soils and Drainage



A study, conducted by Dr. Cooper of the Wildlife Society of South Africa in 1985 on the conservation status of indigenous forests of South Africa revealed the following:

- The conservation of indigenous forests, which only cover 0.2% of South Africa, is extremely important, because they are essential for many rare species. Indigenous forests are rapidly declining due to fires and exploitation. Dr. Cooper is of the opinion that the systematic destruction of rare types forests must be regarded as a national conservation tragedy;
- The forests in the Soutpansberg differ from other South African montane forests and therefore require special conservation efforts;
- Forests in the Western Soutpansberg are small and fragmented and this makes them particularly vulnerable to influences, such as fire, grazing and the like. Wherever possible, groups or clusters of these indigenous forests should be included in conservation areas; and
- In view of the very small area, covered by the indigenous forests and their importance for water infiltration, wildlife conservation, soil conservation, recreation, and the like, it is strongly recommended that all these areas be given full conservation status.

## 6.5.2 Flora

### 6.5.2.1 General

Approximately 2 500 to 3 000 vascular plant taxa comprising 1 066 genera and 240 families are known to occur in the mountain. This is a significant number if one had to compare it to other regions. Arnold and De Wet (ed.)(1993) recorded 2 604 genera and 353 families for the entire Flora of southern Africa region (South Africa, Namibia,

Botswana, Swaziland and Lesotho). The Soutpansberg therefore contains 41% of all plant genera and 68% of all plant families of the Flora of Southern Africa region. Altogether, 38 plants taxa are known to be endemic to the Soutpansberg, comprising 27 genera and 17 families.

Altogether, 556 tree taxa are known in the Soutpansberg, one of the highest counts for southern Africa, and approximately one third of all known trees of southern Africa. This is a significant number representing 18% to 22% of the known flora of the mountain range. It is therefore no wonder that most vegetation types within the area are predominantly woodlands.

Approximately 10% of the plants occurring within the Soutpansberg can be considered succulent, 32% of the endemic flora of the mountain can be regarded as succulents.

A succulent could be defined as a plant which has the ability to store water in one or more of its morphologic components. This water being used when the plant is unable to absorb moisture through its normal means, namely its roots. Nonetheless the plant will need a period where it must replenish its reserves.

From this we can deduce that whatever conditions arose towards their evolution had to be related to periods of water stress. This would suggest that succulent endemics are the prodigies of a far distant relative that inhabited the area in times of lower than average moisture perspiration that became isolated as the climactic situations improved. It therefore becomes clear that the Soutpansberg throughout its history has undergone periods of drought leading to the isolation of biological entities.

Of the known endemic taxa, no fewer than 17 can be considered succulent, with eight being leaf succulents and nine stem succulents. Eight taxa can be considered trees, that is to say woody or semi-woody plants growing taller than 2 m. The greatest generic diversity within a family is displayed by the Asclepiadaceae with five genera and six species. Aloe show the greatest species diversity with five species. The monotypic genus *Zoutpansbergia* is the only genus endemic to the mountain entailing one species. 24 species are found within the mist-belt with 13 restricted to it. Of these 13 species confined to the mist belt seven are succulents, two are trees, one an epiphyte one and one a herb.

Approximately 63% of the endemic species occur within the mist belt region where of no fewer than 34% are restricted to it. In times of drought a large percentage of the high altitude mountain flora survives on the mist. Very little is known about mist and its interaction with the environment.

#### **6.5.2.2 Vegetation – Primary Study Area**

Plants have not been fully documented and new species are continuously discovered. Many species are only found on the mountain and nowhere else on earth. Some species are so rare that their total distribution is restricted to less than one hectare. The area is now recognised as one of the centres of endemism in South Africa. The Soutpansberg has a remarkable diversity of plants. Although it makes up less than 1 % of the surface area of South Africa, it contains no fewer than 48% of the genera of flowering plants. More than 500 species of trees have been recorded in the mountain making it the area with the highest diversity of trees in South Africa.

- **Acocck's Veld Types**

The vegetation of the lower lying parts are of Acocck's Veld Type 18, that is Mixed Bushveld, while the higher lying areas are of Veld Type 20, Sour Bushveld.

- **New Vegetation Classification of Low and Rebelo**

According to the new vegetation classification of Low and Rebelo. Kranspoort forms part of the Soutpansberg Arid Mountain Bushveld (Veld Type 11), while the lower areas are in the transition zone to Veld Type 17, Sweet Bushveld.

The vegetation of the site earmarked for a first phase development, is generally very disturbed Mixed Bushveld. The plant species composition of the site is very poor due to the agricultural and missionary disturbances of the past.

### 6.5.2.3 Scarce Plants

According to Mr. F Venter, formerly from the Department of Botany at the University of the North, at least two Red Data plants occur on Kranspoort:

- *Orhiopsis hardyji*, and
- *Chionanthus battiscombei* (Pock ironwood).

### 6.5.2.4 Plant List

According to the vegetation map of South Africa, Lesotho and Swaziland (Low & Rebelo 1998), Portions 2 and 3 of the farm Kranspoort is situated in the Soutpansberg Arid Mountain Bushveld of the Savanna Biome. The tree layer of this vegetation type is characterized by White Syringa *Kirkia acuminata*, Stem Fruit *Englerophytum magalimontanum*, Lavender Feverberry *Croton gratissimus*, Red Bushwillow *Combretum apiculatum*, *Adansonia digitata*, *Pseudolachnostylis maprouneifolia* and *Acacia caffra*. The grass layer is described as poorly to moderate developed and grasses such as *Aristida congesta*, *Panicum maximum*, *Digitaria eriantha*, *Setaria lindenbergia*, *Loudetia simplex*, *Heteropogon contortus* are the most conspicuous species.

The vegetation found on the site was not typical to those described for this vegetation type, but the Tree List of the Soutpansberg drafted by the Institute of Conservation and Natural History of the Soutpansberg (Hahn 1994) confirmed the presence of the trees identified in the area. Dominant plant species that were observed during the site reconnaissance are listed below:

- **Terrain 1: Around the existing farm buildings**
  - *Ficus natalensis* (Natal fig)
  - *Kirkia acuminata* (White syringa)
  - *Acacia karroo* (Sweet thorn)
  - *Acacia sieberiana* (Paperbark thorn)
  - *Dichrostachys cinerea* (Sickle bush)
  - *Adansonia digitata* (Baobab)
  - *Erithryna lesistemon* (Common coral tree)
  - *Ziziphus mucronata* (Buffalo thorn)
  - *Euphorbia ingens* (Common tree Euphorbia)
  - *Cussonia spicata* (Common cabbage tree)
  - *Ficus sur* (Broom cluster fig)
  - *Dombeya rotundifolia* (Common wild pear)
  - *Sclerocarya birrea* (Marula) – Protected tree

Some of these trees were planted by the previous owners of the property. Significant specimens of *Acacia sieberiana*, *Ficus natalensis* and *Sclerocarya birrea* occur on the site and these trees should be marked and protected.

- **Terrain 2: Area between tar road and farm buildings**
  - *Lonchocarpus capassa* (Apple leaf)
  - *Croton* spp.
  - *Acacia rehmanniana* (Horned thorn)
  - *Peltophorum africanum* (Weeping wattle)
  - *Rhus pyroides* (Common wild currant)
  - *Dichrostachys cinerea* (Sickle bush)
  - *Gymnosporia senegalensis* (Red spike-thorn)
  - *Vangueria infausta* (Wild medlar)
  - *Acacia karroo* (Sweet thorn)
  - *Olea europaea* (Wild olive)
  - *Ehretia rigida*
  - *Acacia sieberiana* (Dominant) (Paperbark thorn)

This area had a high density of trees, with *Acacia* spp. and *Dichrostachys cinerea* being dominant.

- **Terrain 3: Along river**
  - *Ziziphus mucronata* (Buffalo thorn)
  - *Rhus pyroides* (Common wild currant)
  - *Grewia flavescens* (Rough-leaved raisin)
  - *Carissa bispinosa* (Noem noem)
  - *Acacia schweinfurthii* (River climbing thorn)
  - *Gymnosporia senegalensis* (Red spike thorn)
- **Grass layer**
  - *Heteropogon contortus* (Spear grass)
  - *Panicum maximum* (Guinea grass)
  - *Aristida stipitata* (Long-awned Three-awn)
  - *Aristida congest subsp. congesta* (Tassel Three-awn)
  - *Cynodon dactylon* (Couch grass)
  - *Melinos repens* (Natal Red Top)
  - *Diheteropogon amplexans* (Broad-leaved Bluestem)
  - *Bothriochloa insculpta* (Pinhole grass)
  - *Urochloa mosambicensis* (Bushveld Signal grass)

*Panicum maximum* was the dominant species as it is associated with the high density of large trees occurring in the area.

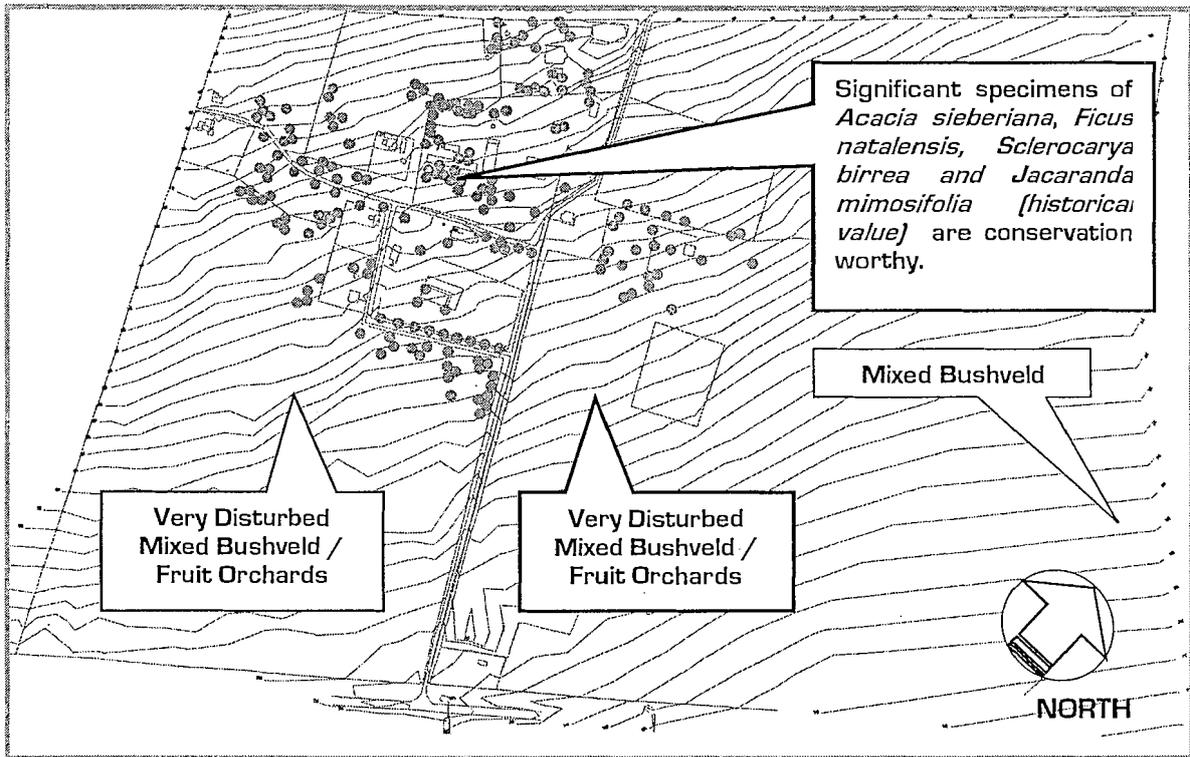
Of the trees identified, only *Sclerocarya birrea* is a protected tree species, and special permission must be obtained from the Department of Water Affairs and Tourism to remove a tree and parts thereof. The large specimens, of apparent great age, *Acacia sieberiana*, *Sclerocarya birrea* and *Jacaranda mimosifolia* (cultural-historical value) are conservation worthy and should form part of any development plans.

### 6.5.2.5 Exotic Plants

A few exotic, problem and invader plant species occur on the site. They were mostly:

- *Opuntia ficus-indica* (Prickly pear)
- Sisal
- Alhabra
- Jacaranda

**Figure 8: Vegetation**



## 6.6 Fauna

The high plant diversity is reflected in a high animal diversity. More than 300 species of birds, 97 species of lizards, 17 species of frogs and 95 species of mammals have been recorded in the Western Soutpansberg. Several of these species are endemic or are listed in the South African Red Data Book of threatened species. Studies have shown that the Soutpansberg contain a remarkable diversity of butterflies, spiders and other invertebrates, many of which are still unknown to science.

The Soutpansberg has a remarkable diversity of mammals making up 60% of the total number of species that occur in South Africa. There are more mammal species in the Soutpansberg than in the Cape Floristic Kingdom [127]. The whole of the Kruger National Park only contains two more species of mammals than the Soutpansberg. It is particularly rich in bats, carnivores and larger hoofed animals.

As a result of the decline and elimination of various large mammals and the introduction of livestock such as cattle and goats, secondary bush encroachment has replaced much of the original grassland vegetation. At present many rare and endangered mammals are still to be found within the Soutpansberg.

The avian fauna is immensely diverse, ranging from species confined to the forest (*Macheiramphus alcinus*, Bathawk) to species commonly associated with the savanna vegetation of the surrounding area. A number of scarce species of birds does occur on Kranspoort. The crested guineafowl, as well as the Knysna Loerie, Purple Crested Loerie and Grey Loerie, can be found on Kranspoort, as well as several raptors, such as Wahlbergs Eagle, the Crowned Eagle and Long Crested Eagle.

The insect fauna has been poorly studied. However, many endemic species, especially butterflies have been found. There seems to be a definitive disjunct distribution between the endemic butterflies occurring in the Soutpansberg, and those occurring in the Blouberg.

The Soutpansberg is known for its substantial number of restricted reptile species. Branch (ed.) (1988) considers the Soutpansberg and adjacent regions a sensitive area, having recorded eight restricted taxa of which seven are endemic to the mountain region.

At present no endemic fish have been recorded in the Soutpansberg. This could be attributed to the immense age of the Soutpansberg and possibly through periodic droughts which lead to mass extinction of fishes.

One endemic frog *Breviceps sylvestris taemiatus* Poynton has been recorded for the Soutpansberg. Its nearest ally *B. s. sylvestris* FitzSimons occurs in the Wolkberg region a distribution shared with some of the endemic plants. The Soutpansberg has a relatively poor representation of frog species, an attribute shared with the fish. It is possible that the factors pertaining to the fish diversity are also relevant to those of the frogs. The only frog genus that has an endemic representative is *Breviceps*, a fossorial genus that is capable of aestivation. It is also the only group of frogs which do not need water for the development of their offspring making it more tolerable towards the survival of droughts.

## 7. CULTURAL-HISTORICAL ENVIRONMENT

### 7.1 General

The earliest prehistory of man in the Soutpansberg Area is reflected in the artefacts dating from the beginning of the Early Stone Age that are found scattered throughout the Soutpansberg. The stone-tool industry complexes from the Middle to Late Stone Ages are well-represented, and reflect a great variety of occupations by various cultures for relatively short periods of time. The remnants of the earlier cultures can still be seen in the paintings they drew on the walls of their shelters, as well as the scattering of their microlithic stone-tools. At present 25 rock art sites have been recorded in the Western Soutpansberg, some of which maybe be located on Kranspoort. The latter is to be established by detailed archaeological surveys.

The Western Soutpansberg contains unique cultural and historic sites that should be protected at all cost. These extend from Stone Age through all phases of Iron Age to historic. Some of these sites have already been disturbed by cultivation, erosion due to overgrazing or other factors. Some of these sites are still of cultural importance to local communities. This should be respected and access should be possible where required. There are also a number of early iron-age sites that have been identified indicating that these people knew how to smelt iron, glass, copper and gold. These early cultures dated from roughly 3 000 BC and eventually culminated in the establishment of Mapungupwe about 1 000 years ago. More recently (in the 19th Century) early settlers, such as Coenraad Buys and Louis Trichardt arrived in the area.

The Soutpansberg Area, including Kranspoort, is therefore, rich in diversity and represents a cross-section of South Africa's cultural heritage.

The following three aspects are considered as being of particular importance in the archaeology of the Soutpansberg area:

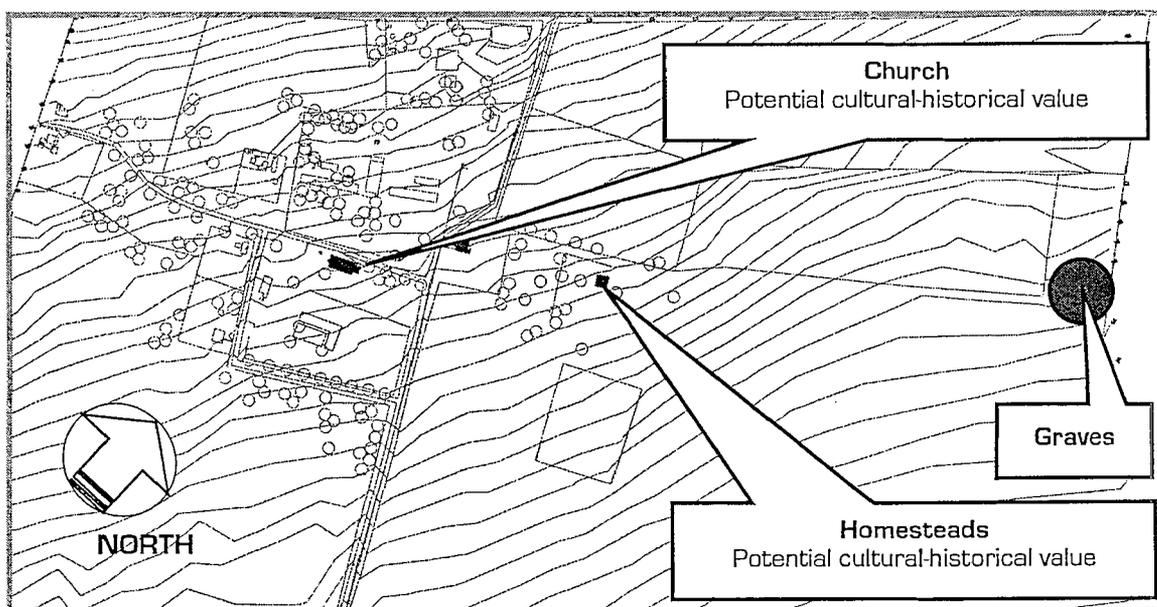
- The Rock Art which is extensive and contains three separate traditions namely: San (Bushman) paintings and engravings with a wide range of animal and human images, Khoekhoe paintings (Geometric Tradition Paintings) consisting mainly of geometric images, dots, lines, representational forms and handprints, and Northern Sotho paintings (white finger paintings made by Bantu-speaking Agro-pastoralists) comprising anthropomorphic, zoomorphic and geometric designs, many of which relate to contact with early colonialists.
- Modern Venda culture has a long history dating back to 1300AD and forms the final part of the Great Zimbabwe culture. This is reflected in a range of stone walled ruins, several of which are reminiscent of the Zimbabwe style of building.
- Human history as represented in the Soutpansberg covers the past 1 million years.

The Soutpansberg area has a uniquely rich history of missionary endeavours. The documents about missionaries in this area are the only sustained written source material dating back to the 1860's. This material covers the history and provides a great deal of information about the area's ecology, medicine, local cultures and cultural and social change and exchange as well as linguistic developments. Physical remnants of former mission stations, cemeteries, hospitals and schools are interesting foci for tourism. Almost all the missionary denominations of Christianity are represented in the Soutpansberg area and there is also active development of African Initiated Churches.

The living cultural resources of the Soutpansberg are also extremely rich. The Venda was the last cultural group to be affected by colonialism and the Venda people's culture is still a way of life and is not just an object for material gain. There is a high emphasis on traditional divination and healing in the Soutpansberg area. This area has a very high healer: patient ratio. An interesting aspect is the Four-Tablet system of spiritual healing. The area also has a long history of acclaimed artists: The Venda Wood Carvers are world renowned.

## 7.2 Kranspoort – Portion 3

**Figure 9: Sites of Potential Cultural-Historical Importance**



Some of the existing buildings have been built by the Dutch Reformed Church to house mainly groups of children. These buildings may be of cultural-historical value and will have to be investigated by an archaeologist. The majority of the buildings on Portion 3 are modern.

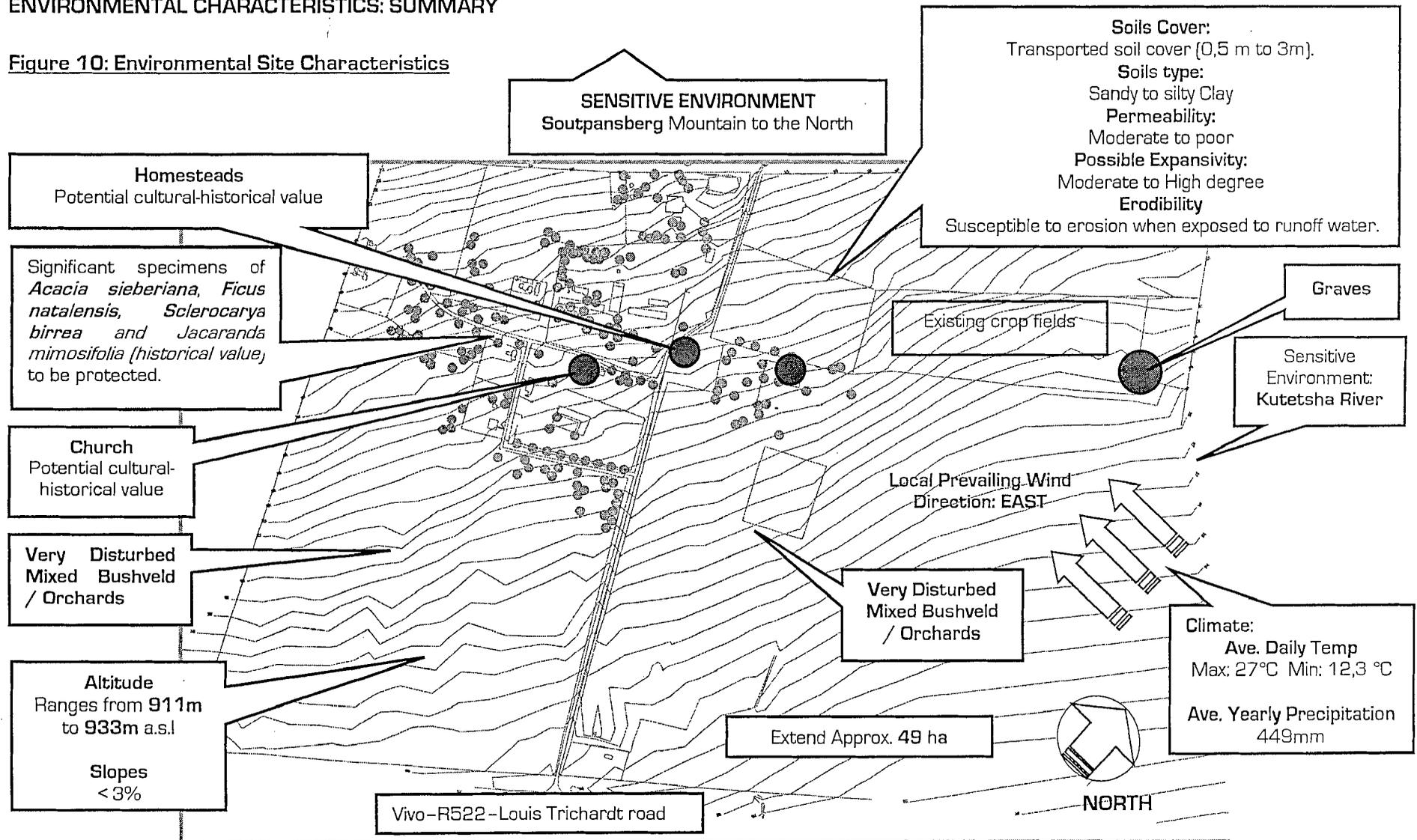
It is important to note that according to the National Heritage Resources Act (NHRA) that no person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority.

**Graves** are located on the eastern portion of the farm (refer to Figure 9). It is important to note that according to the National Heritage Resources Act (NHRA) that no person may, without a permit issued by the South African Heritage Resources Agency (SAHRA) or a provincial heritage resources authority:

- (a) destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;
- (b) destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or
- (c) bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation equipment, or any equipment which assists in the detection or recovery of metals.

8. ENVIRONMENTAL CHARACTERISTICS: SUMMARY

Figure 10: Environmental Site Characteristics



A PORTION OF PORTION 3 OF THE FARM KRANSPOORT 48 LS

## 9. ENVIRONMENTAL OPPORTUNITIES &amp; CONSTRAINTS

Table 4: Environmental Opportunities and Constraints: Summary

CHARACTERISTIC	OPPORTUNITY	CONSTRAINT
<b>CLIMATE</b>		
General climatic conditions	Ideally suited for eco-tourism, outdoor creation	None
Temperature	Shade side of the mountain in hot climate	Limiting factor for plant and animal diversity
Rainfall	Rainwater harvesting	<ul style="list-style-type: none"> <li>• Limiting factor for plant and animal diversity</li> <li>• Distribution and reliability of local rainfall</li> <li>• Irrigation of crops is required to obtain consistent high yields.</li> </ul>
Wind	Funnel wind for cooling effect	

<b>TOPOGRAPHY</b>		
Plains-Footslope (< 3%)	Highly suitable for structural development	
Footslope-Midslope (3-20%)	Suitable for structural development	Potential erosion problems
Midslope-Crest-Cliffs-Plateau (> 20%)	Sensitive environment - conservation worthy	No structural development

<b>SOILS</b>		
General soil characteristics	Agriculture - soil suitable for crop production	
Permeability		The permeability is expected to be moderate to poor.
Soil Reactivity		Possible expansivity of a Moderate to High degree
Excavations	Easy to moderate excavations	
Erodibility of the Soils		Erosion potential is expected to be high. Surface runoff is expected to be by means of sheetflow.
Foundation Conditions		Potential expansiveness - Medium to High.
Construction Materials		No construction materials for roads, streets and paved areas available on site.

CHARACTERISTIC	OPPORTUNITY	CONSTRAINT
<b>VEGETATION</b>		
Existing Vegetation	<ul style="list-style-type: none"> <li>Significant specimens of <i>Acacia sieberiana</i>, <i>Ficus natalensis</i> and <i>Sclerocarya birrea</i> conservation and historical worthy.</li> <li>Provide shade</li> </ul>	Conservation worthy restrict development
Diversity	High Plant Diversity, Eco-tourism, Medicinal plants	Conservation worthy restrict development
Veld type	Generally very disturbed Mixed Bushveld - opportunity to rehabilitate.	None

<b>CULTURAL-HISTORICAL</b>		
Graves	Graves	None
Structures	Missionary Buildings	Extensive upgrading required
Archaeology	Cultural-historical value	Status to be investigated

**10. DEVELOPMENT CONCEPT PLAN**

The key to a sustainable and efficient "Eco-Village" planning (which is, in fact, efficient economic planning) is the **zone** and sector placement of buildings/structures, infrastructure, agriculture facilities, tourism facilities, social services and animal ranges.

Zone planning means placing elements according to how much it will be used and/or how often it needs to be serviced. Areas that must be visited every day (e.g. the chicken pen, garden, plant nursery) are located nearby, while places visited less frequently (orchard, grazing areas, woodlot, wilderness area) are located further away. To place elements in zones, one needs to start from a centre of activity, usually the house or, on a larger scale, an entire village. Zoning is decided by (1) the number of times you need to visit the element (plant, animal or structure) for harvest or yield; and (2) the number of times the element needs you to visit it. The more visits needed, the closer the objects need to be. Those components needing very frequent observation, constant visits, work input, or complex management techniques must be placed very close by, or we waste a great deal of time, effort, and energy visiting them. The golden rule is to develop the nearest area to the house or village first, get it under control, and then expand the edges.

Figure 9 provides a schematic concept land use plan for the farm Kranspoort which indicates relationship between distance and intensity use.

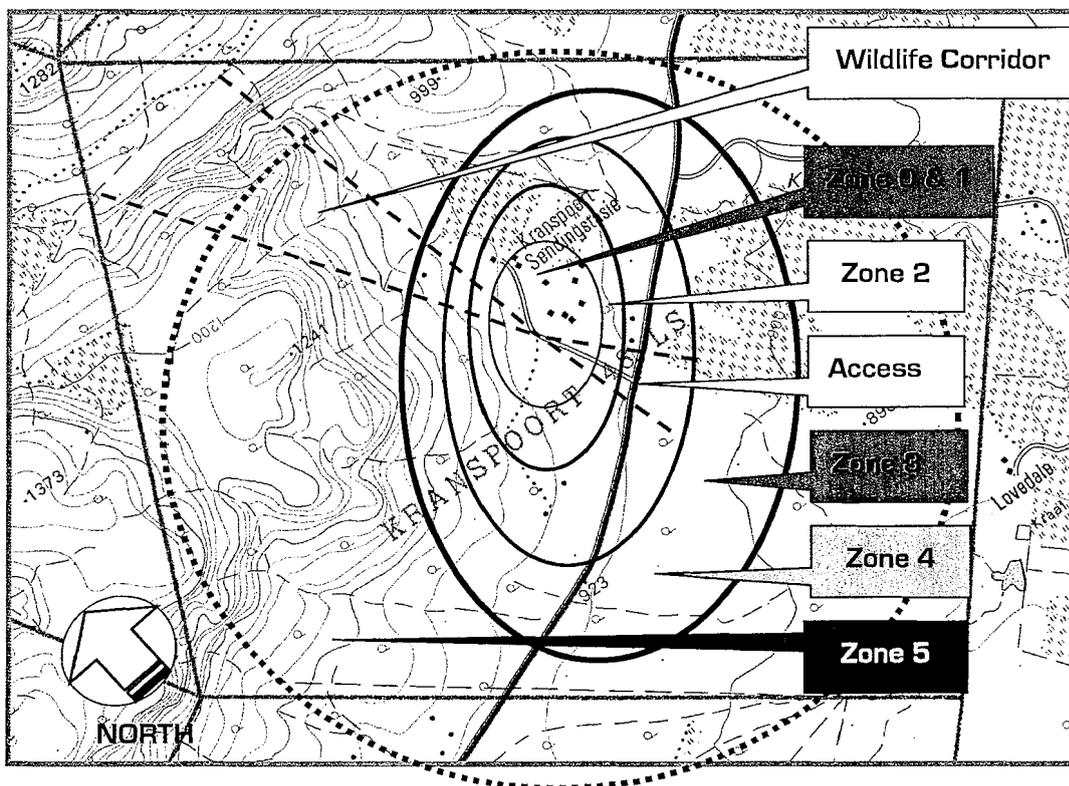
- **Zone 0** is the centre of activity (house or village). It is laid out to conserve energy and to suit its occupants' needs.
- **Zone 1** is close to the house. It is the most controlled and intensively-used area and can contain the garden, workshops, greenhouse, small animals, fuels for the house (gas, wood), compost, mulch, clothesline, and grain drying area. There are no large animals in this zone, and perhaps only a few large trees (depending on shade requirements).
- **Zone 2** is still intensively-maintained, with dense plantings (larger shrubs, small fruit and mixed orchard, windbreaks). Structures include terraces, hedges, trellis, and ponds.

Plant and animal species that require care and observation are located in this zone, and water is fully reticulated [drip irrigation for trees]. Poultry is let into selected areas [orchard, woodlot] to range.

- **Zone 3** contains unpruned and unmulched orchards, larger pastures or ranges for meat animals or rearing flocks, and main crop. Water is available only to some plants, although there are watering areas for animals. Animals are cows, sheep, and semi-managed birds. Plants include windbreaks, thickets, woodlots, and large trees [such as nut and citrus].
- **Zone 4** is semi-managed, semi-wild, used for gathering, hardy foods, unpruned trees, and wildlife and forest management. Timber is a managed product, and other yields [plant and wildlife] are possible.
- **Zone 5** is unmanaged or barely managed natural "wild" systems.

Zones are a convenient, abstract way to deal with distances; however, in practice, zone edges will blur into each other, or landform and site access may mean that sometimes the least-used area [Zone 5] is next to the most intensely-used area [Zone 1]; for example a steep forested hill directly behind the house). We can in fact bring wedges of Zone 5 right to our front door as a corridor for wildlife, birds and nature.

**Figure 11: Schematic Concept Land Use Plan: Zones**



**11. ECO-VILLAGE DEVELOPMENT GUIDELINES**

Sustainable design balances human needs [rather than human wants] with the carrying capacity of the natural and cultural environments. It minimizes environmental impacts and importation of goods and energy, as well as generation of waste. The ideal situation would

be that, if development was necessary, it would be constructed from natural sustainable materials collected on-site, generate its own energy from renewable sources such as solar or wind, and manage its own waste.

Sustainable design is an ecosystemic approach that demands an understanding of the consequences of certain actions.

**Table 5: Eco-Village Development Guidelines**

<b>DEVELOPMENT GUIDELINE</b>
<b>LEGAL COMPLIANCES</b>
<ul style="list-style-type: none"> <li>• <b>Environment Conservation Act 1989 (Act 73 of 1989);</b> Regulations R1182/3, 5/9/97: The Environmental Conservation Act (Act No. 73 of 1998; DEAT 1989) and EIA Regulations Guideline Document (DEAT 1998) set out the conditions under which an EIA is required. Resettlement on Kranspoort is a listed activity and will therefore require an Environmental Impact Assessment.</li> <li>• A Detailed archaeological investigation according to the <b>National Heritage Resources Act (Act No. 25 of 1999)</b> will be a requirement.</li> <li>• <b>National Water Act 36 of 1998 - National Water Act 1998 (Act 36 of 1998) &amp; Water Services Act 1997 (Act 108 of 1997);</b> The purpose of this Act is to "... ensure that the nation's water resources are protected, used, developed, conserved, managed and controlled." The Water Act takes into account the meeting of basic human needs of present and future generations, equitable access to water, redressing the results of past discrimination, efficient, sustainable and beneficial use of water in the public interest, and other factors. The Act is administered by the Department of Water Affairs and Forestry (DWAF).</li> </ul>
<b>GENERAL</b>
<p>The design must:</p> <ul style="list-style-type: none"> <li>• be subordinate to the ecosystem and cultural context;</li> <li>• respect the natural and cultural resources of the site and minimise the impact of any development;</li> <li>• educate visitors/users about the resource and appropriate built responses to that environment;</li> <li>• use the resource as the primary experience of the site and as the primary design determinant;</li> <li>• enhance appreciation of natural environment and encourage/establish rules of conduct;</li> <li>• create a "right of passage" or "point of arrival" by developing an entrance into special natural or cultural environments that emulates the respectful practice of removing shoes before entering a Japanese home - visitors leave cars and consumptive values behind;</li> <li>• use the simplest technology appropriate to the functional need and incorporate passive energy-conserving strategies responsive to the local climate;</li> <li>• use renewable indigenous building materials to the greatest extent possible;</li> <li>• avoid use of energy-intensive, environmentally damaging, waste-producing and/or hazardous materials; choose materials and construction techniques using cradle-to-grave analysis;</li> <li>• strive for "smaller is better," optimizing use and flexibility of spaces so overall building size and the resources necessary for construction and operation are minimised;</li> <li>• strive for minimal environmental disruption, resource consumption and material waste during construction, and identify opportunities for re-use/recycling of construction debris;</li> </ul>

<b>DEVELOPMENT GUIDELINE</b>	
<ul style="list-style-type: none"> <li>• provide equal access to the full spectrum of people with physical and sensory impairments while minimising impacts on natural and cultural resources;</li> <li>• consider phasing the development to allow for monitoring of resource impacts and adjustments in subsequent phases;</li> <li>• allow for future expansion and/or adaptive uses with a minimum of demolition and waste, with materials and components that can be easily re-used or recycled;</li> <li>• make it easy for the occupants/operators to recycle waste.</li> </ul>	
<b>NATURAL FACTORS</b>	
<b>CLIMATE</b>	
<ul style="list-style-type: none"> <li>• Apply natural conditioning techniques to achieve appropriate comfort levels for human activities; do not isolate human needs from the environment;</li> <li>• Avoid overdependence on mechanical systems to alter the climate - such dependency signifies inappropriate design, disassociation from the environment and non-sustainable use of resources.</li> </ul>	
<b>TEMPERATURE</b>	
<ul style="list-style-type: none"> <li>• Temperature is a liability in climates where it is consistently too hot, when climate is predominantly too hot for comfort:               <ul style="list-style-type: none"> <li>– minimise solid enclosure and thermal mass;</li> <li>– maximise roof ventilation;</li> <li>– use elongated or segmented floor plans to minimise internal heat gain and maximise exposure for ventilation;</li> <li>– separate rooms and functions with covered breezeways to maximise wall shading and induce ventilation;</li> <li>– isolate heat-generating functions such as kitchens and laundries from living areas;</li> <li>– provide shaded outdoor living areas such as porches and decks.</li> </ul> </li> </ul>	
<b>SUN</b>	
<ul style="list-style-type: none"> <li>• Sun can be a significant liability in hot climates, when solar gain causes conditions too hot for comfort;               <ul style="list-style-type: none"> <li>– use overhangs to shade walls and openings, use site features and vegetation to provide shading to walls with eastern and western exposure;</li> <li>– use shading devices such as louvers or covered porches and trellises with natural vines to block sun without blocking out breezes and natural light;</li> <li>– orient broad building surfaces away from the hot late-day western sun (only northern and southern exposures are easily shaded);</li> <li>– use light-coloured wall and roofing material to reflect solar radiation (be sensitive to resulting glare and impact on natural-cultural setting).</li> </ul> </li> </ul>	
<b>WIND</b>	
<ul style="list-style-type: none"> <li>• Wind can be an asset in hot, humid climates to provide natural ventilation:               <ul style="list-style-type: none"> <li>– use natural ventilation wherever feasible; limit air-conditioning to areas requiring special humidity or temperature control such as in a clinic;</li> <li>– control exposure to wind through plan orientation and configuration, number and position of wall and roof openings and relationship to vegetation;</li> <li>– use wind scoops, thermal chimneys or wind turbines to induce ventilation on sites with limited wind.</li> </ul> </li> </ul>	

<b>DEVELOPMENT GUIDELINE</b>
<b>RAINFALL</b>
<ul style="list-style-type: none"> <li>• Rainfall can be a liability if concentrated runoff from developed surfaces is not managed to avoid erosion;</li> <li>• Rainfall can be an asset if it is collected from roofs for use as drinking water or irrigation water.</li> </ul>
<b>VEGETATION</b>
<ul style="list-style-type: none"> <li>• Locate and size facilities to avoid cutting mature vegetation and to minimise disruption to, or disassociation with, other natural features;</li> <li>• use natural vegetation and adjustments in building plan to diminish the visual impact of facilities and to minimise imposition on environmental context;</li> <li>• in warmer climates, strengthen interplay of facilities with their site environment through minimising solid walls, creating outdoor activity spaces, etc.</li> </ul>
<b>TOPOGRAPHY</b>
<ul style="list-style-type: none"> <li>• Use landforms and the sensitive arrangement of buildings to <ul style="list-style-type: none"> <li>– diminish the visual impact of facilities;</li> <li>– enhance visual quality by creating a rhythm of open spaces and framed views;</li> <li>– orient visitors to building entrances;</li> <li>– accentuate key landmarks, vistas and facilities.</li> </ul> </li> </ul>
<b>HYDROLOGY</b>
<ul style="list-style-type: none"> <li>• Use building setbacks/buffer zones;</li> <li>• Locate and design facilities to minimise erosion and impacts on natural hydrological systems;</li> <li>• Safeguard hydrological systems from contamination by development/activities;</li> <li>• Allow precipitation to recharge groundwater naturally, where possible.</li> </ul>
<b>GEOLOGY / SOILS</b>
<ul style="list-style-type: none"> <li>• Minimise excavation and disturbance to groundcover;</li> <li>• Minimise erosion by avoiding large impervious surface areas and footprints that collect rain and create concentrated runoff onto site.</li> </ul>
<b>HUMAN FACTORS</b>
<b>CULTURAL / ARCHAEOLOGICAL RESOURCES</b>
<ul style="list-style-type: none"> <li>• Use preservation and interpretation of archaeological features for insight into previous cultural responses to the environment.</li> </ul>
<b>VERNACULAR ARCHITECTURE</b>
<ul style="list-style-type: none"> <li>• Analyse local historic building styles, systems and materials for time-tested approaches in harmony with natural systems;</li> <li>• Use local building material, craftsmen and techniques as much as possible in the development of new facilities.</li> </ul>
<b>HISTORIC RESOURCES</b>
<ul style="list-style-type: none"> <li>• Reuse historic buildings whenever possible to assist in their preservation, contribute to the special quality of the place.</li> </ul>
<b>TECHNOLOGICAL STRATEGIES</b>
<b>CLIMATE CONTROL</b>
<ul style="list-style-type: none"> <li>• Wood burning stoves or slow-burning, efficient cast iron stoves for heating.</li> <li>• Greenhouse attachment for winter heating.</li> </ul>

<b>DEVELOPMENT GUIDELINE</b>
<ul style="list-style-type: none"> <li>• Shade house attachment for summer cooling</li> <li>• Trellis systems for sun deflection; cooling.</li> </ul>
<b>COOKING AND COOK STOVES</b>
<ul style="list-style-type: none"> <li>• Wood-fuelled cook stoves (best in cold temperate climates) provide heat as they cook..</li> <li>• Gas/propane stoves suit hot and hot-humid climates; a gas system leaves open the potential to use methane from biogas digesters using sewage and other wastes.</li> <li>• Solar cooking units are divided into two types: reflective parabolic arcs focusing onto one point and solar ovens (home-made) which are glass-fronted insulated boxes lined with reflective aluminium foil. Both types must be moved by hand to follow the sun unless fitted with a solar tracking device.</li> <li>• Insulated container cooking is an effective method for items which need a long cooking time. Essentially, one boils a pot (of stew, casserole, beans, soup) for between 1-3 minutes. The hot pot and its contents are then immediately transferred to an insulated box where it continues to cook.</li> </ul>
<b>HOT WATER SUPPLIES</b>
<ul style="list-style-type: none"> <li>• Wood cooking or heating stoves with an 18cm copper or stainless steel tube loop in the fire-box (to the back or one side) will provide hot water to an insulated storage tank.</li> <li>• Solar collectors on the roof can be purchased commercially or hand made, and includes flat plate, bread-box, and cylindrical collectors.</li> </ul>
<b>ELECTRICITY AND LIGHTING</b>
<ul style="list-style-type: none"> <li>• Solar cells and storage batteries can be used to power house lights and appliances.</li> <li>• Wind power or small-scale hydro-electric in appropriate locations could provide for all lighting and appliance needs.</li> <li>• Energy-conserving and long-lasting lights such as low pressure sodium lamps are recommended for rooms that are in almost constant use (kitchens).</li> </ul>
<b>WASHING AND DRYING CLOTHES</b>
<ul style="list-style-type: none"> <li>• For bigger families and communities, a shared operated washing machine saves energy and money.</li> <li>• Clothes can be dried on a clothesline in the sun.</li> </ul>
<b>REFRIGERATION AND COOLING</b>
<ul style="list-style-type: none"> <li>• Gas refrigerators are available, and are usually small and efficient. A large photovoltaic system, wind power, or hydro-electricity easily powers a refrigerator.</li> <li>• An airy, screened cupboard, open on one side to the shade house in temperate areas, can be used to store fruits and vegetables, eggs, and anything else that does not require cold refrigeration.</li> <li>• For drying fruits and vegetables, a solar food dryer or a semi-empty greenhouse in summer will do the job.</li> </ul>
<b>WATER CONSERVATION</b>
<ul style="list-style-type: none"> <li>• Water tank off large building roof is ideally located uphill from the house for gravity flow.</li> <li>• Hand-basin water is used to flush toilets; or hand-basin and shower wastewater diverted to garden/greenhouse.</li> <li>• Low water use shower nozzles are commercially-available.</li> <li>• Toilets with two flush modes are commercially-available.</li> <li>• Compost toilets or pit latrines use no water, and provide composted manures for use</li> </ul>

DEVELOPMENT GUIDELINE	
	around trees and shrubs.
WASTE HANDLING	
	<p>The "waste products" of a house or village are all too often viewed as disposal problems rather than as resources. These waste resources are wastewater from baths, showers, sinks, and laundry; sewage, food scraps, and paper, glass, metal and plastic garbage.</p> <ul style="list-style-type: none"> <li>• <b>Separation of refuse at the source:</b> Residents must separate garbage into compostable materials, glass, paper, metals, etc., which means less time spent in sorting at the landfill site or depot, and easily available materials can be sold to recycling companies. A financial incentive for recycling must be initiated.</li> <li>• <b>Organic waste:</b> The use of home composting to handle small units of domestic waste must be promoted. This means individual gardens receive the benefit, rather than concentrating the compost at a dumpsite. For tree prunings and other compostable material, a large-scale composting operation can be mounted at a communal site. The material can be chopped and shredded, and some animal manure can be added to activate the heap; it is then formed into large windrows, and used by the local residents.</li> </ul> <p>There could also be a large vegetable garden at the site, made from compost, which produces vegetables for local sale. Trees and shrubs could be planted along the compost site, for visual screening.</p> <p>Food scraps must be fed to animals and their manures used in the garden. Alternatively, scraps are composted or even directly buried into garden beds, although these will become hot under the ground as they break down, so caution must be taken not to plant immediately in the area. Thus household waste products are used in the system to produce food and nutrient to plants and animals.</p> <ul style="list-style-type: none"> <li>• <b>Recoverable material:</b> This includes scrap metal, tins, bottles, and plastics, an entrepreneur and can be sold to re-processing industries. Glass and metal can be recycled, while plastics are kept to a minimum if you take your own shopping bags to the shops. Newspapers and other paper can be used as a mulch barrier in gardens and orchards, or soaked and fed to worm [in limited quantities].</li> <li>• <b>Grey water:</b> The most important products are wastewater and sewage, and these can be treated in different ways according to climate and preference. In dry seasons, where water is at a premium, sink and shower water can be diverted to a grease-trap and from there used to irrigate garden beds. Hand basin water can also be used to fill the cisterns of flush toilets, thus performing a double-duty. Roof water can be harvest to storage tanks. Roof gutters must lead to storage tanks for drinking water.</li> </ul> <p>Sewage from flush toilets can be routed via a septic tank to plant systems (orchard crops). Compost from dry toilets can be buried beneath trees; or, in the case of moveable pit toilets, a tree is planted on top of a closed pit.</p>

## 12. CONCLUSION

This report investigates the status quo of the biophysical character of the area with a view to identifying the potential for the establishment of an "Eco-Village" and assist in promoting the local economy.

The biophysical characteristics of the study area indicate that it would be well suited to the establishment of eco-agricultural and eco-tourism development initiative. The compatibility of mixed game and cattle farming needs to be carefully managed, but has great potential.

Our recommendation, based on the assessment of the information supplied to us as well as that which is gained from the site visits, consultations and specialist investigations is that provided the project planners implements the development guidelines and recommendations as outlined and contained in this report, the proposed development will have a minimal impact on the environment. While a number of environmental constraints have been identified, none of these are considered that severe after mitigation as to prevent the further planning and design of the proposed resettlement.

It is recommended that, detailed archaeological and ecological investigations must be carried out as part of an Environmental Impact Assessment (EIA) in order to:

- Confirm the absence of archaeological sites and/or artefacts as well as Red Data Book Species; and to
  - Indicated, relocate, demarcate or recommend further conservation / preservation actions and measures for any identified ecologically and/or archaeologically "sensitive" area, species and/or artefacts prior to the commencing of detailed planning.
-

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# Annexure A

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## PHOTO ALBUM REPORT

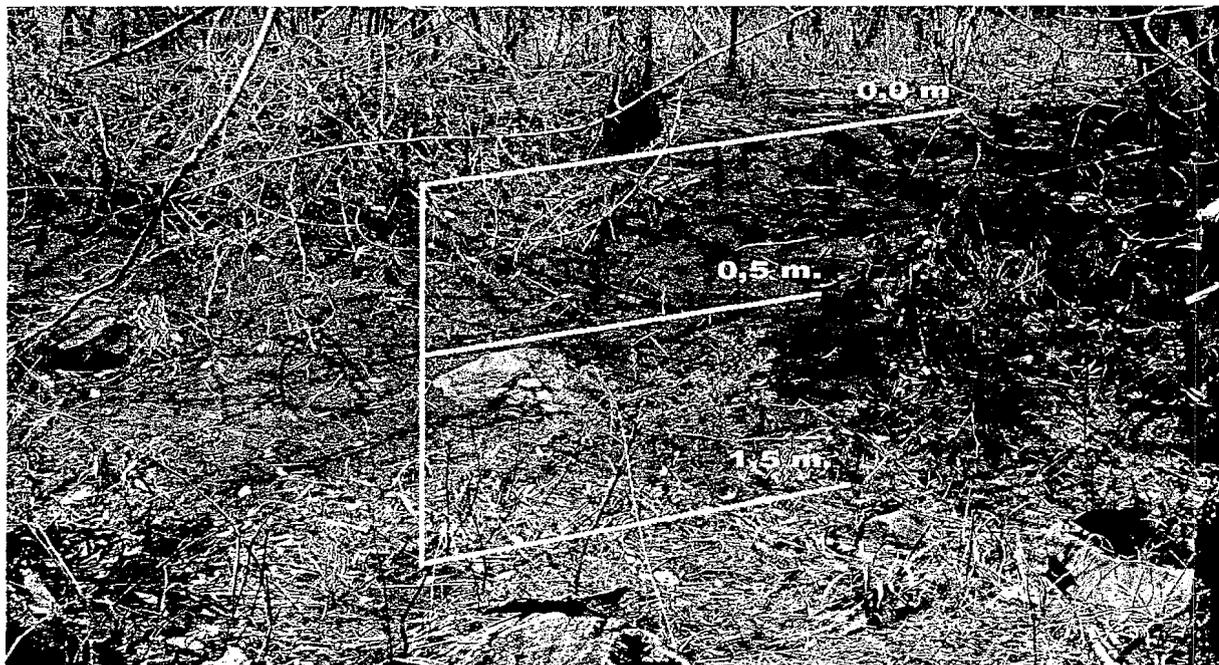
Kranspoort Development - Engineering Geological Evaluation, Phase 1: Desk Study

## PHOTO ALBUM.



PHOTO No. 1.

- DARK RED, SANDY CLAY MATERIAL.
- TOPSOIL OR A – HORIZON MATERIAL
- OBSERVED IN PLOUGHED LAND.



SOIL PROFILE IN OPEN EXCAVATION.

0,0 – 0,5 : DARK RED, MEDIUM DENSE TO VERY STIFF SANDY CLAY.  
0,5 – 1,5 : AS ABOVE BUT WITH BOULDERS, COBBLES AND PEBBLES OF WEATHERED QUARTZITE.

PHOTO No. 2.

## PHOTO ALBUM.



**PHOTO No. 3.**

- BOULDERS AND COBBLES OF WEATHERED QUARTZITE AND SANDSTONE.
- MATERIAL REMOVED FROM THE SOIL DURING PREPARATION OF ADJACENT AGRICULTURAL LANDS.



SUB-ROUNDED LARGE BOULDER OF WATERBERG QUARTZITIC SANDSTONE. TRANSPORTED MATERIAL. POSSIBLY BY WATER.

**PHOTO No. 4.**

## PHOTO ALBUM.



DAM CONSTRUCTED WITH DARK RED TOP SOIL MATERIAL. NO CLAY CORE.  
DAM WALL FAILED DUE TO POSSIBLE PIPING AND HAVING NO FLOOD CAUSEWAY.

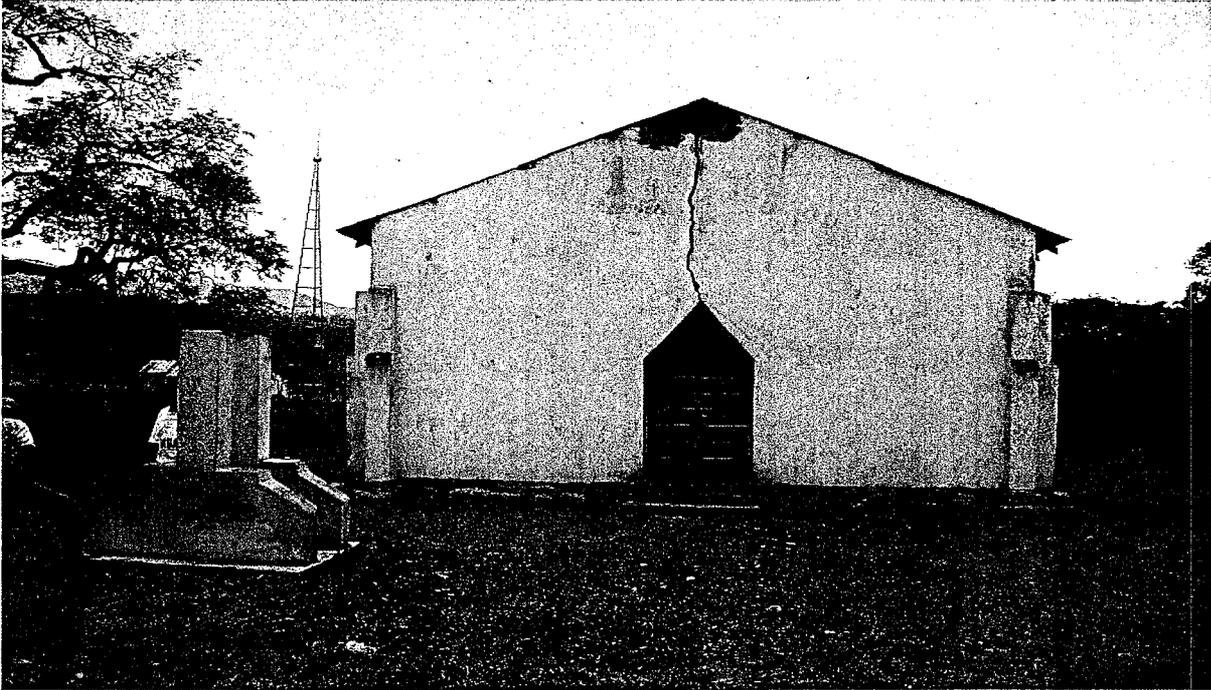
**PHOTO No. 5.**



**PHOTO No. 6.**

- ANT HILL BUILT WITH DARK RED TOPP SOIL OR A – HORIZON SOIL LAYER.
- NO INDICATIONS OF STONES BROUGHT UP FROM THE DEEPER LYING BOULDER AND GRAVEL TRANSPORTED MATERIALS.
- SOIL MATERIAL MADE UP OF SANDY CLAY.
- INDICATIVE OF DEEP SOIL PROFILE.

## PHOTO ALBUM.



OLD CHURCH BUILDING WITH VERTICAL CRACK THROUGH CENTRE OF BUILDING.

PHOTO No. 7.

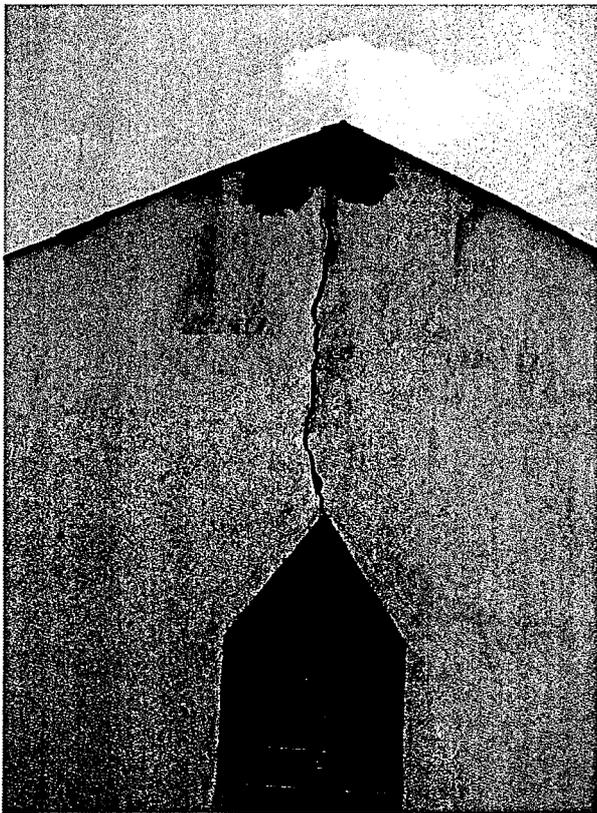


PHOTO No. 8.

- OLD CHURCH BUILDING WITH DISTRESS CRACK DOWN THE CENTRE OF THE STRUCTURE.
- CRACK MORE OPEN AT THE TOP.
- INDICATIVE OF DIFFERENTIAL HEAVE CAUSING DISTRESS.

## PHOTO ALBUM.

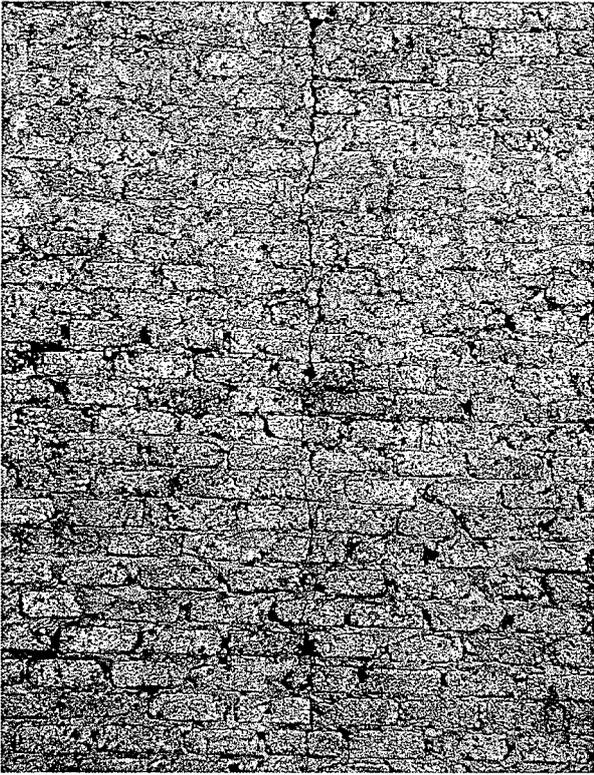


PHOTO No. 9.

- VERTICAL DISTRESS CRACK THROUGH MIDDLE OF RECENTLY CONSTRUCTED BUILDING.
- CRACK RUNS THROUGH CEMENT BRICKS AND IS MORE OPEN AT THE TOP.
- SOIL REACTIVITY CAUSED BY CHANGES IN SOIL MOISTURE CONTENT RESULTED IN GROUND HEAVE.
- HEAVE COUPLED WITH INADEQUATE FOUNDATION DESIGN IS EXPECTED AS CAUSE FOR THIS PROBLEM.

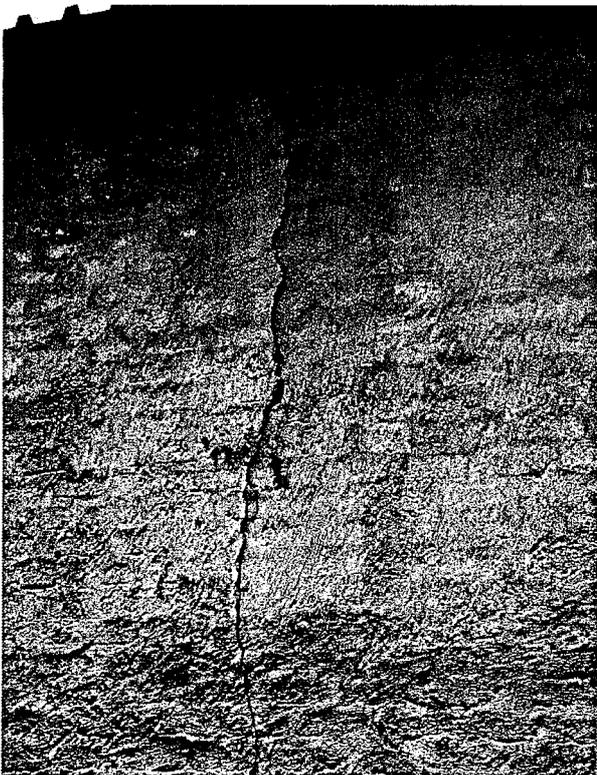


PHOTO No. 10

- VERTICAL DISTRESS CRACK THROUGH MIDDLE OF RECENTLY CONSTRUCTED BUILDING.
- CRACK RUNS THROUGH CEMENT BRICKS AND IS MORE OPEN AT THE TOP.
- SOIL REACTIVITY CAUSED BY CHANGES IN SOIL MOISTURE CONTENT RESULTED IN GROUND HEAVE.
- HEAVE COUPLED WITH INADEQUATE FOUNDATION DESIGN IS EXPECTED AS CAUSE FOR THIS PROBLEM.



**PRELIMINARY SERVICES REPORT FOR :  
KRANSPOORT: LAND RESTITUTION,  
PRESERVATION AND SUSTENANCE PROJECT**

**July 2004**

**DEVELOPER: VUKA PROMS (Pty) Ltd**

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**ANNEXURE A: LOCALITY DRAWING**

**ANNEXURE B: PHOTO'S**

**ANNEXURE C: LAYOUT DRAWING**



## **1. INTRODUCTION**

### **1.1 Background**

The Land Claims Court, has granted the restoration of the Kranspoort 48LS (Portion 2 & 3) to Kranspoort Community on 13 June 2001. The Department of Environmental Affairs & Tourism (DEAT) has initiated a land reticulation, preservation & maintenance project for the Kranspoort Community.

Vuka Proms (Pty) Ltd has been appointed to act as project managers for the implementation of the land restitution preservation and sustenance project to ensure the development & production of a local economy, based on sustainable development. This services report is to indicate how and to what standards the services will be provided.

### **1.2 The appointment**

Kwezi V3 Engineers (Pty) Ltd have appointed by Vuka as consulting engineers for the civil, electrical and structural engineering service.

In terms of the brief, the services must comply with the norms of Makhado Municipality and must be of similar standard to low cost housing developments of the Department of Local Government and Housing, Limpopo Province. The structure is to comply with the minimum standards and regulations of the National Building Regulations.

### **1.3 Scope of Report**

This report addresses the existing civil services and proposed rehabilitation and upgrading to the services, in and adjacent to the affected areas, as well as highlighting problems specific to the sites. The sizes and location of all existing services were obtained from site visits, as well as from discussions with local people.

The proposed new structures, with the minimum specifications, to be provided for the community member, are also discussed.



## **1.4 Information Supplied**

This report has been based on the information received from the relevant institutions, as well as site visits that.

Vuka Proms (Pty) Ltd provided an environmental scan report as well as a summary of the existing infrastructure.

A total of 120 households will be returning to Kranspoort according to information. 190 Stands will be developed.

## **2. STUDY AREA**

### **2.1 Location**

Kranspoort is located just North of the Makhado – Vivo Road (Road R522) in the Western Soutpansberg in the North Western Limpopo Province. It is, located approximately 21km east of Vivo and 45km west of Makhado within the Makhdo Municipal area.

### **2.2 Topography**

The affected area consists in general of the very gently sloping hills and well – defined watercourses.

### **2.3 Geology**

No specific information is available regarding the individual sites and will have to be investigated in detail before construction. A competent person shall make a proposal regarding foundation requirements for the envisaged structures. Special attention shall be given to the expected localized occurrence of collapsible soil or residual clays.

According to “ An engineering Geological Evaluation – Phase 1 : Desk study by De Villiers, Cronje & Ass”, the study area is mainly covered by surficial transported soils, overlying residual decomposed sedimentary and vulcanicrock, overlying Gneiss.



### 2.3 Servitude and Building Lines

All servitude's will be honored in accordance to the requirements of the Municipality where required.

### 2.4 Township Layout

See layout drawing as prepared by Vuka.

### 2.5 Existing Land Use

Remarks of agricultural activities that did take place on Kranspoort still exist. The plantations are however not well established.

### 2.6 Flood Lines

Flood lines of the watercourses in this village need to be calculated where needed in order to ensure that new infrastructure to be built are not within the 1:50 year flood line.

## 3. EXISTING INFRASTRUCTURE

### 3.1 Water

The water source is one (1) boreholes within the area located next to the man house, as well as an abstraction point from the maintenance. A collapsed windmill is present on the farm but investigations indicated that this windmill was used to supply water from a storage tank, which obtained water from a mountain streams. The borehole located in the vicinity of the main farm building was tested to determine the available yield of the borehole. The results of the tests indicated the following:

- Borehole depth = 47 m
- Installation depth = 45 m
- Water level = 26,4 m
- Yield = 0,14 ℓ / s
- Location = Long 29° 28' 26" , Lat 23° 03' 97"



Water quality results of the water samples (borehole & mountain stream) submitted to the laboratory are summarized as follows:

Sample Description		KRANSPOORTS BOREHOLE	KRANSPOORT STREAM
TDS	mg/l	298	74
Chloride	mg/l	15.0	9.3
Conductivity	mS/l	35.7	6.06
Sulphate	mg/l	17	2
p-Alcalinity	mg/l CaCO <sub>3</sub>	0.0	0.0
m-Alcalinity	mg/l CaCO <sub>3</sub>	179.7	14.5
Nitrate	mg/l as N	0.05	0.0
Fluoride	mg/l	0.10	0.05
Turbidity	NTU	23	2
PH		6.37	7.45
Nitrite	mg/l as N	0.0	0.0

From the results above it is clear that the water quality from the borehole is not to an acceptable standard. The water from the mountain stream seems very good, but due to the fact that it is a natural stream, some filtering will still be required.

There is no water purification works or Filter system. Water used to be pumped via rising mains to four (4) water tanks, of which none is currently in a functional condition. Water is currently obtained via a gravity feed pipeline from an abstraction point located in the mountain stream approximately 5 kilometers from the site. The storage reservoir is damaged beyond repair. The water reticulation comprises of two to three kilometers of pipelines to the orchard.

### 3.2 Sewerage

The sewer infrastructure consists of two ablution blocks and ablution facilities at the teacher's house. Drainage of the effluent is by means of septic tanks of which no details are available. These facilities are in a very bad state and need extensive upgrading before they can be utilized to accommodate people.



### **3.3 Streets**

The existing streets of Kranspoort consist of gravel (in most cases it is basically in situ soil that is graded) and are in general in a fairly accessible condition. It may be necessary to address some of the accesses to sites before construction can start because of limited localized poor condition of some of the streets. A very important aspect that will need approval is the main access to the site from the provincial road.

### **3.4 Storm Water Drainage**

No storm water drainage system exists within Kranspoort.

### **3.5 Structures / Buildings**

Existing residential buildings consists of the following:

- Seven (7) brick houses
- Five (5) traditional houses
- Two (2) brick houses without roofs (ruins)

This is in accordance with the "Guidelines for Human Settlement Planning and Design", as given out under the auspices of the Department of Housing (National).

### **3.6 Electricity**

No bulk electricity is available within the vicinity of the farm. The nearest ESKOM power supply is located at Buysdorp. Electricity was previously provided by means of a generator situated in the proximity of the main residence of the farm.

### **3.7 Solid waste**

No waste management/transfer infrastructure is available. Waste is being disposed of in pits dug in the vicinity of the exiting houses.



## 4. DESIGN STANDARDS

### 4.1 Water

The following will apply for the installation of the water supply to the development:

- Annual average daily demand (AADD) : 60 l/c/d
- Peak Factor: : 3.0 x AADD
- Residual pressure during peak : 20mm
- Fire protection: : None
- Pipes: : uPVC
- Storage capacity : 48 hours

### 4.2 Streets

- Slopes to follow natural ground line
- All roads have a cross fall of 3%
- Pavement Design
  - All Roads: In situ grader bladed
  - Road Widths All roads to be 5.0m wide
  - Regravelling: Material to comply to the specification of TRH20

### 4.3 Sewer

Ventilated improved pit latrines with lined pit (upgradeable to waterborne system)

### 4.4 Storm water

All storm water will be accommodated on the surface in channels created by the in situ grader bladed street operation.

A storm water master plan investigation will be conducted and where possible and affordable preventative measurements will be implemented.

Damaged storm water structures will be rehabilitated.



#### **4.5 Houses / Buildings**

All the applicable SABS codes, National Buildings Regulations and practices will apply. Refer to attached layout drawing of the proposed dwelling. Where the in situ conditions warrant special foundation requirements because of the presence of collapsible soil or high groundwater, the necessary adoption to standard foundations will be done.

### **5 NEW INFRASTRUCTURE**

#### **5.1 Water**

##### **5.1.1 Domestic**

A water source needs to be developed for the community due to the poor yield results of the boreholes. Two alternatives can be investigated.

- a) A geohydrological investigation need to be done and new boreholes need to be developed as water source. The boreholes will be equipped with diesel engines or solar panel engines. No special approval need to be obtained and it is anticipated that groundwater will suffice in supplying sufficient water to the community.
- b) The abstraction point in the mountain stream must be upgraded and pipelines installed to provide water to the developed area. An automatic gravity filter system or purification system will also need to be provided to supply clean and potable water to the community. Very little operation and maintenance will be required for this option. A license for water use will however be required from DWAF.

Each stand will be provided with a metered yard connection. Existing water distribution networks can be ignored and new water distribution networks will be installed.

New bulk water supply pipelines and bulk water storage facilities (reservoirs / tanks) with a total capacity of 150 kL will be constructed to serve the community up to yard connection standard.

##### **5.1.2 Irrigation**

Water for irrigation purposes can be obtained from the river. Approval from the department of Water Affairs will however be required. The damaged earth dam needs to be repaired and provided with the necessary filters, pumps, etc.



## **5.2 Sewer**

The potential owner will be provided with a ventilated improved lined pit latrine. Where the groundwater table is high, the pit will be sealed to prevent it from seeping full of water. This system will also be upgradeable to a water bourne system at a later stage.

## **5.3 Streets**

The streets will at least be graded. Where necessary, gravel will be imported to ensure sustainability. This will be done in collaboration wit the local authority. Special attention will be given to the compliances with regulations of the road authorities of the entrance to Kranspoort from the R522. The existing alignment of the road will be determined and applications will be made to Road Agency Limpopo for the access.

## **5.4 Storm water**

Existing storm water infrastructure will be rehabilitated where necessary and new storm water infrastructure will be implemented where required. Erosion trenches will be backfilled where necessary.

Stromwater will be accommodated on the road surface and in open channels where no storm water infrastructure exists.

## **5.5 Buildings / Houses**

A minimum of 40m<sup>2</sup> dwelling consisting of maxi brick walls, SA Pine door, steel windows and corrugated iron roof, al the minimum requirements for the SABS, will be provided at every stand, with a proposed size of 500 m<sup>2</sup>.

The position of the houses on the stand will be determined in consultation with the owner and officials.

Appropriate foundation construction will be provided to as to fit the geological conditions of the specific site.

Groundwater seepage problems will also be addressed where it is deemed necessary to ensure a sustainable structure.



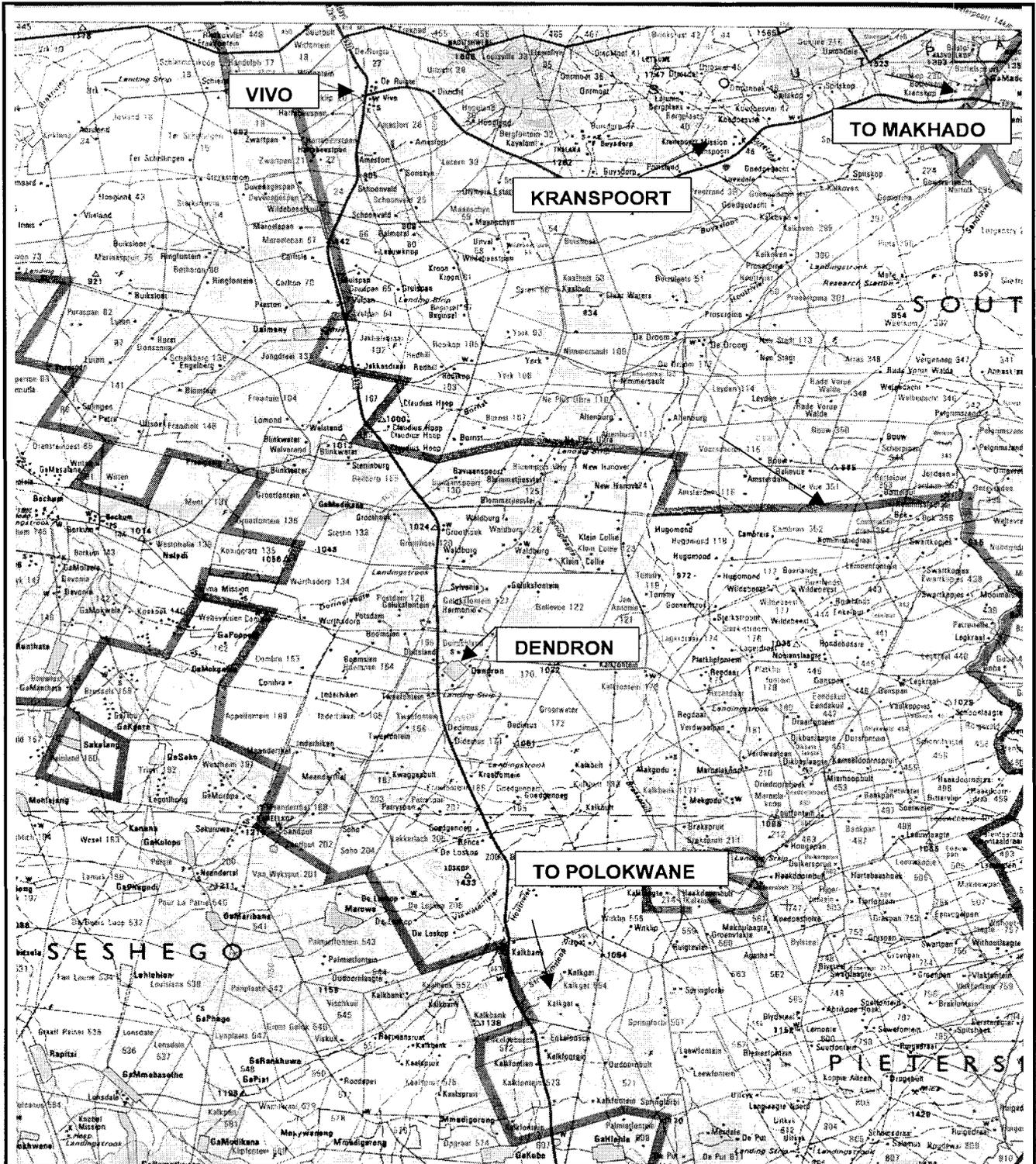
## **5.6 Electricity**

No Eskom electricity is available in the close proximity of the farm. The proposal is therefore to provide each household with solar panels to provide in their essential needs. No metering or payment will then be required as each household will take responsibility for their own solar panel electricity supply.

## **5.7 Solid waste transfer station**

A solid waste transfer point will be constructed for the removal of all solid waste from the site on a frequent basis. The Makhado Municipality indicated that they can attend to the removal of the solid waste from the transfer station if the community is paying municipal levies. A different alternative that can be investigated is to appoint a local member of the community with access to appropriate transport as responsible person for the removal of the solid waste.

**ANNEXURE A**  
**LOCALITY DRAWING**



**KWEZI V3 INGENIEURS**  
**KWEZI V3 ENGINEERS**



POSBUS/P O BOX 5633  
 POLOKWANE  
 0750  
 TEL (015) 297-2546/7

**BESKRYWING/DESCRIPTION**  
**LOCALITY DRAWING**  
**KRANSPOORT COMMUNITY SETTLEMENT**

**SKAAL/SCALE**

1:250 000

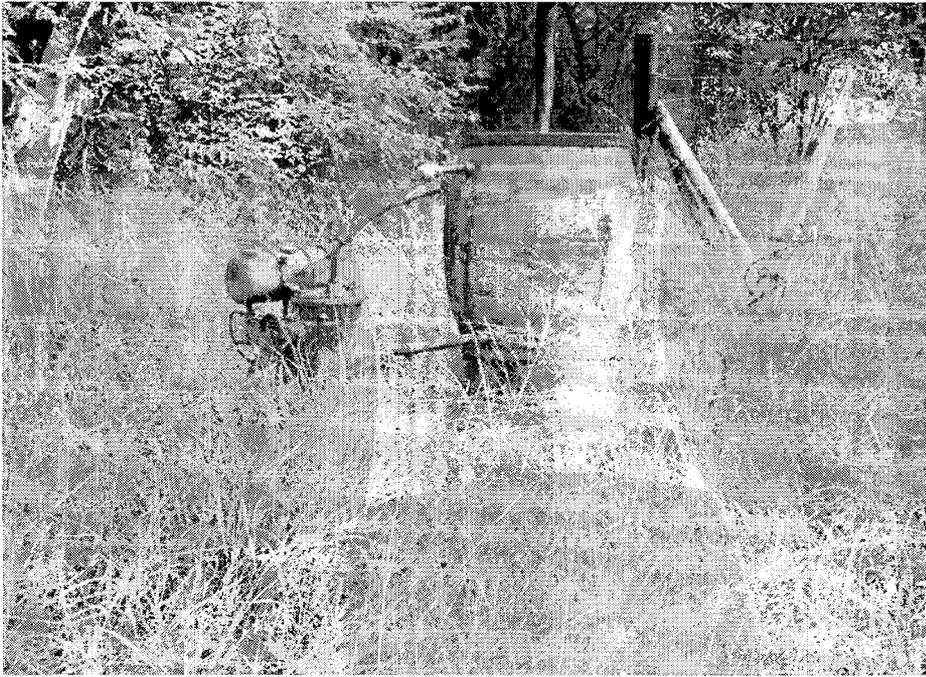
**ANNEXURE B  
PHOTOS**



**Existing access roads are only insitu bladed roads – need to be upgraded to gravel roads with stormwater infrastructure**



**Building outside main farm house that use to serve as the generator room**



**The existing borehole located close to the main farm house that used to supply water to the tanks**



**One of the existing elevated tanks on a steel tank stand. All the tanks are badly damaged and is not usable**



**This existing water retaining structure is currently provided with water from the mountain stream. . The structure is cracked beyond repair and can not be used as water retaining structure.**



**The existing ablution facilities at the staff residence. A septic tank has been constructed to handle the effluent.**

## **ANNEXURE C**