

**MASTERS IN ENVIRONMENT & DEVELOPMENT  
CENTRE FOR ENVIRONMENT AND DEVELOPMENT  
UNIVERSITY OF NATAL  
PIETERMARITZBURG**

**SUSTAINABLE MANAGEMENT IN A DISTURBED  
ENVIRONMENT: A Case Study of the Hogsback  
Working For Water Project**

**Jayne Alexandra Coleman  
Student Number: 982206958**

**Supervisor: Professor C.L. Breen  
Institute of Natural Resources  
University of Natal  
Pietermaritzburg**

**In partial completion of the requirements for the Masters in  
Environment and Development, Centre for Environment and  
Development, University of Natal, Pietermaritzburg.**

**December 1999**

## DECLARATION

I, Jayne Alexandra Coleman, declare that this thesis is my own work based on original research undertaken by myself except where otherwise stated, and that the dissertation has not been submitted for a degree at any other university.

A handwritten signature in dark ink, appearing to read 'J.A. Coleman', with a long horizontal flourish extending to the right.

**J.A. COLEMAN**

**13/12/1999**

## **ACKNOWLEDGEMENTS**

My supervisor: Professor Charles Breen

For incisive questions and comments, commitment, caring about the outcome and making his time available in a very busy life.

My husband: Michael Coleman

For endless patience, sharing his wide knowledge and giving me access to his personal library of relevant documents, papers and books, support in moments of crisis and making sure I didn't give up, and sacrificing his comfort and peace of mind for two years.

My son: Christopher Coleman

For wanting stories about dragons, keeping me in contact with what's really important in life and bringing me joy at unexpected moments.

The residents of Hogsback I interviewed

For giving the time to provide valuable information and the opportunity to interact with them about our beautiful mountain.

The Hogsback Community

For providing such a fascinating group of people to study.

Vanessa Daniels

For doing such a good job with the Xhosa interviews.

## **BURSARIES RECEIVED WITH GRATEFUL THANKS:**

HSRC: CSD bursary grant

University of Natal Pietermaritzburg: Graduate assistanceship

## TABLE OF CONTENTS

CHAPTER TITLE	PAGE NUMBER
<b>CHAPTER ONE: INTRODUCTION TO THE STUDY</b>	
1.1. STATEMENT OF THE RESEARCH PROBLEM	1
1.2. HOW THE RESEARCH PROBLEM WILL BE INVESTIGATED	1
1.3. RESEARCH OUTCOMES	2
1.4. SCOPE OF THE STUDY	2
<b>CHAPTER TWO: RESEARCH RATIONALE AND METHODS</b>	
2.1. RESEARCH RATIONALE	4
2.2. RESEARCH METHODS	4
2.2.1. Literature review	4
2.2.2. Definition of study area, population, community	5
2.2.2.1. Criteria used to define the study area	5
2.2.2.2. Criteria used to define the population and community	5
2.2.2.3. Sampling criteria for selecting survey population	6
2.2.2.4. Sampling method used to select sample population	7
2.3. QUESTIONNAIRE DESIGN	7
2.4. SURVEY METHODS	8
2.5. ANALYSIS OF SURVEY RESULTS	9
2.6. EVALUATION OF ENVIRONMENTAL PLANS AND IDP PLANS	9
2.7. EVALUATION OF WFW BUSINESS PLAN AND GOALS PROJECT PLANS AND GOALS	9
2.8. CONCLUSION	10
<b>CHAPTER THREE: THE PROBLEM OF INVASIVE ALIEN PLANTS IN SOUTH AFRICA AND GOVERNMENT RESPONSES SINCE 1994</b>	
3.1. INTRODUCTION	11
3.1. INVASIVE ALIEN VEGETATION IN THE SOUTH AFRICAN CONTEXT	11
3.2.1. Forestry and alien plant species in South Africa	13
3.2.2. Wattle species in South Africa	14

3.2.3.	Description of black wattle: <i>Acacia mearnsii</i>	15
3.2.4.	Habitat of <i>Acacia mearnsii</i>	16
3.2.5.	Control measures for <i>Acacia mearnsii</i>	16
3.3.	CONTROL OF INVASIVE ALIEN PLANTS	18
3.3.1.	Biological control	18
3.3.2.	Chemical control	18
3.3.3.	Physical control	19
3.3.4.	Integrated control	19
3.4.	THE SOCIO-ECONOMIC AND POLITICAL FACTORS INFLUENCING INVASIVE ALIEN CONTROL PROGRAMMES	19
3.5.	GOVERNMENT ACTIONS SINCE 1994 TO ADDRESS THE PROBLEM OF ALIEN INVASIVE PLANTS	20
3.6.	CONCLUSION	28

#### **CHAPTER FOUR: THE STUDY AREA**

4.1.	INTRODUCTION	30
<b>SECTION A:</b>	<b>A HISTORY OF ENVIRONMENTAL DISTURBANCE IN HOGSBACK DUE TO HUMAN DEVELOPMENT</b>	<b>30</b>
4.2.	THE PHYSICAL ENVIRONMENT OF HOGSBACK	30
4.2.1.	Geophysical Environment	31
4.2.1.1.	Geomorphology and soils	31
4.2.1.2.	Climate	32
4.2.1.3.	River catchments	32
4.2.2.	Biophysical Environment	34
4.2.2.1.	Vegetation in the Amatola Mountains	34
4.2.2.2.	Vegetation Types in Hogsback	36
4.3.	BIOPHYSICAL FACTORS THAT PRE-DISPOSE THE HOGSBACK ENVIRONMENT TO INVASION BY ALIEN VEGETATION	38
4.4.	INVASIVE ALIEN PLANT SPECIES OCCURRING IN HOGSBACK	38
4.5.	IMPACT OF INVASIVE ALIEN PLANTS ON THE HOGSBACK WATER CATCHMENTS AND WATER YIELD	38
4.6.	A HISTORY OF ENVIRONMENTAL DISTURBANCE IN HOGSBACK DUE TO HUMAN DEVELOPMENT	41
4.6.1.	Environmental changes to the vegetation over the past 150 years	42
4.6.2.	Changes in the grassland	42
4.6.3.	Changes in the forests	45

4.6.4.	Conservation status of the Hogsback area	50
4.6.5.	Management status of the Hogsback environment	50

## **SECTION B: A HISTORY OF SOCIAL DISTURBANCE IN THE HOGSBACK AREA 54**

4.7.	INTRODUCTION	54
4.8.	1800 – 1900: THE YEARS OF DISPOSSESSION	54
4.9.	1900 – 1994: THE YEARS OF OPPRESSION	58
4.10.	1994 – THE PRESENT: THE YEARS OF FLEDGLING DEMOCRACY	62
4.11.	MEDIA REPORTS AND HOGSBACK COMMUNITY CONFLICT IN 1998/99	65
4.12.	IMPACT OF COMMUNITY CONFLICT ON THE WFW PROJECTS IN HOGSBACK	69
4.13.	THE INTER-RELATIONSHIP BETWEEN THE ENVIRONMENTAL AND SOCIAL HISTORY OF HOGSBACK	71
4.14.	CONCLUSION	72

## **CHAPTER FIVE: RESULTS**

5.1.	INTRODUCTION	73
5.2.	INTERVIEWS WITH MEMBERS OF THE HOGSBACK COMMUNITY	73
5.2.1.	The socio-economic profile of the respondents interviewed	73
5.2.2.	Organisational membership of respondents	76
5.2.3.	Perceptions of wattle and the WFW projects	77
5.2.3.1.	Attitudes to wattle	77
5.2.3.2.	Use of wattle	79
5.2.3.3.	Kinds of businesses that could be developed using wattle	81
5.2.3.4.	Limiting factors for business development	82
5.2.3.5.	Views on the WFW projects	84
5.2.3.6.	Current problems and potential improvements to the WFW projects	86
5.2.3.7.	Views on future use of the cleared areas	88
5.2.4.	Roles of civil society and government in environmental management	90
5.2.4.1.	Individuals role in environmental management	90
5.2.4.2.	Role of the community in environmental management	93
5.2.4.3.	Role of the HLC in environmental management	95
5.2.4.4.	Role of the ADC in environmental management	98
5.2.4.5.	Role of the Provincial Government in environmental management	100
5.2.5.	EVALUATION OF THE ENVIRONMENTAL PLANS IN HOGSBACK	101
5.3.1.	The Hogsback Plantation Environmental Management Plan (Phase One)	102

5.3.2.	Conservation Management Plans: Hogsback, Hogsback Natural Heritage Site and Tor Doone Natural Heritage Site	104
5.3.3.	Hogsback Integrated Development Plan: Phase 1 & 2 Report: Spatial Issues and Strategic Framework	105
5.3.3.	EVALUTATION OF WFW BUSINESS PLAN AND GOALS	108
5.3.4.1.	Business Plan: WFW - Keiskamma Catchment	108
5.3.4.2.	Goals of the WFW projects	110
5.4.	CONCLUDING COMMENTS ON ENVIRONMENTAL PLANS FOR HOGSBACK	111

## **CHAPTER SIX: DISCUSSION OF FINDINGS: PROSPECTS FOR SUSTAINING WORKING FOR WATER AT HOGSBACK**

6.1.	WFW GOALS, OBJECTIVES AND APPROACH	113
6.2.	ENHANCING WATER YIELD AND APPROPRIATE CATCHMENT MANAGEMENT	114
6.3.	ACHIEVING CONTROL OF INVASIVE ALIEN SPECIES AND ENHANCING ECOLOGICAL INTEGRITY	114
6.3.1.	Problems with the follow-up phase of the programme	114
6.3.2.	Resource utilisation as a means of maintaining clearance	115
6.3.3.	What could contribute to the failure of the invasive alien control programme?	115
6.3.4.	Enhancing ecological integrity	117
6.4.	ACHIEVING BIODIVERSITY CONSERVATION	117
6.4.1.	The lack of long term strategies and plans for the land use and rehabilitation of the cleared areas	118
6.4.2.	The lack of WFW participation in local environmental planning	118
6.4.3.	The shortage of suitable seeds and planting material, especially of indigenous plant species	119
6.4.4.	"Leave it to nature" recovery is unlikely to succeed	119
6.4.5.	The aggressive pioneer growth characteristics of invasive alien species enabling rapid recolonisation of cleared areas	120
6.4.6.	The impact of clearance on fuelwood utilisation patterns by the local communities - increased use of indigenous forest timber resources	120
6.4.7.	Impact of clearance on the riparian environment	121
6.5.	EMPOWERING PEOPLE	121
6.5.1.	Empowerment through employment	121
6.5.2.	Empowerment through training	122

6.6. THE PROMOTION OF ECOTOURISM	122
6.7. THE PROMOTION OF SECONDARY INDUSTRIES	123
6.8. SUSTAINING THE PROCESS	125
6.8.1. Positive factors that will contribute towards sustaining the process	125
6.8.2. Management problems as a threat to sustaining the process	125
6.8.3. Community conflict as a threat to sustaining the process	127
6.8.4. Lack of public and community awareness and involvement as a threat to sustaining the process	127
6.9. SUSTAINING WFW PROJECTS IN HOGSBACK: DEALING WITH THE SOCIAL CONTEXT AND COMMUNITY CONFLICT	128
6.10. RECOMMENDATIONS FOR WORKING FOR WATER	129
6.10.1. Water security	129
6.10.2. Control of invasive aliens	129
6.10.3. Conservation of biodiversity	130
6.10.4. Empowering People: Employment/Job Creation	130
6.10.5. Promotion of ecotourism and productive use of land	130
6.10.6. Creation of secondary industries	130
6.10.8. Communities, communication and partnerships	131
6.11. CONCLUSION: CHALLENGES FOR WFW	131
<b>REFERENCES</b>	<b>133</b>

## LIST OF TABLES

TABLE NR	TITLE	PAGE NUMBER
TABLE 1:	Criteria used to define the population and community	6
TABLE 2:	Criteria used in selecting survey population	6
TABLE 3:	Questionnaire design	7
TABLE 4:	Control methods for <i>Acacia mearnsii</i>	16
TABLE 5:	Delegation of local authority at provincial level	28
TABLE 6:	Threatened plant species occurrence in Hogsback	41
TABLE 7:	Demographic profile	74
TABLE 8:	Employment profile	74
TABLE 9:	Income profile	75
TABLE 10:	Land tenure profile	75
TABLE 11:	Membership of organisations by respondents	76
TABLE 12:	Attitudes towards wattle	77
TABLE 13:	Use of wattle by respondents	79
TABLE 14:	Potential businesses that could be developed using wattle	81
TABLE 15:	Business development limitations	83
TABLE 16:	Views of WFW projects	84
TABLE 17:	Problems and proposed solutions for WFW projects	86
TABLE 18:	Recommended future use of the cleared areas	88
TABLE 19:	Individuals role in environmental management	91
TABLE 20:	Role of the community in environmental management	93
TABLE 21:	Role of the HLC in environmental management	95
TABLE 22:	Role of the ADC in environmental management	98
TABLE 23:	Role of the Provincial Government in environmental management	100
TABLE 24:	Achievement of national and catchment goals of WFW in Hogsback WFW projects	110
TABLE 26:	Factors that could contribute to failure of invasive alien plant control	115

## LIST OF MAPS

MAP NR.	MAP TITLE	PAGE NUMBER
MAP 1:	Distribution of <i>Acacia mearnsii</i> invasion in Southern Africa (Map after Grenfell, 1976)	17
MAP 2:	Hogsback's geographical location	31
MAP 3:	Hogsback water catchments (Map prepared by J.A. Coleman from 1:50 000 map: Mapsheet 3226DB)	33
MAP 4:	Vegetation distribution in Hogsback (From: Hill Kaplan Scott, 1989 - Keiskamma River Basin natural resources survey vegetation map)	37
MAP 5:	Territorial losses: 1779 - 1850; Map showing the loss of land by the Xhosa to the Cape Colony (From: The House of Phalo, J.B. Peires, 1987)	53
MAP 6:	Areas invaded by <i>A. mearnsii</i> in Hogsback (Based on personal observation & discussion with WFW contractors)	109
MAP 7:	Keiskammahoek WFW project areas targeted for clearance in 1998 (From WFW Business Plan - 1997/98)	109

## LIST OF PHOTOGRAPHS

(All photographs: J.A. Coleman and M. Coleman)

NR.	PHOTOGRAPH TITLE	PAGE NUMBER
1.	The study area from the Hogsback mountain - panoramic view from Gaika's Kop to King's Neck of a landscape altered by invasive alien Vegetation	Frontispiece
2.	View of the 3 Hogsback peaks from Hogsback village	Frontispiece
PHOTOGRAPHS OF INDIGENOUS VEGETATION IN HOGSBACK		35
3.	Watsonias blooming after fire	35
4.	Indigenous forest canopy	35
5.	Lip flower Protea ( <i>Protea simplex</i> )	35
6.	Indigenous forest canopy	35
7.	Yellowwood tree ( <i>Podocarpus spp.</i> )	35
8.	Waterfall on the Tyumie river	40
9.	Snow on the Hogsback	40
PHOTOGRAPHS OF SOME OF THE AREAS IN HOGSBACK CLEARED OF WATTLE BY THE WFW PROJECTS		
10.	Typical <i>Acacia mearnsii</i> (black wattle) invasion in Hogsback	51
11.	Re-growth on area cleared of <i>A. mearnsii</i>	51

PHOTOGRAPHS OF WFW PROJECTS IN HOGSBACK	
11. WFW labourers at work cutting and stacking fuelwood	52
12. Fence poles stacked after clearing and prior to collection on site	52
13. WFW contractor, James Ndzaleni at work on a private contract in Hogsback to clear a plot for bed and breakfast rondavels.	52
14. In the foreground the wattle cleared 6 months previously. In the mid-ground it was cleared 1 month previously. In the background it is 10 to fifteen years old.	80
15. This river was a dense stand of wattle prior to clearing. The contractor was still completing the work.	80
16. The newly cleared area near Madonna & Child waterfall is thick with bramble.	80
17. This area burnt after clearing. It is thick with wattle seedlings.	80
INFRASTRUCTURE DEVELOPMENTS IN HOGSBACK IN 1999	106
18. Notice of construction of new water scheme	106
19. Construction of Plaatjieskraal dam	106
20. The new Craft Market in the village.	106
21. The new reservoir for the water scheme	106
22. Notice of the construction	106
PHOTOGRAPHS OF THE HOGSBACK ENVIRONMENT AND DEVELOPMENTS	112
23. Typical roadside wattle invasion post clearing with no follow-up clearing. This wattle grew in one season.	112
24. The new boardwalk at Hogsback with James Ndzaleni, a WFW contractor and community leader, and Christopher Coleman.	112
25. The west face of Hogsback 1 after a scheduled control burn of the macchia vegetation. The hiking trail runs to the top of the mountain.	112

## LIST OF ILLUSTRATIONS & EARLY PAINTINGS

TITLE OF ILLUSTRATION/PAINTING	PAGE NUMBER
Thomas Baines: The Amathole Mountains – 1835 <i>(Thomas Baines travels in South Africa)</i>	44
Painting of the 'Ruins of Auckland' - 1851 <i>(The Edges of War)</i>	44
WAR IN THE AMATOLAS AND ITS CONSEQUENCES	53
The Highlanders and Port Elizabeth Fingo Levy storming the position in the Amatolas. <i>(Thomas Baines - Courtesy of the Africana Museum, Johannesburg)</i>	53
Collage of newspaper cuttings on Hogsback in 1998/99	66

## **ABBREVIATIONS**

WFW	Working For Water
DWAF	Department of Water Affairs and Forestry
RLCC	Regional Land Claims Commission
DLA	Department of Land Affairs
RDP	Reconstruction and Development Programme
GEAR	Growth Employment and Redistribution Strategy
DEAT	Department of Environmental Affairs and Tourism
HLC	Hogsback Local Council
HRA	Hogsback Ratepayers Association
UDHAR	United Democratic Hogsback Association of Residents
SANCO	South African National Civics Organisation
SAFCOL	South African Forest Company Limited
IDP	Integrated Development Plan
LDO	Land Development Objective

## ABSTRACT

Invasive alien plants in South Africa have become one of the major environmental problems affecting millions of hectares of productive and conservation land. *Acacia mearnsii*, black wattle, is a key invader species along the eastern escarpment. The major rivers of the country rise on this escarpment and the water catchments have been severely affected by black wattle invasion that has reduced water flow and increased soil erosion. The government introduced the Working For Water (WFW) programme in 1995 in order to address the problem of invasive alien plants in the country while, at the same time, creating job opportunities.

This study researches the implementation of WFW projects in the small mountain village of Hogsback in the Amatola Mountains since their inception in 1996/97. The main research question posed by this study is: ***"What factors support or threaten sustainable environmental management through the Working For Water Programme in the Hogsback area?"*** It gives a history of the environmental changes since 1800 as a result of human disturbance. The social history of the area is described from the viewpoint of the social and cultural disturbances that led to the present day community conflict. The interface between the environmental and social history is then discussed.

Semi-structured interviews were held with twenty eight members of the Hogsback community to solicit their views and perceptions of the WFW projects and the role of civil society and government in sustainable environmental management of invasive alien vegetation. Environmental and development plans undertaken for the Hogsback area were analysed. The results were then discussed in terms of the national and regional goals of WFW.

The findings indicated that most of the goals of WFW have not met with great success in Hogsback. A number of limiting factors were identified, the primary one being community conflict, both within and without WFW. As the community struggles to address the aspirations of the landless and economically deprived black population while, at the same time, addressing the fears of the white population, the rapid rate of societal, governance and legislative change since the election of the democratic government in 1994 contributed to an environment of uncertainty. Within WFW, there are management problems that have limited the success achieved in clearing invasive alien species in the catchment. The lack of long-term strategic plans, sufficient accurate data and hands-on management are shortcomings in the local projects. The likely long-term effects of large scale clearing in this disturbed environment, without proper rehabilitation, are serious concerns.

The study proposes a number of potential avenues to address the problems uncovered in WFW in Hogsback. These are addressed within the framework of WFW's national goals. It is recommended that water security will best be addressed by building a comprehensive information base for good catchment management to take place. Control of invasive alien species requires better project planning, management and implementation. Conservation of biodiversity will depend upon rehabilitation of cleared areas and monitoring of critical species. Empowerment will best be served by providing longer contracts and skills training. The promotion of ecotourism requires strategic partnerships with ecotourism developments and plans implemented by other agencies. The creation of secondary industries can only take place if feasibility studies and promotion of suitable ventures are undertaken. Other recommendations primarily address the issue of building partnerships with organisations that can contribute towards WFW

## FRONTISPIECE



1. The study area from the Hogsback mountain – a panoramic view from Gaika's Kop to King's Nek of a landscape altered by invasive alien vegetation



2. View of the 3 Hogsback peaks from Hogsback village

## **CHAPTER ONE**

### **STATEMENT OF THE RESEARCH PROBLEM**

#### **1.1. STATEMENT OF THE RESEARCH PROBLEM**

Invasive alien plants have invaded hundreds of square kilometres of land in South Africa. The Department of Water Affairs and Forestry (DWAF) estimates that 403 000 ha of land are densely infested, 232 000 ha have medium infestations and 1 074 000 ha are lightly infested (*Jelinek & Breen, 1997*). Between 780 and 970 invasive alien plant species have been recorded in South Africa (*Fuggle & Rabie, 1994*). Wells *et al*, (1986) listed 47 transformer species. The Department of Water Affairs and Forestry (DWAF) launched the Working For Water (WFW) programme in September 1995. It is a national programme that identified its mission to "...enhance water supplies by empowering local communities to carry out catchment management projects that focus on the eradication of invasive alien plants" (*African National Congress, 1996*). It has six primary objectives (*The Working For Water Communication Project, 1999*):

1. Water security
2. Productive use of land
3. Conservation of biological biodiversity
4. Reduction of the intensity and frequency of fires and floods
5. Employment
6. Creation of secondary industries

The research problem identified for this study is:

**What factors support or threaten sustainable environmental management through the Working For Water Programme in the Hogsback area?**

#### **1.2. HOW THE RESEARCH PROBLEM WILL BE INVESTIGATED**

The study will investigate this problem by evaluating the implementation of the WFW programme in the Hogsback area and investigating community perceptions of WFW. Secondly, the potential involvement of civil society and government in long term management control of invasive alien species will be investigated. The impact of community conflict and lack of community capacity on the WFW programme will be investigated. The views of the community on WFW and its implementation at local level will be investigated. The case study will be the Hogsback area and the WFW projects implemented since 1996.

### **1.3. RESEARCH OUTCOMES**

The research outcomes that have been identified for the study are:

1. To establish community perceptions of wattle and WFW.
2. To establish community perceptions of potential land use options for areas cleared of invasive alien plants.
3. To establish perceptions on the roles of civil society and government in environmental management.
4. To evaluate existing policies and plans in order to develop recommendations on long term management and control of invasive alien plants in Hogsback.
5. To undertake a literature review of invasive alien plants and their control in South Africa, the Eastern Cape and the study area.
6. To make recommendations to WFW.

The study will research the history of environmental and social disturbances that contributed towards the creation of the present invasive alien problem and community conflicts. Where there is societal conflict, environmental problems cannot be addressed as only technical problems. In order to address the environmental problems it is necessary to address the social problems. The underlying premise of this study is that environmental problems always have a social and development component and that in order to address the environmental problem it is necessary to address the social and development problems that contributed to the environmental problem. It is also presumed that it is not possible to obtain a full picture of the present day problems without looking at the history that created those problems. This study will attempt to provide some guidelines on how the environmental and social problems can be dealt with in a realistic and holistic way.

### **1.4. SCOPE OF THE STUDY**

This study will:

1. Investigate the history of environmental disturbance in the Hogsback area and how this contributed to the invasion of the catchments by alien plant species.
2. Investigate the history of social disturbance in the Hogsback area and how this contributed to the present day community conflict and lack of capacity.
3. Investigate the history of timber utilisation, the resulting impact on the natural environment and how this contributed to the establishment of the invasive alien plant problem in the Hogsback area.

4. Investigate the conflict between the environment and development that arose as a result of the historical environmental and social disturbances.
5. Investigate the WFW programme in Hogsback, and the problems it has encountered.
6. Report on the community conflicts in the Hogsback area that took place during the course of the study and how these contributed to the problems being experienced in addressing the question of environmental management.
7. Report and analyse the findings of interviews held with Hogsback residents regarding the WFW programme and management of the environment.
8. Identify the underlying problems that need to be addressed before successful environmental management can take place.

This chapter has laid the background for this study on investigating how civil society and local government can be involved in sustainable environmental management of environments affected by invasive alien plants. The next chapter outlines the research rationale and methods.

## **CHAPTER TWO**

### **RESEARCH RATIONALE AND METHODS**

#### **2.1. RESEARCH RATIONALE**

The invasion of mountain catchment and riparian zones on the eastern escarpment of South Africa by invasive alien plants has affected hundreds of thousands of hectares and reduced the water production capacity of major river catchment systems in the area. In addition, biodiversity has been reduced, especially in indigenous forests and mountain grasslands (Fuggle & Rabie, 1994). The WFW programme to remove invasive alien plants from these catchments was initiated in 1995. The Keiskamma catchment, Eastern Cape, was one of the first WFW project areas within which Hogsback was identified as one of the priority areas (Department of Water Affairs & Forestry, 1997). The study investigates community perceptions of the WFW projects in Hogsback and views on how civil society and government can become involved in managing the area to control invasive alien plants in the long term.

#### **2.2. RESEARCH METHODS**

The following research methods are used in the study:

- A literature review, conducted in 1998
- Criteria for selecting interviewees were established
- Purposive and snowball sampling methods were used to select the sample population
- Semi-structured interviews with individuals using a prepared questionnaire conducted in 1998/1999
- Analysis of interviews undertaken in 1999

##### **2.2.1. Literature review**

A literature review was undertaken of:

1. Policies, legislation and programmes relating to the environment at national, provincial and local government levels that are relevant to the study.
2. Invasive alien plants, the history of their establishment in South Africa
3. Control methods used on *Acacia mearnsii*
4. An historical review of environmental disturbance in the Tyumie Valley and Hogsback over the past 200 years and how this contributed to the present alien invasive problem.

5. An historical review of the social disturbance in the Tyumie Valley and Hogsback over the past 200 hundred years and how this has contributed to the present community conflict and its effect on environmental issues, projects and concerns.
6. WFW: Policies, business plans.
7. Hogsback environmental and development plans.

### **2.2.2. Definition of study area, population, community**

The study area was selected for the following reasons:

- It has an alien invasive problem, primarily, with *Acacia mearnsii*, *A.melanoxylon* and *Pinus patula*.
- It has participated in the WFW programme of DWAF since 1996.
- It is in the process of implementing an Integrated Development Plan (IDP) that incorporates environmental action plans.
- It is sufficiently small that a study could be completed in the available time and still produce meaningful results.
- It is a complex community with a wide range of social categories and opinion.

#### **2.2.2.1. Criteria used to define the study area**

The study area was defined geographically and according to the municipal boundaries.

- Hogsback municipal boundaries
- Catchment boundaries of the Tyumie, Klipplaats and Kat rivers.
- The peaks of the Hogsback mountains and Gaika's Kop.
- The escarpment at 1000m above sea level.

#### **2.2.2.2. Criteria used to define the population and community**

The following criteria were developed in order to group the population and community:

**TABLE 1: Criteria used to define the population and community**

<b>Geographical</b>	<b>Administrative</b>	<b>Tenure System</b>	<b>Economic Sector</b>
Catchment boundaries of the Tyumie, Klipplaats and Kat rivers.	Hogsback Transitional Local Council	Private land owners	Subsistence/ Unemployed
The peaks of the Hogsback mountains and Gaika's Kop.	Hogsback municipal boundaries.	Lessees/tenants	Forestry/WFW and related economic activities
The escarpment at 1000m above sea level.		Non-paying tenants	Ecotourism
		State ownership	Crafts, furniture

**2.2.2.3. Sampling criteria for selecting survey population**

Stakeholders and important interest groups were established in discussion with community leaders. The survey population was then selected from these using the following sampling criteria:

**TABLE 2: Criteria used in selecting survey population**

<b>ETHNIC GROUPS</b>	<b>POLITICAL GROUPS</b>	<b>BUSINESS GROUPS</b>	<b>SOCIAL/ ENVIRONMENTAL GROUPS</b>
White Black	Affiliation	Forestry: Timber Production Timber Harvesting Timber Processing Timber Sales WFW	Aim
	Membership	Tourism: Hotels Self-catering establishments Bed & Breakfast establishments Backpackers establishments	Membership
	Leadership	Formal Retail: Supermarkets Crafts Services	Leadership
	Community Role	Informal: Crafts Health & Beauty	Community Role

#### 2.2.2.4. Sampling method used to select sample population

The sampling method used to select the sample population was purposive sampling that *"handpicks the cases to be included in the sample on the basis of his judgement of their typicality...a sample that is satisfactory to his specific needs"* (Cohen & Manion, 1984). The respondents were selected after all potential organisations and key employment sectors were identified. Letters were posted to each organisation requesting them to nominate a representative to participate in the survey. The objectives of the study and a brief overview of WFW was included in the letter to assist the organisations in nominating representatives.

In addition, snowball sampling was used that *"identifies a small number of individuals who have the characteristics...required. These people are then used as informants to identify others who qualify for inclusion..."* (Cohen & Manion, 1984). WFW contractors and the local council were asked to organise employees working on WFW projects to participate in the survey. A representative gender division was requested. Interviews were then arranged. A public notice was placed at the local post office requesting any member of the public who was interested in participating in the study to contact the researcher.

### 2.3. QUESTIONNAIRE DESIGN

The questionnaire was designed using the following criteria:

**TABLE 3: Questionnaire design**

MAIN SECTIONS OF THE QUESTIONNAIRE	SPECIFIC AREAS THAT REQUIRE QUESTIONS
SOCIO-ECONOMIC INFORMATION	Age Gender Employment Land Tenure Organisational affiliations Income No/employees
PERCEPTIONS	Working For Water Wattle Land Use Wattle clearance Management of WFW projects
RESOURCE UTILISATION PATTERNS	Raw Timber Cut Timber Firewood Construction Crafts Cultural
RESOURCE NEEDS	Grazing Crops Gardens
ROLE OF DIFFERENT LEVELS OF SOCIETY IN ENVIRONMENTAL MANAGEMENT & DECISION-MAKING	Individuals Community Hogsback Local Council Amatola Regional Council Provincial Government departments

The questions were structured to obtain the following information:

- Demographic and socio-economic information of interviewees.
- Questions to elicit perceptions, attitudes and views on *A. mearnsii* and the WFW Project in the study area.
- Potential land use management options for the alien invasive areas and utilisation of *A. mearnsii*.
- Questions to elicit perceptions and views on the role of civil society and government at local, district and provincial levels.

The questions were all open-ended. In addition there was room for general discussion around the issues raised in the interviews.

## **2.4. SURVEY METHODS**

There are two main types of interviews: Structured and unstructured Interviews. *"In a structured interview there is a definite set of questions prepared in advance. ...The interviewer cannot deviate from the prepared questions"* (Mann, 1985). In comparison, in unstructured interviews *"The exact questions are left open ...open-ended questions are asked, and the respondent is allowed to discuss his answer without restrictions."* (Mann, 1985). The method chosen for this study is a mix of an structured and unstructured interview - i.e. a Semi-Structured interview with open format questions. Questions were prepared but without pre-set answers. The respondents discussed their answers and follow-up questions asked based on the responses.

The research interviews were undertaken *"for the specific purpose of obtaining research relevant information"* (Dooley, 1995). Face-to-face interviews were held in order to *"maximise trust and co-operation between interviewer and interviewee"* (Dooley, 1995).

A series of semi-structured interviews were held with selected stakeholders and organisational representatives. A total of 15 black community members and 13 white community members were interviewed. The total number of people living in the village according to the 1996 national census was 532, of whom about 360 were adults. The survey, therefore, interviewed 7.5.% of the adult population of Hogsback.

Questionnaires were used as the basis for discussions. The questionnaires were composed of 31 questions, including 10 questions to elicit socio-economic information. The interviews offered opportunities for general discussion around issues raised or which the respondents

felt were important. The interviews took one to one-and-a-half hours each. Interviews were held, where possible, at the respondents' homes. A Xhosa speaking interviewer was employed to interview Xhosa speaking respondents. She translated the responses into English and the results were then transcribed.

The interviewers took verbatim long hand notes of respondents' replies. The completed questionnaires were then transcribed and, where necessary translated.

## **2.5. ANALYSIS OF SURVEY RESULTS**

The transcribed interviews were analysed for the following:

- Socio-economic grouping of respondents interviewed.
- Views and perceptions of black wattle, *A. mearnsii*.
- Views and perceptions of the Working For Water project.
- Views and perceptions of potential sustainable land use management options.
- Views and perceptions of the role of individuals and the community in environmental management and decision-making.
- Views and perceptions of the role of government in environmental management and decision-making at local, district and provincial level.

An initial quantitative analysis was made of the results and these were tabulated. The responses were analysed qualitatively by ethnic group and gender to identify areas in common and underlying attitudes.

## **2.6. EVALUATION OF ENVIRONMENTAL PLANS AND IDP PLANS**

Copies of all existing environmental plans undertaken in the area on behalf of the community since 1992 were accessed. The Integrated Development Plans (IDP) and Land Development Objectives (LDO) plans were obtained from the Hogsback Local Council (HLC). The plans were examined for references to alien invasive vegetation and for references to community involvement and participation in drafting them.

## **2.7. EVALUATION OF PROJECT PLANS AND GOALS**

The WFW Project Management Plans were accessed from the manager of the project in Hogsback. These were examined to determine the methods used and organisational structure adopted by the project. Meetings were attended and notes made on conflict that emerged and

how the responsible managers had dealt with it. The problems that had been experienced with the community were examined in order to determine the root causes of the problems and how the problems had affected the implementation of the project management plans.

The national and regional WFW Programme and project goals were tabulated and then analysed in terms of the success achieved in fulfilling these goals in the Hogsback WFW projects. Four categories were used: Good, fair, questionable and poor.

## **2.8. CONCLUSION**

The study methods have been selected to investigate representative community views and perceptions that could contribute to a better understanding of how WFW has been implemented in Hogsback. Identification of problem areas and potential solutions were priority concerns of the research.

## CHAPTER THREE

### THE PROBLEM OF INVASIVE ALIEN PLANTS IN SOUTH AFRICA AND GOVERNMENT RESPONSES SINCE 1994

#### 3.1. INTRODUCTION

Over the past 200 years invasive alien plants have become major agents of land transformation around the world. Thousands of foreign species of plants have been introduced into ecosystems and have thrived in their new environments to such an extent that they have replaced indigenous vegetation in millions of hectares of land. In many cases their spread has been encouraged by disturbance of the environment by agricultural, mining, road building and overgrazing activities (*Fuggle & Rabie, 1994*). The invasive species "*produce a marked change in the composition and structure of communities as well as ecosystem processes*" (*Richardson et al, 1997*).

#### 3.2. INVASIVE ALIEN VEGETATION IN THE SOUTH AFRICAN CONTEXT

Invasive alien plants are described as such because of the ability of different species to colonise areas very rapidly and to develop into monocultures which exclude all other vegetation but, especially, slower growing indigenous vegetation. These species are known as transformer species due to the way in which they transform environments (*Richardson et al, 1997*).

In South Africa invasive alien plants have become a major environmental and economic problem. It is estimated that at least 1.71 million ha is affected to a greater or lesser degree by invasive alien vegetation in South Africa that utilise 1.50 billion m<sup>3</sup> of water per annum (*Breen & Jelinek, 1997*). The most affected are the Fynbos biome and the eastern coast escarpment catchments (*Fuggle & Rabie, 1994*). Widespread ecological damage and lost agricultural and other land-use options are estimated to have cost several billion rand (*Yeld, 1997*). Van Wilgen, (1997) stated "*the declines in water yield resulting from unchecked invasions of the catchment areas would be disastrous for the water supplies to cities, industries and agriculture, and could be ill afforded*". DWAF estimated that if invasive alien plants were not controlled they will lead to a loss of about 3 000 million m<sup>3</sup> of water per year and the cost of replacing this "lost" water will be in the region of R12 000 million. In addition over 1 000 plant and animal species may become extinct (*Department of Water Affairs & Forestry, 1997*).

By the mid 1980s it was estimated that between 780 and 970 invasive alien plant species had been recorded in South Africa (Richardson *et al*, 1997). Wells *et al*, (1986) listed 47 transformer species. The transformer species are dominated by the *Acacias* (10 species), and the *Eucalyptus* and *Pinus* species (5 each). Sixty three percent are trees and shrubs and 79% are perennials. (Richardson, *et al*, 1998)

Owen (1985) and Welis (1986) identified the following characteristics of invasive alien plant species:

- very heavy seed loads;
- damage resistant seeds;
- seeds that are disease resistant;
- seeds that are, either inedible by most indigenous fauna, or favoured by indigenous birds and mammals as food in preference to original indigenous food sources;
- vegetative propagation, in a number of cases;
- coppice rapidly when slashed;
- allelopathic suppression of competitor species;
- fire resistant mature trees and seeds.
- inherently high transpiration rates and greater biomass.

The most significant ecological changes resulting from alien invasive plants are the establishment of a monoculture in place of a diverse habitat, changes in soil chemistry, geomorphological processes, fire regimes and hydrology, plant extinctions and, in South Africa, destruction of riparian habitats (Richardson *et al*, 1997).

Monocultures form artificial, man-made, simplified ecosystems. They lack the built-in balancing mechanisms incorporated in more complex natural ecosystems that are composed of multi-aged, multi-species communities. The single-species, single-aged communities primarily serve one function: for example, wood or food production (Owen, 1985). Alien tree species have been proved to utilise significant amounts of water that in areas with dense infestations may result in reductions in water flow into catchment areas from between 30 to 70% (Van Wilgen & Little, 1997; Richardson *et al*, 1997). There is substantially increased risk of runaway fires, especially where species such as *Acacias* or *Eucalypts* with high volatile oil contents in their leaves are particularly flammable in drought conditions (Adams & Simmons, 1996). Riparian zones that are densely infested by alien plants are more prone to erosion and flood damage which in turn alters the river system itself as soil is deposited into the stream bed (Richardson *et al*, 1997)

### 3.2.1. Forestry and alien plant species in South Africa

In South Africa more than 100 species of alien fauna and flora have invaded all seven major biomes. Fynbos, savanna and forest biomes have the highest percentage of land invaded by alien plant species. The savanna, grassland and forest biomes have the largest number of invasive species. There are 40 invasive alien plant species in grassland biomes and 36 in forest biomes. In the indigenous forests *"Eighty four percent of the aliens recorded from closed forest were regarded as passive or active invaders, compared to only 32% of the aliens from open forest. ... Most alien invader plants in the forest establish only in disturbed forest margins or large gaps in heavily exploited forest"* (Geldenhuys et al, 1985). Fragmentation and exploitation of the indigenous forest for timber resources renders it more susceptible to invasion by alien plants.

The most important types of invasive plants in South Africa are woody plants. It is postulated that the reason is because of the importation of woody plants by earlier colonists to provide necessary timber resources (Richardson, et al, 1997). South Africa was never richly endowed with indigenous forests. It is estimated that historically about 4% of the land area was covered with indigenous forests (Fuggle & Rabie, 1994). This has now been reduced to approximately 0.25% of the country (Cooper, 1985). Those that occurred were exploited intensively for their timber from the time of European settlement in the Cape. *"Within 30 years of white settlement at the Cape, legislation had been introduced to protect some of Table Mountain's resources through prohibitions against the felling of trees and against grazing"* (Fuggle & Rabie, 1994). By the late 1600's the populace of Cape Town were already travelling as far afield as the present day Knysna and George to remove timber for building wagons, homes and other purposes.

By the late 1800's, most of the loggable timber in the indigenous forests had been extracted and many forests were in a very poor state. In order to address this problem the newly appointed Forest Commissioners decided that it was necessary to start planting fast growing exotic species of trees to supply the timber market. Afforestation using exotic species such as pines and eucalypts began and the first plantations had been established (Darrow, 1976). *"The Cape colonial authorities realised 120 years ago that the fledgling South African economy was short of a strategic resource - timber. The country is naturally short of forests, and the growing economy was placing the existing forests under strain. The Cape authorities started a dual process of developing timber plantations on the one hand, and protecting indigenous forests on the other. So began a long process of state involvement in the supply of timber to industry"* (Bethlehem, 1999).

From small beginnings, plantation forestry now accounts for 1.2% of the total land area and by 1998 1 486 923 ha was planted in South Africa. The three most important provinces are Mpumalanga with 41.4%, KwaZulu-Natal with 37.5% and the Eastern Cape with 11.4% of the afforested areas. The most common species planted are *Pinus patula*, *P. radiata*, *Eucalyptus grandis* and *Acacia mearnsii* (South African Forest Owners Association, 1996). Forestry is growing at an estimated 3% per annum (Fuggle & Rabie, 1994). The forestry industry is worth R20.6 billion and contributes 8.7% of the gross value of agricultural output in the country per annum (South African Forest Owners Association, Undated). The forestry plantations are primarily situated on the eastern escarpments that were originally grassland and indigenous forests. The effect on these biomes has been substantial, especially along forest margins, watercourses or in disturbed environments (Fuggle & Rabie, 1994).

The widespread invasion by alien plants of mountain catchment and forest areas in the Eastern Cape is largely the result of forestry activities. The environmental consequences have been degradation of many areas; soil moisture and stream and river flow compromised; acidification, nutrient depletion and compaction of the soil; soil erosion, especially along stream banks and from steep mountain slopes; and many indigenous plant species are threatened (Department of Water Affairs & Forestry, 1997).

### 3.2.2. Wattle species in South Africa

Wattle species were introduced into South Africa in the late 1850's. Records show that black wattle was growing in the Cape Town Botanic Garden by 1858 and a farmer from Camperdown, John van der Plank, introduced it into Natal in 1874 (Stirton, 1987). They were widely planted for firewood, shelter, driftsand reclamation, and windbreaks, as quick growing species (Grenfell, 1976). The economic potential of wattle was soon realised and large plantations were established in Natal by 1880, as well as the Transvaal and the Cape provinces. The ability of these species to adapt to areas with severe environmental constraints made them popular choices (Stubbings & Schonau, 1987).

The wattle species that were imported included *Acacia cyclops* (rooikrans), *A. dealbata* (silver wattle), *A. decurrens*, *A. longifolia*, *A. mearnsii* (black wattle), *A. melanoxylon* (blackwood) and *A. saligna* (Port Jackson willow). Each one is considered an invasive alien species. Their distribution depends upon the environmental conditions suitable for each species. Rooikrans and Port Jackson willow are most common in the Western Cape, whereas, black wattle and blackwood occur more commonly in the mountainous areas of the Eastern Cape and KwaZulu-Natal (Grenfell, 1976).

By 1930 wattle had been established on 350 711 acres in South Africa. The industry was already exporting £1 109 161 of extract and bark. The timber remaining after the bark had been removed was used to make fruit boxes and to supply mine props. Research had been undertaken to investigate potential side industries around charcoal, acetate of lime, acetic acid, pyroligneous acid, wood tar and naphtha (*Samler Brown & Gordon Brown, 1930*). Today, black wattle is used for the tannin and woodchip industry, as well as for mineprops, matchwood, firewood, charcoal, hardboard, paper rayon pulp, parquet flooring and building construction for wattle and daub houses (*Grenfell, 1976*).

Certain species, including *A. mearnsii*, invade along riparian zones where dense stands are frequently found. "*The direction and rate of spread suggest that seed dispersal in water is a major cause of these problems*" (*MacDonald et al, 1986*). Although there is argument concerning the damage species such as black wattle and blackwood do to indigenous vegetation, a study by Seagrief (1965) in Hogsback, noted that "*Large numbers of indigenous seedlings established under a 40 year old monospecific stand of Acacia melanoxylon near Hogsback in the Amatola.*" In a follow up study Wilson (1982) noted that the regenerated indigenous undergrowth was destroyed during the subsequent clearfelling of the stand. Follow-up studies using the WFW projects in Hogsback could be undertaken to assist in developing better rehabilitation processes for areas in indigenous forest habitat.

Today black wattle is grown on 160 000 ha of commercial plantations in South Africa by 1100 registered wattle growers but occurs in 2.5 million ha (*Working For Water, 1999*). It is estimated to have invaded thousands of hectares of land. It is primarily a problem on the eastern mountain escarpment and along its rivers (*Stirton, 1987*).

### **3.2.3. Description of black wattle: *Acacia mearnsii***

Black wattle is a species of *Acacia* from Australia. It is a tall evergreen tree with a fine leaf and yellow puffball flowers. It bears many seeds in leguminous pods that split open to spread the seed over a wide area (*Stirton, 1987*). Depending on the level of infestation wattle will produce anything between 2 000 and 540 000 seeds per m<sup>2</sup>/year (*Campbell, 1993*). The seeds are insect and disease resistant, and retain their viability for many years. They are also fire adapted, so dormant seeds in the soil will germinate many years after they were dropped, if exposed to the heat of fires. The mature trees are fire resistant as they have a very thick bark and if burnt will readily coppice new growth in the following growing season (*Grenfell, 1976*). Wattle trees use large amounts of water and it is estimated that one full grown wattle tree uses 200 litres of water each day (*Environmentek, 1999*).

### 3.2.4. Habitat of *Acacia mearnsii*

Found in relatively high rainfall areas (MAP 850mm - 1200mm, but 750mm in cooler areas). Mean annual temperatures should be above 16C and >10C in July and <22C in January. It usually grows above 600m altitude and below 1200m. It is frost sensitive but does not thrive in warm and humid areas either. It grows best in well-drained dystrophic soils, especially those derived from sandstone, shale, granite and dolerite (Schonau & Grey, 1987).

### 3.2.5. Control measures for *Acacia mearnsii*

The Southern African Institute of Forestry recommended that *Acacia mearnsii* should be controlled by initial felling, then burning followed by herbicides (Wilson, 1987). The following control schedule was recommended:

**TABLE 4: Control methods for *Acacia mearnsii***

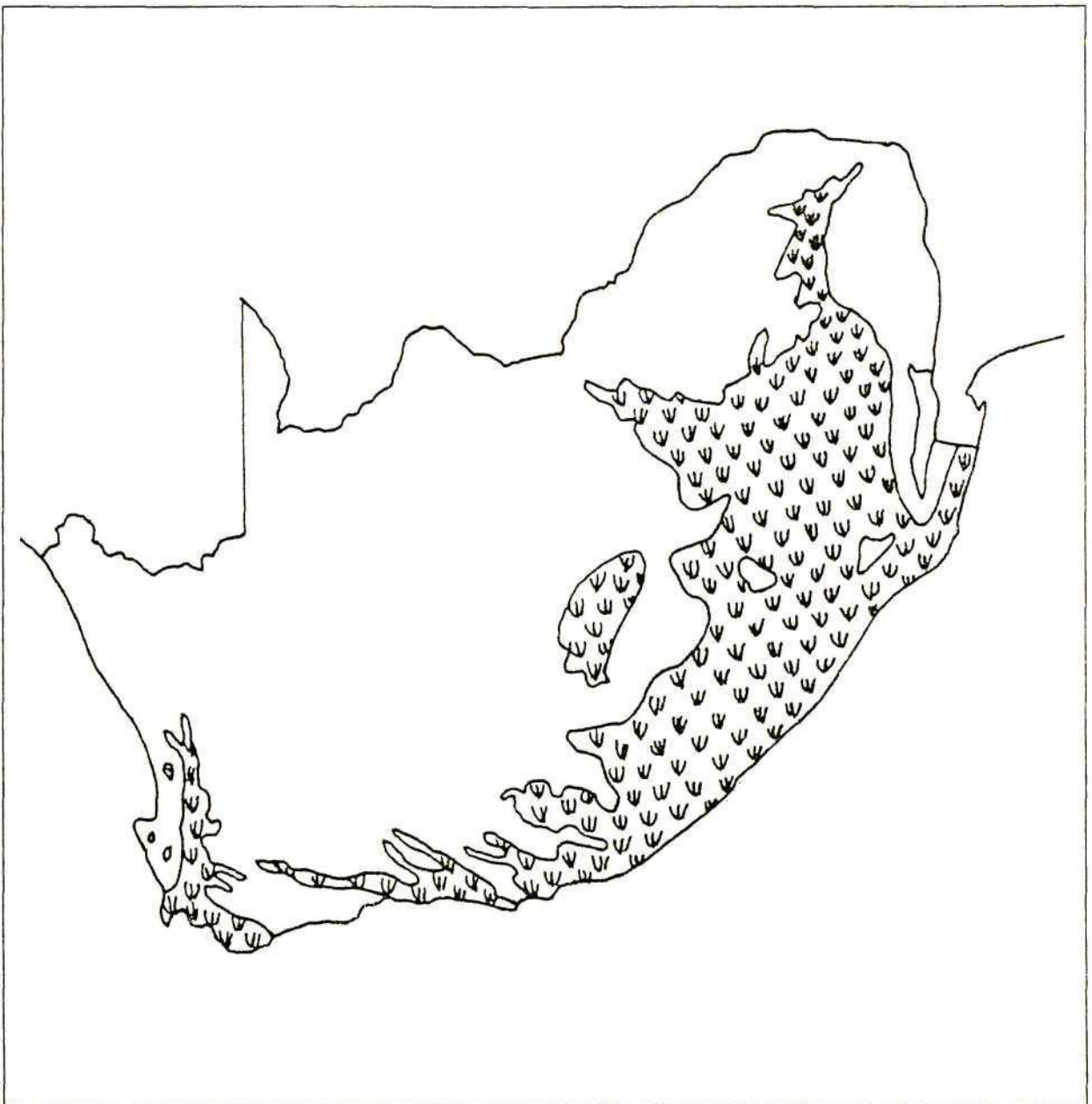
Weed situation	Mechanical Control	Chemical Control	Remarks
Plants 0 - 50mm tall	Hoe out		May stimulate more germination
Plants 0 - 1m tall		Triclopyr@ 1:150 to 200 in water. Add BP Agripron Super @ 1:200	Wet well
Plants 0.5 - 1.0 m tall	Hand pull		Do when soil moist. Use gloves or hand protection.
Trees 10 - 100mm in diameter	Cut with heavy duty rotary slasher or fell with hatchet.		Stems over 20mm diameter less likely to coppice. Cut close to ground level. Cut down into stump to break it up.
Trees over 50 mm in diameter	Ringbark Fell Fell, stack, slash and burn with hot fire.		Remove all cambium over 200 - 300mm of stem low down Strip bark to below ground. Sow <i>Eragrostis curvula</i> densely and/or handpull or spray re-growth.

(From Haigh, 1987.)

The Plant Protection Research Institute produced a handbook (Campbell, 1993) which dealt extensively with the methods required for proper wattle control. It identified a three-phase strategy for controlling wattle. Phase one is initial control that requires a drastic reduction of the standing wattle population. Phase two is follow-up control that removes seedling, root suckers and stump re-growth. Phase three is maintenance control when low or reduced wattle populations are controlled with low annual costs. The methods required for each phase are

dealt with in detail, including advice on the best herbicides to use. It is a simple, easy to read booklet which lays out the steps required for controlling wattle invasion with good illustrations. It also deals with the issue of rehabilitation of wattle infested areas that have been cleared. In addition to the mechanical and chemical control of wattle, the Plant Protection Research Institute has investigated an insect, *Melanterius maculatus*, as suitable for release for biological control of wattle (Campbell, 1993). According to Olkers & Hill (1999) this insect was released in 1998.

**MAP 1:**            **Distribution of *Acacia mearnsii* invasion in Southern Africa**  
(Map after Grenfell, 1976)



### **3.3. CONTROL OF INVASIVE ALIEN PLANTS**

The control of invasive alien plants is a major challenge today. Despite over 100 years of attempted control of invasive alien species, the problem is more severe today than ever. Early control campaigns were haphazard and inappropriate and in some cases worsened the problem. The technology, techniques and biological control methods are now available to control many species. These methods are briefly discussed below.

#### **3.3.1. Biological Control**

Biological control refers to the use of natural enemies to regulate pest species. It requires that organisms that prey on the plant in its natural environment are identified and then imported for rigorous testing prior to release into the South African environment. Biological control of 38 target species resulted in 18% completely and 29% substantially controlled. A total of 73 species of herbivorous insects and microbial pathogens have been introduced and almost two-thirds have become established on the target plants (*Richardson, 1997*).

Initially biological control agents were introduced that had been used successfully in other countries. South African scientists have introduced a number of control agents as a result of research since 1970. Today South Africa is the third most active country in the world in developing biological control of alien species (*Richardson, 1997*). Biological control is successful because it suppresses the target plants over most or all of their range. It is, however, a long term control method as the process of identifying, testing, releasing, getting successful introductions and spreading the biological control agents takes a number of years (*Fuggle & Rabie, 1994*).

#### **3.3.2. Chemical Control**

A number of chemicals have been developed over the years to control or eradicate invasive species. Many of these are hormone based herbicide chemicals that cause damage to specific types of plants. The process of research to develop chemicals that are environmentally friendly, plant specific and relatively inexpensive to produce, is long and costly. It also requires state-of-the-art laboratory facilities. The development of herbicide chemicals is, mostly, undertaken by private companies who produce and sell the finished product. Widely used chemicals are Tordon® whose active ingredient is Picloram, Roundup® and Ridder® whose active ingredient is glyphosate and Garlon® whose active ingredients are picloram and triclopyr (*Haigh, 1987; Vermeulen et al, 1996*). Chemical control offers only a partial solution to the problem. It should be used in conjunction with other control methods and frequently, the chemicals need to be applied

after plants have been physically damaged if other susceptible species are not to be affected (*Richardson et al, 1997*).

### **3.3.3. Physical Control**

Physical control refers to chopping, digging, slashing, burning or using animals to graze or browse problem plants. For many species, particularly when their density is very high, it is necessary to use physical control measures as an initial stage in the control process. Most forms of physical control are labour intensive and, therefore, very expensive (*Richardson, et al, 1997*).

### **3.3.4. Integrated Control**

It is now recognised that any effective control requires a co-ordinated attack that integrates the different methods. Depending on the species, integrated control will use biological, chemical and physical control methods along with improved land management practices. Control of invasive alien plants is a long-term process that requires regular follow up to prevent re-invasion of cleared areas (*Richardson, et al, 1997*).

## **3.4. THE SOCIO-ECONOMIC AND POLITICAL FACTORS INFLUENCING INVASIVE ALIEN CONTROL PROGRAMMES**

Although the technology is available to control many invasive alien plants, including black wattle, there are several factors that influence the technology being implemented. Firstly there are economic factors: Control of invasive alien vegetation is extremely expensive and someone has to pay for it. The private sector and government have, in the past, not viewed control as economically viable, feasible or worthwhile. In other words, the perceived benefits have been far outweighed by the costs. Species that have been targeted for control are species that have a high economic cost to the agricultural sector and little or no benefits (*Richardson et al, 1997*).

Political factors contributed to the previous unwillingness to address the problem of invasive alien vegetation. The change in the political landscape in 1994 and the linking up of invasive alien vegetation control with rural development, poverty alleviation and job creation established a political climate conducive to the implementation of the WFW programme under the new government.

The successful implementation of invasive alien control programmes is also dependent upon social factors such as community dynamics. This study attempts to examine the implementation

of WFW in a small community and the problems that have been encountered. It isolates some of the factors, other than the technological, that influence the implementation of the programme in order to see what lessons can and have been learned and how they could be extrapolated in the wider sphere of the country.

### **3.5. GOVERNMENT ACTIONS SINCE 1994 TO ADDRESS THE PROBLEM OF INVASIVE ALIEN PLANTS**

In 1994 the first democratic elections were held in South Africa and a majority government was elected to power. Since then the struggle to re-define the political, social and economic environment has led to major changes in government structures, legislation and policies. Most of this, however, has taken place at national and provincial level. The rural poor have had to face the reality that life has continued much as before. The struggle for a better standard of living, access to land and educational opportunities, and to participate in the new democratic structures is one that underlies much of the community conflict in communities around the country.

In South Africa the change in 1994 from the apartheid government to a democratically elected government has had wide-reaching changes in the people who have access to power and to the way in which power is being used. The change of government caused a transfer of power from a minority white elite to the black majority. This acted as a catalyst to enable wider citizen involvement in planning and implementation of development. The restructured power network operates within a democratic political framework underpinned by the new Constitution. Government departments have been substantially re-structured or are still in a process of re-structuring or transformation. Government policy has changed significantly and the distribution of economic resources has changed, in line with changes in policy.

For development this has meant changes in the way development is envisaged, planned, implemented and prioritised. It is now near the top of the government agenda and a number of new programmes have been initiated and implemented within different government departments to address development needs. The government has put in place legislation, such as the Development Facilitation Act of 1995, and programmes such as land reform that enable greater public participation in decision-making (*Heideman, 1998*). To ensure public participation takes place it is, however, essential that legislation are supported by policies and practices. Departments such as Land Affairs and Water Affairs and Forestry have undertaken intensive policy formation processes with developed practices to support public involvement and, especially involvement of women in decision making (*Department of Land Affairs, 1998, 1999*).

The power that citizens are able to access and exercise affects how they can influence decision-making. Individuals and groups can influence or force changes at local, provincial and national level. They can use this by exercising the right to vote, by using their numbers, by organising themselves into effective interest groups, by lobbying and by participating in existing structures. The use of veto can be a useful tool to circumvent unpopular decisions or as a means of exercising power.

The mindset developed by civic organisations in the 1980's, in response to their need to resist the government of the time, is still in place in many communities. Even with the changeover to a new democracy, many civics still operate within the parameters of "The Struggle". This is an important factor for government and development programmes that attempt to plan or implement from the top down. Frequently, well-designed and well-meant projects or programmes fail because there has been insufficient consultation with local communities or not all groups in a community have participated in the consultations. Despite the widespread use of terms such as "involve all stakeholders", "consult with the community", and "empowerment of people" the rural citizen, especially, frequently feels disempowered and marginalised from key decision-making processes which will have widespread impacts on their lives.

Many rural communities are ill-equipped to deal with the transformation of the political arena. The lack of access to land, resources and employment means that most rural blacks continue to live a subsistence lifestyle. The years of "struggle" politics means that the skills learned then are applied in a different scenario in which they are not always the most appropriate. The ongoing changes in the legislative and policy arenas lead to confusion.

The adoption of the new constitution marked the change to a truly democratic government. It offers the framework for society within which all legislation and government action must be situated. In the constitution environmental concerns are encapsulated as follows:

*"That everyone has the right:*

- *to an environment that is not harmful to health or well-being;*
- *to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that:*
  - *prevent pollution and ecological degradation;*
  - *promote conservation;*

- *secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development." (The Constitution of South Africa, 1996)*

These rights assume that *"all landowners, land occupants, custodians of the land, and land managers have a direct interest in the proper management of the resource. ...There is a responsibility to ensure that the ecological integrity of the natural resources...is maintained"* (Critchley, et al, 1998).

Environmental policies are developed at three levels, national, provincial and local government. Environmental policy for the country underwent a long and intensive review process, the Consultative National Environmental Policy Process called CONNEP that drew in a wide and diverse range of organisations and individuals from government, quasi-government and non-government organisations, as well as civil society. This ultimately produced a Green Paper that was accepted and became a White Paper in 1996. The Environmental Act was finally passed in 1999 (Department of Environmental Affairs and Tourism, 1999).

Prior to 1994 the African National Congress Party had drafted an environmental policy which contributed to the CONNEP process but ultimately was incorporated to form the basis of the environmental policy within the RDP policy (African National Congress, 1994). The newly appointed democratic government of South Africa developed the RDP policy as a flagship programme to bring about widespread transformation of the country. One of the fundamental ways in which it differed from the former government's policies on environmental issues was that it focused on people within the environment. A second fundamental difference was that environmental considerations were highlighted as an essential part of any development or planning decision. There was a move away from an elitist conservation policy towards an environmental policy that stressed equitable access, participatory decision-making processes and community empowerment to manage the environment. It emphasized that environmental issues need to be tackled in an integrated and sustainable way. It states that, *"These strategies will be implemented at national, provincial and local levels by government, parastatals and organisations within civil society working within the framework of the RDP"* (African National Congress, 1994).

Within the forestry sector the RDP has been addressed in the following way: *"The RDP strategy identifies the forest sector as an important element of local natural resources development that can contribute to creating better living environments and economic opportunity. Plantation forestry and local valueadding industries would have a place in local development programmes in many rural districts..."* (Department of Water Affairs & Forestry, 1999).

The key elements of the RDP policy are that it must offer:

- *An integrated and sustainable programme.*
- *A people-driven process.*
- *Peace and security for all.*
- *Nation-building.*
- *Link reconstruction and development.*
- *Democratisation of South Africa*

The role of government in bringing about this policy was to establish procedures, *"revise current environmental legislation and administration with a view to establishing an effective system of environmental management. It must make use of environmental auditing, with provision for public disclosure."* (African National Congress, 1994).

An important government programme that has widespread implications for the environment is the Growth, Unemployment and Redistribution Strategy (GEAR). GEAR is the South African macro-economic policy framework that aims to uplift the economy and the social needs. GEAR has largely replaced the RDP. GEAR policy has been formulated to echo the goals of the RDP programme (Erwin, 1996). Other departments such as DWAF have addressed implementation of RDP and GEAR through their programmes and policies. For example, in the Forestry White Paper it states that *"Rural development is one of the main objectives of the RDP. Successful rural development will be achieved through cooperation between rural people, their local government, and many provincial and national agencies. The RDP strategy is based on a multisectoral approach to rural development, aimed at local economic development, in which rural people set the agenda"* (Department of Water Affairs & Forestry, 1999).

It is argued by GEAR that the upliftment of the economy and provision of social needs can be achieved through the improvement of the economy, which will in turn create jobs for the people (trickle down theory) (Erwin, 1996). It is primarily an economic policy that has six key areas:

- Fiscal policy
- Monetary and exchange rate policy
- Trade, industrial and small enterprise policy
- Social and sectoral policies
- Public investment and asset restructuring
- Employment

The most relevant of these to this discussion are the social and sectoral policies. GEAR argues that job creation is essential and will take place through economic growth, government programmes and reform of the labour markets. It further argues that social grants are vital to poverty alleviation but affordable alternatives need to be investigated and that land reform is a means of generating income and employment in the rural areas.

The Minister, Mr Manuel, argues that the budget allocation for 1998 supports development. R45.468 billion out of a total national budget of R100 billion was allocated to health services, social security and welfare, housing, road construction, water provision, municipal infrastructure investment, hospital rehabilitation, land restitution and redistribution, and poverty relief (*Manuel, 1998 & 1999*).

DWAF developed WFW in 1994/95. WFW is a key RDP project that addresses the problem of invasive alien plants at the same time as fulfilling the goal of job creation and poverty relief. WFW plans to clear high priority water catchments in South Africa of alien invasive vegetation. "The principle of the WFWP is that removing the alien plant invaders and restoring indigenous vegetation increases runoff because the latter consumes less water than the former. The basis for this thesis is plantation forestry research into decreased water yields resulting from afforestation...with alien tree species" (*Hosking & du Preez, 1999*). The programme originally had three goals but now has six primary goals (*The Working For Water Communication Project, 1999*):

- Water security
- Productive use of land
- Conservation of biological biodiversity
- Reduction of the intensity and frequency of fires and floods
- Employment
- Creation of secondary industries

These goals differ at regional level for different catchments where they are tailored for the specific requirements of the project areas. WFW is envisaged as a twenty year programme with short term three to five year programmes for specific project areas that intends to hand on long term management of cleared areas to landowners. The costs of a clearing programme such as this are not sustainable for government in the longer term. The funding for WFW is channeled through DWAF and the Poverty Relief Fund (*Preston, 1999*).

WFW has cleared 33 000 hectares of land invaded by invasive alien plants since its inception. It has created 6686 direct employment opportunities, of which 55% were given to women. It is estimated that run-off from cleared catchments has been increased by 3 500 m<sup>3</sup> and in one study it was found that clearing increased water flow in a single catchment by 120% (*Enviromentek, 1999*). The Eastern Cape WFW office identified the Keiskamma catchment, which includes Hogsback, as one of the priority areas requiring clearing. A project has been in place since 1996 to clear invasive alien vegetation in the area (*Department of Water Affairs & Forestry, 1997*). In Hogsback, the HLC has been the implementing and management agency, until September 1999. It worked in co-operation with the regional manager for WFW. An employee of the HLC was the project manager responsible for the work of the project (*Kantor, pers. com.*).

In 1999 DWAF published the white paper "*Sustainable Forest development in South Africa*", which is its policy articulating the policy determining the future of forestry in the country. The restructuring of the state forestry industry is part of this policy document (*Department of Water Affairs & Forestry, 1999*). A process has been embarked upon to lease state forests and those managed by the government parastatal SAFCOL, to the private sector. The economically viable plantations, classified as Category A plantations, have been identified and placed into seven packages. The Eastern Cape South package includes all the plantations in the Hogsback area – both DWAF and SAFCOL plantations (*Department of Water Affairs & Forestry, 1998*).

The privatisation programme is linked to Land Restitution as a number of claims have been lodged against the plantations identified for privatisation. A Forest Land Rights Working Group has been set up between DWAF, DLA and the relevant Regional Land Claims Commissions. A national programme is underway to co-ordinate the two programmes. There are 11 land claims in Hogsback that will need to be settled (*RLCC*). The policy, at present, is that claimants' rights will be protected but that restoration of land will be subject to leases being honoured. This means that claimants who have their land restored will be required to accept that the lessee will manage the plantations for the full period of the lease – a period of 75 years (*Department of Water Affairs & Forestry, 1999*).

The Department of Land Affairs (DLA) embarked on an ambitious land reform programme in 1994. This has three major legs – Land Re-Distribution, Land Tenure Reform and Land Restitution. The first two are the direct responsibility of DLA but Land Restitution is the responsibility of the Commission on the Restitution of Land. (*Department of Land Affairs, 1999*). The two legs of land reform that are relevant to this study are Land Re-Distribution and Land Restitution. In Hogsback the provincial office of DLA's Re-Distribution programme has been involved with the HLC in obtaining state land for village development and commonage. This

process is still underway. The Eastern Cape Regional Land Claims Commission (RLCC-EC) will be responsible for dealing with eleven land claims lodged against various portions falling in the Hogsback area. In both cases wide-ranging community consultation is required with, in the case of restitution, negotiated settlements being reached between claimants and the RLCC (*RLCC - EC, pers. com.*).

DWAF has produced three new pieces of legislation since 1994 that will have dramatic environmental implications and consequences. The Water Resources Bill, the new Forestry Act and the Water Services Act have made major changes to the way in which water and forest resources will be managed in the future. In line with the RDP policy, these new pieces of legislation are, to a significant degree, concerned with human impacts, redress and equity. The traditional model of environmental legislation that was concerned only with the environment and that was under the primary control of national state departments, has been replaced with legislation that addresses human development and environmental needs (*Department of Water Affairs & Forestry, 1999*).

In the Eastern Cape environmental legislation that emanated from the Cape Provincial Administration, Ciskei and Transkei, form a patchwork of legislation that is still in force in different parts of the province. Enforcement of environmental legislation is a problem. Until such time as this legal situation is addressed with new environmental legislation to replace that which exists, environmental management, planning and control will be severely hampered. The department has put the drafting of new provincial legislation to replace the existing Cape, Ciskei and Transkei environmental legislation out to tender. Consultants will be used to draft the new legislation because of the lack of capacity within the department. Hogsback, therefore has both former RSA Cape and Ciskei legislation applied to it.

Since 1994 the provincial environmental department has been through an intensive transformation process. In the Eastern Cape environmental matters had been extremely fragmented as four different organisations were responsible for environmental management. These organisations are the Cape Provincial Administration Nature Conservation Department, Ciskei Nature Conservation Division, Transkei Nature Conservation Division and CONTOUR, the Ciskei Conservation and Tourism Board, which managed the three game reserves in Ciskei (*Mzazi, pers. com.*).

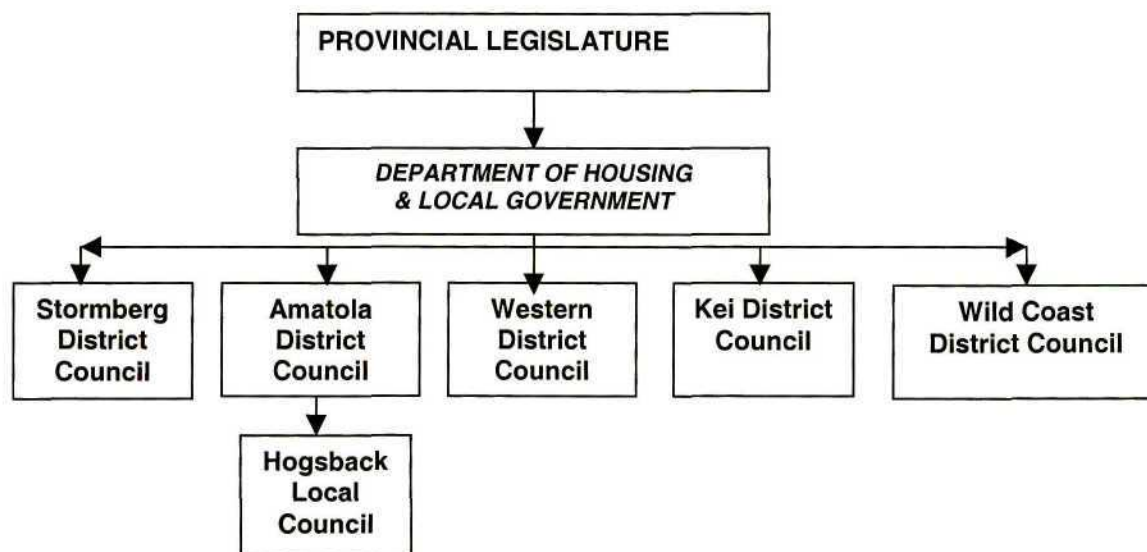
The process of integrating three of these organisations into the Eastern Cape Environmental Affairs Division, within the Department of Economic Affairs, Tourism and the Environment, (DEAT-EC) has been long and difficult. CONTOUR retains its independence but has been re-

named the Eastern Cape Tourism Board. It is responsible for management of the three game reserves - Tsolwana, Double Drift and Mpofu (*Mzazi, pers. com.*). The MEC for the relevant department is reviewing the possibility of creating an Eastern Cape Environmental Board that will consolidate these into a single organisation responsible for all environmental matters in the province (*Daily Dispatch, 1999*).

This background is necessary because it is the source of the lack of environmental policy making and management within the province. The lengthy transformation process saw large numbers of experienced and capable environmental managers leaving the employ of the province, most of them using the "*voluntary severance package*" route. This has left a management vacuum, particularly when it comes to policy and legislative transformation. In addition the Environmental Affairs directorate has suffered financial cuts due to budgetary constraints in the province. These have severe implications for environmental management in the Eastern Cape. The end result is environmental programmes in the province generated by national departments. The most important and relevant of these to this study has been the WFW programme of the DWAF. Millions of rands and thousands of people have been employed in the province over the past three years to implement WFW.

In the longer term the capacity of the DEAT-EC to implement the Environmental Regulations promulgated in September 1998 will be a determining factor in the proper control of development in the province according to acceptable environmental norms and principles. This is a national competence that has been delegated to provincial environmental departments or agencies. There is the possibility of further delegation to regional councils and municipalities with the requisite capacity (*Department of Environmental Affairs & Tourism, 1998*). In the province there are five district councils. These councils fall under the jurisdiction of the provincial department of Housing and Local Government. In the study area the Amatola District Council is the responsible body. It provides funding, leadership, policy direction and technical advice to Transitional Local Councils and Transitional Rural Councils within the region. The Hogsback Local Council is a Transitional Local Council. It is responsible for budgeting, planning and implementation of developments, as well as providing municipal services to the municipal area. The decision-making powers of the Councils enable them to have an impact on the environment (*Kantor, pers. com.*).

**TABLE 5: Delegation of local authority at provincial level**



At local government level there has been little attempt to draft new environmental policies or plans. To a large extent the larger municipalities are still making use of existing policies, regulations and by-laws, where they had been developed. In most cases the policies and plans that have been drawn up are not directly environmental, but are aimed at development. The most important of these are the Integrated Development Plans that each municipality has been required to draft, in consultation with the local community (*Heideman, 1998*).

### 3.6. CONCLUSION

Invasive alien plants in South Africa have become one of the major environmental problems affecting millions of hectares of productive and conservation land. *Acacia mearnsii*, black wattle, is a key invader species along the eastern escarpment. It is associated particularly with the establishment of forestry on the escarpment and affects remaining pockets of indigenous forest, sourveld grasslands and industrial plantations. The major rivers of the country rise on this escarpment and the water catchments have been severely affected by Black Wattle invasion that has reduced water flow and soil erosion.

The government implemented the WFW programme in 1995 in order to address the problem of invasive alien plants in the country while, at the same time, creating job opportunities. There are a number of other government initiatives in the legislative, policy and planning spheres by a variety of government departments and agencies at national, provincial and local level that have a direct or indirect effect on the WFW programme and the control of invasive alien plants. The problem of

invasive alien plants is, therefore, not merely an environmental problem but is very largely a human institutional problem. The management of the political and social aspects of the invasive alien problem is crucial to the success of the WFW programme.

The next chapter will introduce the study area selected, giving a history of the environmental and social disturbances that shaped the present situation and how these are impacting on the management of the environment and control

## **CHAPTER FOUR**

### **THE STUDY AREA**

*"The Tyumie valley was regarded by colonists and Xhosa alike as the most beautiful in that entire country." (Mostert, 1992)*

#### **4.1. INTRODUCTION**

The study area selected is Hogsback in the Amatola mountains of the Eastern Cape. It is a mountain environment that has been substantially altered due to human disturbance over the past two hundred years. The village itself is a microcosm of many of the problems facing communities around South Africa as they attempt to grapple with the inheritance of the past while shaping a new future. This chapter describes the study area before giving a history of the environmental changes since 1800 as a result of human disturbance. The social history of the area is described from the viewpoint of the social and cultural disturbances that led to the present day community conflict. The interface between the environmental and social history is then discussed.

### **SECTION A**

#### **A HISTORY OF ENVIRONMENTAL DISTURBANCE IN HOGSBACK DUE TO HUMAN DEVELOPMENT**

#### **4.2. THE PHYSICAL ENVIRONMENT OF HOGSBACK**

The village of Hogsback is situated on the south-western escarpment of the Amatola mountain range below the massif of Gaika's Kop and to the west of the three Hogsback Peaks. (Map 2). It is situated between 1 100 and 1 500 metres above sea level. The mountain peaks are over 1900 metres above sea level (*1:50 000 map: Map sheet 3226DB*). Due to the altitude and position on the escarpment, Hogsback has a very high rainfall and regularly receives snow in winter. It is an extremely scenic area with many waterfalls, indigenous forest, wetlands and Dohne Sourveld grasslands. Within the village itself there are about 200 properties which are a minimum of two morgen in size. The original grassveld, in the area now settled, has been replaced almost completely by exotic trees such as pines and oaks, and garden plants such as azaleas from many parts of the world. Some species such as wattle, blackwood, bugweed and bramble have invaded the riparian zones and forest edges.

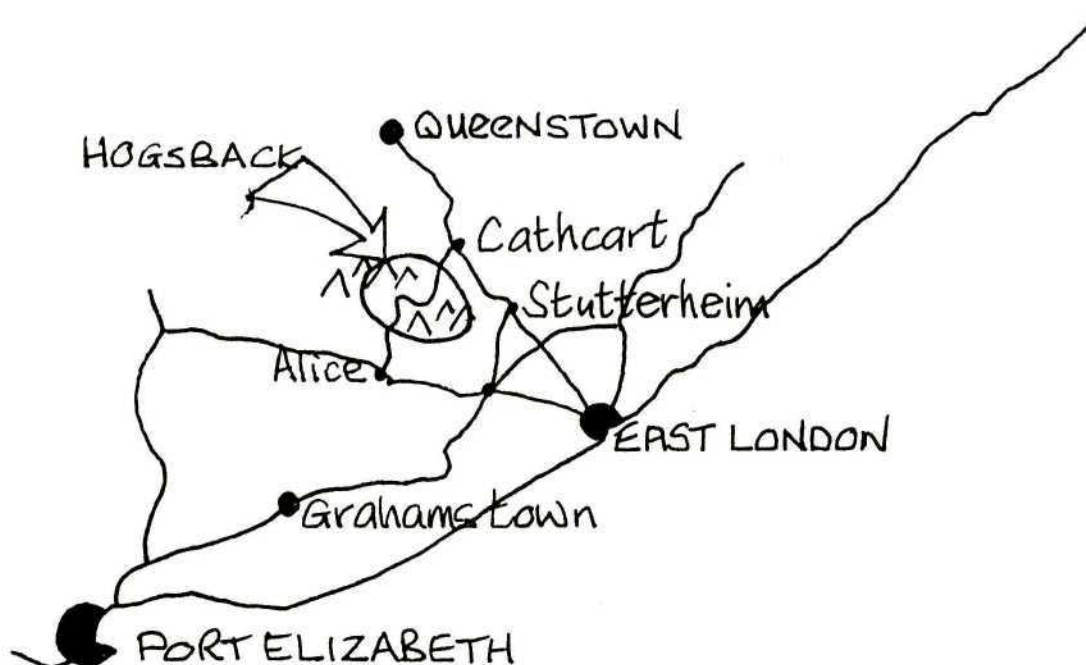
#### 4.2.1. Geophysical environment

##### 4.2.1.1. Geomorphology and soils

The dolerite-capped Amatola Mountains reach almost 2 000 metres in places with the Hogsback Peaks reaching 1 937 metres at their highest point and Gaika's Kop at 1 963 metres above sea level in height (1:50 000 map: Map sheet 3226DB). The Beaufort group sedimentary rocks were laid down 230 million years ago and consist of the Katberg formation of pinkish grey sandstones, and the Balfour formation, which consists of 70% grey mudstones, 25% fine sandstones and 5% grey shales. Between 150 and 190 million years ago igneous intrusions formed dolerite sheets, dykes and sills. Alluvium terraces were laid down in the river basins about 2 million years ago. The most recent formation is colluvium that is unconsolidated and very erodible, and is found on valley side slopes (Hill Kaplan Scott, 1989).

The soils most commonly found in the Hogsback area are Hutton, Griffin and Clovelly forms that are derived from shales and mudstones of the Beaufort group and dolerite intrusions (Marais, 1994). The soils derived from the Beaufort group are nutrient poor whereas those from the dolerite have higher nutrient levels. Due to the high rainfall experienced above 800m altitude these soils are leached and very acid (Hill Kaplan Scott, 1989).

**MAP 2: Hogsback's geographical location**



#### **4.2.1.2. Climate**

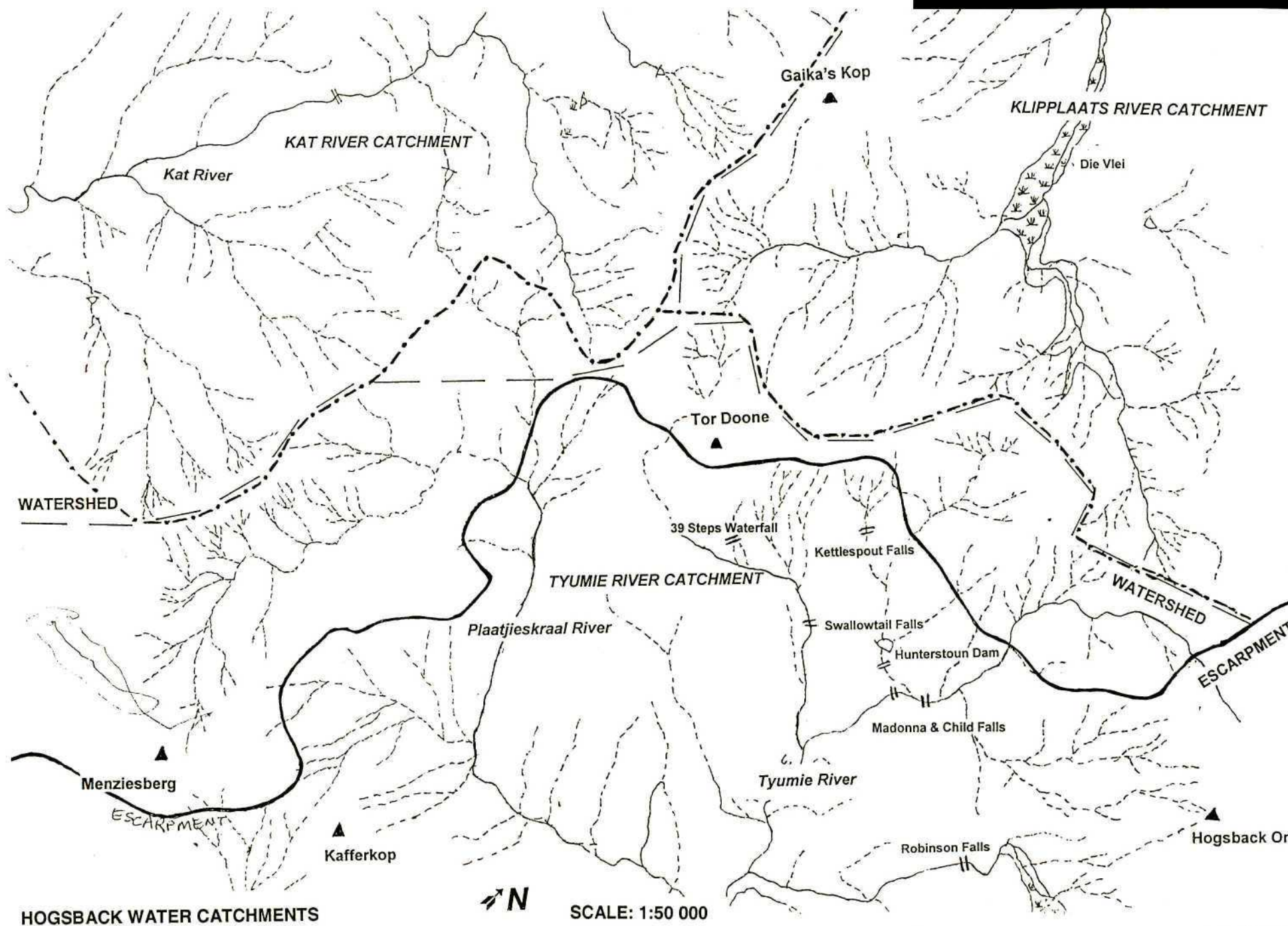
Hogsback has a temperate climate for most of the year. In winter daily temperatures average 12 degrees Celsius in the day and 2 degrees Celsius at night. In summer the daytime average is 21 degrees Celsius and the night average is 10 degrees. Frost occurs regularly during the months May to September. The annual rainfall averages between 1 000 and 1 200mm. The bulk of this falls in the summer but there is usually rain in every month of the year. An important part of the annual precipitation is in the form of mist and snow. Snow has been recorded during each month of the year, including Christmas Day. There are usually four to five snowfalls in winter. The meltwater contributes to the soil moisture profile and the winter base flow (*Marais, 1994; Uys, 1983*).

#### **4.2.1.3. River catchments**

The Hogsback area is the primary catchment for the Tyumie and Kat rivers. These are major tributaries of the Great Fish River. The Klipplaats River that is a tributary of the Swart Kei River, which, in turn, is a tributary of the Great Kei River, rises on Gaika's Kop Mountain. The Wolf River that rises on the east face of Hogsback is a tributary of the Keiskamma River. These three major rivers in the Border/Kei area provide water to many of the inhabitants of the Eastern Cape (*Hill Kaplan Scott, 1989*). The waterflow from these rivers has been reduced due to the establishment of forestry plantations and invasion of black and silver wattle, especially along the riparian zones. According to a study undertaken by Forsyth et al (*1997*) for afforestation in the North-Eastern Cape, the peak or maximum impact of afforestation varies between 2 - 18% of MAR. They estimate the total impact at tertiary catchment at 5% of MAR, at secondary catchment at about 1% and 0.5% at the primary catchment level. If similar figures are applied in Hogsback then reducing the area under invasive alien vegetation will undoubtedly increase the MAR. The control or eradication of alien invasive plants is, therefore, considered to be important in ensuring continued long term water provision to a much wider area that is subject to regular droughts (*Kirkman & Wilson, 1999 and Cavan & Klapwijk, 1997*).

**MAP 3: Hogsback water catchments**

(Map prepared by J.A. Coleman from 1:50 000 map: Map sheet 3226DB)



## 4.2.2. Biophysical environment

### 4.2.2.1. Vegetation in the Amatola Mountains

The vegetation of the Amatola Mountains is predominantly Afromontane in affinity but it has elements of the Cape flora and south east African endemics. It is part of a series of 'isolated islands' of related composition occurring only on the higher mountain ranges (Marais, 1994). The dominant vegetation types in the Afromontane region are sourveld grasslands and tall evergreen forests that are usually dominated by *Podocarpus* spp. (Cowling & Hilton-Taylor, 1994).

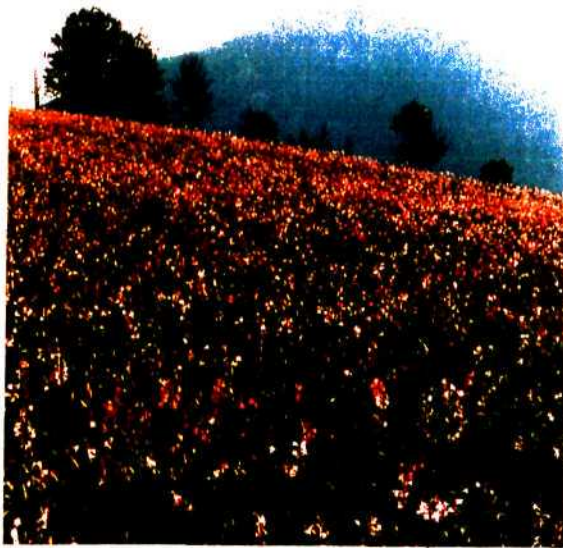
A number of species in the different vegetation types are endemic to the Amatolas or reach their southernmost or northernmost distribution in this area. Phillipson (Cited in Marais, 1994) recorded 1 215 indigenous species of plants are found in the Amatolas which represents 30% of the total number of Afromontane species and 5% of the southern Africa flora. There are 1 endangered, 2 vulnerable, 2 rare, 15 indeterminate and 43 uncertain species of plants occurring in the area (Cited in Marais, 1994).

One of the factors contributing towards the increasing rarity of these species is the impact of alien invasive vegetation on the grasslands. Another is the establishment of pine plantations. The vleis areas along the foot of the mountains, at the source of the rivers, are no longer in a pristine state and several species of orchid are threatened by the habitat changes (Kirkman & Wilson, 1999).

Grassland interfaces with forest patches depending on the soil moisture regime. The occurrence of grasslands in the Afromontane region is determined by climatic and fire factors. The most important of which are: "the number of days with sufficient soil moisture for plant growth, the mean temperature of such days and the mean temperature of days too dry for growth to occur" (Ellery, Scholes & Mentis, 1991). The transformation of grasslands to fynbos occurs if they are protected from fire and exposed to heavy grazing. The establishment of fynbos species is constrained by the vulnerability of their seedlings to drought (Trollope, 1973). The forest is found on mesic, steep, southern slopes, whereas the grassland component is found on the drier, eastern, western or northern plateaus and ridges (Hill Kaplan Scott, 1989).

The descriptions of the vegetation below have been drawn from a variety of sources. Several sources, in particular, Hill Kaplan Scott (1989), Marais (1994), Kirkman & Wilson (1999) and Walker & Baxter (1999) were used as they have undertaken detailed work on the vegetation distribution in Hogsback. These offer micro-level information that is not covered in better known works such as Cowling et al (1997) that have been drawn on for information confirming descriptions of particular vegetation types described by the local studies.

# PHOTOGRAPHS OF INDIGENOUS VEGETATION IN HOGSBACK



<3



4>



<5



6>

3. Watsonias blooming after fire

5. Indigenous forest canopy

4. Lip flower Protea (*Protea simplex*)

6. Yellowwood tree (*Podocarpus* spp.)

#### 4.2.2.2. Vegetation types in Hogsback

The **grasslands** occurring in Hogsback are typical of the high altitude slopes and plateaus of the eastern escarpment of South Africa and occur at altitudes between 600 and 1400m on the plateaus and spurs. These receive rainfall of 650 to 1000mm p/a and are situated on older, nutrient poor soils. These are sourveld grasslands, also known as Dohne Sourveld that form a dense, sour grassveld dominated by *Themeda triandra*. Forbs and herbs include *Watsonia* spp. and *Dierama pulcherrimum* (Acocks, 1953; O'Connor & Bredenkamp, 1997).

The **forests** have been characterised in different ways by different authors but in most descriptions the forests in the Amatola Mountains are Afromontane Forest which forms "*an archipelago-like regional centre of endemism*" (Midgley et al, 1997). The forest is the Mist Belt Mixed *Podocarpus* Forest type (Cooper, 1985) and Acocks (1953) identified it as Dohne Sourveld Forest that is associated with Dohne Sourveld. The forest occurs on the south facing cliffs and escarpment kloofs and valleys. These receive high rainfall, over 1000mm p.a. and occur on younger and nutrient richer soils. The aspect is cooler and therefore, moister. It is tall evergreen *Podocarpus falcatus* and *Podocarpus latifolius* dominated forest in the kloofs and medium to short *Schotia*, *Celtis* and *Calodendrum* dominated forest on the drier, lower lying slopes (Acocks, 1953).

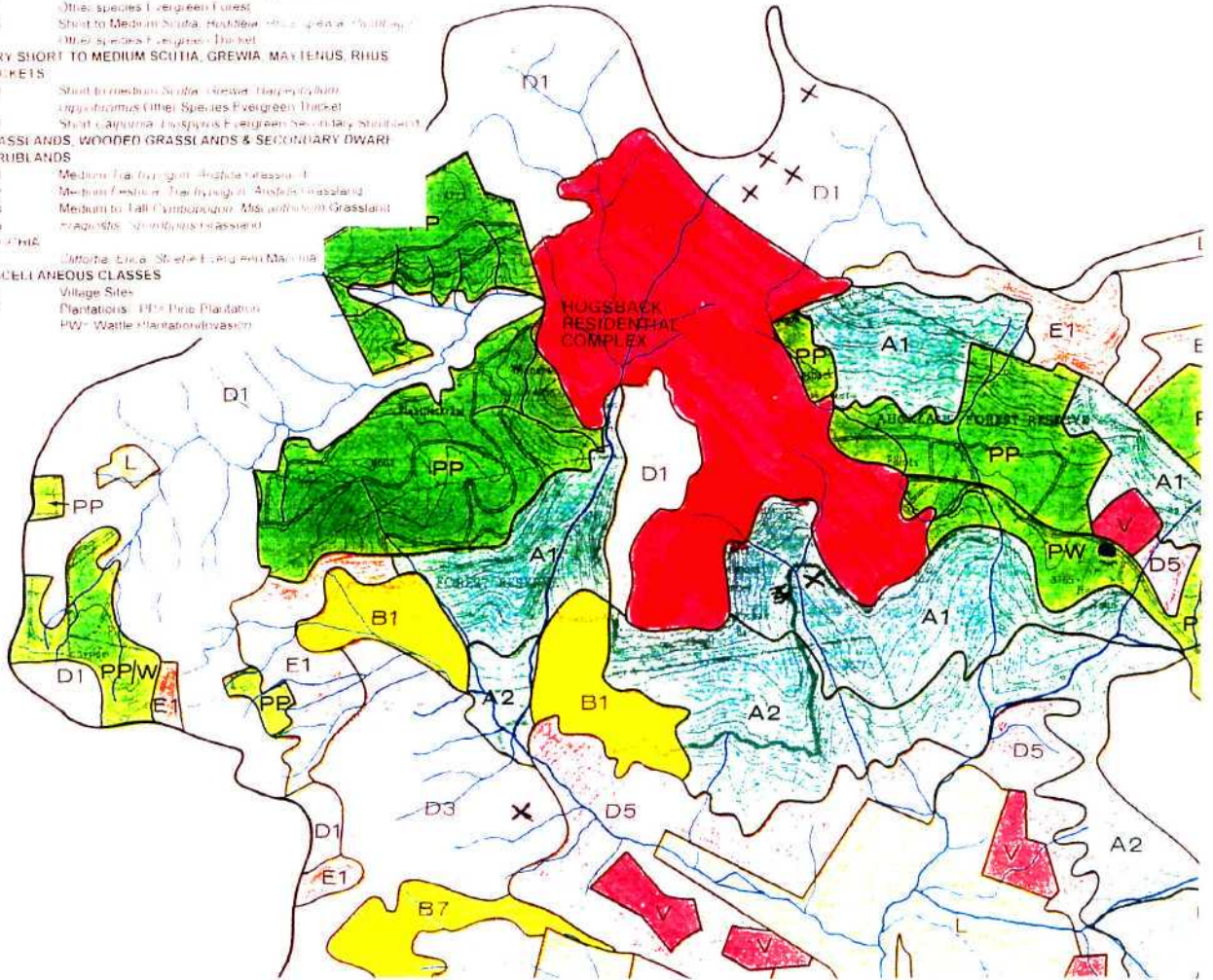
The plateau is a mosaic of sponge wetlands, grasslands, macchia and rock outcrop vegetation types, where it is not under pine plantation or invaded by wattle. Sponge wetlands form the catchment headwaters that feed numerous streams and there are peat vleis below Gaika's Kop mountain. The main species found in the wetland areas are *Restio* spp. and sedges, *Carex* and *Pycreus*, with ground orchids commonly occurring (Kirkman & Wilson, 1999 and Marais, 1994).

Rock Outcrop vegetation is found scattered along the cliffs and rocky outcrops on the mountain sides and here *Rhus dentata* and *Leucosidea sericea* are conspicuous diagnostic species. As they are protected from fire it is common to find *Protea* spp. occurring in the rocky outcrops (Acocks, 1953). Acocks noted that "*the mountains from the Amatolas westwards...(are) associated with Fynbos. The Fynbos occurs on rocky outcrops on the grassy mountain tops and at the forest margins, especially the upper margin*" (Acocks, 1953). There is a dynamic movement between grassland, fynbos and forest, depending on the soils and veld management, especially the fire regime practiced. Overgrazing and protection from fire promote Macchia (Cowling et al, 1997; Trollope, 1973). The fynbos elements in Hogsback have proteoid and ericoid species as well as *Cliffortia* and *Stoebe* species. The mountain summits are characterised by *Protea simplex* and ground orchids (Hill Kaplan Scott, 1989).

# MAP 4: Vegetation distribution In Hogsback

(From: Hill Kaplan Scott, 1989 - Keiskamma River Basin natural resources survey vegetation map)

- 1A11 EVERGREEN PODOCARPUS - OTHER SPECIES FORESTS**  
 A1 Medium to Tall Podocarpus - Symplocos Evergreen Forest  
 A2 Medium to Short *Schotia* - *Cedrus* - *Agave* - *Calceolaria*  
 A3 Short to Medium *Schotia* - *Hedyscyma* - *Podocarpus* - *Podocarpus*  
 Other species Evergreen Forest  
**VERY SHORT TO MEDIUM *SCOTIA*, *GREWIA*, *MAYTENUS*, *RHUS* THICKETS**  
 B1 Short to medium *Scotia* - *Grewia* - *Maytenus* - *Rhus*  
 B7 Short *Calceolaria* - *Podocarpus* - *Podocarpus* - *Podocarpus*  
**GRASSLANDS, WOODED GRASSLANDS & SECONDARY DWARF SHRUBLANDS**  
 D1 Medium to Tall *Hyssopus* - *Andropogon* - *Andropogon*  
 D2 Medium to Tall *Hyssopus* - *Andropogon* - *Andropogon*  
 D3 Medium to Tall *Hyssopus* - *Andropogon* - *Andropogon*  
 D5 Medium to Tall *Hyssopus* - *Andropogon* - *Andropogon*  
**MISCELLANEOUS CLASSES**  
 E1 *Calceolaria* - *Podocarpus* - *Podocarpus* - *Podocarpus*  
 V Village Sites  
 P Plantations - *Podocarpus* - *Podocarpus*  
 PW Wattle Plantation Invasion



#### **4.3. BIOPHYSICAL FACTORS THAT PRE-DISPOSE THE HOGSBACK ENVIRONMENT TO INVASION BY ALIEN VEGETATION**

The combination of altitude, soils, rainfall and temperature found in the Hogsback area provides the ideal habitat for a number of invasive alien species but particularly for black wattle (*Refer to Chapter Three, 3.2.4.*). Sandstone and dolerite soils, high rainfall of 1000 –1100 mm per annum and the species preference for higher altitudes and lower temperatures occur in this environment. In addition the environmental disturbance that resulted from forestry and agricultural activities provided the opportunity for wattle to establish itself as a dominant species in certain areas. The spread of black wattle along riparian zones due to seed dispersal by water is postulated as one of the major contributors to its invasion of these areas (*Richardson, 1997*).

#### **4.4. INVASIVE ALIEN PLANT SPECIES OCCURRING IN HOGSBACK**

Nine invasive alien plant species are recorded in Hogsback: *Acacia mearnsii* (black wattle), *Acacia melanoxylon* (blackwood), *Pinus pinaster* (cluster pine), *Pinus radiata* (radiata pine), *Pinus patula* (patula pine), *Eucalyptus sp.* (gum), *Solanum mauritianum* (bugweed), *Rubus sp.* (bramble) and *Nasella trichotoma* (Nasella tussock grass) (*Kirkman & Wilson, 1999 and Marais, 1994*). Three thousand of the seven thousand hectares managed by SAFCOL in Hogsback, is under commercial plantations of *Pinus pinaster*, *Pinus radiata* and *Pinus patula* (*H. Wylie, pers. comm.*).

#### **4.5. IMPACT OF INVASIVE ALIEN PLANTS ON THE HOGSBACK WATER CATCHMENTS AND WATER YIELD**

Evidence of the impact of alien plant populations in Hogsback is primarily anecdotal and inferential. Only one desktop study was undertaken by Ninham Shand on behalf of SAFCOL (*Marais, 1994*) to quantify the past, present and potential future impact of alien plantings in this environment on MAR from the catchments. The conclusion reached was that the major reductions in run-off had occurred prior to the 1970's as a result of increased plantings of Pine plantations. The modelling exercise indicated a forty percent drop in run-off from the catchment (*Marais, 1994*). O'Keefe et al, (1994) state that "*The afforestation of upper catchments by alien species such as Pinus radiata may reduce run-off by half*".

Riparian zones are estimated "*to cover about 15% of a catchment*" (*Division of Water, Environment and Forest Technology, undated*) and given the fact that three major rivers rise in the Hogsback study area it is probably a higher percentage of the total land area. This biogeographic feature of the landscape probably contributed to the spread of alien species in the

catchment. "Several very widespread invaders in southern Africa owe their extensive distribution to opportunities afforded by rivers. As a result, the distribution of a suite of invaders that occurs mainly along watercourses (includes)...such species as *Acacia dealbata*, *A. decurrens*, *A. mearnsii*," (Richardson et al, 1997).

There is no accurate data on the exact extent of wattle and blackwood invasion in Hogsback. It is estimated by contractors and foresters that about 10% of the land area is affected by dense alien plant invasions. The most critical areas are the riparian zones in the Tyumie water catchment below 1200 m altitude which would account for about 15% of the land (*Division of Water, Environment and Forest Technology, undated*). Other areas affected are the plateau spurs that were previously grassland that was subjected to some form of disturbance (*Burgess, Wylie, pers. com.*). Many properties in Hogsback are infested with wattle, especially those of absentee landowners who are unable to maintain regular clearance of their properties. Roadside verges in the village, especially near densely infested properties, had high densities of wattle growing prior to clearance by WFW. In total this would translate into at least 15% of the area being infested with alien plants to some degree, or approximately 1 275 ha of land.

No specific research on the Hogsback area has been undertaken but based on work undertaken on other similar mountain catchment areas it is probable that clearances of wattle and blackwood by WFW projects along the riparian zones would appear to have had the following effects on the environment:

- The riparian areas were primary clearance targets but unfortunately, once cleared the steep valley slopes were left unplanted for the next heavy rainfall to erode. Gully and sheet erosion occurred. Increased soil erosion as a result of clearing without follow-up rehabilitation caused critical fertile soil to be lost. (*Photographic evidence on page 51*)
- This has caused damage to riparian ecosystems and habitats for rare indigenous amphibian and fish species, especially breeding pools that become clogged with fine silt. *Sandelia bainesii*, a rare indigenous freshwater fish is found in the Hogsback area and is extremely sensitive to siltation of the shallow rocky pools it prefers for breeding (*Bally, pers. com.*). Bothma & Glavovic, (1994), state that endemic freshwater fish are threatened, amongst other factors, by "*sedimentation because of excessive soil erosion*".
- The rivers and streams chemistry changed, especially where careless dumping of wattle and blackwood trash into the streams and rivers caused acidification.
- Increased turbidity adversely affected the quality of drinking water (*Personal observation*).
- *E.coli* levels almost certainly increased as septic tanks discharged into rivers and streams without being filtered through riparian vegetation. This affected the health of those in the

community who depend on the rivers and streams for drinking water (*Tests undertaken at the University of Fort Hare on water samples collected from the main stream supplying the Hydrangea water scheme indicated very high levels of E. coli following heavy rains*).

- Stream and river temperature changes as a result of removing shade trees will have affected aquatic species with a low tolerance for temperature change (*Division of Water, Environment and Forest Technology, undated*).

These changes would result in compromised biodiversity, instead of enhanced biodiversity that is one of the stated objectives of WFW.



**7. Waterfall on the Tyumie river**



**8. Snow on the Hogsback**

**4.6. A HISTORY OF ENVIRONMENTAL DISTURBANCE IN HOGSBACK DUE TO HUMAN DEVELOPMENT**

The following section outlines a history of environmental disturbance in Hogsback over the past two hundred years that contributed to the establishment of the invasive alien problem in the study area.

The original vegetation in the area was described by some of the first travellers in the Amatola Mountains. In 1836, Captain William Cornwallis Harris visited the Bontebok Flats, which comprised the plateau from Hogsback to the Windvogelberg near Cathcart. His description of the vegetation on the plateau area is poetic but accurate.

*"In place of the usual flat features of South African scenery, a boundless billowy succession of surge-like sward undulations are clothed throughout with a layer of bright green close browsed by the wild herds that it supports. Everywhere is the sward illuminated by a dwarf flora, endless in variety as in profusion....and the whole acres positively derive their complexion from the beds of blossoming bulbs by which they are completely covered. Alternate patches of green, yellow, purple or crimson....impart to the country the appearance of being spread with a carpet of gigantic pattern; but over the whole tract not a solitary tree, no not even a bush of so much as a foot in height, is anywhere to be seen,..." (Cornwallis Harris, 1986).*

Due to changes in land use over the past two hundred years and the original geographically limited distribution of Afromontane vegetation in the area, a large number of plants distribution and populations are reduced (Marais, 1994). Table 6 presents a consolidated list of the number of vegetation species occurring in Hogsback that are listed in 'Threatened plants of southern Africa' (Hall et al, 1980).

**TABLE 6: Threatened plant species occurrence in Hogsback**

STATUS	TOTAL NO./SPECIES
Endemic	3
Extinctions	None
Endangered	1
Vulnerable	2
Rare	2
Indeterminate	15
Uncertain	43
<b>TOTAL</b>	<b>66</b>

(Species data obtained from Marais, 1994; Status from Hall et al, 1980)

#### 4.6.1. Environmental changes to the vegetation of Hogsback over the past 150 years

A number of changes have occurred in the vegetation of Hogsback over the past 200 years. These are discussed below under the two major vegetation types: Grassland and Forests.

#### 4.6.2. Changes in the grassland

The picture described by Cornwallis Harris has changed quite considerably. The game herds in the area were rapidly hunted out. The fire regime implemented by the San to manage the grasslands for the production of edible bulbs such as *Watsonia* stopped once they had been eliminated from the area (Mitchell, 1988). The elephant that used to eat the roots and branches of the *Acacia caffra* trees were eliminated from the area and this contributed to the bush encroachment of the valley grassveld. Domestic stock, in particular cattle and sheep, replaced the original game herds. The loss of browsers in the system speeded up the transition from grassland to thornveld (Wilson & Thompson, 1985).

The introduction of sheep and cattle was not the only factor contributing to the ecological disturbance. The different grazing management regimes of the different groups of stockholders led to escalating environmental changes. The Xhosa hunted the few remaining San hunter gatherers to extinction in the 1780s (Wilson & Thompson, 1985). The KhoiKhoi pastoralists grazed their stock on the mountains during summer and then brought them down to the valley sweetveld for winter grazing. The KhoiKhoi were mostly integrated into the Xhosa communities in the early 1800's. This led to changes in the way in which the grasslands were utilised, especially as grazing patterns became permanent. The use of the mountain grasslands for summer grazing by the Xhosa became customary. In 1874 the Commissioner for the district of Victoria East reported that "At the present time the Gagha people are paying 50 pounds a year to the Government for grazing their cattle on the Hog's Back Mountain" (Blue Book of Native Affairs, 1874).

As the Xhosa were squeezed into smaller and smaller areas, the number of cattle, indigenous sheep and goats utilising these areas increased substantially above the original levels. This occurred at the same time as their population numbers were rapidly increasing as a result of the replacement of indigenous sorghum with maize as the staple food. In addition the eradication of the game herds had destroyed one of the Xhosa's main sources of protein. This led to increasing environmental pressure on all the resources in the environment (Wilson & Thompson, 1985). In 1835 the Cape colonial government allowed 16 000 Mfengu to settle in the Peddie area with their 22 000 cattle. In addition, they were agriculturalists who farmed cereal crops with ploughs and

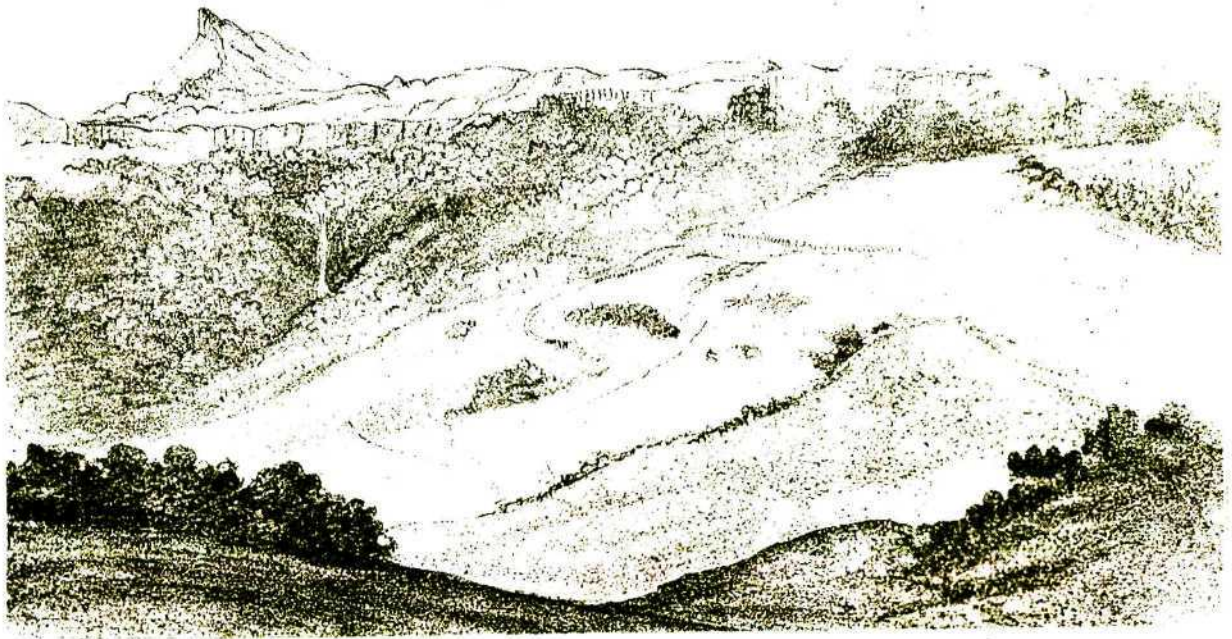
Merino sheep (Bundy, 1988). In the war of 1846/47 the Mfengu provided levies to the colonial forces and fought against the Xhosa. This occurred again in the war of 1850-53 (Wilson & Thompson, 1985). After the war the Xhosa were expelled from the Tyumie valley in 1853. The Mfengu were rewarded for their loyalty to the Cape colonial government with awards of land in the Tyumie valley and the right to rent land in the newly established Crown Forest Reserve (Wilson & Thompson, 1985).

The agricultural activities of the Mfengu resulted in the ploughing of colluvial lands. This led to severe gully soil erosion in places (Bundy, 1988; Coleman, 1995). The selective grazing by the Merino sheep of the most palatable grass species led to degradation of the veld and reduced carrying capacity. The simultaneous settlement of white farmers into the district from the 1860s, led to the intensification of cattle and sheep numbers that, in turn led to a continuous grazing regime. Exotic species of trees were planted as windbreaks and for fuelwood.

Sourveld grassland is unsuitable for winter grazing and farmers found that, in order to survive, they needed to plough up alluvial soils and wetlands to grow winter forage crops. The changes in land use, grazing patterns and fire regime led to changes in the vegetation. The most obvious is the high percentage of *Themeda triandra* on many farms due to its desirability as a forage grass. This is a secondary phase succession grass, not a climax grass. The present day burning regime maintains it in this succession phase (Trollope, 1973). The environment was put under severe pressure for the first time and a threshold was breached causing man-induced soil erosion (Coleman, 1995).

In 1884 "the grass land lying between the Hogsback forests and the Auckland forests has been surveyed into farms under the Agricultural Lands Act of 1882. The forest will benefit from this in the country being settled and fenced, in the enhancement of the value of forest produce, and in the diminution of grass fires. ...I am now also in possession of a plan which can be re-plotted, extended, and used as a working plan of the forest" (Report to Parliament, 1885). By 1885 the land at Hogsback had been divided up and sold as farms and the stock inspector, Ben Green reported that, " ...but now that the ground on the Hogsback plateau is to be disposed of they will no longer be able to hire grazing there" (Green, 1885). This was of crucial importance in severe drought years, such as were experienced in 1885.

## EARLY PAINTINGS AND SKETCHES OF THE HOGSBACK ENVIRONMENT



**Thomas Baines: The Amathole Mountains - 1835**

*(Showing Hogsback from the Amatola valley with the Zingcuka cliffs in the midground)*



**The Ruins of Auckland - 1851**

*(Showing Hogsback Mountains from the Tyumie River valley and the forested kloofs and grassy escarpment) (The Edges of War)*

The settlement of Hogsback from the 1880's on led to the establishment of gardens filled with ornamental exotics. The colonial settlers yearned to recreate a landscape reminiscent of Britain. The Hogsback climate was highly suitable for the imported flowers and flowering shrubs and trees so loved by British gardeners. The grassveld with its *Dieramas* and *Watsonias* was transformed into an English type woodland of Azaleas, Roses, Rhododendrons, Oaks, Birches, Beeches, Daffodils, *Narcissi* and hundreds of other exotic species of plants. An entirely exotic environment was created in the space of twenty years, completely replacing the original vegetation (L.G.C., undated).

Slater commented that *"dismal pine and wattle plantations now over-run the broad slopes - once resplendently waving with red-brown grass - which divide from each other various deep valleys, ribbed with primeval forests of noble yellowwood trees"* (1954). By the 1950's large-scale planting of trees and shrubs, on what had previously been grassland, was having a clear impact on the streams in the area. The large areas of plantation forest reduced stream flow, particularly during the winter months, and drying up of springs had taken place. Sponge areas surrounded by plantations were deteriorating as reduced water flow affected them and some had been planted over (*Anecdotal oral evidence from long term residents*).

It was during the period of the 1930's to 1950's that wattle became established as an invasive alien species. It impacted on grasslands, especially where they had been disturbed or degraded. The wattle exploited the ecological disturbance brought about by the changed land use. The original mountain grassland vegetation, with its high number of fire adapted bulbous flowering plants, was replaced by a monoculture of wattle in a number of areas. This contributed to the reduction of species diversity and plant communities started to reach dangerously low levels for certain species.

There are now 3000 ha of pine plantations that produce about 20 000m<sup>3</sup> of timber per annum at present and bring in an annual income of about R2 million per annum. In full production they will produce 50 000 m<sup>3</sup> of timber per annum. SAFCOL supplies three sawmills, one large and two small mills. Two other sawmills closed down this year (*Wylie, pers. com.*). The preferred bidder for the privatisation of the SAFCOL and DWAF plantations in this area is the Amatola Timber Consortium established by Rance and Lentz, two of the largest sawmillers in the Amatola region (*Bethlehem, pers. com.*).

#### **4.6.3. Changes in the forests**

Up until 1800 the Xhosa used the indigenous forests for hunting, shifting slash and burn agriculture and the provision of firewood and hut poles. Their effect on the forest was relatively

minimal (Wilson & Thompson, 1985). The increasing contact with European settlers and the establishment of permanent European settlements in the Grahamstown area changed this. In 1819 a load of yellowwood logs extracted from the forest overturned crossing the Tyumie River. The load was so large that it blocked the drift and the site became known as Block Drift.

From 1820 on, large numbers of indigenous forest trees, but especially Yellowwood and Sneezewood, were extracted from the forests to build military establishments, wagons and homes, as well as for fencing posts (Hartney, date unknown). The indigenous forest was seriously affected as most of the large trees of these species were cut out. The 1830's saw the construction of a series of forts along the frontier: Fort Hare, Fort Cox, Fort Michell, Fort Willshire, Fort White and Fort Eyre, all of which required timber from the Amatola forests for their construction (Wilson & Thompson, 1985).

The wars between the Xhosa and the British government detailed in the history below culminated in the annexation of the Keiskamma in 1853 (Hunt, 1974). For the forests this was crucial. In 1853, Governor Sir George Cathcart declared: *"Whereas the tract of country of British Kaffraria from which the Gaika people have been expelled has been declared in the Proclamation of the 2nd inst. to be forfeited to the Crown, it is hereby further declared that it shall, pending Her Majesty's pleasure, be held to be a Royal forest or common, and be designated the "Royal Reserve" (Govt. Notice No.3/1853).*

Despite the designation of large portions as forest reserve, for the next thirty years the Amatola forests were logged heavily. Legal and illegal wood sawyers logged the forests indiscriminately (Darrow, 1976). The destruction of the forest contributed to greatly reduced indigenous fauna populations. In 1866 Captain Johann Baron de Fin was appointed Ranger of the Crown Forests in British Kaffraria. His first inspection tour in 1867 revealed that destruction of forests and illegal cutting was widespread. The Cape Forest department was established in 1875. By 1876 most of the forests in the Amatola and Katberg mountains were worked out and in a poor state (Darrow, 1976). The depletion of the indigenous forest resources forced the colonial government to look for potential forestry land. Hogsback was identified in the late 1870's as suitable for afforestation. In 1881 a survey was undertaken to determine the best areas for forestry plantations. A Chief Forest Conservator, Count de Vasselot de Regne, was appointed in 1882. In 1883 D.E. Hutchins replaced Baron de Fin and some of the overworked forests were closed to cutting (Darrow, 1976).

In 1884 the Superintendent of Woods and Forest for the Cape Colony noted that, *"One portion of the Auckland forest contains the stateliest trees in the Colony, but the larger portion has been overworked by licence-holders and devastated by Government contractors,...The Hogsback*

forest ...has been almost worked out, and now has the appearance of a coppice-under-standard forest, the standards being the faulty trees left under the old system of working" (Report to Parliament, 1885).

In 1884 Hutchins started surveying and demarcating the Amatola forests. By the end of 1885, he had demarcated almost 80 square miles of forest. He commented in his report that the Amatola valley forests were *"badly depleted and broken"* and the lower mountain forests, *"that portion of the forest which carries the best timber, is eaten into, and honeycombed by mielie gardens"* (Cited in Darrow, 1973). The urgent need to conserve what was left of the indigenous forests was constructive in that *"the first formal conservation areas in South Africa were demarcated forest reserves established in terms of the Cape Forest Act 28 of 1888"* (Fuggle & Rabie, 1994).

The destruction of the indigenous forests was the result of demand for timber by the colonists. It became apparent that if the increasing need for timber were to be met then the forestry authorities would need to develop alternative sources of timber. The foresters realised that the slow growth patterns of the majority of indigenous tree species that provided good quality wood and the lack of silvicultural knowledge on the propagation of such species by foresters at the time made indigenous species unsuitable for developing a forestry industry (Darrow, 1976).

Foresters such as Hutchins had training in European forestry and experience in countries such as India. It was decided that the only way South Africa was going to be able to meet the internal demand for timber was by establishing plantations of fast growing exotic species. Accordingly a mix of traditional timber species such as Oak (*Quercus spp.*) and Pine (*Pinus spp.*) along with fast-growing *Eucalypt* and *Acacia* species from Australia were selected for trials. Hutchins used some of his energy to begin establishing the exotic forestry in the Amatolas as, in his view, the long term salvation of the indigenous forests required alternative sources of timber to be developed. He selected potentially suitable sites for plantations, a nursery was established in 1887 and in 1889 experimental planting of pine trees began (Darrow, 1976). By 1910, eighty hectares of plantation had been planted and this increased substantially after 1920 (L.G.C., undated). By 1994 2 919 ha were under *Pinus radiata* and *Pinus patula* plantations (Marais, 1994).

It was during the early afforestation period that wattle and blackwood were introduced as experimental tree crops, along with American redwoods, oaks, cypresses and eucalyptus (Darrow, 1976). In 1893 the new plantings were burnt in a fire that *"scorched a number of the outside pines, ...this fire passed along the edge of the Oak belt above the nursery, and the trees here, appear to have suffered as much as those of any other kind"* (Report 1893 cited in Darrow, 1976). Wattle and blackwood very soon increased in numbers and escaped from the

experimental plantations. The heaviest growth was along the streams and rivers. The forest edge and clearings within the indigenous forest, which had been created by the earlier timber felling activities of the early colonists, were rapidly colonised by wattle and blackwood.

The introduction of fast growing exotic species with few or no natural predatory insects or diseases in an environment that was ideal for their propagation had the inevitable result – widespread invasion of the environment by exotic species. Odum (1971) makes the point that *"When an existing system is disturbed and new species are added, there may be great fluctuations and pulses during the self-designing process. ...The rapid success of some invaders is possible partly because they are able to use portions of the disturbed system that have fallen into disuse."*

J. Storr Lister replaced Hutchins in 1888. Lister re-opened the indigenous forests to cutting under a proper management system based on De Vasselot's book of 1885 entitled, *"Introduction of Systematic Treatment of the Crown Forests in the Cape Colony."* The forest was divided into sections, and 'ordons'. Trees were personally selected, marked with a serial number, measured and valued by the District Forest Officer and his assistant. Unfortunately, the management system was not implemented very well, due to the lack of knowledge of the district foresters and rangers. The sale of indigenous timbers rose steadily under Lister's control and by 1901 almost 224 000 cu.ft. of indigenous timber was being extracted each year (Darrow, 1976).

In 1907 Sim (1907) estimated that there were 168 051 acres of forest in the Eastern Conservancy valued at 1 418 483 English pounds. In the Cathcart district, under which Hogsback fell, there were 601 morgen of *A. mearnsii* planted, however, in Keiskammahoek only 3 acres of a total of 252.2 acres were planted to this species (Sim, 1907). During the period these plantations were established foresters followed Hutchins recommendations and planted 1.5 kg of seed per ha. Between 1882 and 1893, the forestry authorities supplied three million *A. mearnsii* seeds to private growers (MacDonald et al, 1986). Sim stated that *"the most important change has been the gradual rise during recent times...wherein the formation of artificial forests is being prosecuted with much vigour"* (Sim, 1907).

The post of Chief Conservator of Forests was established and J. Storr Lister was appointed. He organised the establishment of the South African School of Forestry in 1906 at Tokai, attached to the South African College (Sim, 1907). The Crown Lands came under the management of the Department of Forestry that was responsible for the plantations, the indigenous forests and the mountain catchments. The control, protection, use and establishment of forests were further refined in the Forest Act 16 of 1913, the Forest Act 13 of 1941, the Forest and Veld Act of 1941,

the Forest Act 72 of 1968 and the Forest Act 122 of 1984 (*Fuggle & Rabie, 1994*). Since 1994, DWAF has been involved in a major revision of its legislation. The National Water Act, the National Water Resources Act and the National Forest Act were passed by parliament in 1998 (*Department of Water Affairs & Forestry, 1998*). DEAT had the National Environmental Management Act passed by parliament in 1999 (*Department of Environmental Affairs and Tourism, 1999*).

The forests that remain in the Amatolas today have regenerated in less than 100 years. The floristic structure is almost certainly altered from the original forest due to the selective harvesting that took place. There are very few of the ancient Yellowwoods left, one of which is the "Big Tree" in the Auckland Forest below Hogsback, estimated to be about 1 000 years old. (*L.G.C., Undated*) The regeneration of Yellowwoods has been good and there is a first generation population that has already reached 20 metres in height. The many Sneezewood trees that occurred have not regenerated in any significant numbers (*Hartney, date unknown*). Today, the forest in Hogsback is affected on the margins by fires and invasion by invasive alien species. The forest interior is utilised for hiking and walking trails, as well as illegal hunting, grazing and timber extraction (*personal observation and Kantor & Kockott, pers. com.*).

The primary event signalling environmental disturbance in the area was the arrival of European settlers. The principal disturbances were:

1. The introduction of agricultural practices such as ploughing and farming of cereal crops and the introduction of exotic cattle and sheep.
2. The destruction of the indigenous forests to provide timber for construction of homes, military establishments and wagons.
3. The introduction of exotic plant species to produce timber.

The results of these disturbances were:

1. Soil erosion.
2. Changes to the composition and extent of grasslands.
3. Reduction of grasslands and indigenous forests.
4. Establishment of alien vegetation, especially in riverine catchments.

#### 4.6.4. Conservation status of the Hogsback area

About 20 000ha of Dohne Sourveld are formally protected in South Africa, most of which is indigenous forest and very little of it is grassland.

A total of 2 782 ha has been set aside as conservation areas in Hogsback. This conserves 943 ha of indigenous forest, 998 ha of Grassland and Shrub and 841 ha of wetlands. The remaining 65% of the area has no formal conservation status. The areas with conservation status are:

- Indigenous Forest: Protected under the Forest Act. The Auckland Nature Reserve conserves the Auckland Forest.
- The Hogsback Peaks and Tor Doone: National Heritage Sites since 1996.

#### 4.6.5. Management status of the Hogsback environment

The management of the Hogsback environment is shared by three organisations:

**SAFCOL:** Lease 7 500 ha of state land from DWAF. An Environmental Management Plan for the Hogsback Plantation was drawn up by the SAFCOL regional ecologist in 1994 in consultation with the Hogsback community (*Marais, 1994*). Conservation Management Plans for Hogsback, the Hogsback Natural Heritage Site and the Tor Doone Natural Heritage Site were completed by SAFCOL early in 1999 (*Kirkman & Wilson, 1994*). Revised environmental plans for the Hogsback plantation, Hogsback and Tor Doone National Heritage Sites, were drawn up in 1999 by the SAFCOL regional ecologist Karen Kirkman. The pending privatisation of the DWAF and SAFCOL forests will include the Hogsback plantation. This may lead to a change of management for this land, depending on the outcome of the bidding process that is in its last stages in late 1999 (*Wylie, pers. com.*).

**DWAF:** Manage state land to the east of the Tyumie river, including the three Hogsback Peaks, and the Auckland indigenous forest reserve (*Kirkman & Wilson, 1999*). Their main responsibility is conservation of the indigenous forests. Plantations that belonged to the Ciskei Department of Agriculture and Forestry will be privatised by the end of 1999. (*Department of Water Affairs & Forestry, 1998*) These plantations formed part of Chief Yantolo's grazing that was expropriated by the Ciskei government for forestry development. It is the subject of 3 land claims lodged with the Eastern Cape Regional Land Claims Commission and there are a further eight land claims in the Hogsback area (*Regional Land Claims Commission: Eastern Cape, pers. com.*).

**Hogsback Local Council:** Manage land within the municipal boundaries. Cavan & Klapwijk prepared a Hogsback Environmental Management Plan in 1997, and Wanklin & Associates completed the Hogsback Integrated Development Plan in 1998. These will guide all future developments in Hogsback. The Hogsback Integrated Development Plan includes Land Development Objectives, such as the establishment of a biosphere reserve, and eradicating invasive alien species. The HLC has been involved in managing the WFW Programme in Hogsback since 1997 (*Kantor, pers. com.*).

**PHOTOGRAPHS OF SOME OF THE AREAS IN HOGSBACK CLEARED OF WATTLE BY THE WFW PROJECTS**



**9. Typical *A. mearnsii* invasion in Hogsback**



**10. Re-growth on cleared area**

## PHOTOGRAPHS OF WFW PROJECTS IN HOGSBACK



11. WFW labourers cutting and stacking fuelwood

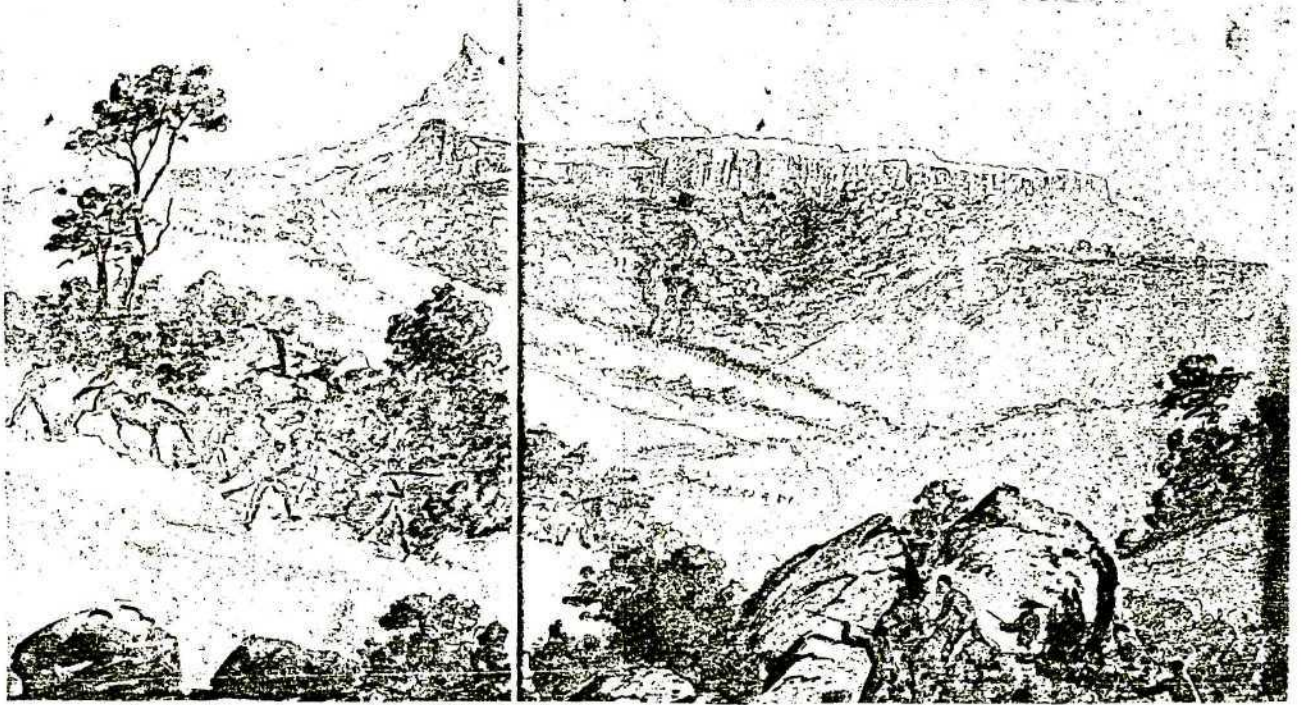
12. Fence poles stacked after clearing and prior to collection on site



13. WFW contractor, James Ndzalani, at work on a private contract in Hogsback to clear a plot for bed and breakfast rondavels

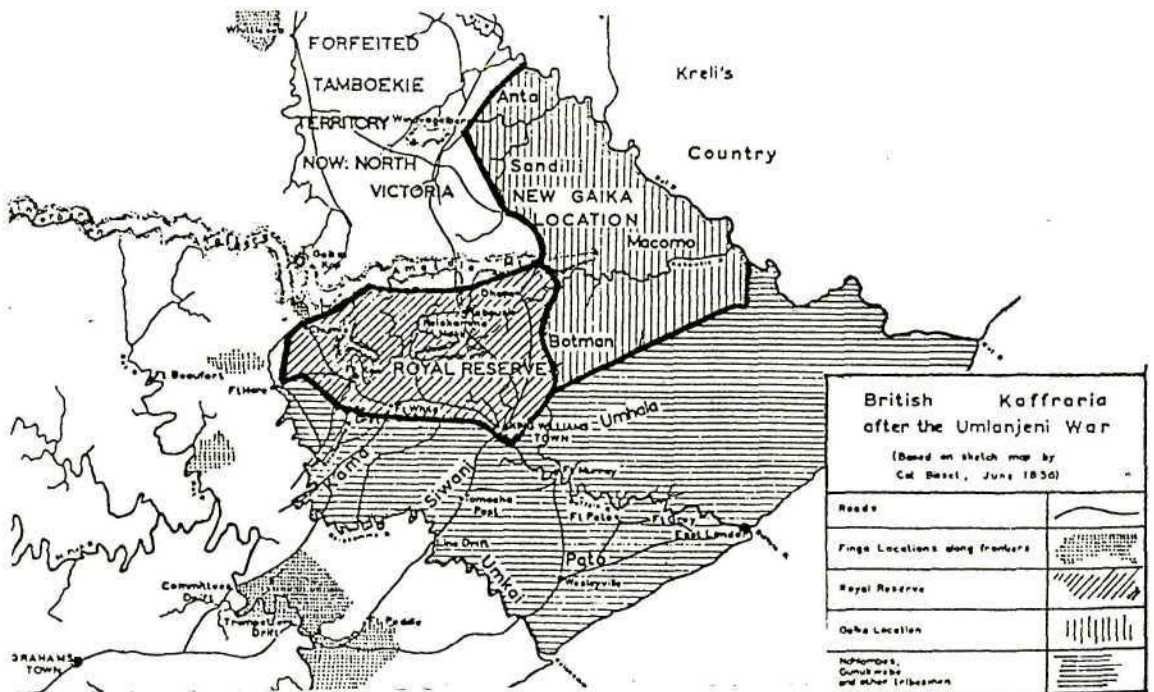


## WAR IN THE AMATOLAS AND ITS CONSEQUENCES



The Highlanders and Port Elizabeth Fingo Levy storming the position in the Amatolas

(Thomas Baines - Courtesy of the Africana Museum, Johannesburg)



MAP 5: Territorial losses: 1779 - 1850

Map showing the loss of land by the Xhosa to the Cape Colony

(From: *The House of Phalo*, J.B. Peires, 1987)

## SECTION B

### A HISTORY OF SOCIAL DISTURBANCE IN THE HOGSBACK AREA

*"All is lost; the tribe is broken..."*  
*The Lament of Tyala (Brownlee, 1977)*

#### 4.7. INTRODUCTION

The present day political and socio-economic situation needs to be understood in the context of the history of social disturbance that took place over two centuries. The primary event that led to social disturbances was the arrival of European settlers in the Eastern Cape. The three main results for indigenous peoples were:

1. The tribal structures were irrevocably altered.
2. Loss of land on an increasing scale through the 19<sup>th</sup> and 20<sup>th</sup> centuries.
3. Loss of political power.

#### 4.8. 1800 – 1900: THE YEARS OF DISPOSSESSION

The early 1800s saw the beginning of massive societal upheavals and changes, especially for the Xhosa people who had established themselves in the Tyumie valley. In 1795 the British took control of the Cape Colony as, according to Lord Caledon, governor of the Cape Colony in 1809, *"The true value of this colony is its being considered an outpost subservient to the protecting and security of our East Indian possessions"* (James, 1994).

At that time the Xhosa occupied the area as far as the Great Fish River that had been proclaimed the eastern frontier of the Cape Colony in 1780. The colonial government received numerous complaints from colonists about the Xhosa cattle thieving. In an attempt to address ongoing border problems the colonial government enforced the eastern frontier in 1811/12 and the British government offered land to British citizens prepared to immigrate to the Eastern Cape. In 1819 *"All the Xhosa who lived between the Fish and the Keiskamma rivers were required to withdraw east of the new (Keiskamma river) boundary"* (Hunt, 1974). Ngqika was permitted to occupy the valley of the Tyumie river as the result of a special request to Lord Somerset. In 1820 4000 British settlers arrived and settled on farms in an attempt to *"buttress an insecure frontier"* (Wilson & Thompson, 1985). The Xhosa, who had been displaced *"blocked the path of the eastward progression of the colonists, just as the colonists checked the gradual migration of the Xhosa..."* (Hunt, 1974).

Contact with the neighbouring Xhosa was mostly through missionary work and trade. In 1824, trade fairs were held thrice weekly at Fort Willshire on the Keiskamma River. In 1825 the border area of the Eastern Cape received the first influx of refugees from the Mfecane (Difakane) upheavals caused by the expansion of the Zulu kingdom under Shaka (Wilson & Thompson, 1985). This exacerbated the existing land shortage experienced by the Xhosa as a result of the actions of the Cape Colonial government. *"An essential of Xhosa society was the availability of plenty of land. Political tensions were sometimes resolved by the subdivision of a chieftdom. ...The circumscription of movement dictated by a European frontier created tensions amongst the Xhosa which neither colonists nor their government could understand"* (Hunt, 1974).

In 1828 the Cape Colony enacted the Ordinance 49/1828 that allowed entry of Africans to work in the Cape Colony. In 1835 16 000 Mfengu entered the Cape Colony and were awarded land in the Peddie district (Bundy, 1988). The Mfengu were viewed by the settlers as *"the most penurious, industrious, wealthy, and progressive (of the different races)"* (Blue Book of Native Affairs, 1876). The agricultural innovations introduced by the settlers were avidly seized on by the Mfengu who were soon ploughing using oxen, irrigating those lands from newly constructed water furrows, growing a wide range of cereal and vegetable crops and farming with imported Merino sheep (Bundy, 1988).

The Xhosa had a less constructive relationship with the settlers who they saw as competitors for land and resources. In 1831 Colonel Stockenstrom was of the opinion that *"ferment among the Xhosa was maintained by depriving them of their means of subsistence"* (Hunt, 1974). During 1835 war broke out between the Xhosa and the Cape Colony. One opinion was that the underlying factor to this and all the other eastern Cape frontier wars was *"..the struggle between black and white pastoralists for access to land and water"* (Stretch, 1988). Charles Brownlee, (1977) a well-known missionary in the region, stated: *"The forests and fastnesses in this region, commonly known as the Amatola, had, up to the war of 1846, been most jealously guarded by the Gaika's, and, though the bulk of the tribe lived in the neighbourhood, no missionary or trader had been permitted to settle there, and all attempts to enter the country, or to make roads, with the view of settlement, had been strictly prohibited by the chiefs"*. The colonial government that deprived them of thousands of hectares of their best arable and grazing land and the missionaries who challenged tribal customs and authority were hated by the Xhosa (Bundy, 1988).

When, after the war of 1846/47, the British began annexing Ciskei and expropriating large tracts of land the Xhosa were angry and there was widespread poverty (Bundy, 1988). This ultimately led to the war of 1850-53. At the end of the war the Gaika lost most of their land and the Xhosa

were expelled from the newly annexed territories across the Kei River (*Wilson & Thompson, 1985*). Chief Tyala, one of the remaining chiefs of the Gaika, said, *"We fought against the white man and were driven from the Keiskama, the Chumie and Amatola....they (The Gaikas) are now no longer a people, they have no chief nor land"* (*Brownlee, 1977*). Within thirty years of the first white settlers arriving in the Eastern Cape the Xhosa had already lost large tracts of land, were suffering population pressure and land hunger as a result, and traditional tribal society had started to break down.

The other agents of change in the Eastern Cape were the missionaries who set out to Christianise and educate the tribal African population. Despite numerous setbacks, including massacres of missionaries and destruction of mission stations, such as that at Auckland and Woburn in 1834, by 1850 about 16 000 Africans lived on mission stations in the Eastern Cape. By 1884 there were 50 mission stations in the Ciskei alone (*Bundy, 1988*). Some of the African population, more noticeably the Mfengu, embraced Western religion, education and agricultural practices. Many, however, resisted this fiercely and this led to a divide between the Christian 'school' Africans and those known as 'red blankets' who retained traditional beliefs and customs (*Wilson & Thompson, 1985*).

The following environmental consequences resulted from the contact between the indigenous people and the colonists:

1. Large scale hunting of game, especially elephant for ivory, led to the eventual eradication of the great game herds (*Wilson & Thompson, 1985*);
2. Introduction of the plough for cultivation – due to the lack of knowledge of the new settlers lands unsuitable for cultivation were ploughed and widespread gully erosion occurred (*Bundy, 1988*);
3. Changes to the grazing regime, that became continuous rather than seasonal, resulted in gully and sheet erosion (*Bundy, 1988*);
4. Due to the demand for timber by the settlers much of the indigenous forest was destroyed (*Darrow, 1976*).

The environmental degradation led to increasing hardships amongst the African population as reduced productivity on marginal lands compounded the problems experienced from land losses. Most of the social disturbance that had taken place was a result of the wars and land losses. In 1856, however, the Colonial government made its first concrete move to reduce the powers of the chiefs and consolidate government power in these territories. Sir George Grey introduced white

magistrates and chiefs were paid by the government (Bundy, 1988). The dispersal of Xhosa tribal society was underway.

An attempt to fight back against this situation led to one of the great tragedies of the Eastern Cape – The Cattle Killing. Between 1855 and 1857 the Xhosa rallied behind the vision of a young girl Nongqawuse. They began killing all their cattle and stopped planting any crops in the belief that on a certain day warriors and cattle would rise out of the sea to fight the colony and replace the cattle. This would only happen if all the cattle were slaughtered. Reverend Charles Brownlee wrote in December 1856 that *"Hunger is fast closing upon its victims, and though there should be no war their sufferings will far exceed anything they have hitherto experienced"* (Peires, 1989). At the end of the Cattle Killing an estimated 30 000 Xhosa had died of hunger.

It had also led to deep divisions between those who had believed Nongqawuse's prophecies and those who had not. Peires (1989) states that *"The Cattle Killing split every chieftdom and, indeed many homesteads from within. ...The little evidence we have strongly suggests that the amathamba were a party of the common people, whose material subsistence was largely eroded by conquest, drought and lungsickness, and for whom Nongqawuse's prophecies were probably the last chance to avoid migrant labour and the final disintegration of the old way of life"*. The Cattle Killing struck a final blow to the existing societal structures and way of life. After this Xhosa society was forced to adapt to survive within a colonial context where the nexus of power lay with the Cape Colonial government.

In 1875 the Cape government introduced revised tax, pass, location and vagrancy laws to control the movement and settlement of Africans in the Colony. Individual title deeds were awarded to blacks but they were primarily Mfengu who were granted land in Victoria East. Another war erupted in 1877/78 between the Xhosa and the Cape government. At the end of this Gaika locations were confiscated and divided into white farms. This was followed in 1880 by a survey of communally owned land and all natives were cleared out of Alice (Bundy, 1988). The ongoing land squeeze on the Xhosa increased congestion and landlessness amongst the African population. It was pushing them into what would ultimately become the black homelands.

A process of social stratification amongst the Africans, particularly the Mfengu, had reached noticeable proportions by this stage. On the one hand was a small elite of Mfengu farmers with land, who were more productive and wealthy than most white farmers, and on the other hand, there were large numbers of landless and very poor Mfengu and Xhosa peasants. The social tensions that arose from this stratification were beginning to resolve as class conflicts within the tribal structures (Bundy, 1988).

The outbreak of Rinderpest in 1896 when 70-80% of cattle died in the Ciskei affected ploughing and transport as well as decimating the primary source of wealth amongst the Xhosa and Mfengu. The extreme poverty and famine that resulted led to an increase in migrant labour, especially to the newly discovered gold fields in the Witwatersrand. The number of migrant labourers from the tribal areas tripled in twenty years from 27 000 labourers to over 90 000 labourers (*Bundy, 1988*). The long-term effects on African society of stripping the tribal areas of males of working age began to be felt as the rural women raised children, crops and stock in the absence of the men. The disintegration of social structures such as family, clan and tribe was accelerated at this time. More and more families became dependent on mining remittances as the ability to provide for annual food security for families from existing lands waned (*Bundy, 1988*).

#### **4.9. 1900 – 1994: THE YEARS OF OPPRESSION**

From 1900 to 1910 there was a widespread increase of fencing and irrigation that led to African families who had become labour tenants and squatter peasants being evicted from farms. The government exacerbated the situation with the introduction of subsidies and grants to white farmers as well as preferential access to agricultural information. African peasant farmers were no longer able to compete on an equal footing with white farmers. During this period there was an increasing introduction of racially discriminatory legislation to protect white farmers. Even the previously favoured Mfengu were discriminated against (*Bundy, 1988*).

In 1912 the national cattle herd was decimated once more – this time by East Coast Fever. As in every previous outbreak of disease amongst the cattle, the most critically affected were the African peasants who lost the entire wealth of the family in many cases. This led to a further increase in poverty, widespread famine and reduced food security (*Bundy, 1988*). In 1913 one of the most infamous pieces of legislation was promulgated – the Natives Land Act (*South African Government, 1913*). This led to a further round of land dispossessions, especially of sharecroppers and squatter peasants. Land owning black farmers were targeted for land dispossession, although it took nearly fifty more years to eradicate black land ownership (*RLCC - EC, pers. com.*). It became a question of tidying up the landscape to obtain neat boundaries between black and white areas.

There was severe social transformation as Africans were dispersed into what had now become the Native Reserves, or became farm servants, wage labourers or labour tenants. There was widespread erosion of land rights, both formal and informal. Native Reserves were increasingly over-populated and under-resourced (*Bundy, 1988*). The loss of land as a result of the Natives

Land Act was, in fact, minimal compared to the earlier losses of the 1800s. It had taken less than 100 years to completely transform the social, political and economic system of the Africans.

The following results had occurred:

- reduction of the tribal system to a shadow of its original structure and power;
- resistance to the colonising settlers crushed;
- the bulk of the land grabbed, pushing the African population into the totally inadequate areas known as native reserves;
- stratification of the African population;
- introduction of Christianity and education of the natives;
- creation of a pernicious migrant labour system (*Bundy, 1988*).

The present day problems between white and black residents in South Africa and, more particularly, the Eastern Cape, stem from this history. The introduction of 'Grand Apartheid' by the nationalist government in the late 1940s and early 1950s with its concomitant brutal legislation and oppression merely refined the institutionalised racism and landlessness established prior to 1920. In 1936 the Native Trust and Land Act, No. 18/1936 was promulgated. By 1976 this Act had been amended 29 times in order to strengthen the government's hold on Bantu areas and ownership of land by Africans (*Native Trust & Land Act, No. 18/1936*). In addition, the Group Areas Act was passed in 1955. These acts demarcated the areas where blacks were allowed to live and ensured that any blacks holding land in declared white areas were eventually dispossessed.

Further legislation enabled the establishment of the homeland system. This ultimately led to the creation of so-called "Independent Homelands" and consolidated areas under white and black control. The Transkei was declared independent in 1976 and Ciskei in 1981. In 30 years, from 1950 to 1980, it is estimated that more than 1.4 million people had been removed or forced to move and 94% of these ended up living in the black reserves and homelands (*Simkins, 1983*). The disparities and inequities in land, resources and population pressure created areas of extreme poverty and environmental degradation. The standard of living, education and health in the black homelands meant that high levels of illiteracy, unemployment, infant mortality rates and lower life expectancy were the norm. The Eastern Cape is today rated as the second poorest province in South Africa, largely due to the Ciskei and Transkei homelands.

In South Africa the rise of civic organisations in the 1980's was a response of the oppressed to an increasingly hostile government. The basic premise of "civics" was that they were the only legitimate representatives of their communities. The question of how representative they were

was not tested and may hide the fact that they only represent a small portion of their community. Pieterse and Simone (1994) made the point that *"Despite the fact that civics may indeed embody the aspirations and thinking of the bulk of any given community, a rhetorical strategy whereby civics claim to be representative becomes their best chance of survival in the present context no matter how representative they might actually be"*.

The black population in Hogsback consists of people of Mfengu and Xhosa extraction who were rendered landless in the late 1800's and early 1900's. They were forced to become labour tenants or waged labourers living on white owned properties and by 1918 some of the present residents were being born in the village (*Mafika, pers. com.*). Land ownership in the area was and is almost entirely by whites. Development was largely driven by white people but a growing population of black people started to live in the village on properties established by whites.

There are now third generation black residents in Hogsback who have never owned land there and who have always lived on white properties. There are now approximately 200 white landowners in Hogsback, of whom about 120 are permanent residents, and about 550 black residents, all of whom live permanently in Hogsback (*J.A. Coleman, personal records as Census Officer for Hogsback in 1996*). Four families who owned extensive land in Hogsback itself were dispossessed of their land when their white father died and the state refused to allow the black spouses or coloured children to inherit the farms (*Summerton, Mafika, pers. com.*). There is only one property owned freehold by a coloured family, the Summerton's. Although blacks outnumber white residents almost five to one in Hogsback, there is not one single black landowner in the village. The result is that many people live illegally at the village of Plaatjieskraal that was established by DWAF and taken over by SAFCOL. Another pattern that has emerged is that large numbers of people crowd into inadequate housing on properties with absentee landlords (*Wanklin & Assoc., 1997*).

During the Ciskei homeland boundary demarcation process, the views of white residents and landowners were taken into account. The boundary commission excluded Hogsback from Ciskei, retaining its South African identity (*HRA, 1978-1980*). The three Hogsback peaks were included in Ciskei and management of these lands passed to the Ciskei department of Agriculture and Forestry (*Coleman, pers. com.*).

Most of this land had originally been the commonage or communal grazing land of Chief Yantolo in the valley that was expropriated by the Ciskei government. The Tribal Authority was promised compensatory land in Lushington but this was never honoured. The Ciskei government invested heavily in establishing forestry plantations on the lower slopes. Dissatisfaction with this state of

affairs reached a peak in 1992/93 during the period when Brigadier Gqozo was in power in Ciskei. Numerous arson attacks during the dry bergwind months of July to September destroyed almost all of the plantations on the eastern side of the Tyumie River in 1993 and again from 1997 to 1999.

At no stage until the mid 1990's was there any attempt to establish a village for black residents where they could build their own homes. Black residents were expected to find themselves land for their own homes down in the valley at Auckland and Khayaletu villages. Due to this situation there has been no security of tenure for black residents (*UDHAR, 1999*). If a property changes hands or a landowner decides that he/she does not wish an individual or family to live on the property, they are forced to find alternative accommodation.

The two economic sectors offering employment for unskilled and semi-skilled workers in Hogsback are forestry and tourism. Usually only one or two members of a family will have full-time employment. Most are unemployed or have seasonal employment. The population consists *"overwhelmingly of children and the aged, with a consequent tremendous responsibility being placed upon the relatively few adults,"* (*Burger, 1983*). The average income for adults in fulltime employment is between R500 and R600 per month. A number of women are employed in domestic service. It is generally easier for women to find employment than men. Many families depend on pensions or disability grants as an important source of income, as well as remittances from family members employed elsewhere (*Burger, 1983*). The average age of the population is older than the average for other towns in the area due to the high number of retired permanent residents (*Wanklin & Associates, 1998*).

There are two primary schools and one newly established pre-primary school. The nearest high school is down in the valley at Auckland village. The general levels of education are poor with only a handful of adults having Matric certificates. Many have no more than a grade eight level education. Amongst the older generation illiteracy is quite high. Women are generally more poorly educated than men.

Illegal shebeens operate on some properties, supporting large families in some cases (*Personal observation*). There is a widespread problem of alcoholism and abuse of women and children by males. The poor living conditions on many properties, exacerbated by the cold and wet climatic conditions that prevail in winter, lead to illness, especially amongst the elderly and very young. The nearest clinic is ten kilometres away at Gilton and a mobile clinic visits once a week. The community has been attempting to get a clinic since 1992. The nearest hospitals are in Cathcart, Alice and Keiskammahoek - all at least thirty kilometres away.

Other facilities in the village include a police station, a post office, a firestation, a community centre, two supermarkets, two hotels, two restaurants, a pub, a building supplies store and the Hobbiton-on-Hogsback Outdoor Education Centre. This offers outdoor education opportunities to under-privileged children, schools and scholars from the local area. Seven of these facilities have been established since 1994. There is a soccer and rugby field for community use but no other recreational facilities exist.

#### **4.10. 1994 – THE PRESENT: THE YEARS OF FLEDGLING DEMOCRACY**

In 1994 a new democratic government was elected to rule the country. In 1995 local elections were held to elect local government representatives. The HLC, under the ADC, consists of four elected representatives. There are 2 Democratic Party councillors, 1 independent councillor and 1 African National Council councillor. The new HLC instituted a number of initiatives. These included contracting an environmental consultant to draw up an environmental guideline plan in consultation with the community. This process fed into the Hogsback Integrated Development Plan (IDP) and the process to establish Land Development Objectives (LDOs) for the municipal area (*Kantor, pers. com.*).

A formal waste removal service, waste disposal site and incinerator to deal with municipal waste were established (*HLC, 1996*). Fire fighting and mountain rescue equipment for use in local emergencies was bought. TELKOM undertook an EIA scoping exercise for the new cellphone mast they erected. The first steps to implement the Hogsback IDP were to undertake an EIA scoping exercise for the construction of a dam and municipal water provision scheme, and for development of a housing settlement for the black members of the community. The dam will cover four hectares on the Plaatjieskraal River, one of the tributaries of the Tyumie River. The housing settlement will be sited adjacent to the existing SAFCOL housing compound at Plaatjieskraal. An area of 52 ha has been identified on which a village of 100 houses on 360 m<sup>2</sup> residential sites will be constructed (*Walker, et al, 1999*). The EIA report was submitted in January 1999. Construction of the dam and water scheme commenced in June 1999. In addition, the HLC is negotiating with DLA to buy two farms, Sunnyside and Duiwelskantoor. These will be used for commonage for the Hogsback Municipality using Consolidation of Municipal Infrastructure Project (CMIP) funding obtained from the Eastern Cape department of Local Government and Housing. The municipal boundaries will be enlarged to include the new areas (*Bezuidenhout, pers.com.*).

In order to address the environmental problem of invasive alien plants in the Hogsback Municipal area and the social problem of unemployment, particularly amongst the black community, the

HLC entered into negotiations with WFW in 1995. The first WFW contracts were implemented in 1996. The WFW projects were managed by the HLC and supervised by one of their employees (*Kantor, pers. com.*). A Steering Committee with broad community representation and acceptance was only established in July 1999 (*Buckle, pers. com.*).

A further initiative of the HLC was to become founder members of the Mountain Local Tourism Organisation (LTO) which serves nineteen local municipalities in the Amatola mountain region. Its primary objective is to promote ecotourism and ecotourism ventures in the region. Ecotourism is viewed as a critical avenue for sustainable utilisation and employment opportunities in the region. The HLC has used this avenue as a means of obtaining international funding to investigate the potential for developing a flyfishing industry in the Hogsback and surrounding areas (*ECN, 1999*).

After the 1994 elections an upturn in the mood and economy of the country increased confidence in Hogsback as a holiday destination. New self-catering accommodation establishments, a new shopping complex with restaurant, pub, supermarket and building supplies shop and a number of new homes were built. In the village there are now 2 hotels, 1 guesthouse, 2 backpacker lodges, 5 self-catering accommodation establishments and numerous private cottages rented out to visitors. These provide a total of 452 beds with an annual capacity of 165 000 bed nights. The actual number of bed nights filled per annum is 51 500, giving an occupancy rate of 31%. The tourism industry now contributes R5 million per annum to the Hogsback economy and provides 132 permanent jobs (*Coleman, 1999*). Informal discussions with business people in the ecotourism sector reveal an undoubted downswing in visitor numbers during 1999. They attribute this to the publicity over Hogsback crimes, especially the murders of elderly women, the poor state of the roads and the general economy of the country.

An annual Hogsback Arts Festival in September each year was established in 1994. The annual flow of tourists is an important factor in the residential estate agency market as many people visit and then buy property. They may then move permanently to Hogsback, if they can find employment, or retire, or visit on holiday (*Coleman, 1999*). The other major employment sector is forestry. SAFCOL employ 28 permanent employees, Geoff Ash Contracting employ 50 permanent employees and a further 40 seasonal part-time workers and WFW employs another 50 to 60 people on short term contracts once per annum. There are 78 permanent jobs and about 100 part-time jobs in the forestry industry in Hogsback. Forestry contributes R2,5 million per annum to the Hogsback economy. (*Wylie, Burgess, Kantor, pers.com.*)

Hogsback is marked by the community conflict that arises on any matter of public concern. The rapid changes since 1994 and the government requirement for community consultation on any development plans have offered a variety of forums for community conflict to surface. In some cases this has become very bitter and on more than one occasion has led to a "war of words" in locally circulated newsletters, public notices and the editor's page of the local daily newspaper, The Daily Dispatch. Frequently matters reach an impasse with parties unwilling to move from firmly entrenched positions. The conflict has hampered the effective implementation of a number of the initiatives mentioned above, or has delayed the consultation processes.

A less obvious result of the community conflict and the high number of public meetings manifests as a form of "battle weariness" on the part of some of the main stakeholders. Individuals withdraw as the personal cost of the conflict becomes perceived as too great for the benefits. This has led to a crisis in leadership in more than one organisation, as well as difficulties in finding candidates to represent organisations in different planning processes. The small size of the community means that there is a relatively small pool of willing and able individuals. There are some who are able but unwilling and others who are willing but not as able. Another outcome of the small size of the community is that everyone knows everyone else and matters quickly become personalised with others being drawn in to support one or the other individual's position or viewpoint. This increases the polarisation of the community. Those who attempt to play the role of mediator are frequently savaged by both sides and there has been a history of individuals attempting to play this role but then withdrawing or being drawn into taking sides in the conflict.

The conflict may, on some occasions, be drawn on racial lines but on others will be between individuals of the same race group, if not of the same language or cultural group. Frequently conflict is between organisational groups representing different constituencies in the community. There are a high number of organisations in the community reflecting the different interests and concerns of the residents. Some have very small memberships whereas others are very large. During community consultation processes all stakeholder groupings have to be identified and invited to participate. During the course of this study the same held true. In order not to jeopardise the successful completion of this study it was essential to ensure that each stakeholder group was invited to participate in the interviews.

#### **4.11. MEDIA REPORTS AND HOGSBACK COMMUNITY CONFLICT IN 1998/99**

Since 1992 Hogsback has been in the news a number of times for negative things that have happened. Some of the more important occurrences that reached the local and national media are:

- The dispute between the community and the Friends of Hogsback in 1992;
- The dispute between the community and SAFCOL in 1993/94;
- The attack on Ms Coleman and her son in 1997;
- The murders of Dr Preciado and Mrs Barlow in 1998, with the court case of the accused in November 1999;
- A march by 200 residents to demand better policing as a result;
- The tornado in 1999 when three children were killed;
- The brutal rape and murder of Dr Bride Dickson, the elderly Anglican priest and long term doctor in 1999;
- Recent squabbles between residents and the HLC.

The media are very powerful tools and reach into many homes. Tourist numbers are down to the lowest in five or six years, in part because of the economic downswing but probably partly as a consequence of the image that has been created in the media.

The discussion below highlights only some of the media articles and locally circulated newsletters most relevant to the study. They provide a background to some of the problems that have influenced the WFW projects in Hogsback. During the period 1998/99 conflict in the community has been expressed in a number of media articles, letters to the newspapers and notices, newsletters and letters circulated to the community by organisations and individuals. They illustrate the level of conflict that has been reached in the community over different issues and the kind of conflict that has arisen.

These articles and letters reflect conflict within the white community between four strong-willed and opinionated men who have been at loggerheads for years. Far too often public meetings have become a battle of words and wills between these individuals at the expense of the community and the work that needs to be done. What they do not accurately reflect is the conflict between white and black residents in the same meetings, particularly between members of different political parties.



A report in the Daily Dispatch, the local daily newspaper by reporter Mike Loewe described an interview with Mr James Kantor, the senior local councillor of the Hogsback Local Council. A number of statements of Mr Kantor's were quoted. *"... prior to the election, the town used to be run by a clique of 'old school-tie white conservatives who were appointed to the positions and not elected'... this older generation of conservatives - 'they represent only 10 or 15 percent', had frightened residents - many of them creative, peace-loving individuals - away from meetings with their blustering interjections and harsh 'style of personal attack'."* The article goes on to set out the many achievements of the HLC and the funding that they have obtained to enable developments to go on. Six of the items identified referred to the waste disposal initiatives of the HLC. *"Reaction, says Mr Kantor came in the form of venomous and outraged letters...It's always these old conservatives"*.

The response to this article was heated and letters were printed in the same newspaper a few days later. C.W. Germishuizen wrote a letter sub-titled *"Report twists truth and slurs 'process'"*. It said as follows: *"Was he (the newspaper reporter) trying to write the most hilariously funny expose of a loud mouthed despot? This he managed to do. Or was he after trying to upset those 'old conservatives' who are at present trying to work with the Hogsback Local Council? This he also managed to do."* C.W. Germishuizen, the author of the letter, was previously chairman of the HLC prior to the elections.

Ian R. Bruce wrote *"The report included gross inaccuracies, distortions, misinformation and derogatory and insulting references. ... The fact that the Democratic Party through it's senior official on the TLC has chosen to denigrate the efforts of the previous councillors and to launch a personal attack on the retired persons in our community is a measure of his and their ethics."* Mr Bruce was also a member of the HLC prior to the elections. Both Mr Germishuizen and Mr Bruce have openly clashed with Mr Kantor in public meetings on a number of occasions as well as in letters and newsletters circulated by themselves and the Hogsback Residents Association, of which they were executive members. The antipathy between the men is well known in the Hogsback community but in these newspaper articles and letters relations appear to have reached a new low.

The Hogsback Newsletter of the Hogsback Ratepayers Association, August 1998, contains a number of reports and articles by members of the community. One report by George Kockott, convenor of the Environment Group involved in the IDP process included the following statements *"There isn't much that can be said about the Hogsback IDP process that isn't libellous and could be held in evidence against me... It seems to me that the proverbial bus has been hijacked. Viva the 'New South Africa'."*

Another article in the same newsletter reports on the same meeting. With regard to the water reticulation scheme the following statement is made: *"those electing to get connected (to the water scheme) in the beginning would pay a lower connection fee than those only coming on to the scheme at a later stage. The opinion was expressed from the floor that this was nothing less than blackmail"*. The article also reports that there *"followed many questions and comments from the floor, some of which related to the matters at hand but others of which sought to attack the HLC for the way it had handled the IDP/LDO process. Eventually, when it seemed that some people were more intent on scoring political points than getting information about the two schemes, the chairman ruled that no further discussion on the pros and cons of the IDP process would be allowed"* (Hogsback Ratepayers Association, 1998). These articles reflect the concern with the IDP process and what is perceived as the too hasty implementation of the Land Development Objectives in the Hogsback Integrated Development Plan of some members of the community.

The different articles illustrate some of the conflict that occurs in public meetings. They also reflect the way in which one process spills over into another and the difficulty in moving forward constructively with any actions. Meetings get bogged down over issues of process rather than the outcomes that are the main objective of particular meetings. Repeatedly, the discourse becomes a battle of personalities rather than issues.

In June 1999 matters between UDHAR, the United Democratic Hogsback Association of Residents, the local civic organisation to which many black residents belong, and the HLC regarding the land issue came to a head with a threatened land invasion. A letter was sent out by the Convenor of the UDHAR Land Committee in early June to all residents of Hogsback. This letter gives a resume of the efforts of the landless community to acquire residential and grazing/cultivation land over a period of some ten years. The letter concludes with the following statements: *"The landless community now believes that it cannot rely on assurances at any level and that the only certain way to gain access to tenured land is to occupy by force. We have identified for occupation various lands which fall under the jurisdiction of the State, SAFCOL and the Hogsback Local Council. You are aware of the condition in which a large number of the black community is living. Access to a home of your own is a right not a privelege (sic). It is the responsibility of everyone in Hogsback to contribute towards putting right what is wrong in our midst"* (UDHAR, 1999).

A letter was sent out to the community by James Kantor, chairperson of the HLC, in response to this call for land invasion. He gave a resume of the situation, outlining the legal requirements and the limitations of the HLC in certain matters that are decided at national level. During the course

of the letter, however, he makes a number of statements about UDHAR. *"If there is one overriding trait with which the HLC has become familiar in dealing with UDHAR it has been procrastination. UDHAR ... still believe that every law, every piece of legislation and government policy is up for challenge. In the case of national legislation the HLC becomes the handy scapegoat and is attacked and abused for not "challenging" such legislation on behalf of the people. The rule of law appears to count for nothing and this attitude is eloquently expressed in the UDHAR circular."* He goes on to say *"We note that UDHAR are big on "rights" when it relates to them, but a little short when someone else is involved. ...That UDHAR is a political front with a political agenda should not be lost on anyone."* Further on he says *"A councillor, council official and workers have received death threats and families have been intimidated. Criminal charges have been laid against one UDHAR executive member and civil action is also being investigated"* (Kantor, 1998).

The letter' tone, in a public document, reflects the bitter relations that have developed between UDHAR and the ANC on the one hand and the HLC and the DP on the other hand. Four years of arguing at length about every issue in the public sphere resulted in what would appear to be a complete breakdown in communication between the contending parties. It has led to a situation where neither party has any trust in the word of the other. Everyone demands written proof of what the other party says. Even when both parties have the same goals the lack of communication and understanding is at such a poor level that it becomes impossible to work together to achieve those goals. I have been informed verbally that there has been a rapprochement between the two parties and that they have managed to patch up relations, at least to some extent.

The fact that the confrontation is about land and housing is significant. In the social history of Hogsback outlined in above, the history of the dispossession of land by the Xhosa is a dominant thread. Stretch's comment in 1835 that *"the struggle between black and white pastoralists for access to land and water"* (Stretch, 1988) can be paraphrased nearly 185 years later as *"the struggle between black and white residents for access to land and housing"*.

#### **4.12. IMPACT OF COMMUNITY CONFLICT ON THE WFW PROJECTS IN HOGSBACK**

The widespread community conflict between individuals and organisations has spilled over into the WFW projects. It became a further forum for airing grievances and the process of establishing a Steering Committee took from 1996, when the first WFW project started in Hogsback until August 1999 when a representative Steering Committee that is accepted by the community was finally elected. Numerous meetings were held in the interim in attempts to reach consensus in the

community and with WFW around these and other issues such as the way in which the HLC had awarded contracts from 1996 to 1998.

At the public meeting in June 1999 to find a way forward on electing a WFW Steering Committee a number of residents attempted to raise the problems that they had had in the past with the WFW projects. The chairman, refused to allow the meeting to discuss these matters. He was of the opinion that the important question was to look to the future rather than digging up the past that would take a lot of time and not necessarily solve anything.

Since then, the Hogsback residents who serve on the Steering Committee and the contractors and their staff have had a number of disputes with the WFW management. These have concerned the way contracts are awarded, the inclusion of people from the valley in their quota of employees and the way in which the district manager deals with these and other problems. At first they had problems with the HLC supervisor and when supervision was passed to the WFW Keiskammahoek Catchment project manager, they then had difficulties with him (*Ndzaleni & Macakela, pers. com.*). Some of the contractors were dissatisfied with the fact that only 1 contract had been awarded to a Hogsback contractor in 1999 and that the WFW management had stipulated that they had to employ 50% of the labourers from villages down in the valley. They had threatened to refuse to start work on the contract on the stipulated date unless this was changed (*Ndzaleni & Macakela, pers. com.*).

It was suggested that they consider rather working through the established structures within WFW to address their concerns. Different people in Hogsback warned that, if they do not stop continually creating confrontational situations with WFW management, the possibility existed that the funding of the Hogsback WFW projects could either be suspended or stopped. This possibility had first been raised in 1998 following a confrontation between the King William's Town WFW manager and one of the emergent WFW contractors in Hogsback. The HLC was warned that WFW was strongly considering pulling out of Hogsback due to the ongoing problems. The fact that only 1 contract was awarded to a Hogsback contractor this financial year would appear to indicate that the WFW management is reducing its financial commitment to the Hogsback projects. It is not known at this stage what, if any, funding has been allocated for Hogsback in the 2000/2001 financial year.

There are similarities between the process and methods used by the community in dealing with the HLC over the land issue, the IDP and LDO process and the WFW projects. First, numerous, lengthy meetings have been held in each case, stretching over a number of years. Secondly, a lot of time has been spent arguing about process and procedures. Thirdly, the discussion was

frequently confrontational. Fourthly, issues became personalised. Finally, walk-outs and marches were used by the community in order to force leadership to bow to their demands.

#### **4.13. THE INTER-RELATIONSHIP BETWEEN THE ENVIRONMENTAL AND SOCIAL HISTORY OF HOGSBACK**

The history of environmental disturbance in Hogsback reflects the history of social disturbance in the Tyumie valley and Amatola Mountains. The environmental changes were a result of changing settlement patterns, land ownership, land use, increasing population and the utilisation of the resources offered by the environment. The direct physical causes of the environmental changes can be attributed to exploitation of the indigenous forests for timber; changes in grazing patterns and animal species using the grasslands; exploitation of arable lands using first the hand plough, the ox plough and finally the tractor drawn plough; the establishment of exotic afforestation; and the growth of settlements. The indirect causes were the conflict between the Xhosa and colonists over land that resulted in the dispossession of the Xhosa of almost all their land. The increasing population pressure, with the associated increase in stock numbers were the forces that drove the environmental changes.

The result today is the dramatically altered landscape in Hogsback. Where there were once grasslands there is now an environment dominated by exotic tree species, particularly pines, wattles and blackwood. The result is a patchwork of degraded habitat with reduced vegetation and animal biodiversity. Many indigenous species are threatened as a result of the changes to the vegetation. The imposition of man-induced environmental changes means that the environment requires a high level of sophisticated management, if it is not to revert to a wilderness of invasive alien plants. The WFW programme to clear alien species has added a new dimension to the environmental changes. The threat exists that if this programme is poorly managed or implemented then the environmental degradation will accelerate.

In Hogsback, the environment has been a focus for community conflict. The major initiatives that have been undertaken in Hogsback over the past decade have all been environmental. The establishment of 'Friends of Hogsback', the SAFCOL environmental planning, the environmental plans of the Hogsback TLC and the IDP and LDO's, and the WFW project have each, in turn, become an arena for conflict about access to land, political power and economic opportunities. The majority of residents depend on the environment for their survival and the relationship between the environment and people is, therefore, more obvious than in many places.

Since 1994 the existing power balance was disturbed and the community is still in the early phases of trying to get back some equilibrium. This has intensified the struggle over power

especially in the economy, access to resources, and land. In Hogsback blacks are still largely politically powerless, on the fringe, with limited access to political power and decision making. Power is still mediated by whites. The black community falls back on the powers that they do have – numbers, resistance and the right to say NO. Struggle politics still dominate as a result – strikes, marches, walk outs, boycotts – expressions of frustration and continued limited access to real power.

WFW offered economic opportunities but it was controlled by the HLC. Initially a limited number of blacks were given contracts and all the labourers were blacks. There was continued conflict as the black community fought to obtain more equitable access to the economic opportunities afforded by WFW. The conflict then moved to control of the WFW project in Hogsback. There is resistance to external controls and a desire for community control over the process of selecting contractors and workers.

If one overlays on the environmental disturbance and degradation the human problems of a fragile and volatile social environment the complexity of the problems is exacerbated. Two hundred years of social disruption, dispossession and engineering has resulted in a complex, contradictory and damaged community. The exclusion of the majority from land, voting and many other human rights has given us a black community that is jealous of these newly acquired rights, yet frustrated that they are not able to access all of the benefits to which they feel entitled. In contrast the white minority is bewildered and threatened by the loss of power and control to which they had become accustomed.

#### **4.14. CONCLUSION**

There is a disturbed and fragile environment in the hands of a dysfunctional community. The long history of environmental and social disturbance created the present day situation. The rapid changes since 1994 brought in their wake uncertainty and fear. The community is in a process of adapting to the new political environment but it is not easy. The number of environmental plans that have been developed provide a good basis for proper management of this disturbed environment, if they are implemented. It is essential that the community conflict is resolved if this is to occur. Projects such as WFW can easily become constructive or destructive. Much depends on the manner in which they are conceived and managed.

The next chapter presents the findings of the research undertaken.

## CHAPTER FIVE

### RESULTS

*"To me these projects are very important because...They have brought peace to many homes, because where there is poverty, there is no peace." Florence Lutshiti, WFW Contract Labourer*

#### 5.1. INTRODUCTION

This chapter presents the results of interviews held with members of the Hogsback community. Twenty eight interviews were completed in total. A semi-structured questionnaire was prepared. It was translated into Xhosa for the Xhosa interviews. Thirteen of the interviews were with white residents of Hogsback. I completed these interviews as all those interviewed spoke English. Fifteen of the interviews were with black residents of Hogsback. Vanessa Daniels, a Xhosa speaker, was contracted to interview these residents in Xhosa. Full handwritten notes were made during the course of each interview. Ms Daniels translated the interview notes from Xhosa into English.

The chapter is divided into the following sections:

1. The results of the socio-economic questions that formed the first section of the questionnaire.
2. The results of the questions relating to respondents' attitudes and views on wattle, the WFW projects, the business potential of wattle and the future use of the areas cleared of wattle.
3. The results of the questions relating to the roles of civil society and government in the environmental management of Hogsback.
4. The results of the analysis of environmental plans in Hogsback.

#### 5.2. INTERVIEWS WITH MEMBERS OF THE HOGSBACK COMMUNITY

##### 5.2.1. The socio-economic profile of the respondents interviewed

Each respondent interviewed was asked to supply socio-economic information that was used when analysing responses to the questions on their views or attitudes towards wattle, Working For Water and the roles of civil society and government in managing the environment.

The socio-economic information requested included the respondents age, gender, race, employment, income per month, land tenure, the kind of business they were involved in, and what

organisation, if any, they were affiliated with or were members of. This information is collated below in tables. The results are then briefly described.

**TABLE 7: Demographic Profile**

GENDER & RACE	TOTAL	AGES	TOTAL
White Female	3	Age: 20 – 29	6
Black Female	4	Age: 30 – 39	8
White Male	10	Age: 40 – 49	7
Black Male	11	Age: 50 – 59	5
		Age: >60	2
<b>TOTAL</b>	<b>28</b>	<b>TOTAL</b>	<b>28</b>

A total of 28 people were interviewed for the study. There were 7 females and 21 males. There were 13 white and 15 black respondents. There were 3 white and 4 black females. There were 10 white and 11 black males. The ages ranged from 22 to 71 years. There were 6 people in the 20 to 29 years age range. There were 8 people in the 30 to 31 years old age range. There were a further 7 in the 40 to 49 years old age range. There were 5 in the 50 to 59 year old age range and 2 respondents over 60. The interviewees reflect a range of ages and races. The gender representivity is skewed towards males. The reason for this is that respondents representing different organisations were drawn mostly from their predominantly male leadership. The respondents employed by the WFW projects included some females, as had been requested by the researcher.

**TABLE 8: Employment Profile**

TYPE OF EMPLOYMENT	WM	WF	BM	BF	EMPLOYMENT SECTOR	WM	WF	BM	BF
Self-employed	6	2	1		WFW	1	1	4	4
Permanent labourer			6		Hogsback Local Council	1		5	
Casual labourer			1	4	Art/Crafts/Construction	2	1	1	
Contractor	1	1	2		Ecotourism	2	1		
Manager	2				Education	2			
Lecturer	1				Forestry	1			
Unemployed			1		Domestic/ Caretaker			1	
					Nursery/gardening	1			

The employment profile of the interviewees is divided into the type of employment and the employment sector.

Nine of the 28 respondents are self-employed, 6 of whom are white males. Seven black males work as labourers, 6 in permanent employment. The 2 black males employed as contractors work for WFW. All 4 black female respondents are casual labourers who were employed by WFW. White males work in 7 different sectors, whereas black males are limited to 4 employment sectors, primarily WFW and the HLC.

**TABLE 9: Income Profile**

INCOME LEVELS	WM	WF	BM	BF
No income			1	
Low Income <R1 000/month	1		8	4
Medium Income R1001 – R 3 500/month	6	1	2	
High Income >R 3 501	3	2		

There is a distinct disparity between the earning power of black and white respondents. Twelve of the 15 black respondents interviewed earn under a R1000 per month and average between R500 and R600 per month. Only 2 black respondents earned a medium income and both are WFW contractors. In comparison, 5 of the 14 white respondents interviewed earn over R 3501 per month, 7 earn a medium income and only 1 white male earns in the low income level. One black male is unemployed and gave no income level and, therefore, is not reflected on this table.

**TABLE 10: Land Tenure Profile**

TYPE OF LAND TENURE	WM	WF	BM	BF
Private land owner	7	2		
Paying tenant	2	1		
Non-paying tenant			7	2
State Housing – SAFCOL & Plaatjieskraal	1		2	
Council Housing			1	2
Accommodation part of job on private property			1	

Respondents were asked what type of land tenure they enjoyed. Nine of the respondents' own their own property and 3 are paying tenants who rent other people's properties. All of these respondents are white. There are 9 non-paying tenants, 3 living in SAFCOL housing, of whom 1 is white, and 3 living in Council housing. Their accommodation is provided free as part of their employment package. One individual gets his accommodation as part of his job as caretaker of a privately owned property.

### 5.2.2. Organisational membership of respondents

Respondents were asked for membership of organisations. Responses are tabulated and then described.

**TABLE 11: Membership of organisations by respondents**

NO.	NAME OF ORGANISATION	TYPE	WM	WF	BM	BF
1	United Democratic Hogsback Association of Residents (UDHAR)	Community	1	1	9	4
2	African National Congress Party (ANC)	Political	1	1	5	1
3	Hogsback Chamber of Business (HCB)	Business	4	1		
4	Mountain Local Tourism Organisation (LTO)	Business	3	1	1	
5	S.A. National Civics Organisation (SANCO)	Political			4	
6	Democratic Party (DP)	Political	2	1		
7	SAFCOL Working Group	Community	1	1	1	
8	Hogsback Local Council (HLC)	Local Govt.	3			
9	Hogsback Garden Club	Environment	2	1		
10	Hogsback Ratepayers Association (HRA)	Community	1	1		
11	IDP/LDO Working Group	Community	1	1		
12	None	N/A	1			1
13	Amatola District Council (ADC)	Local Govt.	1			
14	Association for Liberal Democratic Councillors	Political	1			
15	Friends of Hogsback (FOH)	Environment		1		
16	World Wide Fund for Nature (WWF)	Environment	1			
17	Beauty Without Cruelty	Environment	1			
18	Faith and Earthkeeping	Religious		1		
19	Hobbiton-on-Hogsback	Welfare/Enviro	1			
20	Independent Councillor	Political	1			

The 28 respondents interviewed for this study belonged to 19 different organisations. There are 5 political organisations, 5 environmental organisations, 4 community organisations, 2 Local government, 2 business organisations and 1 religious organisation. The black respondents belong to a total range of 5 organisations and primarily to community and political organisations. White respondents belong to every organisation mentioned except for SANCO.

The largest number of respondents, 15, belong to UDHAR 13 of whom are black and only 2 white. Eight respondents are members of the ANC, 2 of who are white. The HCB has 4 white male members and 1 white female member. There are 5 members of the Hogsback Mountain LTO. The HRA has 1 white male and 1 white female as members. Two respondents were members of IDP/LDO Working Groups. Only 1 respondent listed each of the other organisations. Only white respondents belong to environmental organisations

This indicates an extremely wide range of organisations and, therefore, diversity of opinions and interests. It is also a very high number of memberships, averaging out to 1.8 for each person interviewed. One individual belonged to 6 different organisations, but some belong to 2 organisations at least.

### 5.2.3. Perceptions of wattle and the WFW projects

The following section analyses the responses of the interviewees to the following questions:

1. What is your attitude towards wattle?
2. What use have you made of the wattle cleared by the WFW projects?
3. What kind of businesses do you think could be developed using wattle?
4. What are the limiting factors to developing wattle based businesses in Hogsback?
5. What are your views on the Hogsback WFW Projects?
6. How can the WFW Projects be improved? What problems do you see with the projects?
7. What do you think should happen to the areas cleared of wattle and how should they be used in the future?

#### 5.2.3.1. Attitudes to wattle

Respondents were asked what their attitude was towards wattle.

**TABLE 12: Attitudes towards wattle**

ATTITUDES	WM	WF	BM	BF	ATTITUDES	WM	WF	BM	BF
Mixed	5	2	7		Wattle is destructive		2		
Negative	2	1	3	4	Grow in plantations	3	1	1	
It needs control/ management	4				It makes scary forests			2	2
Affects water and soil	3	3	10	3	It is pretty	2	1	1	
Should be eradicated	7	1	5	1	Source of income/ employment	3		11	1
It is a bad invasive	1	1			It is a fire hazard	2	1		
Affects indigenous forest	3	2			Positive	1			
It makes good firewood	4	1	8	1	Provides building materials			6	1

The results of the answers to this question raised 16 different sets of responses. There were distinct differences between white and black respondents. Only white respondents noted that wattle is a bad invasive plant, were concerned about its impact on the indigenous forest and its

threat as a fire hazard. In comparison, only black respondents commented that wattle makes scary forests where wrongdoers hide and that it provides building materials. There was also a marked difference between black and white views on the income and employment potential of wattle with only 3 white males commenting on this aspect compared to 11 black males and 1 black female.

Fifty percent of respondents felt that wattle should be eradicated and another 50% had mixed views on wattle commenting on both the negative and positive aspects of the plant.

Comments from those interviews regarding wattle included the following:

A typical response from white respondents regarding their attitude to wattle is *"Wattle is invasive and gets out of control. It is an unused resource that needs management."* and *"It's dreadful. It takes a lot of space and exploits the land. It destroys vegetation and restricts water resources. It does nothing good except to help with erosion on steep banks where it has taken over."* A moderate response was *"There's a time and place for it depending on its end usage. Industrial use is fine but invasion no. If it's controlled it is fine. It depends on how it's managed."*

Black respondents made statements such as *"It should be chopped in areas where it has grown into thick forests and also along the streets because it provides shelter to wrongdoers. On the other hand it should be borne in mind that it is a source of income for other people, therefore something should be left for them to survive."* and *"I think the wattle should be chopped in some areas because wherever there is wattle it causes wetness or dampness which is not always good for health. On the other hand it is useful because we use it to make fire for cooking."* The concern regarding its usefulness is often tempered by an understanding that it needs to be controlled. *"I think part of it should be chopped down and another part left because we use it for firewood and building houses."*

### 5.2.3.2. Use of wattle

Respondents were asked for what purposes they had used wattle produced by the WFW Project.

**TABLE 13: Use of wattle by respondents**

USE OF WATTLE	WM	WF	BM	BF
Firewood – cooking		1	12	3
Firewood – heating	8	5	2	1
Housing construction/building poles	3		5	1
Fencing			2	1
Sell for income	2		3	1
Crafts	1			
Furniture	1			
Construction of Obstacle courses	1			
No use made	1	1		1

Respondents identified 8 different uses they made of wattle. The two major uses of wattle by the respondents are as firewood - 15 black respondents and only 1 white use it for cooking and 13 whites and 3 black use it for heating. Five black males and 1 black female use wattle poles for housing construction. Three black respondents use it for fencing poles or droppers and 4 use it for generating income as the wattle is chopped and sold locally. A minority use of wattle is for furniture, crafts and obstacle course manufacture.

The cold climate in Hogsback means that the use of fuelwood for heating purposes is essential, even in homes with electricity. The longer cold season also means that the community requires large quantities of fuelwood on an annual basis. In addition, Hogsback supplies fuelwood to the adjacent villages in the Tyumie valley, most of it wattle wood. This has increased since the clearance of wattle along the Tyumie river by the WFW projects in the valley.

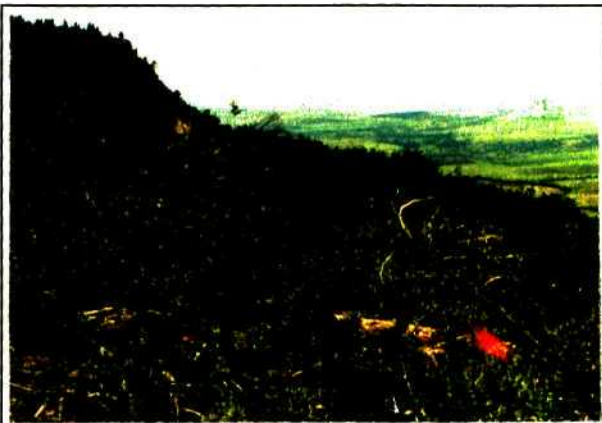
At a rough estimate there are about 400 households in Hogsback, of whom about half use wattle for firewood. The standard figure of one ton of fuelwood consumed per household per year, would probably need to be increased given the long, cold winter season experienced in the village to at least 1.5, if not 2 tons of fuelwood per annum. According to these estimates Hogsback needs to produce between 300 and 400 tons of fuelwood per annum in order to supply the needs of the local community. This figure is increased substantially if one takes into account the hundreds of homesteads at Auckland and Khayaletu that depend on Hogsback for fuelwood supplies. A rough estimate would be a minimum of a further 800 tons of fuelwood per annum.

**PHOTOGRAPHS OF THE AREAS CLEARED OF WATTLE IN THE WORKING FOR WATER  
PROJECTS IN HOGSBACK**

14. In the foreground the wattle was cleared six months previously. In the mid-ground it had been cleared one month previously. In the background it is 10 to 15 years old.



15. This river was a dense stand of wattle prior to clearing. The contractor was still completing the work.



16. The newly cleared area near Madonna & Child waterfall is thick with bramble.



17. This area burnt after clearing. It is thick with wattle seedlings.

The secondary use of wattle for building construction of wattle and daub houses is relatively small in Hogsback itself, however, the villages, especially those nearest to Hogsback use this resource extensively for this purpose. There are also annual repairs to homes damaged by rain. Both Auckland and Khayaletu villages have expanded noticeably in the past 2 years and there are at least fifty new wattle and daub homes that have been constructed there. The average 4 room rural house or single room rondavel takes between half to 1 ton of wattle laths or withies to construct. In the past two years between 25 and 50 tons of wattle laths have been used to construct houses in Auckland and Khayaletu.

The comments by respondents included those of contractors who supplied wood cleared from their contract clearances in the following way: *"We take trucks of wattle for firewood down to the villages. We also supply building and fencing poles"* and *"We produced 3 tons of firewood that we gave away to locals"*.

Respondents who used wattle had the following things to say: *"We have bought a number of loads of firewood at R60 per bakkie load collected"*; *"I use wattle trees as firewood for cooking and also for building purposes"*; *"I use it to make fire for cooking and I also make firewood which I sell to earn a living"*; or *"I use it to make fire for cooking while the government has not yet built us houses with electricity."* Another respondent stated that *"We use it to burn in our geysers to heat water and also to make fires. We have used some of it to build obstacle courses and to make Hobbits and walking sticks."*

### 5.2.3.3. Kinds of businesses that could be developed using wattle

Respondents were asked how they thought wattle could be used to develop businesses. They were asked to particularly think in terms of small, micro and medium businesses.

**TABLE 14: Potential businesses utilising wattle**

KIND OF BUSINESS	WM	WF	BM	BF	KIND OF BUSINESS	WM	WF	BM	BF
Fuelwood/firewood	5	1	11	4	Chipboard manufacture	1			
Building poles	3		8	2	Curios & crafts	2	1		
Fence poles/droppers	3		7	2	Compost/mulch production	2			
Furniture	4	2			Road construction	2	1		
Charcoal	6	3			Tomato droppers	1			
Tanning bark extract	3	1	3		Pole treatment plant	1		1	
Timber	1	1			Donga fill	1			
Wood chips	3				Ploughs & sleighs				1
Wood pulp – paper	1	1			Obstacle courses	1			

Respondents identified 18 different businesses that could be developed using wattle. The majority, 21, of whom 15 were black, proposed small businesses producing fuelwood for sale locally and down in the valley. Thirteen respondents, 10 of whom were black, suggested using the wattle to produce building poles and 12 respondents, 9 of whom were black, recommended businesses producing fence poles or droppers.

Six white respondents proposed wattle furniture, 9 white respondents suggested charcoal production and 7 tanning bark extract production. White respondents also recommended that the wattle could be used to develop businesses for timber production, wood chips and wood pulp for paper, chipboard, compost and mulch and road construction. Other suggestions were production of curios and crafts, tomato droppers, to fill dongas in reclamation works and to build obstacle courses. One black female respondent suggested wattle could be used to make ploughs and sleighs.

Several respondents mentioned the idea of linking WFW and wattle eradication with ecotourism in order to create a self-sustaining clearance programme. Comments included, *"The Mountain LTO is setting up a flyfishing programme that intends to make the Amatolas the finest flyfishing destination in Africa. They intend linking it with WFW. They are getting a British scientist funded by the British Council to advise and investigate how community based tourism and flyfishing can be established. There are economic benefits for WFW in assisting building the flyfishing industry";* and *"An Amatola Mountain Catchment Management Officer should be appointed who would be responsible for all environmental matters in the designated catchment areas. The costs for such a post could be funded by a levy on all villages falling in the area. Increased tourism will provide work for local people that is sustainable in the long term. Local people's awareness of tourism related businesses needs to be expanded."*

#### **5.2.3.4. Limiting factors for business development**

Some respondents provided their views on limiting factors to developing wattle-based businesses as part of their answer to the previous question. These unsolicited responses provide a subset of information that should be used in any discussions around business developments.

**TABLE 15: Business development limitations**

LIMITING FACTORS	WM	WF	BM	BF	LIMITING FACTORS	WM	WF	BM	BF
Transport distances & costs	3				Limited supply of wattle due to WFW actions	1			
Competition: provincial & international	2				High production costs		1		
Extraction costs		1			Small profit margins	1			
Hi-jacking by local elite of business opportunities	1				No economic size wattle left	1			
Lack of entrepreneurial spirit & knowledge	1				Market oversupply	1			
Public nuisance to tourists		1			Factory development costs	1			

Respondents identified 12 different factors that could limit the development of businesses in Hogsback that would utilise the wattle resource. All respondents who raised the question of limiting factors were white. Three respondents identified the major limiting factor for business development in Hogsback as the transport distances and the costs associated with transporting. For example, 1 respondent, who produces wattle furniture said, *“Transport is a huge problem for any product produced in Hogsback. It is the major limiting factor as the distance from major centres adds hugely to the cost of your product.”*

The second factor mentioned by 2 respondents was the question of national and international competition. A forest manager, made the point that *“Local tanners will rather buy from SAWGU (South African Wattle Growers Union) in KwaZulu Natal.”* He also said that developing a tanning plant in Hogsback would be expensive to set up and that *“...in the bigger market picture, the Americans are sitting on huge stockpiles of tanning extracts which they sell very cheaply.”* Other points raised concerned high production costs, small profit margins, market oversupply and factory development costs.

The alternative business options for wattle are small, micro and medium enterprises such as charcoal, wood chips and chipboard, building poles and droppers. Respondents feared that the local elite could hijack such opportunities and that there appears to be a lack of entrepreneurial spirit and knowledge by local residents. Furthermore, respondents questioned the continued availability of the resource given the implementation of the WFW projects and the HLC's commitment to eradicating wattle in the area within ten years. This has already resulted in no economic sized wattle left for exploitation. One respondent raised the problem of informal traders and local residents being a public nuisance that affects the tourism trade.

### 5.2.3.5. Views on the WFW projects

Respondents were asked for their views on the WFW projects in Hogsback.

**Table 16: Views of WFW projects**

VIEWS	WM	WF	BM	BF	VIEWS	WM	WF	BM	BF
Good project	3	3	9	4	Good training	1			
Job creation	3	1	10	4	Concerns sustainability on	2	1		
Negative public perceptions	7	3	1	1	Short contracts are bad	1			
Good for water	1	1	5	1	Provides resources	1			
Clears dangerous areas			3	1	Improves Hogsback	2		4	
Inadequate/poor methods	5	2			It is necessary	1	1	1	
Follow-up bad	3	2			Problems with training	1			
Confused/poor management	2	1			Time is wasted	1			

The responses to this question raised 16 different responses. The results of this question were positive and 19 respondents said it was a good project while a further three said it was necessary. Black respondents were more positive than white respondents. Eighteen respondents, 14 of whom were black, mentioned the job creation and employment aspect of WFW. Negative public perceptions of the clearing, raised 12 responses, especially concerning comments by tourists who dislike the visual impact of the clearing. The 2 black respondents were more concerned that there will be a shortage of building poles and firewood as a result of the clearing. Of the 8 respondents who mentioned that it improves the water quality and availability, 6 were black and draw their water directly from streams, rather than rainwater tanks.

Four black respondents said it clears dangerous areas where the wattle was thick. White respondents only raised concerns that some of the methods used for clearing were inadequately or poorly implemented, there is poor follow-up and poor or confused management of the projects, inadequate training, and the project's sustainability is questionable. Problems with training and the resultant waste of time due to poorly trained labour was another negative factor mentioned by a single respondent. On the positive side single respondents mentioned that the projects are necessary, the training appeared to be good, that the community benefited from resources provided by the projects and that Hogsback has been improved as a result of the projects.

Typical responses were: *"I am very happy about the Working For Water projects because they have created job opportunities for most of the people in the area of Hogsback thereby alleviating poverty"*, and *"I think the WFW projects are helpful in that they provide employment opportunities and livelihood for people"*. One of the most telling comments came from one of the black female respondents who stated that *"To me these projects are very important because they provide a living to many homes which were impoverished. They have brought peace to many homes,*

*because where there is poverty there is no peace."* Another respondent said, *"There has been very positive spin off with the black community. In the LDO planning committee the question of alien vegetation was debated robustly. There was broad agreement amongst community leaders that aliens must go. The wood officially belonged to DWAF but the contracts were structured to give the contractor ownership. They used them for building poles, firewood and sizeable pine and blackwood were sold to commercial loggers."*

Some respondents professed ignorance and said, for example: *"I'm not well versed with what is happening with WFW so I have a shallow perception of the project"* and *"I know little about the WFW programme or projects. I dealt with the Cape Town WFW people when they offered the plan for employment. I don't understand the DWAF concept with WFW but I understand the point of protecting water and making it more relevant"*. The negative public perceptions raised by respondents included: *"What has happened to Hogsback? It is dirty and messy. The paths are lost under wattles"; "Hogsback is neglected and the walkways are terrible. After pruning a mess is left behind"; "Many townsfolk are ignorant and think the clearing is draining the land and causing soil erosion. They think it is bad to clear wattle"; and "Visitors have complained that the clearing is unsightly and makes it difficult to walk over. The deforestation of areas distresses people and they want to know why they are being cleared. The clearing makes obstacles on paths and nothing can walk in some place. A publicity drive is needed to explain WFW locally."*

The respondents concerned about the follow-up aspect of the project made some of the following responses: *"I am worried about follow-up. There are a lot of areas that have been slashed but there appear to be problems with funding for spraying and follow-up. They have clear felled and burned but need follow-up spraying with selective herbicides to encourage grass re-growth."*; *"The methods used by WFW have been inadequate. I strongly approve of the job creation aspect. There have been some problems – affirmative action excluded white participation; it drew unemployed labour from Auckland and employed very few from Hogsback. I have a feeling or suspicion that this contributed to petty crime. I am very much in favour in general terms especially the encouragement of women and disabled people. The training aspect seems to have been good."*

*"We focussed on one watershed in 1997/98. This was the upper section of one tributary of the Tyumie river. The lower section had been done at Khayaletu down in the valley. More than 90% of the wattle was removed from this watershed. The Upper Plaatjieskraal river gorge is identified for clearing in 1999. Theoretically DWAF land on the other side of the Tyumie river will be covered by the programme."*

5.2.3.6. Current problems and potential improvements to the WFW projects

Respondents were asked what their views were on how the WFW projects in Hogsback can be improved or what problems they had experienced with the projects. Not all respondents provided answers to this question.

TABLE17: Problems and proposed solutions for WFW projects

IMPROVEMENTS & PROBLEMS	WM	WF	BM	BF
Better management	3	1		
Better planning	3	1		
Better follow-up	1	2		
Improve training	2	1		
Longer contracts	1		1	
More funding	1	1		
Community conflict	1	1		
Smaller permanent workforce	1	1		
Provide equipment & clothing	1	1		

Most responses came from those white respondents involved in managing the projects. Respondents mentioned a total of 8 ways in which they thought that the WFW projects could be improved. They identified better management and planning of the WFW projects as the most significant improvements needed to minimise problems. Second most important were the need for better follow-up and improved training of contractors and labourers. Thirdly, the need for longer contracts and more funding, were identified as ways to improve the WFW projects. Community conflict and its effect was raised by 2 respondents. Only 1 respondent recommended that the project should look at appointing a smaller permanent workforce and providing equipment and clothing.

Positive comments by respondents included, *"It's a good thing. Starting at the top of catchments and reducing wattle stocks. Increasing water run-off to lower areas. There is job creation for the unemployed."* Negative comments were that, *"WFW could be better managed. There is a need for more hands on management. The one hand doesn't know what the other is doing. Project leaders report to DWAF head of forestry. They don't know what's going on or how much work is entailed. They demand X hectares per month but don't know the infestation levels. Aerial photos haven't helped. They wait until the contractor has worked in an area before they know what the infestation levels are"* and **" There is a need for more hands on management. WFW managers should visit the areas themselves. There should be better surveying and they should find the source points themselves instead of expecting the contractor to do so. They should know the area and where clearing is needed. In this area insufficient money is allocated for the workload. It**

*is succeeding in part by not totally. There should be more people working up in the catchment areas but there is only us".*

*"There is a lack of proper follow-up, especially with changing of contractors. Training chainsaw operators is expensive – R1800/operator. Contractors can't get their investment back in 3 months. There is a need for longer contract periods. Constant training wastes trained human resources. **Not one person from WFW has assisted with training. It is all done by the contractors.** We mostly employed women without husbands, school leavers and pensioners so there was upgrading of previously disadvantaged. We also educated our employees. **There is no lifeskills training that is supposed to be part of the WFW package.** SAFCOL offer fire-fighting, lifesaving, chainsaw operating and adult education. We send our people on those courses."*

One respondent closely involved in initiating and implementing WFW projects in Hogsback commented extensively. These are reproduced verbatim.

*"We had regular communication with DWAF and then they pitched two months before the end of the financial year and wanted everything done yesterday. DWAF want emergent contractors so we had to set up a system to educate potential people. We had to provide start up loans for buying capital equipment so that these contractors could get going as they did not have the capital themselves and were not able to access loans from financial institutions like banks. We needed to be pro-active to get them involved and operational.*

*We had five contractors in 1997/98, two of whom were emergent contractors. The other three had to have a black partner and to do skills transfer. This was only successful in one case. **The very nature of entrepreneurs who tender is opposed to the skills transfer system as all they are doing is developing competitors.** There is a need to train emergent contractors before opening to tender. Another problem with the WFW project was that DWAF sent the cheques directly to the contractors so the HLC had no one of controlling the quality of work and no way of holding them to doing final clean-up. This was a problem in one or two cases. In one case the contractor did a very poor job, never finished the work contracted and refused to clean-up after the job.*

*The skills training for skills is not here – it depends on where the manager is in the province. It went off quite well with the contractors. They are now effectively self-employed clearing plots. Four of the five contractors employed women but we had problems with one black contractor who refused to employ women or disabled people. We appointed our own manager to oversee and he was able to ensure that more than 50% of the labourers employed were women."*

The most critical factor identified by this respondent is the need for WFW to address the question of training of both emergent contractors and labourers. Contractors also identified training as an area that caused them difficulties. The other factor identified was the pressure put on the Local Council by WFW to ensure that emergent contractors were given opportunities to participate, without providing any assistance to enable this to occur. The opinion was that, in order to improve the WFW projects, better planning and support by WFW was needed for the implementing agencies.

### 5.2.3.7. Views on future use of the cleared areas

Respondents were asked their views on what should happen to the areas cleared of wattle. They were requested to state their preference for the long-term future use of these areas.

TABLE 18: Recommended future use of the cleared areas

RECOMMENDED TYPE OF FUTURE USE	WM	WF	BM	BF	RECOMMENDED TYPE OF FUTURE USE	WM	WF	BM	BF
Crop/food production	2		9	4	Follow-up	3	2		
Return to indigenous forest	5	2			Curb soil erosion			1	1
Grazing/commonage	1		5	1	Clear watercourses	1	1		
Rehabilitation	6	3			Planned management	1			
Pine plantations	3		2		Use land for housing and services			10	4
Return to indigenous grassland	4	3			Develop economic infrastructure	2		6	1
Plant with ornamental exotics	3	2		1	Apply permaculture methods	2			

Respondents proposed 14 alternatives for how the cleared areas could be used in the future. Fifteen respondents, 13 of whom were black, supported using the areas for producing crops and food. Fourteen black respondents want some of the land used to build houses, schools, clinics and other services. The need to rehabilitate the cleared areas was raised by 9 white respondents. Eight respondents, only 2 of whom are white, want the cleared areas to be used to develop economic infrastructure such as factories, businesses and shops. Seven white respondents want to return the areas to indigenous forest or grassland, whereas 7 black respondents want to establish grazing areas and commonage. Five wished to plant pine plantations. Other suggestions were to plant ornamental exotics, ensure that soil erosion is curbed and clear watercourses.

The question of what should happen to the areas cleared of wattle raised entirely different answers from the two race groups. Many white respondents proposed that these areas should be returned to indigenous vegetation. Some of the comments were that ***“They should be returned to indigenous forest and grassland”***; *“Cleared areas should not just be left. Specific herbicides*

*should be used and then the areas should be re-grassed or planted with something. Suitable areas should be returned to indigenous forest or original habitat", "They should be left for nature to recover. They require regular follow-up. We should be re-planting with natural grasses, indigenous flowers, bulbs and proteas".*

Some proposed turning suitable areas to pine plantations and the one permaculture specialist proposed an agroforestry type option. Comments included the following: **"Replant those areas with pines"**; *"Plantation areas should be planted to timber. Return riverine areas to grassland."* and *"They should be planted with hedges to provide food security for animals and people. They should be rehabilitated for a useful purpose. The keyline system should be implemented to prevent erosion and promote proper water conservation."*

The uniform response from black respondents was that the cleared areas should be used for housing, economic developments, crop production and establishment of grazing commonage. Suggestions included the following: **"People who have no property should be given land to build houses** and Hogsback should be developed, banks and garages (filling stations) should be built, because when tourists visit Hogsback they have to travel to Alice to get these amenities. This will also create employment opportunities"; and *"The lands in Hogsback should be developed by building factories that will provide employment to the people of Hogsback and surrounding areas, expansion of the shopping area by building banks, more shops and entertainment centres for tourists, schools and houses for people who do not own property".* Respondents also said that: **"Land can be used for commonage for those people who would like to breed cattle and sheep and farmers and those who would like to produce crops should be given land to plant, equally"**; and *"There is nothing as important as growing crops that can be used by the people themselves for consumption. Plans should also be made to curb soil erosion"; and "Fruit and vegetables should be sown because the soil here is generally fertile. These can be used by the people of Hogsback and some could be sold to markets in other towns."*

One black respondent felt that: *"Trees like pine should be planted in order that it can be chopped down and sold to furniture factories or even here furniture factories can be built so that they can process the trees and manufacture wooden goods. Soil erosion should also be curbed because it damages land."* Black respondents showed a high degree of concern over soil erosion in these areas and the need for limiting livestock numbers. *"Livestock breeding should be encouraged by giving people land for this purpose, but numbers of livestock should be limited so that land should not be over-utilised. Numbers of livestock should match the size of the land."*

More in-depth responses to this question came from people who had been directly involved with implementing the WFW projects in Hogsback. One respondent stated *"There is no simple or easy answer. There are different conditions in different areas. **Some need rehabilitation not just follow-up.** Possibly this should be part of the project. We would need outside assistance as to what should happen in these areas. **We need a pro-active programme and a plan of action for each area.** Bi-annual clearing and spot poisoning in areas adjacent to the indigenous forest should be sufficient to rehabilitate those areas. Block CI next to Madonna and Child waterfall is a potential recreation area and picnic site. This requires rehabilitation. Other areas are potentially commercially exploitable or are part of protected indigenous forest, especially in the upper section. There should be committed follow-up by local authority but it needs to be written up in policy. The IDP process is important for long term management. There is too much emphasis on basic needs in these documents."*

Two of the WFW contractors said that: *"WFW should keep the initial clearing team and in summer engage more people to do follow-ups. Seed was supposed to have been available to rehabilitate cleared areas but it hasn't happened. As a result **only wattle regenerates nothing else.** One team should be employed to do rehabilitation. The way it is being run at present rehabilitation is not going to succeed."* and *"It depends on what was there before. As far as possible return to its natural state. You can't leave it to its own devices. Slower project work would enable better rehabilitation of areas."*

#### **5.2.4. Roles of civil society and government in environmental management**

This section deals with the results of the questions on the roles of the individual, the community, the HLC, the ADC and the Provincial Government in environmental management in Hogsback.

##### **5.2.4.1. Individuals role in environmental management**

Respondents were asked their views on the role of individuals in managing the environment.

The respondents identified 10 different ways for individuals to play a role in environmental management of the Hogsback area. Fifteen respondents, 13 of whom were black, said that individuals should protect or conserve the environment. Nine felt that individuals should practice personal environmental commitment in practical ways. Nine white respondents said that landowners should be stewards of their own land and are responsible for keeping it clear of invasive alien plants. Not one black respondent mentioned this. Nine white respondents and no black respondents mentioned membership of community organisations as a way of enabling

individuals to participate in environmental management. Five black respondents said that individuals should participate in decision-making or have input into matters concerning the environment. Of the 8 respondents who raised the matter of law enforcement 6 were black as were all 6 respondents who said that individuals should be responsible for removing things that are harmful to the environment.

**TABLE 19: Individuals role in environmental management**

RECOMMENDED ROLE OF INDIVIDUALS	WM	WF	BM	BF	RECOMMENDED ROLE OF INDIVIDUALS	WM	WF	BM	BF
Protect or conserve the environment	1	1	9	4	Participate in community organisations	5	3		
Practice personal environmental commitment	4	1	1	3	Have a spiritual relationship with the Earth	1	1		
Landowners are stewards of/responsible for own land	6	3			Police those who harm the environment	2		4	2
Participate in decision-making – have input			5		Return indigenous plants	3	1		
Remove harmful things from the environment			4	2	Volunteerism/offer expertise/ educate the uneducated	4			

Four white respondents said that individuals should return indigenous plants to the environment and participate in some form of volunteerism such as educating those who are uneducated or to offer one's expertise in whatever field to the community. Two respondents said that people should develop a spiritual relationship with the Earth.

The key issue identified by white respondents with regard to the role of individuals is that landowners are responsible for their own land. Examples of these responses are ***“Property owners should be responsible for their own property”***; *“Individuals should be responsible for the property they own. Most people do not take sufficient responsibility”*; *“Individuals should be 100% responsible for their own properties”*; and *“Individuals should pick up rubbish and keep their own properties clear of wattle. Land owners and leasees should be responsible for keeping their own property and perimeter clear of wattle.”*

In addition white respondents identified the need for individuals to contribute towards the community and become active participants in community organisations and associations. *“They should join local organisations. There is generally high awareness amongst the white community of Hogsback about environmental issues. I was involved in the Hogsback Resident’s Committee to negotiate with SAFCOL and deal with problems”*; and *“Individuals should become members of community organisations”*; *“They should make a contribution on a community level”*. Another response was: *“Individuals should be proportionately responsible for what is not their’s. They should participate in communal efforts or projects. We are custodians of the environment. It*

*is our problem and we must look after it. It is a big responsibility as **Hogsback is all part of my garden.***"

Other points raised by white respondents were the need for responsible environmental behaviour and the question of our relationship as individuals with the Earth. *"All individuals should have a commitment to the environment. They should participate in recycling, using environmentally friendly products, not littering and not playing their music too loud."* The need for individuals to develop a spiritual relationship with the Earth as a basis for developing sound environmental attitudes was articulated by one respondent as follows: ***"If we regard the Earth as sacred, consecrated ground it changes how we deal with it. There is a reciprocity between ourselves and the Earth and we take too much and don't put enough back. We should restore ancient relationships with the Earth and return to the old ways of managing nature."***

On the other hand black respondents identified individual responsibility to protect or conserve the environment as a key issue. ***"Every individual must have respect for the environment because it is very important for human existence. ..The environment should be conserved."***; *"Every individual should be responsible for conservation of the environment and be on the look out for people who harm the environment because we depend a lot on the environment for our existence, therefore, we must protect it."* The right of each individual to participate in decisions concerning the environment was stated in this way: *"Every individual should take an interest in the environment. Those things that are harmful to the environment should be destroyed and those that are helpful should be conserved. Every individual should have input when decisions are made because what takes place in the environment affects every individual"*; ***"Every individual should have input when decisions are made about anything concerning the environment because the environment affects everybody"***; and *"Every individual should have input in environmental matters because anything that endangers the environment will have an effect on every individual."*

A number of black respondents raised the question of responsibility for community behaviour towards the environment and individual responsibility for caring for the environment. The individual is seen as a member of the community and responsible to that community. Part of these responses included the need for individuals to ensure that others in the community behave in an environmentally responsible way using sanctions and enforcement of the law. Some of the responses were: *"Every individual must have respect for the environment because it is very important for human existence. The environment in the whole of Hogsback should not be endangered by individuals who, for example, make fires and leave such fires until they destroy*

*the environment. The environment should be conserved except for those things that pose harm to humanity and even to the environment itself.”*

*“Every individual must ensure that he or she does not plant things that might cause harm to the environment. Conservation of the environment is the responsibility of every individual.”; and “Every individual should be responsible for conservation of the environment by reprimanding one another when the environment is being harmed by burning the grass on the veld, making fires that destroy trees and forests, littering and polluting water that is consumed by people.”*

#### 5.2.4.2. Role of the community in environmental management

Respondents were asked what their views were on the role of the community in managing the environment.

**TABLE 20: The role of the community in environmental management**

ROLE/COMMUNITY	WM	WF	BM	BF	ROLE/COMMUNITY	WM	WF	BM	BF
Environmental protection & conservation	3		8	3	Community conflict	1	1		
Environmental Committee/ Forum/ Steering Group	3	3		1	Negative attitudes	2			
Environmental involvement	3		2	2	Participate in national NGO's	1			
Community structures/ Working Groups	1	3	3	1	Need for community facilitators/catalysts	1			
Make policy & management decisions	2	1	3		Use natural interest groupings	1			
Communicate with HLC	2		3		Lack of legislation	1			
Environmental education and awareness	1		3	1	Liaise with broader structures	1			

The respondents provided 14 different responses regarding their views on the role of the community in managing the environment. Fourteen respondents, 11 of whom were black, mentioned that the community should be responsible for protecting and conserving the environment. Seven respondents, 6 of whom were white, mentioned that the community should establish and participate in some form of environmental steering group, forum or working group. This was envisaged as a forum that would represent all the main stakeholder organisations in Hogsback. Eight respondents felt that the community should belong to community structures and working groups and 7 respondents mentioned that the community should be involved with the environment. These responses stressed the need for the community to be active in participating in decision-making and having input into planning processes.

Six respondents each made specific statements that the community should make policy and management decisions and 5 that the community should communicate with the HLC. They also

stressed the need for environmental education and awareness in the community. The lack of legislation, community conflict, the concomitant need for community facilitators or catalysts and use of natural interest groupings were mentioned as ways the community could be involved or community conflict around environmental issues solved. The need for the community to liaise with broader structures and participate in national organisations was also identified.

The comments from white respondents included the following: ***"There should be a steering committee on environmental matters in Hogsback. It should involve all different role-players – Friends of Hogsback, Hogsback Chamber of Business, Hogsback Local Council, Hogsback Ratepayers Association, United Democratic Hogsback Association of Residents"***; *"They should participate in community organisation structures"*; *"The community needs to have a common working group that represents the entire community which is responsible for the place. It should be able to respond or act upon environmental damage or destruction. It should be a concerted community based action group"*; and *"The community should form watchdog organisations to police environmental matters. Some kind of aesthetics committee would also be useful. The community should implement some kind of restitution of environmental damage."* This represents a range of opinion as the respondents each belong to different organisations, both political and community.

The black respondents made the following comments regarding the need for the community to be involved in protecting and conserving the environment: ***"The community should ensure that the environment is conserved in order that even their generations can find and see the environment in the same state"***; *"The community should work together in ensuring that the environment is not endangered by anyone and even themselves"*; *"The community should understand the importance of the environment for human existence and that it must be protected"*; and *"The community should also be aware of conservation of the environment and play an active role because everyone has a right to the environment and if anybody harms the environment, the consequences affect the community as a whole"*. There are many others that make similar points. These comments reveal a high degree of environmental awareness and concern.

This is supported by one respondent's comment on the I.D.P. Environmental Committee *"The environmental committee is an open forum for the community. Usually there are 10-12 people in a meeting and about 50/50 black and white. I have been surprised by the black involvement and keenness to see things happened around environmental protection. I was blown away by the IDP process. It really came together like a miracle but where to from now. What happens with the IDP document now? There is a lack of clear guidelines and procedures. Government must educate so*

that the executors can't lead the community by the nose. It's not up to executors to decide how the process works. The community was told but now the HLC says it doesn't work like that anymore and we're saying "Who said?" These comments also raise concerns about how the I.D.P. is being implemented by the HLC.

The question of community conflict raised the following comments: "People always have lots to say and little to do. They won't work together. **Meetings are a butchery – its war situations in public meetings**", "Everyone is rowing their own boat. The attitudes of people living in Hogsback have become negative. They are only worried about their own places and not about the larger community of Hogsback. Generally too many people talk and too few do anything." and " We should celebrate diversity and utilise people's specific interests. This would be more productive. The community is only interested in process not in the end product that should come out of the process."

### 5.2.4.3. Role of the HLC in environmental management

Respondents were asked what their views were on the role of the HLC in managing the environment.

**TABLE 21:      The role of the HLC in environmental management**

ROLE OF HLC	WM	WF	BM	BF	ROLE OF HLC	WM	WF	BM	BF
Consult, support & implement decisions and policies made by the community	4	2	6	2	Hold regular meetings & opinion polls with the community	3	2	3	1
Establish Environmental Steering/ Working Group with broad representation	2	3	5	1	Make decisions to manage the environment	4	1	2	
Provide skills, training, information & education	3		2	1	Manage the integration of environmental management policies	2	1		
Ensure/enforce environmental protection and conservation	1	1	6	1	Make available recreational facilities			1	
Establish by-laws, guidelines and legislation to control the environment & development in HGB	3			1	The HLC has no role in environmental management	1			
Enforce clearance of properties	2			1					

Respondents identified 11 different roles for the HLC in managing the environment. Fourteen respondents felt that the role of the HLC was to consult with the community and then to support and implement decisions and policies made by the community regarding the environment. These respondents felt very strongly that it was not the role of the HLC to make the decisions, that this should be the prerogative of the community.

A further 11 respondents were of the view that the HLC should establish an environmental steering group or working group that broadly represented all the major groupings in the community. The general opinion regarding this was that it should be a permanent group that should have input into all decisions regarding environmental matters in Hogsback. Some respondents were of the view that such a body should act also in a watchdog capacity over any developments or organisations that impact on the environment. Half the respondents were of the opinion that the role of the HLC is to listen to the community and implement the community's views regarding how the environment should be managed. According to 9 respondents the HLC should hold regular opinion polls and public meetings.

The HLC should be responsible for enforcing the by-laws, guidelines and legislation they have the right or responsibility to enact according to 9 respondents, 7 of whom were black. Six respondents felt the HLC has a responsibility to educate, inform and provide skills training about environmental matters for the community. Seven respondents, five of whom were white, were of the opinion that the HLC must ensure protection of the environment and should control development in the HLC area. Three respondents were of the view that the HLC should enforce clearance of invasive alien plants, but especially wattle, on private properties and that the HLC should manage the integration of environmental management policies and plans. One individual was strongly of the view that the HLC had no role in managing the environment in Hogsback. One respondent expressed the opinion that the HLC was responsible for providing recreational facilities for the community.

Comments by respondents regarding the need for the HLC to consult and implement community decisions included the following: ***"The HLC should support and put into practice what the community wants for the environment. They should be responsible for action"***; *"The local council cannot make any decisions without having consulted the community so it can know the feeling of the community"*; *"Any elected official should conduct themselves as such. They are a mouthpiece for the community and as executors of community wishes"*; *"The council should manage the environment by informing the community about anything or any damage to the environment. The council cannot make any decisions without the community"*; *"The council cannot do anything or make any decisions without consulting the community. The local council can only do what the community decided on"*; and *"When making decisions about what happens in the environment the council should involve the community or the community should make the decision and present it to the council for deliberation."*

Responses concerning the need for some kind of environmental steering or working group included the following: *"If they are going to be involved then they must invite representatives from*

each group in Hogsback to sit on the steering committee so it can act on environmental quality control"; and **"There is a need for a Hogsback environmental committee under the council which would supervise all environmental matters.** Nominations should be asked for from the community. There is a need to co-ordinate individual efforts through a controlling committee that would report back to the community using newsletters, etc."

According to some respondents the local council should "draw awareness of the people to situations that pose harm to the environment"; and realise that it "has a big responsibility of **teaching or showing people the importance of conserving the environment**, warn them about things that might be harmful and also those that are helpful for human existence." Another respondent said "I think the local council should educate people about the importance of conservation of the environment, how the environment can be protected and warn them about those things that are harmful in the environment. The people can then educate one another until the whole community is aware of do's and don'ts about the environment."

With regard to the legislative and enforcement role of the HLC respondents had the following to say: "It should make environmentally sensitive by-laws that promote a way of thinking such as the re-cycling programme"; "They should play a major role in keeping areas clean. They should put pressure on landowners to control wattle on their properties"; "The council can enforce instructions for certain things to be done or not to be done"; **"The local council should oversee and ensure that the environment is conserved by having inspectors** who will carry out inspections"; and "People who disregard warnings about conservation of the environment and continue to harm the environment should be reported to the local council which can impose the fine according to the severity of harm or damage." These responses came from both black and white respondents.

The views of councillors from the HLC on its role were, on the one hand, that the HLC should "spearhead action in Hogsback." and that "There have to be management guidelines and policy. The IDP has been a means of getting agreement on those. Local government needs to make hard decisions where you cannot always obtain agreement. **There is a lack of understanding of the role of the HLC and their powers, especially to make decisions** based on a sense of what your constituency thinks. The community should acknowledge the people they elected as represents particular constituencies. They mustn't be surprised when councillors act on behalf of their particular constituencies or particular belief systems" In contrast another councillor was of the opinion that "The HLC should not play any role in managing the environment. They have a responsibility to alert the community to the environment and issues. They could guide but not manage."

5.2.4.4. Role of the ADC in environmental management

Respondents were asked what their views were on the role of the ADC in managing the environment.

TABLE 22: Role of the ADC in environmental management

ROLE/ADC	WM	WF	BM	BF	ROLE/ADC	WM	WF	BM	BF
Provide advice & assistance to HLC	6	2	5	2	Greater control of local planning & management of the environment.	2	1	1	
Regional planning, policies & procedures	3	2	3		Provide education and information	2	1	2	1
Provide district level environmental officers	2	1	2	1	Promulgate stricter environmental laws	3	1		
Ensure HLC consults the community in decisions	1		2	1	Facilitate between government and the HLC & community	1			
Financial control		1			Promote special interest groups	2			
Only assist when requested by HLC/ community	1	1	6	1	Mediate conflict between HLC & community			1	

There were 12 different suggestions from respondents regarding the role of the ADC in environmental management. Fifteen respondents were of the view that the role of the ADC is to provide advice and assistance to the HLC, however 9 respondents felt that this should only occur upon the request of the HLC or the community. Eight respondents felt that the ADC should be responsible for undertaking regional planning, policy making and establishing the procedures to be followed by local councils in implementing planning decisions. Six respondents want the ADC to provide district level environmental enforcement officers who would ensure that the environment is protected and it should also play a role in educating and providing information to local communities regarding environmental matters.

Four respondents want the ADC to play a watchdog role to make sure that the HLC has consulted the community regarding any decisions they have made concerning the environment and that the ADC should promulgate stricter environmental legislation. The final group of suggestions was each from a single respondent. The suggestions included the following: the ADC should facilitate between government and the HLC and the community on the other hand; involve itself in more role-playing; be responsible for financial control of HLC finances, as well as providing the necessary finances; promote special interest groups for ecotourism and the environment; and finally, mediate in any conflict between the HLC and the community.

The comments made by respondents regarding the role of the ADC in providing assistance and advice included that ***“It (the ADC) should act in an advisory capacity when requested. They***

should have some say but not an over-riding say. **Hogsback must run its own affairs**”, and “It can only lend a hand when asked to do so by the Local Council.” Another response was that “The ADC should play a big role in helping the local council and the community achieve their goals.” One respondent stated that: “The ADC should always assist the local council when required to do so, but when decisions are made the community and the Local Council should be part and parcel of the decision making body.” Another had even stronger views that “The ADC cannot manage or make decisions about the environment of Hogsback as they do not know anything about Hogsback. They can only help when asked by the council of Hogsback.”

Some respondents identified the role of the ADC in ensuring protection and proper planning of the regional resources. Comments included the following: “**The ADC should treat the Amatola Mountains like a major resource to be guarded and cared for at all costs.** They need to look at the whole range and the bigger picture as it has potentially wonderful tourist areas in it.”, and “The ADC needs to look at developments in this area and make sure they are done properly. It should help determine priority areas. **Environmental planning should have been an integral part of the IDP process** (and) at IDP level the ADC should have been involved in environmental matters.”

The need for environmental control or enforcement in the area was highlighted by respondents: “The District council should also **employ guards who can look after the forests** for those who damage the environment.”, and “At times the District council might decide to employ officers who will guard on people who harm the environment.”, “The District council can assist the community and the local council by making funds available for the hiring of officers who will look after the environment because there will always be wrongdoers.”, “They need active people on the ground. At district level they are not competent to deal with the full range of problems.” All but one of these comments were made by black respondents and the only white respondent was an ANC councillor.

This sector of the community also supported the view that the ADC should ensure community consultation has taken place regarding environmental decisions and actions. Some of the comments included: “The Amatola District Council should take up matters that have been presented to it by the local council, but the District council should also make sure from structures within the community that the matters are genuine.”, and “The Amatola District Council should also ensure that matters that are brought to it by the local council are presented as they are **by consulting the structures that are in the community.**”

### 5.2.4.5. Role of Provincial Government in environmental management

Respondents were asked what their views were on the role of the Provincial Government in managing the environment.

**TABLE 23: Role of Provincial Government in environmental management**

<b>ROLE OF PROVINCIAL GOVERNMENT</b>	<b>WM</b>	<b>WF</b>	<b>BM</b>	<b>BF</b>
Advise, plan and provide policy for local and District councils on environmental matters	7	2	5	1
Co-ordinate, oversee, assist and support environmental needs at local level	1	1	6	3
Participate in environmental education at local level	4	3	3	
Deal with matters of provincial concern	3	2	1	
Provide resources such as finances and environmental officers	1	1	3	
Make laws to control WFW and alien vegetation	2	2		
Implement environmental regulations and laws	2			

The respondents identified 7 main roles for the Provincial Government in environmental management at local level. The provincial government should advise, plan and provide policy for local and District councils on environmental matters according to 15 respondents. Eleven respondents believe that it is the role of provincial government to co-ordinate, oversee, assist and support environmental needs at local level. A number of these respondents were of the opinion that this should take place following a request for assistance from the local council.

Ten respondents feel that the provincial government should undertake environmental education at local and district level. Five respondents stated that the provincial government should be responsible for providing resources such as funding and officers for law enforcement. Four respondents highlighted the need for the province to provide laws to control alien vegetation and to implement environmental laws and regulations. Respondents appear to feel that the provincial government has greater legal powers and responsibilities for enforcing those powers than local government structures. Only two respondents raised the point that the provincial authorities may not have the capacity to fulfil these expectations.

The role of provincial government to co-ordinate, oversee, assist and support environmental needs at local level drew the following kinds of comments: *"They should oversee the function of district and local councils"*, *"Provincial government should ensure that big developments are properly organised. They should **help build capacity**"*, *"I think the Provincial Government departments should help out or take over whenever the councils have difficulty addressing matters beyond their power"*, and *"In very serious environmental matters the provincial*

*Government departments also have a role to play because they are there to watch over the local and district councils. Therefore their input might be required to solve these serious issues."*

Comments on the role of the Provincial Government to advise, plan and provide policy included: *"It should **articulate clear policy and legislation**"; "It should set policies and guidelines and deal with environmental issues in the realm of professionals. They should be responsible for management and enforcement of policies and forest laws."; "We need a provincial policy about environmental matters. There should be guidance and an educational process for local authorities and local communities."; and "The Provincial Government needs to look at the big picture and develop a clear plan for the environment. Tourism and the environment are two sides of the same picture. There is a need to preserve and develop the area for ecotourism."*

The view that the Provincial Government should be responsible for providing resources such as funding and officers for law enforcement and environmental education at local and district level drew the following comments: *"The Provincial Government can help by hiring or employing police who will look after forests and arrest those people who hunt animals and birds"; "In cases where large sums of money are required the Provincial government departments should assist the two councils by **providing the money or requesting it from National Government**"; "The Provincial Government departments should help the local and district councils by hiring people to guard the environment around the clock" ; and "It should give advice and finances which are beyond local scope and provide an extension officer at local level to provide information and advice."*

The role of the province to provide laws to control alien vegetation and to implement environmental laws and regulations was highlighted in the following comments: *"The province should **put down laws to control WFW activities**"; "It should produce legislation like the Nasella tussock legislation and regulations to force people to clear wattle"; and "The Provincial Government should **implement EIA regulations** and pollution legislation." In contrast one respondent made the point that *"In the past it was too regulated. An oppressive system is inappropriate and regulation is not the way."**

### **5.3. EVALUATION OF THE ENVIRONMENTAL PLANS IN HOGSBACK**

Six plans that affect the environment of Hogsback are briefly outlined below and the major recommendations of each plan set out. The plans evaluated are:

- SAFCOL : The Hogsback Plantation Environmental Management Plan (Phase One) (*Marais, 1994*)
- SAFCOL: Conservation Management Plans: (*Kirkman & Wilson, 1999*)  
Hogsback  
Hogsback Natural Heritage Site  
Tor Doone Natural Heritage Site
- Hogsback Integrated Development Plan: Phase 1 & 2 Report: Spatial Issues and Strategic Framework (*Wanklin & Associates, 1998*)
- Working For Water: Keiskammahoek Catchment (*Department of Water Affairs & Forestry, 1997*)

The plans represent 4 crucial documents that deal with environmental management plans that together cover the entire area considered to comprise Hogsback, excluding the indigenous forest under the control of DWAF.

#### **5.3.1. The Hogsback Plantation Environmental Management Plan (Phase One)**

The Hogsback Plantation Environmental Management Plan (Phase One) was prepared by Marais in 1993/94 for SAFCOL. The plan was the result of pressure by the community and, in particular, the Friends of Hogsback, an environmental organisation. A full community participation process was included during the development of the plan. The primary objective of the plan was *"to allow the optimum use of the land for plantation forestry with full integration of conservation objectives and the restriction or negation of negative impacts on the environment."*

The main recommendations that were made by the plan were:

- No further major afforestation to take place. Some minor afforestation proposed to consolidate existing planted areas. A total of approximately 330 ha to be afforested to achieve this objective.
- A total of 2782 ha to be set aside as conservation areas. This would conserve 943 ha of indigenous forest, 998 ha of Grassland and Shrub and 841 ha of wetlands.
- The existing protection and demarcation of indigenous forests to be maintained.
- A Hogsback Nature Reserve to be established on 650 ha from the Hogsback Peaks to the Klipplaat River. To link with the Auckland Nature Reserve and include Gaika's Kop.
- Tor Doone catchment to be kept free of afforestation and grazing to promote water flow and to protect the endemic Drakensberg Crag Lizard.

- A total of 40 ha to be de-forested due to their impact on the perceived visual landscape and demarcation of riparian zones.
- All plantings to be at least 20m from perennial streams and rivers. Bosch model to be applied.
- Camp site to be enlarged to include arboretum and picnic site.
- Walking and hiking trails to be marked and monitored.
- Individual management plans to be drawn up for the different conservation areas.

This was the first scientific environmental management plan to be prepared for the Hogsback area. It included the following reports:

- A full hydrological report undertaken by Ninham Shand (Cape) Inc.
- A desktop study on the Floristics and Vegetation of the Hogsback estate prepared by Coastal and Environmental Services
- A desktop study on the Terrestrial Mammals prepared by L.R. Wingate, Curator of Mammals at the Kaffrarian Museum, King Williams Town
- A report on the Hogsback Herpetofauna prepared by Professor G. Branch, University of Cape Town

The plan includes maps of the different vegetation zones and plantation compartments as the basis for management of the SAFCOL land. Separate management plans for each demarcated area are included in the plan. These include fire, invasive alien vegetation, infrastructure and harvesting management plans. It is a comprehensive, factual and pragmatic plan that laid the foundations for proper management of the conservation areas falling under the jurisdiction of SAFCOL.

Since 1994, the consolidation of existing plantations has been undertaken by planting identified areas to plantation. The Hogsback and Tor Doone areas have been declared National Heritage sites. The Hogsback area managed by SAFCOL has received Forestry Stewardship Council (FSC) accreditation and submits to an annual audit by the FSC. Individual conservation management plans have been drawn up. A managed burning system has been implemented for the grassland and fynbos habitats. Certain areas were cleared of plantation forestry, especially on the main road and along Oak Avenue, where some compartments, especially of Oak trees were very old and dangerous. The campsite and picnic site was closed to the public. An entry fee into the forests was instituted. These led to widespread public outcries and a lot of negative publicity for Hogsback.

### **5.3.2. Conservation Management Plans: Hogsback, Hogsback Natural Heritage Site and Tor Doone Natural Heritage Site**

SAFCOL's regional ecologist, Karen Kirkman, supported by Angus Wilson, former Regional Director of Forestry, prepared 3 conservation management plans for the Hogsback Plantation, Hogsback and Tor Doone Natural Heritage Sites. These were completed in February and April 1999. The Forestry Stewardship Council will evaluate these during their annual audit in November 1999.

The conservation objectives of the plans are to provide land cover classification of all areas not planted to commercial compartments, identification of management compartments, comprising different classified land cover units and scheduling of conservation operations. The environmental conservation database in the report includes descriptions of the Land Cover Classes, Areas of Special Interest and the two Natural Heritage Sites in the plantation. The land use planning includes descriptions of ecological gradients, conservation zones, hydrology, island biogeography corridor design, conservation and regeneration of representative habitats, visual impacts, recreation zones, forestry zones and infrastructure. It includes weed control, burning and grazing management programmes with schedules for each of these in each demarcated area.

The main recommendations of the plan are:

- Road network improvement to be assessed and corrective action implemented.
- A study to determine effects of grazing on grasslands to be initiated in 1999/2000.
- Rehabilitation and management plans required for all quarries.
- Sites to be identified for set point photography and schedule to be established.
- The Land Cover unit mapping to be captured on GIS
- Faunal and floral lists need further investigation and expanding.
- Gaika's Kop to be incorporated into Tor Doone Natural Heritage Site as a priority for 1999/2000.
- Good communication essential between DWAF and SAFCOL regarding indigenous forest management.
- Gorse control project to be implemented and managed.

These plans update the initial work done by Marais in 1994. The recommendations are more specific than Marais. The updated and recently completed mapping is an important component of the work. These plans are in house and have not been made widely available to the public.

### **5.3.3. Hogsback Integrated Development Plan: Phase 1 & 2 Report: Spatial Issues and Strategic Framework**

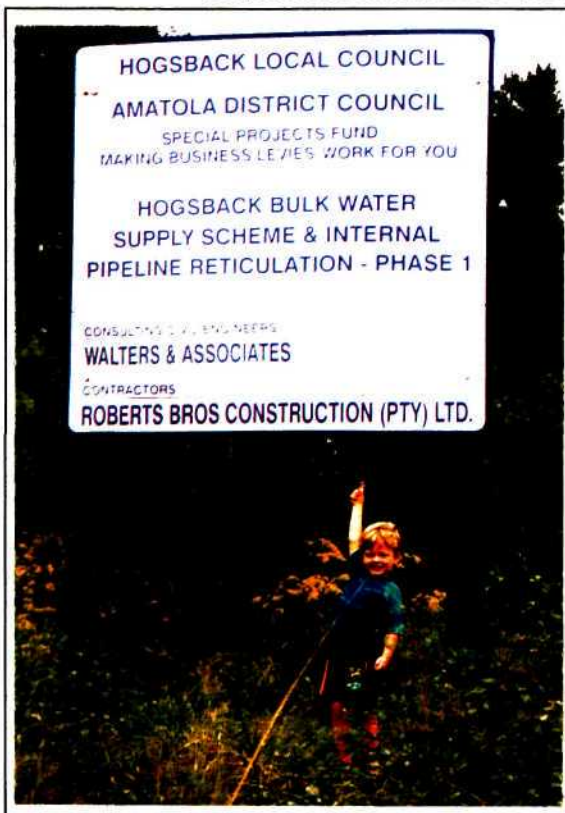
This plan was prepared by Wanklin & Associates of East London for the Amatola District Council and the Hogsback Local Council in September 1997. It was prepared as part of the Integrated Development Plan process required of all municipalities by the provincial department of Housing and Local Government. It includes Land Development Objectives. The objective of the plan is to provide a basis for decisions taken by the local authority regarding development of land. It included a public participation process of three workshops, the election of specific sectoral committees to develop specific plans of action and a questionnaire was circulated to registered landowners and residents.

A situation analysis covers the broader regional context and the Hogsback Local Council area. Under the latter it includes descriptions of the physical characteristics, land use, population characteristics, infrastructure and services, sectoral analysis and administrative status. These are covered briefly and there is no socio-economic information. The physical characteristics and land use draws extensively on the Marais report in 1994. The results of the workshops were to identify development constraints and opportunities and needs of the community.

The key development issues were identified:

- Conservation of the natural environment.
- Preservation of unique settlement structure and character.
- Physical development of the area, centred on tourism related activities that integrate the built and natural environment to mutual benefit.
- Provision of a range of options to satisfy needs for affordable housing in the area.
- Sustainable economic development and skills training.
- Land Use management and physical development policy guidelines.
- Administrative policy and procedures guidelines.
- Infrastructural development providing appropriate levels of services.
- Institutional, recreational and social facilities development.

## INFRASTRUCTURE DEVELOPMENTS IN HOGSBACK IN 1999



18. Notice of construction of new water scheme



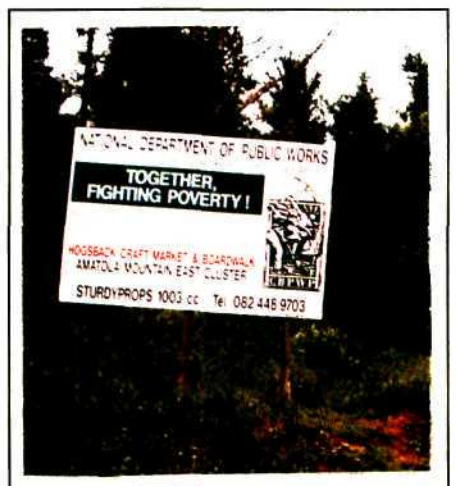
19. Construction of Plaatjieskraal dam



20. The new Craft Market in the village



21. The new reservoir for the water scheme



22. Notice of construction

The IDP process involved about ten percent of the permanent residents in Hogsback. It was drawn out and much of it was confrontational, however, the community was involved in the entire process from beginning to end. The final LDO's identified were the result of the work of the specific sectoral committees. The sectoral committees covered the following sectors: land, education, infrastructure and environment. A total of 17 workshops involving the community and elected community representatives were held in order to develop the Hogsback IDP with associated LDO's. There were 4 public workshops included in these - 2 at the beginning of the process, 1 near the end of the process and 1 after the report was concluded and presented to the community for comment. Wanklin and Associates were the facilitating agents during the process and prepared the report.

The draft development strategy identified a number of action plans to achieve the broad development goals identified during the process. The following have been implemented:

- A tourism marketing plan was prepared by a consultant.
- A central multi-functional community facility is nearing completion.
- The HLC and the community are negotiating with DLA to buy farms for council commonage.
- An EIA Scoping Report was completed in January 1999 to identify a village development site near Plaatjieskraal.
- An EIA Scoping Report was completed in January 1999 to identify a dam development site and a water reticulation system on the Plaatjieskraal River.
- Construction of the dam and the water reticulation system began in June 1999 and is nearing completion of phase one.
- Housing funding applications have been submitted to the provincial department of Local Government and Housing.
- The library has been upgraded.
- A pre-school was established in October 1999.
- A community policing forum has been established.
- The local roads have been upgraded and funding has been obtained for further upgrading.
- Walkways next to the main road are under construction.

The implementation of the development plan has been successful as a result of the efforts of the HLC to obtain funding from a number of sources to enable developments to be undertaken. A total of R8 million has been obtained from the ADC, the Eastern Cape Department of Housing and Local Government, CMIP, as well as donor funding.

### 5.3.4. EVALUATION OF WFW BUSINESS PLAN AND GOALS

#### 5.3.4.1. Evaluation of business plan: WFW - Keiskamma catchment

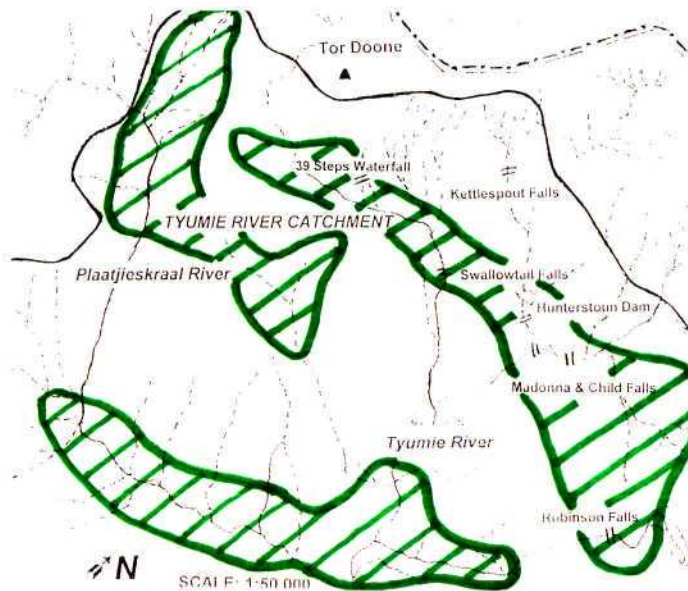
DWAF's WFW regional staff prepared the Business Plan: WFW - Keiskamma Catchment. According to the business plan, the objective is to eradicate invasive alien tree species from the Amatola mountain catchments. The terminology, however, is different in the description of the scope of work where the stated aim is *"to control the spread of alien plants in the upper catchments of the Keiskamma river"* (Department of Water Affairs & Forestry, 1997).

The secondary objectives are to enhance water producing capacity, ecological integrity, conservation of biodiversity, especially in riparian zones, and appropriate catchment management. Also to establish a foundation for ecotourism development and to train and empower people through job creation. In the executive summary it is stated that *"The project will be people-driven and will meet the water, fuel wood and work opportunity needs of the communities in the project area. Over 50% of those employed will be female. The project will provide employees with training skills in a number of disciplines"* (Department of Water Affairs & Forestry, 1997).

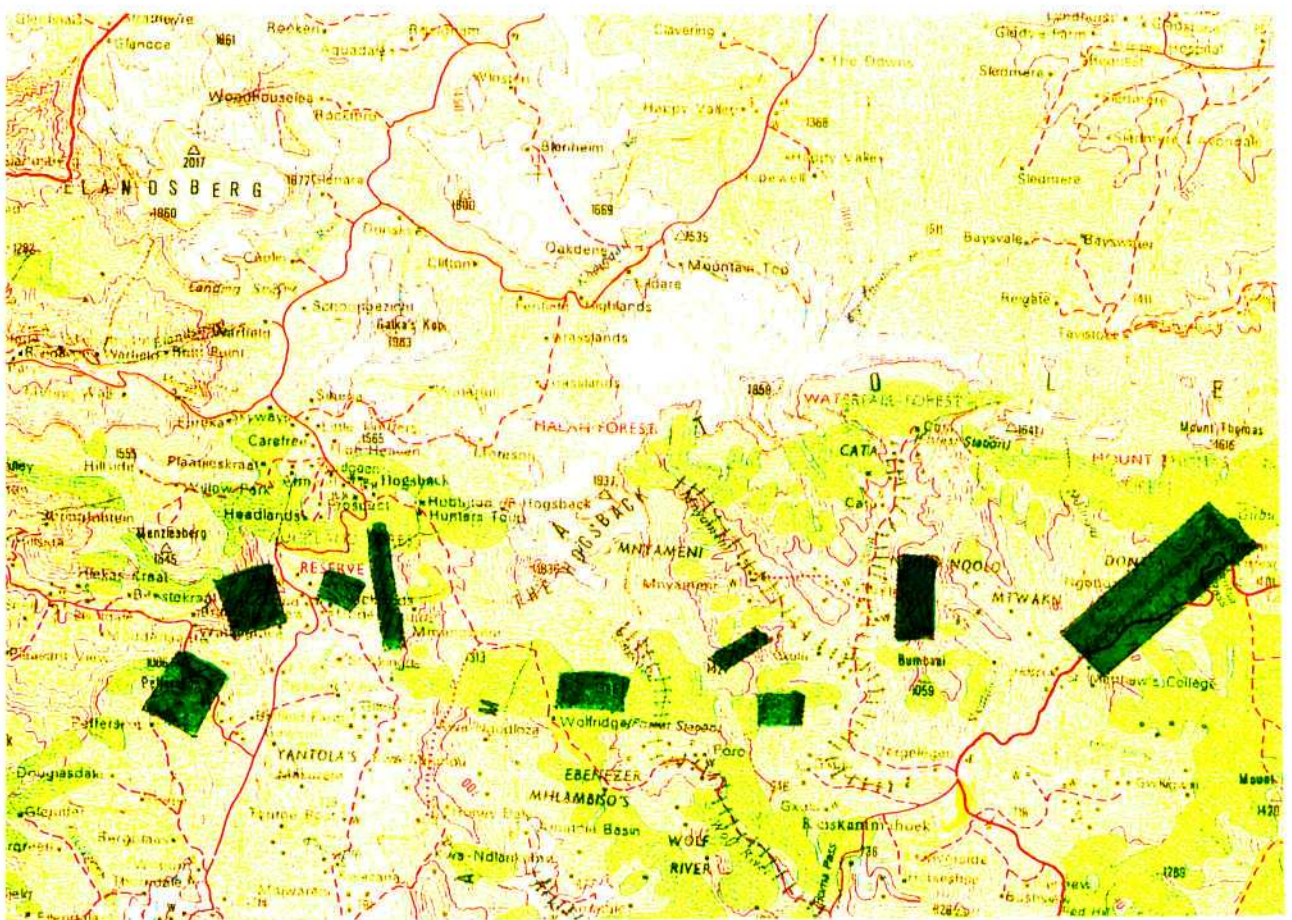
The plan outlines the project details, scope of work and methods of control. It describes the physical environment, demography and economic profile of the project area. The programme is described in terms of the appointment of a Steering Committee, the organisational structure, action plans, programme for clearance of weeds, key performance indicators, monitoring programme and auditing and spot checks. The budget, future work and reporting procedures are included.

The plan is only for the financial year 1997/98. It makes no reference to the longer-term 20 year WFW programme. It is not a strategic plan as it concentrates on the tactics required to deal with the problem. It provides no scientific figures about the extent of the problem in this catchment, the areas that are affected or the degree of infestation in different areas. It does not include any information on individual projects or specific areas demarcated for clearance. There is only one map but the scale is too small for it to be used meaningfully in planning individual projects. The budget breakdown is for the overall programme. There is no breakdown of the expenditure envisaged for each area within the catchment. It is, therefore, impossible to tell how much funding was budgeted for Hogsback. The Hogsback area is not described specifically, nor the areas to be cleared, nor are any site plans included. The plan's utility at the scale of Hogsback village and environment is, therefore, limited.

**MAP 6: Areas invaded by *A. mearnsii* in Hogsback**



**MAP 7: Keiskammahoek WFW project areas targeted for clearance in 1998**



### 5.3.4.2. Goals of the WFW projects

From discussions with the Hogsback supervisor and contractors it would appear that the regional WFW staff have had very little, if any, input in assessing the infested areas and deciding which should be prioritised for clearance. The decisions about where and what to clear are made on an ad hoc basis by the local council and contractors.

The WFW programme has national, regional and district goals. The national goals were initially three but these have been increased to six. They are overarching goals for the entire programme. At regional and district level the goals are more specific. The goals are tabulated below with an assessment of how successful the Hogsback projects have been at implementing these goals.

**TABLE 26:     Achievement of national and catchment goals of WFW in Hogsback WFW projects**

NATIONAL GOALS	KKH CATCHMENT GOALS	SUCCESS AT ACHIEVING GOALS	
		NATIONAL	KKH CATCHMENT
<i>Water security</i>	Enhance water producing capacity & appropriate catchment management	Fair	Good
<i>Productive use of land</i>	Promote ecotourism development	Poor	Poor
<i>Conservation of biological biodiversity</i>	Clear invading alien plants and enhance ecological integrity. Conservation of riparian zones and biodiversity.	Questionable	Poor  Poor
<i>Reduction of the intensity and frequency of fires and floods</i>	Not mentioned	Poor	N/A
<i>Employment</i>	Poverty relief through the creation of jobs & training and empowerment of individuals	Good	Good  Questionable
<i>Creation of secondary industries</i>	Promote secondary industries such as charcoal production	Poor	Poor

Only 1 national goal, that of providing employment can be considered to have had a good success at Hogsback. One is fair, i.e. the increase in water security, although no measurements have been made to prove any increase, and 1 is questionable, i.e., the conservation of biological diversity. At this stage most of the cleared areas are either bare or covered in wattle re-growth; however, the spread of wattle into the forest margins has been curbed thus promoting biodiversity. The other 3 goals have all had a poor success rate. The success rate for regional level goals is slightly better i.e. enhanced water producing capacity and appropriate catchment management and poverty relief. However, the rest of the regional goals have had a questionable or poor success rate. Generally, the WFW programme has only been partially successful in reaching the goals that it has set for itself. The wide range of goals creates big demands on staff capacity. The public perception of the job creation aspect of WFW drew wide praise and support. There are concerns about the follow-up clearance and the sustainability of the clearing. Those who have been involved in managing the projects have had problems with the way in which this has been done.

#### **5.4. CONCLUDING COMMENTS ON ENVIRONMENTAL PLANS FOR HOGSBACK**

Considering the size of the settlement and the area concerned, the number of environmental plans produced for Hogsback is remarkable. Two of the plans have involved intensive community discussion and participation. In-depth research is needed to validate the desktop studies undertaken on behalf of SAFCOL, especially of the vegetation and fauna. Most critical would be to establish the status of Red Data book species and the threats to those species. The impact of invasive alien vegetation on the habitats of these species should be monitored. In addition, it is essential that accurate socio-economic data are collected on the Hogsback community to enable sustainable planning to take place. These plans developed largely a result of community pressure for proper environmental planning of the Hogsback area and reflect the deep concern many residents feel about the environment and its future development, management and utilisation.

These plans provide a good basis for environmental planning in the future. They have contributed to a better understanding of the Hogsback environment and what is required to manage it in a sustainable way that takes human needs into account within the framework of the environment on which they depend. The way they are implemented will depend, largely, upon the management agencies responsible. Monitoring and evaluation of the implementation process should involve community stakeholder groups and environmental experts. The plans are being implemented by SAFCOL or the HLC. They seem to view community involvement as necessary during the planning process but not during the implementation phase. This has led to some resistance by the community, especially during the EIA scoping process for the village and water scheme at

Plaatjieskraal. The community needs to be involved in the implementation phase of these plans in order to obtain wider acceptance by the community. Communication with the community regarding the implementation of plans is essential.

**PHOTOGRAPHS OF THE HOGSBACK ENVIRONMENT AND DEVELOPMENTS**



**23. The new boardwalk at Hogsback with James Ndzelani, a WFW contractor and community leader with Christopher Coleman.**

**24. Typical roadside wattle invasion post clearing with no follow-up clearing. The wattle grew in 1 season.**



**25. The west face of Hogsback 1 after a scheduled burn of the macchia vegetation. The hiking trail runs to the top of the mountain.**

## CHAPTER SIX

### DISCUSSION OF FINDINGS: PROSPECTS FOR SUSTAINING WORKING FOR WATER AT HOGSBACK

*"These projects are important...." Peter Mswazi*

#### 6.1. WFW GOALS, OBJECTIVES AND APPROACH

The goals and benefits of the WFW programme in the Keiskamma catchment have been assessed internally by WFW as the following:

1. Enhance water producing capacity and appropriate catchment management
2. Clear invading alien plants and enhance ecological integrity.
3. Conservation of riparian zones and biodiversity.
4. Poverty relief through the creation of jobs. Training and empowerment of individuals.
5. Promote ecotourism development.
6. Promote secondary industries such as charcoal production.

It has been identified as a 'people driven programme'. Most respondents were of the opinion that WFW is a good project and the job creation aspect of the programme was specifically selected as the best result of the projects. The enhancement of the water producing capacity of the catchment was noted by a number of respondents. Some respondents were of the view that the WFW management has not managed the projects as well as they should have been and are skeptical of the long term success of the clearance unless this improves. Most of the goals have not yet been achieved. There is a need for objective external evaluations and monitoring of programme and project goals and objectives.

WFW should take the opportunity presented by the Hogsback projects to develop new protocols for dealing with problematic communities. If WFW can be made to work here then those lessons could be applied in other communities and areas where similar or comparative problems arise. WFW managers could learn how to assess potentially problematic communities and develop plans to address the problems that are likely to arise.

**The implications of the findings for the WFW project in Hogsback are discussed in more detail below.**

## **6.2. ENHANCING WATER YIELD AND APPROPRIATE CATCHMENT MANAGEMENT**

Enhancing water yield is one of the primary goals of the Keiskammahoek catchment. Unfortunately there has been no monitoring of increased water flow in the Tyumie or Keiskamma rivers since the WFW clearance programme began. There is anecdotal evidence from this study that the water flow has increased and that the quality of water has improved. Records of water flow are available from the Khayaletu weir monitoring station on the Tyumie River but they have not been accessed and analysed for this study. According to the Hogsback contractors and managers about 500 hectares of wattle and other invasive alien species have been cleared from the catchment. This suggests an increase of the order of 150 000 cubic metres of water per annum flowing out of the system.

Some of the areas that have been cleared have contributed to soil erosion with associated downstream water turbidity, especially after heavy rains. Water quality has been affected by the poor methods used, especially where wattle waste has been dumped into streams. The introduction of appropriate catchment management has not really been addressed by WFW as this requires long term planning and implementation rather than the ad hoc annual planning that has been undertaken for Hogsback. The SAFCOL conservation management plans address the issue of catchment management in a more meaningful way. This is because they have changed the plantings to conform with the Bosch model, have implemented a burning regime, have a commitment to rehabilitating the mountain wetlands at the sources of the rivers, and have established the national heritage sites on Hogsback and Tor Doone.

## **6.3. ACHIEVING CONTROL OF INVASIVE ALIEN SPECIES AND ENHANCING ECOLOGICAL INTEGRITY**

A primary goal of WFW is to achieve control of invasive alien plants. The degree to which this has been successful in the Hogsback area is limited as a number of areas have not been cleared or clearance has not been properly followed up. Contractors estimate that approximately 500 ha of invasive alien plants have been cleared in the Hogsback area but this has not been confirmed or measured accurately. The reasons for the limited success in achieving control of invasive alien species are discussed below.

### **6.3.1. Problems with the follow-up phase of the programme**

There have been problems with the follow-up programme. The WFW projects have been operating for three years in Hogsback, however, much of the wattle remains untouched, or has

returned very thickly in the areas where it was cleared. The period between initial clearing and the first follow-up has been too long in most cases. The optimal follow-up period was missed due to delays in funding and providing the necessary chemicals. In some cases 18 months or longer have passed between initial clearing and follow-up, in which time the wattle reaches about 3 metres in height. By the time the follow-up clearing is undertaken contractors are forced to slash the re-growth before they can apply the chemicals. This puts an extra strain on both labourers and contractors managing the project and means that follow-up is more expensive and more difficult than it needs to be.

The Hogsback project is in its third cycle at present. As the photographs 18 to 21 show, the clearing has not been completely successful. The percentage of re-growth on cleared areas is relatively high. This would appear to indicate that the goal of one initial clearing and two follow-up clearings has not achieved the results envisaged. The control phase 2, (follow-up control that removes seedling, root suckers and stump re-growth as outlined by Campbell (1993)) has not been successfully achieved. The tendency to leave one or two very large wattle trees as seed sources in a catchment also militates against successfully eliminating wattle. The existing seed store in the soil may be a problem for a much longer term. Phase 3, maintenance control, when low or reduced wattle populations are maintained with low annual costs, cannot be reached unless phase 2 is successfully achieved first.

### **6.3.2. Resource utilisation as a means of maintaining clearance**

The major use of the wattle resource is as fuelwood, either for heating or cooking. A number of households use it for both purposes as they do not have access to electricity. In addition, wattle is used for housing construction. It is questionable whether the future utilisation of wattle by the community will be sufficient to maintain clearance, although it may contribute somewhat. The lack of any secondary business development in the area is another factor that will limit the maintenance of clearing based on utilisation of the resource.

### **6.3.3. What could contribute to the failure of the invasive alien control programme?**

In looking to the future it is necessary to face the possibility that the invasive alien control programme could fail and to identify those factors that could contribute to its failure. The possibility exists that the WFW intervention may, in the longer term, worsen the problem of invasive alien plants rather than solve it. By identifying the problem areas in the existing programme, WFW will be able to develop strategic plans to address them and thus reduce the

potential for failure. It would require WFW to develop objective criteria for assessing the programme's many facets and to implement a regular monitoring and evaluation programme.

**TABLE 26: Factors that could contribute to failure of invasive alien plant control**

ECOLOGICAL FACTORS	SOCIO-ECONOMIC FACTORS
Characteristics of invasive alien plant species.	Reduced government funding.
Rapid re-colonisation of cleared areas.	Lack of capacity and funding at local government level to maintain clearance.
Inability of indigenous species to compete with invasive species	Reduced demand for fuelwood due to rural electrification programme.
Poorly planned and implemented rehabilitation of cleared areas.	Lack of sustained follow-up.
	Lack of economic incentives for maintainance.
	Lack of long term plans at catchment, district & regional level.
	Shortage of labour due to AIDS crisis.
Unforeseen consequences	Unforeseen consequences

The primary factors that may contribute to a failure of the programme are tabulated above into ecological and socio-economic factors. In addition to the above one should include unknown and unforeseen factors and consequences. No matter how well planned, implemented and managed, ecological interventions, especially on the scale of WFW, carry an inherent risk that they may fail. Modelling future scenarios for WFW or any other similar programme should also include an evaluation of the risk of failure and the primary factors that may contribute to that failure.

Wattle, like other invasive alien species, may increase in density in the cleared areas, if not properly rehabilitated or follow-up stops too soon. The rate at which wattle re-grows, the poor management of the follow-up clearance programme and the potential for further government cuts in funding to the national WFW programme indicate that wattle is a problem that is, probably, going to be around for many years to come. The inherent characteristics of invasive alien plants, outlined in chapter two, indicate that once established, such species will return rapidly once control measures discontinue.

Government has already indicated that WFW has an envisaged 20 year life span. Since its inception the project has been subject to ongoing budget cuts as was discussed in chapter two. The onus will fall once again on local government or landowners to maintain or undertake clearance. Unless there are strong economic benefits it would appear unlikely that this will be successful. The past history of invasive alien plant control indicates that this is a possible consequence. In addition, if the recommendations of the Demarcation Board are implemented in 2 000, which appears probable, then the HLC will disappear and administration of Hogsback will

be absorbed into a much larger municipal structure. The present funding situation will rapidly reverse as larger interest groupings, with little or no interest in Hogsback, will control the budget.

The other factor is the likely impact of AIDS on the physically and economically active population in the next decade. The possibility exists that there will not be a sufficiently large pool of physically able labour to undertake the heavy physical work required by the clearing programme.

#### **6.3.4. Enhancing ecological integrity**

Enhancing ecological integrity in Hogsback falls into the realms of dreams. WFW in Hogsback has not begun to even think about this as a possibility, never mind plan for it or attempt to implement strategies that will bring about enhanced ecological integrity. The evidence, such as it is, points towards an environment that has undergone major disturbance and is suffering from a complete lack of coherent, integrated management. It will take a considerable time before equilibrium is once more attained. Whether this will be through a monoculture, or a carefully managed rehabilitation programme ensuring maximum diversity, depends on how, or if, WFW plans, prioritises, makes available resources and implements the necessary steps to hasten a return to ecological integrity. The management should promote the re-establishment of robust and diverse ecological processes based on optimal ecological species diversity.

There is a need to look more critically at the long-term impacts of clearing invasive alien plants, taking into consideration economic, scientific, technical, management, social and political factors which provide constraints to the effective, sustainable implementation of such clearing programmes. A standardised monitoring procedure with objectively verifiable indicators for the full range of objectives at both national and district or catchment level needs to be developed. This should be easy to apply and minimise bias and subjective results.

#### **6.4. ACHIEVING BIODIVERSITY CONSERVATION**

The most severe constraints on achieving biodiversity conservation as a result of the invasive alien clearance programme are:

- The lack of long term strategies and plans for the land use and rehabilitation of the cleared areas;
- The lack of WFW participation in local conservation planning
- The shortage of suitable seeds and planting material, especially of indigenous plant species to undertake active rehabilitation;

- "Leave it to nature" recovery is unlikely to succeed: active selection management over a long period is likely to be required;
- The aggressive pioneer growth characteristics of invasive alien species enabling rapid recolonisation of cleared areas.
- The impact of clearance on fuelwood utilisation patterns by the local communities - increased use of indigenous forest timber resources.
- Impact of clearance on the riverine environment

#### **6.4.1. The lack of long term strategies and plans for the land use and rehabilitation of the cleared areas**

DEAT has stated that *"The Convention (United Nations Convention on Biological Diversity) requires that we should restore the health of areas and ecosystems which have been badly damaged," (Department of Environmental Affairs and Tourism, 1996)*. This includes the areas that are being cleared in the WFW programme. The WFW business plans for the Keiskammahoek catchment have no long term strategies and plans for the land use and rehabilitation of the cleared areas. This is a great weakness as it means that the future of these areas is either left to chance and nature, or is decided on an ad hoc basis.

There is a need to map each project area and to make strategic decisions about what is to happen to the areas that have been cleared, based on the topography, proximity to indigenous forests, riparian zones, original vegetation, soils and present state of each specific area. If such plans can be drawn up and implemented then the goal of achieving biodiversity conservation will be greatly enhanced, however, this requires high level scientific input and funding again becomes a major constraint. There is local expertise available, especially on fire management strategies, agricultural (pastures and range management; land use planning) and forestry management in these environments. Regional universities cannot undertake specific research without funds.

#### **6.4.2. The lack of WFW participation in local environmental planning**

The WFW programme should have been an important contributor to the environmental and development plans that have been developed in Hogsback over the past two years. Control of invasive alien plants has been identified by the HLC, the community and SAFCOL as an important objective for the environment and yet WFW did not participate in these processes. If it is to become a sustainable programme then it is important that WFW identifies these types of opportunities for long-term clearance programmes and then participates in the process. The

expertise that they have built up could positively impact on the way in which invasive alien control is conceived, planned and implemented by local communities.

#### **6.4.3. The shortage of suitable seeds and planting material, especially of indigenous plant species**

The WFW programme has several research projects underway by organisations such as the Plant Protection Research Institute to identify suitable indigenous grass and tree species for use in rehabilitating cleared areas. The problem experienced by the local manager has been accessing information regarding these, in the first instance, and then obtaining sufficient seed and planting material for replanting the cleared areas. WFW should identify research centres and universities in each province that could be involved in undertaking local research and providing seed and planting materials. It is questionable whether only indigenous species should be used in rehabilitation as there are many exotic grasses that could be used in first stage rehabilitation. Provision of planting material could also provide a viable small business opportunity for local communities and entrepreneurs. As mentioned above in 6.4.1. the major constraint limiting research is funding. The American prairie rehabilitation programme could be one model to investigate as it involves local communities and seed producers.

#### **6.4.4. "Leave it to nature" recovery is unlikely to succeed**

The objective of increased biodiversity will be met in the future if, instead of "Leaving it to nature", we rather "Give nature a helping hand". Through force of circumstance on the one hand and a vehement body of opinion on the other hand, the "leave it to nature" option is a commonly adopted strategy for rehabilitating cleared areas. "Leave it to nature" is cheap and easy - in the short term - and those are 3 reasons why it is so attractive to many people. In a situation where landscape modification has taken place on such a major scale it is virtually impossible to bring about the desired result of increased biodiversity without sophisticated long-term management. If the option of "Leave it to nature" is adopted by WFW then it should be understood that this will require the equivalent intimate environmental knowledge and experience of the original San hunter gatherer firestick farmers if it is to succeed. The people responsible for the long term management of the cleared areas will need to be involved in actively selecting the best ways to promote the return of a natural equilibrium.

#### **6.4.5. The aggressive pioneer growth characteristics of invasive alien species enabling rapid recolonisation of cleared areas**

This is linked to the previous point. The aggressive pioneer growth characteristics of invasive alien species enables rapid recolonisation of cleared areas, re-establishing a monoculture rather than a botanically diverse habitat. A number of respondents raised this problem in the light of their own experiences of trying to control Black Wattle on their own properties over decades. Maintenance of a diverse range of plants requires ongoing control that can come to naught within one or two years, if no control is applied. This is especially so if the area is adjacent to a stand of black wattle, or was previously infested with the plants that left a dormant seed load in the soil, or if one or two mature trees are left near the head of a catchment.

#### **6.4.6. The impact of clearance on fuelwood utilisation patterns by the local communities - increased use of indigenous forest timber resources**

Hogsback and the adjacent villages have been using 1100 to 1250 tons of wattle per annum for a number of years and yet the resource has hardly been touched. The WFW projects have made the first serious inroads into the quantities of wattle growing in Hogsback and its surrounds. WFW and the HLC's plan to eradicate wattle entirely from Hogsback within ten years, if successful, may have serious implications for the survival of the poorest households in the community. They will turn to alternative wood sources to supply the annual tonnage required for basic needs. The most accessible are the indigenous forest resources. The cultural custom of 'ukutheza', that is the collection of dead wood from the forest, will increase substantially. This will have a serious effect on the indigenous forests as the practice of ring barking trees in the forest is already wide spread. Increasing population will also increase the demand for timber. It may be possible to eradicate the wattle but in so doing create the conditions for the wholesale destruction of the indigenous forests in the Amatolas.

The present day demands for timber products using invasive alien species, in both the formal and informal sectors, needs to be assessed. The reduced demand for fuelwood, due to the rural electrification programme, implies a reduced demand for wattle. Assessment should be done in conjunction with assessing the potential impact on indigenous forests of exterminating or substantially reducing these alien resources.

After four years of WFW it is time to undertake more in-depth research into the degree of success that has been attained in eliminating different species of invasive alien plants subjected to clearing and the impact that it has had on the environment. Research on the impact of the

clearing of utilisable alien species on timber exploitation and utilisation patterns, especially in rural areas with indigenous forests, is also required.

#### **6.4.7. Impact of clearance on the riparian environment**

The impact of clearance of alien plant species from the riparian zone has had a number of consequences. Increased soil erosion, siltation of the riverine ecosystem, temperature and chemical changes in the water have had an overall negative impact. Aquatic species are under further threat as a result of the changes. The visual impact of the clearance programme has also had a negative effect on tourism as visitors are appalled at the "destruction of the forest". In an area with such high annual rainfall it is imperative that cleared areas are replanted as soon as possible after clearing and spraying otherwise severe erosion can take place within a single season.

### **6.5. EMPOWERING PEOPLE**

One of WFW goals is empowerment of the communities with which they work. This is implemented through creating jobs and training. The empowerment goal of the WFW programme has been achieved only in part in Hogsback.

#### **6.5.1. Empowerment through employment**

WFW offered direct employment to seven contractors and over 100 labourers in Hogsback. The majority of black respondents' were very positive about the job opportunities that WFW created and the impact that this had on their quality of life. This was especially true of the women. WFW met its gender quota on most contracts with at least 50% female labourers. On the downside, the contractors were all male and women were not given the opportunity. The refusal of one affirmative action contractor to employ any women as labourers, despite the WFW criteria, displayed a lack of commitment on the part of WFW to implementing this essential objective. In addition, these were short term, seasonal jobs that have had little real long-term empowerment for the people who benefitted. The affirmative action contractors either started from scratch or were already small-scale entrepreneurs with some capacity.

Women should be specifically targeted as potential contractors and encouraged to participate in training and empowerment programmes to enable them to compete at this level. Although the job creation aspect of WFW was seen as the most positive aspect of the projects the intermittent nature of employment offered no job security. It was more like an unexpected short-term

government grant. Individuals have been able to develop small-scale businesses based on the skills they learned through WFW but the economic downswing in Hogsback has reduced the number of potential private jobs available.

### **6.5.2. Empowerment through training**

The training aspect of WFW needs to be addressed. This has not been implemented in Hogsback outside of the individual efforts of contractors. The WFW project plan identifies this as an important part of the programme and yet, neither direct skills training nor life skills training has been offered by WFW. The WFW affirmative action policy led to any white contractors needing to have a black partner who would be trained and empowered. White contractors were only employed in the first 2 years of the projects while local black entrepreneurs developed the necessary skills. The development of the requisite entrepreneurial and management skills was hampered by this approach and there was a complete lack of training by WFW.

Several emergent contractors participated in the WFW projects but they were not able to benefit from proper entrepreneurial training as it was not offered in Hogsback. Neither was training offered by WFW to labourers. WFW put the onus of training on the contractors without ensuring that it takes place, or taking into account the extra costs to the contractors. Once the project is completed the labourers are once more unemployed and have received minimal training in most cases. It is recommended that the booklet 'Wattle Control' (*Campbell, 1993*) is translated into the 11 official languages and distributed to all contractors participating in WFW projects targeting these species, in conjunction with a short field-based training course in alien plant control.

If this goal is to be reached then either training must be outsourced to service providers from NGO's, the private sector and universities and technikons, or training staff need to be appointed at regional level to undertake properly planned training courses in each project area. The cost of training should be factored into the annual budget.

## **6.6. THE PROMOTION OF ECOTOURISM**

Although the promotion of ecotourism is seen as an important goal of the Keiskamma catchment business plan and, despite this being the major industry sector revenue earner for Hogsback, the WFW projects in Hogsback have not had a good impact on ecotourism in the area. There was not attempt to communicate with the public about the WFW projects or to incorporate ecotourism opportunities. Tourists have complained about the forests being chopped down, Hogsback being desecrated, and walking trails becoming dangerous obstacle courses. The ecotourist operators

were the respondents who particularly highlighted these problems but others mentioned comments made by their visitors. A guided trail of WFW projects and sites would have assisted both ecotourism and WFW.

The HLC and the Chamber of Business are of the view that the long term success of ecotourism in Hogsback depends upon controlling the invasive alien problem and restoring the ecological integrity of the area. The possibility exists for a mutually beneficial partnership between WFW and the Hogsback Local Council, the Hogsback Business Chamber and the Mountain Local Tourism Organisation. An ecotourism levy on all facilities or visitors could be implemented to fund WFW projects in the longer term, along the lines of the levy instituted by the KwaZulu Natal Nature Conservation Services.

## **6.7. THE PROMOTION OF SECONDARY INDUSTRIES**

The long-term goal of developing secondary businesses that would assist in making the clearance programme sustainable in the future has not received any real attention in Hogsback. The businesses that utilise wattle have either been in existence prior to the implementation of WFW or have arisen in an informal way and do not provide a regular income. Guy Preston, the national programme leader for WFW made the comment that *"We also need to be far more creative in taking advantage of the secondary industry possibilities of the cleared wood. But only those who have tried will know how difficult it is to make such programmes work."* (Preston, 1999)

A number of options and factors limiting business development in Hogsback were identified. The question of developing businesses to utilise the wattle resource depends very largely upon the continued availability of the resource. The primary businesses suggested by respondents were the production of fuelwood, building construction and fencing materials. These echo the results of the major uses of wattle by respondents. The quantities used at present are small and would require a small area of well managed wattle plantation to supply the annual basic requirements for fuelwood and construction timber. Given the HLC's commitment to eradicating wattle from the catchment in the next ten years this has, however, not been included in the Hogsback IDP as a potential Land Development Objective.

The development of small enterprises such as fuelwood, construction timber, fencing and tomato droppers, charcoal making, chipboard manufacture and compost and mulch production would appear to provide viable business options to utilise the wattle resources available in the Hogsback area. The limitations of transport distances and costs should be minimal as most of these enterprises would supply the local market. A feasibility study to investigate which of these

options is economically viable and at what scale, is required to provide greater certainty and guidance to would-be small entrepreneurs.

The viability of a number of the other suggestions is certainly questionable, particularly those that require large quantities of wattle. These would also require revision of the Hogsback I.D.P. and Land Development Objectives. It is also not feasible to plant the quantities required. Business people who have personal experience of the limiting factors of transport distance and costs for any businesses in Hogsback raised the constraint this puts on developing small or large-scale businesses. They are especially important when developing larger scale industrial use of wattle. Railing wattle products to Richards Bay was not a viable option as sufficient quantities of large wattle were not available and the railhead is too far.

A further constraint to such development is national and international competition for industrially produced wattle products. Most of the large factories using wattle products, such as bark and wood chips for producing tanning chemicals and paper, have access to large supplies of good wattle from producers that are geographically much nearer. It would make little economic sense for them to buy the small quantities that could be produced commercially in the Hogsback area at much higher prices. The stockpiles of tanning chemicals in the United States would mean that in the present economic climate of globalization and de-regulation such a tanning plant would have to compete with much cheaper imports and, therefore, would not be economically viable. Production of woodchips, tanning bark and paper pulp requires large industrial plantations to produce the quantities required to make such enterprises viable. It would seem that if industrial production of wattle in this area were feasible that one of the larger forestry companies or SAFCOL itself would have already been involved in developing such plantations. It could also be related to DWAF and DFID supported programme of forestry development centres as part of restructuring smaller plantations.

It would appear that it could be possible to develop small, medium and micro enterprises (SMME's) to utilise the available wattle resources but that large-scale utilisation is not realistically feasible. In order for such enterprises to be established WFW would need to involve organisations such as the Small Business Development Corporation (SBDC), the provincial department of Economics, Tourism and Environment, the Eastern Cape Development Corporation (ECDC) and economic development research centres from the different universities. They could promote, research, and conduct feasibility studies, training and skills development in creating an environment for establishing WFW related SMME's.

## **6.8. SUSTAINING THE PROCESS**

There are a number of questions surrounding how and if the WFW projects can be sustained in Hogsback given the discussions above. This section will address what needs to be addressed if WFW is to sustain the process in Hogsback.

### **6.8.1. Positive factors that will contribute towards sustaining the process**

The WFW programme has a store of goodwill amongst the local community. However, if this is to continue it is necessary to review the management of the programme, especially at local level, and implement changes where necessary. The findings on respondents' views on Working For Water would appear to indicate that the programme has a positive public image as most are convinced that it is a good programme or that it is doing a good or necessary job. The most positive views came from black respondents whose answers focus on the job opportunities created by WFW.

It needs to be borne in mind that many black families in Hogsback benefited from the job creation aspect of the programme, despite these being short term seasonal contract jobs. The black women who were interviewed were particularly positive about the benefits of the job creation aspect of WFW. Their comments highlighted the difference that this has made to their lives and those of their families. There is no doubt that the programme has had a very positive impact on the quality of life of those who were employed. The other main reason cited by black respondents was the perception that there has been an improvement in water quality and quantity as a result of WFW.

### **6.8.2. Management problems as a threat to sustaining the process**

The lack of hands-on management by the regional WFW staff was perceived as a problem. There has been insufficient involvement in planning, training, providing backup and support or supervision of individual contractors by these staff. The tendency to only become involved when there is a problem or crisis is perceived negatively by contractors and other members of the community. The development of sophisticated and onerous paperwork control mechanisms does not replace the need for field inspections, more frequent supervision of projects and meetings, especially in planning and evaluating local projects. Better planning and management of local projects would also obviate the recurring problem of projects being implemented at the last minute which makes for proper supervision and timely provision of the necessary chemicals and equipment impossible.

Some respondents were of the opinion that the WFW management does not take people's views into account. Unless they become confrontational, the management ignores their concerns. There is also a perception that the WFW management has been unwilling to address some of the larger societal problems that have impacted on the implementation of the projects and the establishment of the Steering Committee. The district manager is viewed as autocratic and biased. The issue concerns the perceived marginalisation of the community in the decision-making processes.

Contractors are generally concerned about the short-term nature of the contracts, the short notice given before they are implemented and the problems with training labourers to undertake the necessary tasks. It would appear that there is a need to look at the question of extending the length of contracts in order to obtain better buy-in by contractors. For contractors, longer contracts would mean a better economic return on their investment in equipment and skills training, as well as the opportunity to develop better management skills.

The interviews with black contractors did not reveal these views. However, numerous concerns have been aired by them in public meetings as well as in personal discussions with myself where I have been requested to give advice on problems they are finding with the way the programme is being run and managed in Hogsback. *(Note: This is partly a result of this study and known interest in WFW, my attendance at several crucial WFW meetings with the community and the fact that I am not a member of any of the local organisations and therefore, have no vested interests.)*

In addition, workers would also be able to develop more of a sense of ownership and pride in the projects. At present it is largely seen in terms of the financial rewards with people having little or no understanding of the real impacts of the work that they have done. The benefits of having fewer but longer contracts for contractors and labourers would mean better training, life skills, greater economic benefits and developing a sense of pride in their work and its contribution to a better quality of life and improved environment.

Relatively few white respondents have benefited directly from the WFW projects in Hogsback. They are more concerned with the methods employed by WFW in clearing the wattle, especially with follow-up clearing. Those who were not directly involved tend to admit to a degree of ignorance or confusion about what the project is doing. The most in-depth criticisms and comments on the projects came from white respondents who have been involved either as contractors or managers. Respondents were of the view that the WFW projects can be improved through better management and planning.

### **6.8.3. Community conflict as a threat to sustaining the process**

In chapter four the history of community conflict in Hogsback is covered in detail but the results from the questionnaire did not reflect concerns about the community conflict that has emerged around the project. Only two respondents raised the issue of community conflict. It is unclear how this has affected the successful implementation of the project or how the community conflict with the WFW project management staff threatens the future of the project. The findings do not reflect the dissatisfaction of the black residents and respondents with the management of WFW in Hogsback. The length of time it has taken to establish a Steering Committee with acceptable representation and the number of meetings that were held in order to do so are a better reflection of these concerns.

One of the contributing reasons for the increase in community conflict in relationship to WFW has been the introduction of previously unavailable resources such as job opportunities. De Wet has made the point that *“the introduction of resources into under-resourced communities causes conflict”* (De Wet, pers. com.). In Hogsback some of the conflict has revolved around the issue of who gets the opportunity of participating as contractors, who forms the labour pool and the length of the WFW contracts. Each of these relates to the question of who gets access to the resources. The general practice in Eastern Cape rural development is for the community as a whole to nominate beneficiaries of projects according to negotiated criteria. The conflict around WFW could be de-fused to some degree if similar processes were adopted by WFW and the local WFW Steering Committee.

### **6.8.4. Lack of public and community awareness and involvement as a threat to sustaining the process**

Despite many people being aware in a general way about WFW the results indicate that there is a need for greater communication at local level amongst the community, especially of the projects that are being undertaken in the area. Some publicity about the projects, the people employed and the areas targeted for clearing would increase awareness and understanding of what is being done in the local area. The WFW clearing has had a major visual impact in Hogsback, not all of it positive. Although views have been opened up, the clearing, especially if it is not done well, can leave an eyesore. Tourists have responded negatively to what they perceive as the forests being chopped down. The damaging effects on ecotourism have been the opposite of the WFW objective to promote ecotourism in the Amatolas. An information board and pamphlets explaining the WFW project and what is being done locally and the reasons for clearing invasive alien

plants, would assist in redressing these negative perceptions. WFW would also benefit from a review of the educational and information side of WFW projects at local level.

#### **6.9. SUSTAINING WFW PROJECTS IN HOGSBACK: DEALING WITH THE SOCIAL CONTEXT AND COMMUNITY CONFLICT**

The socio-economic history outlined in chapter 4 and the findings presented in chapter 5 provide evidence that sustaining the WFW projects in Hogsback will require a co-ordinated and integrated management approach aimed at addressing the underlying community conflicts. Unless this is undertaken the WFW projects will limp on amidst continuing discord and management crises until a point is reached when it no longer becomes viable to continue. It is recognised that it is not the role or function of WFW to address the conflicts between the community organisations and the HLC, other than where they directly affect the management and implementation of WFW. It will be necessary, however, to deal with those that impact on WFW in a judicious and impartial manner within a properly planned framework.

The community has strong views on its right to be involved in decision-making processes that impact on the environment in which they live and on which they depend and that impact on the community itself. The questions around access to and use of resources, especially land and economic opportunities, is especially crucial for the disadvantaged black community - the primary target group of WFW. The emphasis by black respondents' on the need for cleared areas to be used for housing, cropping and grazing reflects their historic lack of access to land and present poverty due to unemployment. The issues of who is to participate in WFW and the present composition of the WFW Steering Committee have not been resolved.

Part of the solution will be to give the community a greater say over how contracts are awarded, to whom and on what basis. Their sense that other communities down in the valley have the right to determine the contracts and their conditions awarded in Hogsback has had a negative impact on the relationships between Hogsback and its neighbours. All the stakeholders in the WFW projects in the affected area need to be brought together and a working protocol developed setting out the respective rights and responsibilities of the different communities.

In order to bring closure to the past events in WFW it is advisable to review the past five years of the project, taking time to unpack the errors that were made by all parties. A post project meeting with all participants should be held to report back on the project, its achievements and problems. This will be time-consuming and require expert facilitation and mediation. It will, however, offer the black community an opportunity to have their grievances addressed and feel that they are

being heard, instead of brushed aside. The feelings of disempowerment and exclusion that presently colour their participation need to be replaced with a sense of empowerment and inclusion in the decision-making processes.

Another way in which the problems can be addressed is by holding training and awareness courses. These should explain to all participants exactly how WFW operates and role and functions of the Steering Committee, the contractors, the labourers, the WFW district manager and the WFW regional manager. Procedures to be followed in the event of a problem with the projects need to be explained and clarified. In addition, WFW should explain exactly how funding is allocated to different areas, communities and projects. The lack of a properly planned and implemented training strategy for the projects in this area is another problem that should be addressed. This is covered in greater detail in 6.5.2. above. Many of the problems experienced are a direct result of inadequate communication between WFW and Hogsback residents.

## **6.10. RECOMMENDATIONS FOR WORKING FOR WATER**

### **6.10.1. Water security**

Record rainfall and streamflow for each catchment from prior to implementation of projects.

Monitor micro-catchments with assistance from local universities.

Provide simple water quality testing kits for contractors to use. Teach them how to use them.

Make sure they use them and provide WFW with the data obtained.

Keep track of what else is happening in the catchment, especially forestry plantation activities, road building and major developments such as dams and residential developments.

### **6.10.2. Control of invasive aliens**

Undertake follow-up clearing on schedule.

Provide the necessary funding, chemicals and materials on time and well before the end of the financial year.

Make plans for handing over maintenance of control to other agencies now. Think strategically.

Develop partnerships.

Map targeted catchments for invasive aliens.

Plan individual catchments properly with first hand, on the ground information. Make strategic decisions not ad hoc decisions.

Develop software that assists with proper planning of catchment clearance and train people to use it.

### **6.10.3. Conservation of biodiversity**

Develop simple monitoring procedures to track changes in biodiversity. Train people to use them.  
Make agreements with tertiary institutions to use post-graduate students to obtain in-depth information on biodiversity changes.  
Rehabilitate cleared areas using indigenous plant species.  
Create optimum conditions for indigenous vegetation to return.

### **6.10.4. Empowering people: Employment/job creation**

Extend the length of contracts.  
Allow contractors to participate more than once.  
Build a skilled labour force.  
Encourage community structures to get involved in decision-making and planning local projects.  
Offer suitable skills training packages to all contractors and labourers.

### **6.10.5. Promotion of ecotourism and productive use of land**

Promote public awareness of the goals, reasons and achievements of local projects in ecotourism destination areas.  
Link into ecotourism development opportunities and organisations.  
Address the visual impact of clearing with proper clearing methods and follow-up.  
Ensure proper stacking of cleared timber, controlled burning of waste and fire breaks.  
Rehabilitate cleared areas as quickly as possible to prevent soil erosion due to flash flooding after heavy rainfall.  
Plan how the cleared areas can be used productively and sustainably.  
Ensure mixed land-use of cleared areas.  
Ensure appropriate land-use of cleared areas and rehabilitate for productive use.  
Use local I.D.P. and L.D.O. plans in planning the productive use of the cleared areas.  
Involve LandCare, departments of agriculture and environmental affairs, as well as local tertiary institutions in planning the productive use of cleared areas.

### **6.10.6. Creation of secondary industries**

Shortlist and undertake feasibility studies of the best option secondary industries.  
Involve business development organisations in promoting secondary industries.  
Offer incentives to small-scale entrepreneurs for starting up secondary industries.

#### 6.10.8. Communities, communication and partnerships

Build good relationships with local communities.

Communicate the reasons, plans and successes of local projects in the local area.

Build partnerships with local government structures.

Build partnerships with regional government structures.

Build partnerships with provincial government structures.

Develop opportunities for individuals and local organisations to participate in WFW on a volunteer basis.

Take time to unpack difficult community dynamics and find solutions to their problems.

Make use of local non-government organisations and agencies with rural development expertise to build staff capacity to deal with community and rural development problems.

Make use of local and traditional expertise and knowledge.

#### 6.11. CONCLUSION - CHALLENGES FOR WFW

The WFW programme has challenges to face if it is to fulfil the goals and objectives it has set itself. This study puts the following to WFW:

- **What is to happen to the land?** Long-term strategic plans must be developed and implemented for each catchment and project area. These must address each of the goals the programme has set for itself at both national and regional level.
- **What are the costs of WFW?** Resource utilisation, biodiversity, erosion and indirect effects on indigenous forests are some of the areas that need to be assessed.
- **How to deal with difficult community dynamics?** Co-ordinated plans to improve community relations are required.
- **Hands on management versus paper mountains?** Is the system becoming too complex, especially for emergent contractors? Can it be simplified? There is a need for more visible management with regular visits by WFW managers.
- **How can secondary businesses get off the ground?** Easy to suggest and easy to fail. How can it be done? Who should do it? What should be done - options and viability? Making WFW economically viable/sustainable - is it a realistic option? The business plan should include plans for secondary businesses that are drawn up using expertise from SMME

practitioners. The local community should be involved in the planning process. The plans should then be implemented.

- **Sharing the load - How can other agencies become involved?** A strategic plan identifying all the major roleplayers and their respective roles in implementing WFW should be developed. Provincial government departments, local government, universities, environmental organisations and community organisations should be included in such a plan. Such a plan should address how WFW will contribute to other processes thus keeping invasive alien clearance on agendas, plans and strategies for the future.

**This study provides pointers to solutions and answers to these challenges.**

## REFERENCES

- Acocks J.P.H., Ed, Leistner O.A., 1953, *Veld types of South Africa*, 3<sup>rd</sup> ed., Memoirs of the Botanical Survey of South Africa, No. 57, Botanical Research Institute, Department of Agriculture and Water Supply, Pretoria, South Africa.
- Adams R. & Simmons D., 1996, *The Impact of Fire Intensity on Litter Loads and Understorey Floristics in an Urban Fringe Dry Sclerophyll Forest and Implications for Management, Fire And Biodiversity: The Effects and Effectiveness of Fire Management*, Biodiversity Series, Paper No.8, [http://www.environment.gov.au/life/general\\_info/biodivser\\_8/paper3.html](http://www.environment.gov.au/life/general_info/biodivser_8/paper3.html)
- African National Congress, 1994, *The Reconstruction and Development Programme: A policy framework*, Umanyano Publications, Johannesburg, South Africa.
- A.R.D.R.I./Rhodes University, 1981, *Socio-economic Survey of the Amatola Basin (Ciskei)*, University of Fort Hare, Alice, South Africa.
- Baines T., 1988, *Thomas Baines Travels in Southern Africa*, Brentwood Press, Johannesburg, South Africa.
- Barrell H., 1999, *Manuel postpones the pain*, Mail & Guardian, Johannesburg, South Africa.
- Bethlehem L., 1999, *New law sorts the wood from the trees*, Mail & Guardian, Johannesburg, South Africa.
- Blue Book of Native Affairs*, 1874, Government of the Cape Colony, Cape Town.
- Blue Book of Native Affairs*, 1876, Government of the Cape Colony, Cape Town.
- Bothma J. du P. & Glavovic P.D., 1994, Ed's. Fuggle R.F. & Rabie M.A., 1994, *Wild Animals, Environmental Management in South Africa*, Juta & Co, Ltd., Johannesburg, South Africa.
- Brownlee C.P, 1977, *Reminiscences of Kafir Life and History, and other papers*, University of Natal, Killie Campbell Africana Library Reprint Series, Durban, South Africa.
- Bruce I.R., 1999, *Hogwash on Hogsback*, Daily Dispatch, East London, South Africa.
- Bundy, C., 1988, *The Rise and Fall of the South African Peasantry*, David Philip, publisher, (Pty) Ltd., Claremont, South Africa.
- Burger P.J., 1983, *The Amatola Basin Rural Development Project: Interim Report: Report No 5/83*, Agricultural and Rural Development Research Institute, University of Fort Hare, Alice, 1983.
- Campbell P., 1993, *Wattle Control*, Plant Protection Research Institute, Pretoria, South Africa.
- Cavan & Klapwijk, 1997, *Hogsback: An Environmental Guideline Plan*, Johannesburg, South Africa.
- Coetzee J.K. and Graaff J., 1996, *Reconstruction, Development and People*, International Thomson Publishing Southern Africa (Pty) Ltd, Halfway House, South Africa.
- Cohen L. & Manion L, 1984, *Research Methods in Education*, 2<sup>nd</sup> ed., Croom Helm Ltd, Beckenham, Kent, U.K.

Coleman J.A., 1992, *Report on the Hogsback area with a view to its being declared a nature reserve*, The Hogsback Community Association, Hogsback, South Africa.

Coleman M., 1995, *When Did It Happen? Soil Erosion In The Tyume Catchment Of The Eastern Cape Province*, Desertification Workshop proceedings (South Africa).

Coleman M., 1999, *The Hogsback Tourist Industry: A survey of tourism-related businesses in Hogsback*, The Hogsback Chamber of Business, Hogsback, South Africa.

Cooper K.H., 1985, *The Conservation Status of Indigenous Forests in Transvaal, Natal and O.F.S., South Africa*, Wildlife Society of S.A., Durban, South Africa.

Cornwallis Harris W., Capt., 1986, *Portraits of the Game and Wild Animals of Southern Africa*, Galago Publishing (Pty) Ltd, Alberton, RSA.

Cowling R.M., Richardson D.M. & Mustart P.J., Ed's, Cowling R.M., in Richardson R.M. & Pierce S.M., 1997, *Vegetation of South Africa*, Cambridge University Press, Cambridge, U.K.

Cowling R.D. & Hilton Taylor C., Ed's. Cowling R.M., Richardson R.M. & Pierce S.M., 1997, *Phytogeography, flora and endemism, in Vegetation of South Africa*, Cambridge University Press, Cambridge, U.K.

Cowling R.M., Richardson D.M. & Pierce S.M., Ed's, 1997, *Vegetation of South Africa*, Cambridge University Press, Cambridge, U.K.

Critchley W., Versveld D. & Mollel N., 1998, *Sustainable land management: some signposts for South Africa*, The University of the North Press, Sovenga, South Africa.

Daily Dispatch, 1999, *Report on Environmental Affairs and the Eastern Cape Environmental Board*, Daily Dispatch, East London, South Africa.

Darrow, W.K., 1976, *Forestry in the Eastern Cape Border Region: A History of Forest Destruction and Reforestation in the Amatole Mountains 1866-1910*, Bulletin 51, Dept. of Forestry, Pretoria.

De Vasselot de R., 1885, *Introduction of Systematic Treatment of Crown Forests in the Cape Colony*, Cape Colony Government, Cape Town, South Africa.

Department of Environmental Affairs & Tourism, 1996, *Towards a Policy for the Conservation and Sustainable Use of South Africa's Biological Diversity*, Draft Discussion Document, The Biodiversity Secretariat, Pretoria, South Africa.

Department of Environmental Affairs & Tourism, 1998, *National Environmental Management Act No. 107 of 1998*, DEAT, Cape Town.

Department of Environmental Affairs, 1989, *The Environmental Conservation Act of 1989 (Act 73 of 1989)*, Government Printer, Pretoria, South Africa

Department of Land Affairs, 1998-1999, *Internal memoranda regarding gender and procedures to establish legal entities to act on behalf of beneficiary communities*, DLA, Pretoria, South Africa.

Department of Land Affairs, 1999, *Department of Land Affairs Annual Report 1998-1999*, Department of Land Affairs, Pretoria, South Africa.

Department of Native Affairs, 1936, *Native Trust & Land Act No 18/1936*, Government Printer, Pretoria, South Africa.

Department of Water Affairs & Forestry, 1988, *National Water Act No. 36 of 1988*, DWAF, Pretoria, South Africa.

Department of Water Affairs & Forestry, 1997, *National Forest Action Plan*, DWAF, Pretoria, South Africa.

Department of Water Affairs & Forestry, 1997, *Business Plan: Working For Water: Keiskamma Catchment*, DWAF, King William's Town, South Africa.

Department of Water Affairs & Forestry, 1998, *Re-Structuring of the State Forests*, DWAF, Pretoria, South Africa.

Department of Water Affairs & Forestry, 1988, *National Water Act No. 36 of 1988*, DWAF, Pretoria, South Africa

Department of Water Affairs & Forestry, 1998, *National Forests Act No. 84 of 1998*, DWAF, Pretoria, South Africa.

Department of Water Affairs & Forestry, 1998, *National Veld & Forest Fires Act 101*, DWAF, Pretoria, South Africa.

Department of Water Affairs & Forestry, 1999, *Sustainable Forest Development in South Africa: Policy of the Government of National Unity, White Paper*, Ministry of Water Affairs & Forestry, Pretoria, South Africa.

Division of Water, Environment and Forest Technology, Undated, *Riparian zone management in afforested areas: A guide to best practices in the afforested areas of South Africa*, CSIR, Pretoria, South Africa.

Dooley D., 1995, *Social Research Methods*, 3<sup>rd</sup> ed., Prentice Hall, Englewood Cliffs, New Jersey, USA.

ECN, 1998, *Angry Hogsback residents to stage march*, Daily Dispatch, East London, South Africa.

ECN, 1999, *Hogsback plans to lure tourists*, Daily Dispatch, East London, South Africa.

Ecumenical Service for Socio-Economic Transformation, 1996, *The Government's Macroeconomic Strategy: Growth, Employment and Redistribution: Background Perspective*, Ecumenical Service for Socio-Economic Transformation, Johannesburg, South Africa.

Ellery W.N., Scholes R.J. & Mentis M.T., 1991, *An initial approach to predicting the sensitivity of the South African grassland biome to climate change*, South African Journal of Science, 87.

Environmentek, 1999, *Forestry Programmes of Environmentek*, CSIR, [www.csir.co.za/world/plsql/DIV PROJECT?](http://www.csir.co.za/world/plsql/DIV_PROJECT?)

Erwin A., 1996, *Building the new South Africa's economy*, The African Communist 145 (Third quarter).

Forsyth C.G., Versfeld D.B., Chapman R.A. & Fowles B.K., 1997, *The Hydrological Implications of Afforestation in the North-Eastern Cape: A Survey of Resources and Assessment of the Impacts of Land-use Change*, WRC Report No 511/97, Report to the Water Research Commission by the Division of Water, Environment and Forestry Technology, Water Research Commission, CSIR, Stellenbosch, South Africa.

Fuggle R.F. & Rabie M.A., 1994, *Environmental Management in South Africa*, Juta & Co, Ltd., Johannesburg, South Africa.

Geldenhys C.J., le Roux P.J. & Cooper K.H., Ed's, MacDonald I.A.W., Kruger F.J. & Ferrar A.A., 1986, *The ecology and management of biological invasions in Southern Africa*, Oxford University Press, Oxford, U.K.

Germishuizen C.W., 1999, *Report twists truth and slurs 'process'*, Daily Dispatch, East London, South Africa.

Goodland R., 1995, *The Concept of Environmental Sustainability*, The World Bank: Annual Reviews, Washington DC.

Green B., 1885, *Annual Report of the Stock Inspector, Victoria East*, The Blue Book of Native Affairs, Government of the Cape Colony, Cape Town, South Africa.

Grenfell A.M., 1976, *Black Wattle (Acacia mearnsii) and Silver Wattle (Acacia dealbata)*, Agricultural Extension Service, Dohne Research Institute, Stutterheim, South Africa.

*Government Notice No. 3/1853*, 1853, Government of the Cape Colony, Cape Town, South Africa.

Haigh H., 1987, Ed's, Von Gadow, K, van der Zel D.W., van Laar A., Schonau A.P.G., Kassier H.W., Warkotsch P.W., Vermaas H.F., Owen D.L. & Jordaan J.V., *Forestry Handbook: Bosbou Handboek*, Southern African Institute of Forestry, Pretoria, South Africa.

Hall A.V., de Winter M., de Winter B. & van Oosterhout S.A.M., 1980, *Threatened plants of Southern Africa*, South African Natural Science Programme Report No 45, CSIR, Pretoria, South Africa.

Hartney W., Date unknown, *Movement in the Pirie Forest*, Kaffrarian News, King Williams Town, South Africa.

Heideman L., 1998, *Quagmire of integrated development planning*, Daily Dispatch, East London, South Africa.

Hill Kaplan Scott & Partners assisted by R.F. Loxton Hunting & Assoc., 1989, *Keiskamma River Basin Study: Vol. 2: Data Report*, HKS & Partners, Cape Town, RSA.

HLC, 1996, *The Dustman's Report*, Hogsback Local Council, Hogsback, South Africa.

Hogsback Residents Association, 1978-1980, *Various unpublished letters in the records of the Association*, Hogsback, South Africa.

Hollands G. & Ansell G., (eds), 1998, *Winds of Small Change: Civil Society Interaction with the African State: Proceedings of multilateral workshops on good governance, sustainable development and democracy*, Afesis Corplan on behalf of the Austrian North-South Institute and Austrian Development Co-operation, Johannesburg, South Africa.

Holt, B., 1974, *They Came Our Way: A Miscellany of Historical Tales and Sketches of the old Cape Colony*, Howard Timmins, Cape Town, RSA.

Hosking S.G., du Preez M., 1999, *A Cost-Benefit Analysis of Removing Alien Trees in the Tsitsikamma Mountain Catchment*, South African Journal of Science, Vol. 95, Issue 10.

HRA, 1998, *Hogsback Newsletter of the Hogsback Ratepayers Association*, Hogsback, South Africa.

- HRA, 1978-1980, *Unpublished correspondence of the Hogsback Residents Association*, Hogsback, South Africa.
- Hunt K.S., 1974, *Sir Lowry Cole: Governor of Mauritius 1823-1828, Governor of the Cape of Good Hope 1828-1833: A Study in Colonial Administration*, Butterworths, Durban, South Africa.
- Jelinek I. & Breen C.M., Ingenieurburo fur Landentwicklung & Institute of Natural Resources, 1997, *Working For Water Programme Evaluation Report*, EU & DWAF, Pietermaritzburg, South Africa.
- James, L., 1994, *The Rise and Fall of the British Empire*, Little, Brown and Company, London.
- Kantor J., 1999, *Hogsback Local Council - Threats of a land invasion*, Hogsback Local Council, Hogsback, South Africa.
- Kirkman K. & Wilson A., 1999, *Conservation Management Plan: Hogsback Plantation*, SAFCOL, Humansdorp, South Africa.
- Kirkman K. & Wilson A., 1999, *Conservation Management Plan: Tor Doone National Heritage Site*, SAFCOL, Humansdorp, South Africa.
- Kirkman K., 1999, *Conservation Management Plan: Hogsback National Heritage Site*, SAFCOL, Humansdorp, South Africa.
- L.G.C., Date unknown, *Hogsback - a guide*, Hogsback, South Africa.
- Loewe M., 1999, *Hogsback tour centre prompts road repairs*, Daily Dispatch, East London, South Africa.
- Loewe M., 1999, *SA's only DP mayor puts Hogsback on track*, Daily Dispatch, East London, South Africa.
- MacDonald I.A.W., Kruger F.J. & Ferrar A.A., 1986, *The ecology and management of biological invasions in Southern Africa*, Oxford University Press, Oxford, U.K.
- Mail & Guardian, 1999, *Budgeting for stability or stagnation*, Mail & Guardian, Johannesburg, South Africa.
- Mail & Guardian, 1999, *RDP bears the brunt of cuts*, Mail & Guardian, Johannesburg, South Africa.
- Mann P.H., 1985, *Methods of Social Investigation*, Basil Blackwood Inc., Oxford, UK.
- Manuel T., 1998, *Budget 98 speech*, <http://wn.apc.org/opengov/budget.htm>.
- Manuel T., 1998, *Budget 99 speech*, <http://wn.apc.org/opengov/budget.htm>.
- Marais, G., 1994, *Hogsback Plantation: Environmental Management Plan (Phase One)*, SAFCOL, Pretoria, South Africa.
- Midgley J.J., Cowling R.M., Seydack A.H.W. & van Wyk G.F., Eds. Cowling R.M., Richardson D.M. & Pierce S.M., *Forest, Vegetation of South Africa*, Cambridge University Press, Cambridge, U.K.
- Milton, J, 1983, *The Edges of War: A history of frontier wars - 1702 - 1878*, Juta, Cape Town, South Africa

Mitchell P., 1988, *Human Adaptation in Southern Africa During the LGM*, in *Prehistoric Cultures and Environments in the Late Quaternary of Africa*, Eds. Bower J. and Lubell D., *Cambridge Monographs in African Archaeology* 26, Cambridge University Press, Cambridge, United Kingdom.

Mostert, N., 1992, *Frontiers: The Epic of South Africa's Creation and the Tragedy of the Xhosa People*, Alfred A. Knopf, New York.

Munslow B, Katerere T., Ferf A. & O'Keefe P., 1988, *The Fuelwood Trap: A Study of the SADCC Region*, Earthscan Publications Ltd, London.

O'Connor T.G. & Bredenkamp G.J., Ed's, Cowling R.M., Richardson D.M. & Pierce S.M., 1997, *Grassland*, in *Vegetation of South Africa*, Cambridge University Press, Cambridge, U.K.

Odum H.T., 1971, *Environment, Power, and Society*, Wiley-InterScience, New York, USA

Olkers & Hill, 1999, *Biological Control of Weeds in South Africa (1990 -1998)*, African Entomology memoir No. 1.

O'Keefe J.H., Uys M., Bruton M.N, Ed's. Fuggle R.F. & Rabie M.A., 1994, *Environmental Management in South Africa*, Juta & Co, Ltd., Johannesburg, South Africa.

Owen O.S., 1985, *Natural Resource Conservation: An ecological approach 4<sup>th</sup> ed.*, Macmillan Publishing Company, New York.

Peires J.B., 1981, *The House of Phalo: A history of the Xhosa people in the days of their independence*, Ravan Press, Johannesburg, South Africa.

Peires J.B., 1989, *The Dead Will Arise: Nongqawuse and the Great Xhosa Cattle-Killing Movement of 1856-7*, Ravan Press, Johannesburg, South Africa.

Preston G., 1999, *Opening the tap of SA's potential: Right of Reply*, Mail & Guardian, Johannesburg, South Africa.

Raasch S., 1998, *Hogsback marches for better policing*, Daily Dispatch, East London, South Africa.

Report to Parliament, 1885, *Report of the Superintendent of Woods and Forest for the Cape Colony*, Blue Book for Native Affairs, Cape Town, South Africa.

Richardson D.M., MacDonald I.A.W., Hoffman J.H. & Henderson L., Ed's, Cowling R.M., Richardson D.M. & Pierce S.M., 1997, *Vegetation of South Africa*, Cambridge University Press, Cambridge, U.K.

SAFCOL, 1997, *Environmental Report: SAFCOL 1997: Sustainable and holistic forestry management*, South African Forestry Company Limited, Silverton, South Africa.

Samler Brown, A. & Gordon Brown, G., 1930, *The South and East African Year Book and Guide for 1930 with Atlas, 36th Issue*, Sampson Low, Marston & Co. Ltd., London.

S.A. Forest Owners Association, Undated, *Forestry Fact File*, SAFOA, Johannesburg, South Africa.

Samler Brown, A. & Gordon Brown, G., 1930, *The South and East African Year Book and Guide for 1930 with Atlas, 36th Issue*, Sampson Low, Marston & Co. Ltd., London.

Schonau A.P.G. & Grey D.C., Ed's, Von Gadow, K, van der Zel D.W., van Laar A., Schonau A.P.G., Kassier H.W., Warkotsch P.W., Vermaas H.F., Owen D.L. & Jordaan J.V., 1987, *Forestry Handbook: Bosbou Handboek*, Southern African Institute of Forestry, Pretoria, South Africa.

Seagrief S.C., 1965, *Establishment of Podocarpus latifolius in Blackwood plantations at the Hogsback*, South Africa Journal of Science 61, Johannesburg, South Africa.

Sim T.R., 1907, *The Forests and Forest Flora of the Cape of Good Hope*, Government of the Cape of Good Hope, Taylor & Henderson, Aberdeen, Scotland.

Simkins C.E.W., 1983, *Four essays on the past, present and possible future of the distribution of the black population of South Africa*, Saldru, Cape Town, South Africa.

Slater F.C., 1954, *Settler's Heritage*, The Lovedale Press, Alice, South Africa.

*The Constitution of the Republic of South Africa*, 1996, South African Government, Government Printer, Pretoria, South Africa.

South African Forest Owners Association, 1998, *Understanding our Forestry Heritage*, SAFOA, Johannesburg, South Africa.

South African Forest Owners Association, Undated, *Information Pamphlet: Understanding Our Forestry Heritage*, Rainbird Publishers, Cape Town, South Africa.

South African Government, 1913, *Natives Land Act*, Government Printer, Pretoria, South Africa.

Stirton C.H., 1987, *Plant Invaders - Beautiful, But Dangerous, 3<sup>rd</sup> ed., 5<sup>th</sup> impression*, Department of Nature and Environmental Conservation of the Cape Provincial Administration, Cape Town.

Stretch C.L., Le Cordeur B.A. Ed., 1988, *The Journal of Charles Lennox Stretch*, Maskew Miller Longman (Pty) Ltd, Cape Town, South Africa.

Stubbings J.A. & Schonau A.P.G., Ed's, Von Gadow, K, van der Zel D.W., et al, 1987, *Forestry Handbook: Bosbou Handboek*, Southern African Institute of Forestry, Pretoria, South Africa.

The Division of Water, Environment and Forest Technology, undated, *Riparian zone management in afforested areas: A Guide to Best Practices in the Afforested Areas of South Africa*, CSIR, & DWAF, Pretoria, South Africa.

The Working For Water Communication Project, 1999, *Information Pamphlet: The Department of Land Affairs and Working For Water Partnership*, DLA/WFW, Pretoria, South Africa.

Trollope W.S.W., 1973, *Fire as a method of eradicating macchia (fynbos) vegetation in the Amatola mountains of the eastern Cape*, Proceedings of the Grassland Society of Southern Africa 8, South Africa.

UDHAR, 1999, UDHAR Notice of proposed land invasion in Hogsback, Hogsback, South Africa.

Uys J., 1983, *Rainfall Variation at Fort Hare: 1970-1982*, Master of Arts, University of Fort Hare, Alice, South Africa.

Van Wilgen B.W. & Little P.R., 1997, *The Sustainable Development of Water Resources: History, Financial Costs, and Benefits of Alien Plant Control Programmes*, South African Journal of Science, Sept. 1997, Vol. 93, Issue 9, Pretoria, South Africa.

Vermeulen J.B., Dreyer M., Grobler H. & van Zyl K., 1996, *A guide to the use of herbicides*, 15<sup>th</sup> ed., National Department of Agriculture, Pretoria, South Africa.

Von Gadow, K., van der Zel D.W., van Laar A., Schonau A.P.G., Kassier H.W., Warkotsch P.W., Vermaas H.F., Owen D.L. & Jordaan J.V., 1987, *Forestry Handbook: Bosbou Handboek*, Southern African Institute of Forestry, Pretoria, South Africa.

Walker D.R., Baxter R.M., et al, 1999, *Draft Scoping Report: Proposal for the Construction of a Dam at Plaatjieskraal, Hogsback*, Environmental Studies Group, King William's Town, South Africa.

Wanklin & Associates, 1998, *Hogsback: Spatial Development and Infrastructure Proposals: A Contribution Towards the Preparation of an Integrated Development Plan*, East London, South Africa.

Warr T., 1995, *Land redistribution in The Hogsback area, Eastern Cape, South Africa: an evaluation of the role of GIS in the management of land redistribution*, Masters disxsertation.

Wells M.J., Balsinhas A.A., Joff H., Engelbrecht V.M., Harding G. & Stirton C.H., 1986, *A Catalogue of the Problem Plants in Southern Africa*, Memoirs of Botanical Surveys of South Africa, Botanical Research Institute, Department of Agriculture & Water Supply, Pretoria, R.S.A.

Wilson F., Ed's, Ramphela M. & McDowell C., 1991, *Restoring the Land: Environment and Change in Post-Apartheid South Africa*, PANOS, London.

Wilson M., 1982, Cited in MacDonald I.A.W., Kruger F.J. & Ferrar A.A., 1986, *The ecology and management of biological invasions in Southern Africa*, Oxford University Press, Oxford, U.K.

Wilson, M. & Thompson, I., Ed's, 1985, *A History of South Africa to 1870*, David Philip, Cape Town, RSA.

Wilson P.A.S., 1987, Ed's, Von Gadow K., van der Zel D.W., et al, 1987, *Invader Plants in Forestry Conservation Areas*, *Forestry Handbook: Bosbou Handboek*, Southern African Institute of Forestry, Pretoria, South Africa.

Working For Water, 1997, *The Working For Water Programme: 1996/97 Annual Report*, The Department of Water Affairs and Forestry, Cape Town.

Working For Water, 1999, *The Environmental Impacts of Invading Alien Plants in South Africa*, Working For Water, Pretoria, South Africa.

Yeld J., 1997, *Caring For The Earth: South Africa - A guide to sustainable living*, WWF South Africa in partnership with the World Conservation Union (IUCN), United Nations Environment Programme (UNEP) and The Gold Fields Foundation, Stellenbosch, South Africa.