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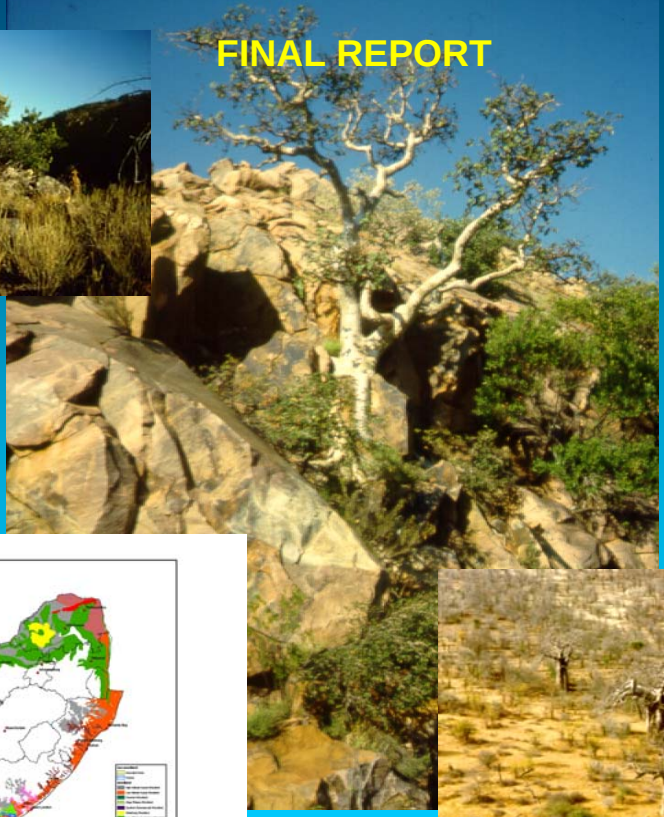
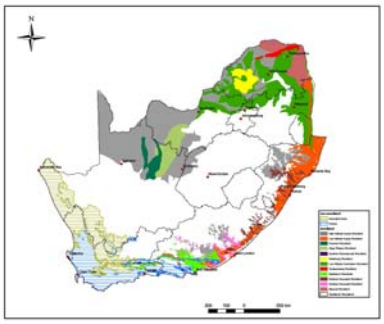
Baseline Study on Woodlands in South Africa

FINAL REPORT





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LIST OF ACRONYMS USED IN THE REPORT

CARA	Conservation of Agricultural Resources Act
CBNRM	Community-based natural resource management
CFSM	Committee for Sustainable Forest Management
DEAT	Department of Environment Affairs and Tourism
DWAF	Department of Water Affairs and Forestry
ECA	Environmental Conservation Act
IUCN	International Union for Nature Conservation
NBI	National Botanical Institute
NEMA	National Environmental Management Act
NFA	National Forests Act
NFAC	National Forestry Advisory Council
NLC	National Land Cover
NWA	National Water Act
PWD	Department of Public Works
SANDF	South African National Defence Force
SANPARKS	South African National Parks

1. Introduction

The woodland resource in South Africa covers close to one third of the total land area. Commonly referenced classification systems identify a great number of woodland types, attributable to the diversity and geographical range of this biome. Furthermore, land covered by woodland is owned and managed by a diverse range of role players. The current status of this resource is not well documented and the roles of different service providers in government and non-government sectors are poorly understood.

In the past this resource was not really recognised as a forestry responsibility except where some woodland occurred on state forest land. However, the policy of the new democratic government as captured in the White Paper on Sustainable Forest Development in South Africa included woodlands within the scope of forest policy. The National Forestry Action Programme of 1997 identified woodland management as a key area of operation for Forestry. The National Forests Act of 1998 (NFA) also includes woodland in its definition of forests and mandates monitoring and reporting on the state of the forests (woodland). This new legislation aims, while promoting sustainable utilisation, to protect woodlands on private, communal and state forest land.

The NFA provides a broad definition of woodlands, but this is not nationally recognised and for the purposes of a co-ordinated response to woodland management and conservation planning and implementation, a nationally agreed definition is required. In order to obtain an acceptable working definition, consideration should be given to determining an agreed national typology for woodlands. A number of typology studies have already been undertaken – some funded or co-funded by the Department of Water Affairs and Forestry (DWAF) – to determine the nature and extent of the woodland resource in the country. Until the definition and typology of woodlands is investigated and finalised, the process of defining the national woodland estate remains very difficult.

In accordance with the National Forest Act of 1998, the mandate of the Department of Water Affairs and Forestry is to recognise that savanna woodlands form part of the forest resource in South Africa. The Department has taken the initiative to demonstrate their commitment by addressing two main components with respect to their mandate:

1. Defining the role DWAF should play in terms of woodland management
2. Developing a classification system that would be useful and understood by all involved with woodlands

The CSIR has been contracted to work with DWAF through consultation with key stakeholders in order to address and report on the above.

2. Terms of Reference

These terms of reference, developed with the client, outline the requirements for the first stage in the development of the national woodland estate and the fulfilment of the legislative mandate established by the NFA. The following tasks were jointly agreed upon:

1. Review available woodland information with DWAF staff.

2. Contact relevant institutional stakeholders, analyse the type and availability of woodland information collected or used by them for monitoring, regulating and reporting on sustainable woodland management and review it.

3. Recommend a woodland definition, with its rationale and justification.

4. Organise two workshops to bring the institutional stakeholders together to agree on the woodlands definition, agree on the process to be followed and review the relevance of information being collected/used by these institutions for the purposes of monitoring and reporting on woodland management.

   4a: The objective of the first workshop will be "to clarify the roles and responsibilities of DWAF relative to other role-players in the sustainable management of woodlands". The consultant will use the results of the telephonic and/or personal interviews (Task 2) as preparatory material to guide the discussions at the workshop.

   4b: The objective of the second workshop will be "to establish an agreed upon typology for woodlands to be adopted by DWAF which accommodates the requirements of the NFA". The consultant will use the review of available material (Task 1), including VEGMAP if possible, as preparatory material to guide the discussions at the workshop

5. Provide the client with a report which incorporates:
   - A brief review of the type and scope of woodland information available nationally;
   - Review of the workshops' outlining:
     (i) agreed woodlands definition, and
     (ii) agreed future process to be followed

3. Methodology

The process for the undertaking of this project involved four components:

1. Regular meetings with DWAF to exchange information and report on progress
2. Interviewing key stakeholders (undertaken by CSIR and DWAF)
3. A workshop with key stakeholders to establish DWAF's roles and responsibilities with regard to the woodlands
4. A workshop with scientists generally recognised by the botanical community as having expertise in the disciplines of woodland taxonomy and ecology.

3.1 Meetings with DWAF

Four monthly meetings were held, from November 2001 to February 2002 during which times the following items were addressed:

1. A review of the existing information pertaining to woodlands was addressed and both parties verified that they were both aware of, and in possession of, similar information.

2. Agreement between the CSIR and DWAF on the stakeholders who should be consulted and who would contact each stakeholder (see Appendix 1).

3. Discussion concerning the progress on the project and arrangements for the two workshops.

3.2 Interviews

A list of stakeholders to be interviewed was developed jointly by the CSIR and DWAF. The list included mainly representatives from government departments and parastatals involved either in the direct management of woodland areas or in the monitoring of woodlands. The responsibility for contacting the various institutions and interviewing people was divided between CSIR and DWAF staff, with the latter focusing on government departments and the former focusing on parastatals, and NGOs. The complete list of stakeholders and a summary of the interactions with each is attached as Appendix 1.

The purpose of the interview was to obtain some background understanding of current activities being undertaken by other institutions and to establish how these could complement or conflict with DWAF's mandate with regard to the woodlands. The findings gleaned from the interviews have been summarised in the two tables presented below. Table 1 provides a summary of the role-players and attempts to categorise their involvement in woodlands into different categories (e.g. management, research, funding). Table 2 focuses more specifically on the monitoring of woodlands and summarises information obtained from the stakeholders. These tables are neither complete nor thorough in their content as they are populated only from inputs received (i.e. the perceptions or insights of the authors which could be used to populate the table further have not been included). The contents of the tables were used as a basis for discussions at the first workshop.

Table 1: Comparison of the roles of different types of institutions in terms of woodlands

ROLE	NATIONAL GOVT	PROVINCIAL GOVT	TERTIARY EDUCATION	RESEARCH INSTITUTIONS	NGOs	COMMUNITIES	PRIVATE
OWNERSHIP	SANPARKS SANDF PWD	Provincial Nature Reserves				Ex- Homelands (Trust Land)	Mainly Farms and ranches
MANAGEMENT	SANPARKS SANDF	Provincial Depts and Parks Boards				Communal	Mainly Farms and ranches
TECHNICAL ADVICE		Provider	Provider	Provider	Provider and Recipient	Recipient	Recipient
POLICY AND PROCESS ADVICE	Provider	Provider	Provider	Provider and Recipient	Provider and Recipient	Recipient	Recipient
POLICY	Developer Administrator Implementer	Developer Administrator Implementer	Provider of input	Provider of input	Provider of input	Affected	Affected
FINANCING	Landcare Poverty Alleviation Research funding	Funds research and implementation	Recipient	Recipient	Some direct Some through fund raising	Recipient	Corporate sponsors (e.g. SASOL/ SAPPI) and recipient
RESEARCH	Strategic	Localised Formal and informal	Scientific and policy	Strategic, policy and scientific			
EDUCATION		Internal And extension	Formal (main function)	Informal (ad hoc)	Specific	Recipient	Sector specific and recipient
AWARENESS RAISING	Macro-level (e.g. legislation)	Localised Formal and informal	Specific	Informal (ad hoc)	Specific		
MONITORING	State of Environment State of the Forest	Reserve management Resource use	Usually contracted	Usually contracted	NBI		
REGULATION	Instruments Law Enforcement	Instruments Law Enforcement					

Table 2: Institutions involved in monitoring woodlands

Monitoring Institutions	**National Department of Agriculture**	**Department of Water Affairs and Forestry**	**Department of Environmental Affairs and Tourism**	**South African National Parks**	**Provincial Government Departments**	**Research Institutions** (based on NBI only)
Type of information	State of Resource Productivity Erosion Tree counts Weeds Invasive plants	State of the Forest Utilisation patterns Condition & extent National Trends	State of the Environment Biodiversity Condition & extent National Trends	Trends in veg.: Canopy cover, tree mortality, tree height Impacts of fire & elephants Impact of changing climatic conditions	Environmental impact Utilisation Condition Provincial Trends Productivity Permits issued Species composition	Floristics Condition of vegetation
Format of information	AEGIS	FRIS (being developed)	SoE reports	Digital spatial data (KNP)	BIOBASE (Mpumalanga & Limpopo)	PRECIS
		Reports	Database of Natural Heritage Sites		Permits	ACOCKS?
	National Land Cover	GIS (extent of forests)	Conserved areas (IUCN categories)		ENPAT (North West)	PROTEA ATLAS
		National Land Cover	National Land Cover			Several other taxonomic databases
Reason for information	Own use	NFA	ECA	Own management	Provincial ordinances	NBI Board
			NEMA		Biodiversity Bill	
	CARA	NWA (e.g. catchments)	White Paper on Biological Diversity		CARA	DEAT
					NEMA	
					ERA	
Scale	National to local	National and provincial	National	Only SANPARKS land	Own reserves and Provincial permits	National to local

3.3 Workshops

All the stakeholders listed in Appendix 1 were invited to both workshops. The workshops were held for two days each, backing on each other for four consecutive days to facilitate attendants participating in both workshops if they wished. A list of participants who attended the workshops is attached as Appendix 2.

Workshop 1: "Roles and responsibilities"

The objectives of the first workshop were:

- To establish clarity of roles and responsibilities of different departments in woodland management.
- To assist in defining the role DWAF should play in terms of woodland management.
- To highlight mechanisms to be put in place to assist DWAF in its role.

The workshop was structured as follows:

- Welcoming address by Director: Forestry Regulation
- Presentation by DWAF on the NFA, with specific emphasis on the woodlands.
- Presentation by CSIR on the outcomes of the interviews.
- Facilitator's overview of objectives and process for the workshop.
- Identification of issues relating to woodlands.
- Consolidation of issues into main concerns to be addressed by DWAF.
- Proposed way forward (recommendations and actions for DWAF).
- Brainstorming session to develop preliminary criteria for setting aside a minimum area of each woodland type.

Workshop 2: "Classification of woodlands"

The objectives of the second workshop were:

- To establish the requirements of DWAF with regard to a woodland classification.
- To develop a classification system which complies with the requirements of DWAF and other major stakeholders.
- To ensure scientific input and rigour in the proposed classification.

The workshop was structured as follows:

- Welcoming address by Assistant Director: Forestry Policy Research
- Presentation by DWAF on the NFA, with specific emphasis on the woodlands.
- Presentation by CSIR on the proposed classification.
- Facilitated session to critique, adapt, and finalise the proposed classification of South Africa's woodlands.
- Brainstorming session to develop preliminary criteria for setting aside a minimum area of each woodland type.

3.4 Classification of woodlands

The methodology used for the classification of the woodlands is presented as part of the results in Section 4.3.

4. Results

4.1 Roles and responsibilities of DWAF

A. The requirements of the Act (NFA)

The NFA contains several sections which relate either directly or indirectly to the woodlands as a forest type. These sections set out quite clearly what the minister's obligations are, as well as those areas where certain functions may be carried out but are not mandatory. The Act also defines forests, trees and woodlands and therefore provides a framework within which DWAF should develop its mandate. A summary of the relevant sections of the Act is attached as Appendix 3 (developed by DWAF and presented at the workshop).

B. The main issues confronting effective woodland management

Appendix 4 comprises a detailed reflection of comments received during participative sessions. However, these have been summarised below as a means of focusing the report towards recommendations and actions for DWAF, which evolved during the workshop.

Once all the issues had been listed, the participants of the workshop went through a process of aggregating the issues into clusters or related issues. From this, five main concerns were identified.

- The need for interdepartmental co-ordination and co-operation with regards to the overlapping roles and responsibilities in the woodlands biome.
- The need for alignment of policies and legislation pertaining to, or impacting upon, the woodlands. This is particularly important for those actively involved with woodland management on the ground who feel swamped and confused by all the policy and legal requirements they need to consider.
- The need for effective and relevant monitoring and reporting, particularly with reference to DWAF's obligations in terms of the NFA.
- The need for funding to support initiatives in the woodlands (this could be donor funding, channelled through DWAF to address global concerns such as biodiversity, climate change, desertification, etc. (see also section D (a) below).
- The need for guidelines, tools, educational and training materials to promote sustainable woodland management and to support local government in its future endeavours at integrated planning.

As well as the five issues listed above, two cross-cutting issues were also identified. These were considered to be important issues pertaining to all of the above, but not issues to be addressed in themselves. The two cross-cutting issues are:

- The need to consider the community's perspectives in woodland management, especially with regard to issues of ownership and land tenure.
- The need to set in place systems for conflict resolution, considering that conflict may occur at any level (e.g. national policies, implementation of different land use options).

C. Where should DWAF be focusing its capacity?

The participants of the workshop were given the opportunity to assist DWAF in prioritising the areas where, as a department with limited capacity, it should focus its energy in addressing the woodlands issue.

It was generally agreed at the workshop that the "on-the-ground" management of woodlands was not the role of DWAF but was catered for, to a greater or lesser extent by other institutions such as provincial departments of agriculture and/or conservation, NGOs, and land-owners.

The debate also concentrated, for a while, on the overlap between DWAF's mandate and that of other departments such as DEAT (in terms of setting aside land for conservation and reporting on the state of the woodlands) and NDA (in terms of providing extension services and support to land owners and communities). It was agreed, however, that this debate was one that could not be resolved at the operational level being addressed by the participants of the workshop but is one which should continue to be debated at a higher political level. Nevertheless, it was agreed that DWAF *does* currently have a role to play and should be playing it until such time as the players or the playing field changes.

Three of the above five issues were highlighted as responsibilities for which DWAF should currently take the lead. The first concerns the need for ***interdepartmental co-ordination and co-operation***. The second concerns the need for ***alignment of policies and legislation*** and the third pertains to the need for effective and relevant ***monitoring and reporting***. These issues were debated further and concrete recommendations as to ***how*** this should be done are presented below.

D. Recommendations and way forward

The proposals presented below provide practical steps by which DAWF can begin to address the three issues mentioned above:

(a) Interdepartmental co-ordination and co-operation

There are two levels at which co-ordination and integration need to take place. The first is at the level of Ministers and senior managers, so that they can provide the departmental framework for their employees to engage in such functions at all other levels. The recommendations of the workshop were that this should be driven from two angles:

- The National Forestry Advisory Council (NFAC), through its Committee for Sustainable Forest Management (CFSM), should make recommendations to the Minister, to ensure that DWAF's role with regard to the woodlands is given priority.

- The issue of "woodlands" should be placed on the agenda of the CEC (Committee for Environmental Co-ordination) so that it is recognized and addressed at these meetings attended by the Director-Generals of the relevant departments.

At an operational level, structures already exist for such co-ordination. Inter-departmental committees to address several environmental issues (e.g. CBNRM, desertification, biodiversity, climate change) already function. It was agreed that there should not be a separate committee developed to address the woodlands issue for three reasons. Firstly, to add more committees and more meetings to already meeting-fatigued civil servants would not improve the efficient use of their thinly-stretched capacity. Secondly, the woodlands are a *biome* and as such should be cross-cutting across all the above mentioned committees, rather than an issue in itself. Thirdly, funding agencies tend to fund global issues rather than a specific biome. It is therefore more efficient to punt for funding for woodlands by means of justifying how addressing the woodlands would impact on one of these issues.

The recommendation of the workshop is therefore that the woodlands be placed as an item on the agenda of each of these committees. Most importantly, it was recommended that DWAF should ensure one dedicated, relatively senior, member of staff to oversee DWAF's woodland mandate. This person would then ensure that feedback from all these existing fora could be consolidated and co-ordinated.

(b) Alignment of policies and legislation

The workshop participants asserted that the vast amount of policies and legislation often create confusion to the implementers on the ground and that often these policies appear to be in conflict with one another. It was established at the workshop that DWAF can facilitate the improvement of the situation by means of the following:

- Determine its own policy, mandate and requirements from other stakeholders
- Check the structures, mandates and functions pertaining to other stakeholders
- Establish the necessary interventions and put them in place to improve the required alignment.

The three points above were, to a large extent, addressed at the workshop. The workshop confirmed for DWAF that other stakeholders do not perceive DWAF to be *managers* of woodlands but rather policy makers and regulators. DWAF can now take this role forward, as proposed by the workshop, and communicate it to its own staff and other stakeholders (the recommendations in section (a) above would facilitate this process). In this way DWAF can ensure that clarity of roles is obtained, conflicts are cleared and that policies (and their implementation) are aligned between the role players.

It was also suggested that the existence of provincial fora could be used as an existing structure through which DWAF could facilitate this process. These differ in their composition and structure, but most provinces have (or should have) regular meetings between departments involved in environmental issues.

(c) Monitoring and reporting

The third aspect identified as priority for DWAF's involvement was that of monitoring and reporting on the woodlands. Despite recognizing that this is a daunting task due to the various stakeholders and initiatives currently involved in woodlands, three practical steps were recommended:

- To check and ensure that the Forest Resource Information Service (FRIS) is developed in such a way that it will accommodate the woodlands issues (probably based on criteria and indicators of sustainability).
- To develop and implement a process by which DWAF will gather and collate data from the various stakeholders (including incentives and controls)
- To establish mechanisms and resources to continually update the database and keep it current and relevant.

4.2 Overview of existing woodland documentation

Substantial work has been done in the past in classifying the vegetation types of South Africa, including the woodlands. The value of these documented works is recognized and taken into consideration when developing *yet another* classification. While the current classifications do not accommodate DWAF's requirements, it was important that the classification developed during this project should take these into account and, wherever possible, prevent duplication of work and/or conflicting classifications (especially considering that end-users may already be familiar with, and making use of one of these). The main sources of woodland classification in recent use are briefly reviewed below.

Rutherford and Westfall (1986)
This aim of this study was to provide an objective categorization of the biomes of southern Africa. A biome is a broad ecological unit that represents a major life zone extending over a large natural area. A biome consists of a relatively uniform set of life forms or is characterised mainly by life forms with similar physiognomic types. The biotic component includes both plant and animal forms. Relevant features of the biota are closely tied to environmental conditions and are more specifically determined by climate.

Seven biomes were diagnosed according to these definitions. These are Savanna, Nama-Karoo, Grassland, Succulent Karoo, Fynbos, Desert and Forest Biomes. This classification system was not suitable for DWAF's purposes because is categorizes Savannas (Woodlands) at too broad a scale (i.e. only one type).

Acocks (1988)
In this third edition of a work first published in 1953, John Acocks classified the vegetation of South Africa into veld types based on the agricultural potential of the vegetation. Although the later edition has been updated in terms of plant species nomenclature and related matter, the text has not been revised and remains essentially the same as the original. According to this system, a veld type is defined as a unit of vegetation whose range of variation is small enough to permit the whole of it to have the same farming potentialities. This classification system was used mainly for agricultural planning. According to this system, South Africa's woodlands are divided into 13 categories.

Low and Rebelo (1996)
This vegetation map provides a broad overview of the natural plant resources of South Africa, Lesotho and Swaziland. The 68 vegetation types were delimited in the following way: each vegetation type had to be a coherent array of communities which shared a common species (or abundance of species), possessed a similar vegetation structure (vertical profile), and shared the same set of ecological processes. They would thus have similar uses, management programmes and conservation requirements. According to this classification system, the Savanna Biome consists of 25 vegetation types, excluding thickets.

National Land-cover Database (Thompson 1996)
The primary objective of the National Land-cover (NLC) project was to produce a standardized digital land-cover database for all of South Africa. Swaziland and Lesotho. Thirty-one level 1 land-cover categories were recognised, the Savanna biome of these falls into 27 of these categories.

Shackleton *et al.* (1999)
According to this classification system, the term savanna or woodland, refers to *'a suite of tropical and subtropical vegetation types in which fire-adapted, co-dominant, continuous or discontinuous herbaceous and largely deciduous woody strata experience markedly seasonal growth patterns and processes in relation to the seasonal delivery of precipitation, which occurs during hot summers, followed by cooler, but warm, dry winters. Generally the herbaceous stratum is dominated by C4 grasses and sedges, but this, and the overall cover of the woody and herbaceous strata, may be temporarily altered by a range of disturbance phenomena.'* This classification system divides South Africa's woodlands into two categories i.e. arid/eutrophic and moist/dystrophic woodlands. The primary determinants in this classification system are rainfall and nutrient status of the substrates.

Eutrophic woodlands occur in areas with lower rainfall and are associated with soils with higher base status than dystrophic woodlands. Eutrophic woodlands are dominated by family Mimosaceae (mainly *Acacia* species) and Burseraceae (mainly *Commiphera* species). The most readily identified characteristics of eutrophic woodlands are:

- Dominance by typical tree genera;
- Prevalence of tree species with relatively small leaves or leaflets;
- Prevalence of thorny species;
- Presence of succulents; and
- Absence of any well-developed litter layer.

Dystrophic woodlands occur in areas of higher rainfall than eutrophic woodlands and on substrates with a low base status. Dystrophic woodlands are dominated by the families Combretaceae (mainly *Combretum* and *Terminalia* species) and Caesalpinoideae (including species of *Burkea*, *Peltophorum* and *Schotia*). The most readily identifiable characteristics of dystrophic woodlands are:

- Dominance by typical tree genera mentioned above;
- Prevalence of trees species with relatively large leaves or leaflets;
- Relative absence of thorny species;
- Absence of succulents;
- Presence of well developed litter layer; and
- Low herbaceous biomass.

Fairbanks (2000)

This classification system involved a regional classification of the woodland biome of South Africa, delineated by satellite imagery and using environmental data and a rigorous statistical methodology. The savanna biome was classified into 27 homogeneous physio-climatic units based on thirty-year mean monthly temperature, total plant-availability water balance of soil, elevation, landscape topographic position, and landscape soil fertility.

This classification system may not be suitable because the growth days index and growth temperature can both be expected to change over space and in magnitude with the predicted climate change scenario for precipitation and temperature in southern Africa. The woodlands also fall into too many classes for DWAF's purposes.

VegMap (in prep)
A collaborative initiative entitled the National Vegetation Map of South Africa Project or VEGMAP is currently in progress to satisfy the need for a new, definitive map of the vegetation of southern Africa. This project is funded by the Department of Environmental Affairs and Tourism and is managed by the National Botanical Institute. It is in the final stages of completion and will, in all likelihood replace the Low and Rebelo (1996) classification.

The aims of this project are to determine the variation in and units of southern African vegetation based on the analysis and synthesis of data from vegetation studies throughout the region and to compile a vegetation map of southern Africa. This map must accurately reflect the distribution and variation in the vegetation and indicate the relationship of the vegetation with the environment (Website of the National Botanical Institute: http://www.nbi.ac.za/research/vegmap.htm).

Compilers of this map have been consulted during the workshops that were held as part of the project to develop a woodlands classification system for DWAF.

4.3 Classification of woodlands in compliance with the NFA

Briefly described, woodlands can be seen as vegetation formations dominated by trees but not to the extent that the canopies are continuous or overlapping. (Scholes submitted). The National Forests Act defines woodlands as “a group of trees which are not a natural forest, but whose crowns cover more than five per cent of the area bounded by trees forming the perimeter of the group”. A further definition, according to the Food and Agriculture Organization (FAO), states that woodlands come into existence only when there is a 10% projected woody plant canopy cover surface. This differs from the NFA definition and this discrepancy is addressed in the proposed classification.

The National Forests Act states: “a minimum area of each woodland type should be conserved”. In order to comply with the Act, an understanding of what constitutes a woodland is necessary, including a breakdown of the extent and different types of woodland. The classification that is developed therefore needs to group woodlands into several types that would be suitably robust and yet disparate enough to allow DWAF to conserve a representative proportion of each type. The overview of the existing documentation (section B, above) motivates in greater detail the need to develop a new classification rather than adopt any of the existing ones. It is, however, essential that the new classification is compatible with those classifications currently used in South Africa, so as to allow other stakeholders to understand and accept the classification used by DWAF.

A. Proposed classification system

(a) Generalised Woodland Concept

A further refinement, proposed for the definitions of woodlands, is that woodlands are such only when the mean height of the vegetation is 2,5 metres or above. This definition would, however, exclude many of South Africa's thickets and therefore has not been applied in the classification presented below.

A generic classification of all wooded lands is presented in Figure 1. This serves to clarify the various categories of wooded lands and to ascertain which of these are included in the overall classification of "woodlands" for South Africa. For the purposes of DWAF's classification and reporting requirements, woodlands will include those types ranging from wooded grasslands (between 5% and 10% canopy cover) to dense thickets (areas with over 75% canopy cover but which do not meet the other criteria required to be defined as indigenous forests). Within this broad woodland category (which includes vegetation types not traditionally considered to be true woodlands) the true woodlands are defined as such when the projected woody plant canopy cover surface reaches the 35% threshold, where trees become responsible for 50% of net primary production. A change in the herbaceous layer from vigorous grasses to sparser, shade-tolerant grasses, forbs and a notable tree litter layer can be observed at this threshold (Frost 1996). Described in a different way, the 35 % threshold is roughly the point at which the mean gap between the edges of the tree canopies is equal to just less than the mean radius of the tree canopies, a useful aid to field classification.

These woodland definitions described above, as well as some neighbouring vegetation types are graphically represented in Figure 1. From this figure, it can be noted that the woodland types included in the DWAF classification include the following:

Wooded Grassland:	5-10% Cover	1 -20 metres Height
Open Woodlands:	10-35% Cover	2.5-20 metres Height
Low Woodlands:	35-75% Cover	2.5-6 metres Height
Tall Woodlands:	35-75% Cover	6-20 metres Height
High Woodlands:	35-75% Cover	>20 metres Height
Open Bushland:	10-35% Cover	1 - 2.5 metres Height
Bushland:	35-75% Cover	1 - 2.5 metres Height
Thicket:	> 75% Cover	1 - 2.5 metres Height

(b) Spatial Analyses

Woodland distribution in South Africa is heavily dependent on climate, fire frequency and soil type. These classes therefore correspond spatially to these factors. The combination of climate and soil is interesting, as different woodland types occur in areas where there is 300 – 1000mm rainfall per year, yet the rainfall figure is not the key factor. In fact, water demand vs. seasonal distribution of water availability determines which woodland type will flourish. The impact of soil type can be seen in the fact that the water demand vs. water availability figure is 200mm higher in clayey soils compared to deep, sandy soils. Another climatic influence is temperature. The daily mean dry season temperature threshold of 17°C (approximate frost limit) creates the boundary for woodlands. Frequent fire

occurrence is a feature of woodland areas. Forests are too moist and their flammable load too small for frequent fires to occur. Certain shrublands and grasslands do not contain a high enough fuel load to sustain frequent fires (Scholes, submitted). A minimum classification unit should be 1 hectare at mapping scales of 1:50 000 or finer, 1 km^2 at a 1:1 million of courser and appropriate sizes in between.

The primary means by which it is proposed that woodlands be identified, once the classifications have been agreed upon, is by using Geographic Information Systems technology (GIS). This document demonstrates the principle by providing GIS maps of the spatial distribution and extent of woodland types according to the suggested classifications.

Datasets of information can be overlaid in a GIS. Thus, the proposed woodlands classes can overlie base level data such as provincial boundaries, roads, rivers, towns and railways. Data for each suggested woodland classification level have been incorporated into the maps. These data provide information on the distribution patterns, overlap and extent of each woodland class.

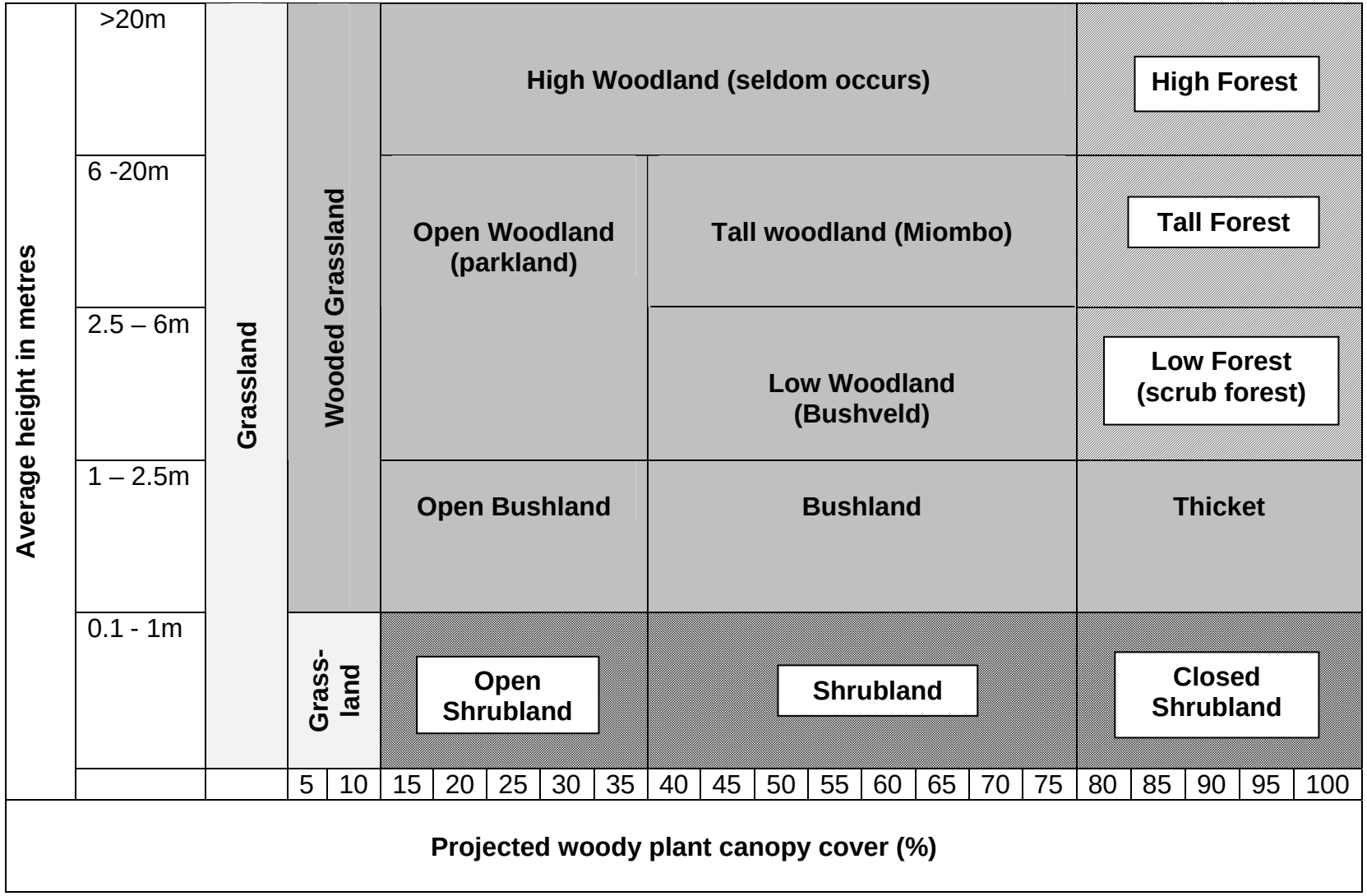

Figure 1: Classification of wooded vegetation types, indicating those included in the woodland definition adopted in this report.

(c) Woodland Classification Framework

CSIR Environmentek has already undertaken extensive research into woodlands and has developed ideas around classification systems. It is proposed that a hierarchical, nested, repeatable classification system be developed and adopted. The proposed vegetation hierarchy structure presented at the workshop appeared as follows:

1. All Vegetation Surfaces
    2. Life Forms *e.g. woodlands, grasslands, croplands*
        3. Structural breakdown *e.g. forest, woodland, bush*
            4. Functional breakdown
                5. Floristic breakdown
                    6. Phytogeographic breakdown
                        7. Edaphic breakdown

In such a hierarchy, woodlands as a whole appear high up in the hierarchy as a structural class (see Figure 2). Randomly conserving tracts of this class ignores the great variety inherent in woodlands. Lower levels in the classification expose the richness and differentiation of woodlands. This classification framework is widely accepted down to the Structural breakdown (level 3). At the Functional, Floristic, Phytogeographic and Edaphic levels (levels 4,5,6 and 7) debate is likely to occur. During the workshop the above classification was debated and approved, but only levels 1-5 were considered. It was agreed that lower levels would split the woodlands into more classes which was considered unnecessary for the reporting and management requirements of DWAF.

If the classification framework is sufficiently robust and well documented, then it can be re-applied at any time in the future to updated or improved datasets. The emphasis of this study is to develop a classification, not to represent it precisely on the ground. It is for this reason that this classification system was adopted by the workshop. Its robustness allows it to be interpreted in terms of Low and Rebelo (1996) vegetation types and is also expected to accommodate the VEGMAP classification currently being developed.

B. Classification details

All Vegetation Surfaces

This is the parent category of the hierarchy, representing land that is under vegetation cover of all densities. Spatial information about this classification level is derived from the National Land Cover dataset.

Life Forms

Vegetation cover can be broken up into three Life Form classes, namely wood, grass and crop cover.

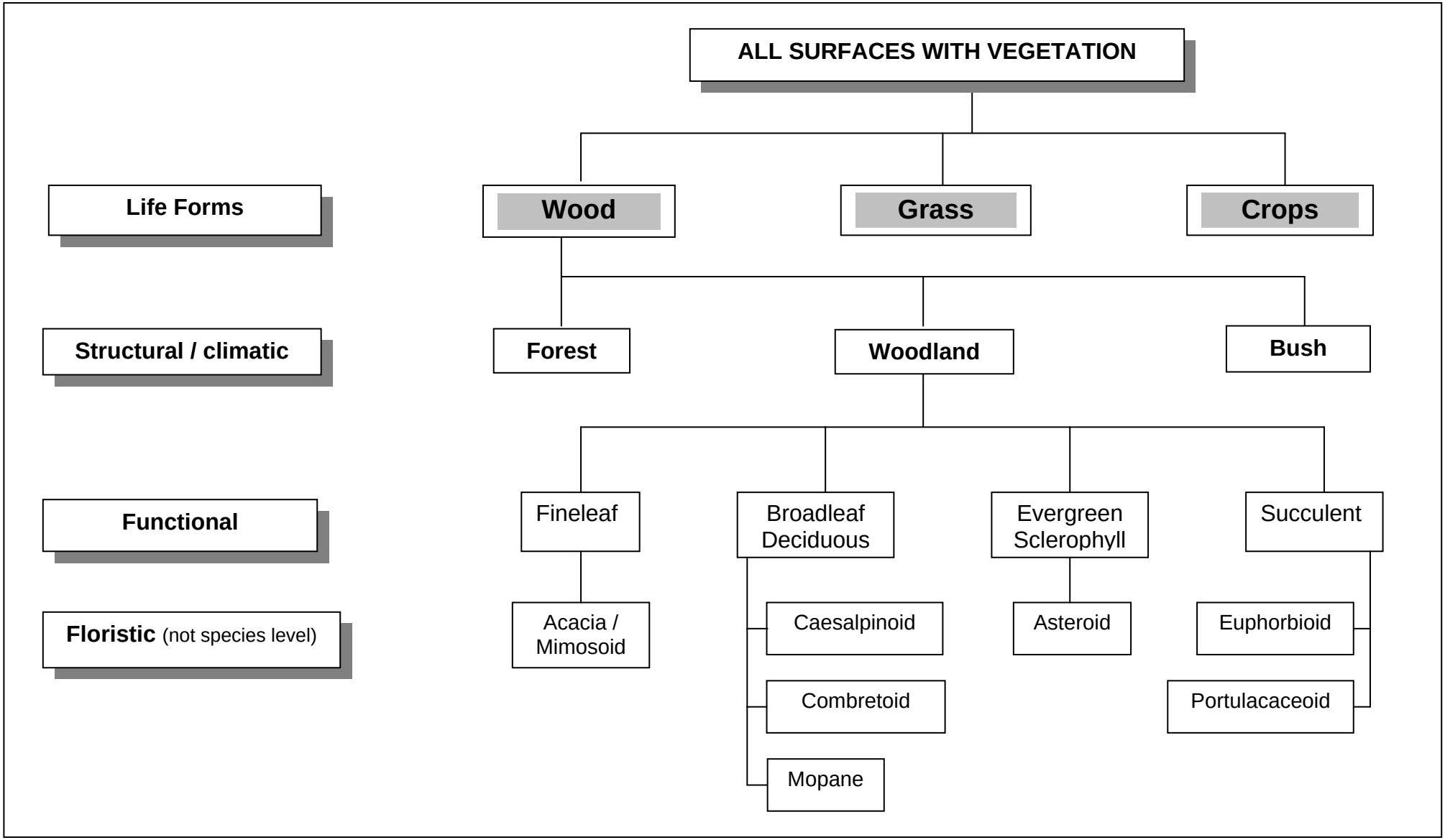

Figure 2: Hierarchical structure of vegetation presented graphically, highlighting the woodlands thread.

Structural breakdown

At this level in the hierarchy, woodland or *potential* woodland can be identified. The main sources of data used here for classifying at this level are Rutherford and Westfall's (1986) savanna boundary and Low and Rebelo's (1996) boundaries of the savannas and thickets (Map 1). The boundary for potential woodland used hereafter is *inclusive* of differences between the two datasets i.e. it includes areas which may be covered by only one or the other dataset. Map 2 presents the *actual* area of South Africa covered by thickets and woodlands as presented from the National Land Cover (NLC) dataset. It is clear from this map that many patches of woodland and thicket occur outside the defined woodland boundary presented in Map 1.

Functional breakdown

The purpose of this category is to classify woodlands based on ecological and physiological similarities, for example, between broad-leafed or fine-leafed woodland.

Broad-leafed woodlands can also be referred to as dystrophic, moist or nutrient-poor woodlands. This is based on the low nitrogen content (as low as 0.4%) of the grasses in the dry season, which renders the grasses associated with the woodland indigestible. Hence, grass matter tends to accumulate and burn. Such woodlands occur in areas of high rainfall and altitude, cooler temperatures and old soils derived from granitoid, sandstone or sandy substrates.

Fine-leafed woodlands are often characterised by trees with thorns or compound leaves, can also be referred to as arid, eutrophic or nutrient rich savannas. The nitrogen content in the associated grasses is higher (>1% in the dry season) owing to the nitrogen fixing actions of the fine-leafed trees. The grasses can therefore support a greater mammalian herbivore population resulting in a lower accumulation of grass and that burns less frequently. Woodlands of this type occur on lower lying igneous geologies or fine-grained sediments, in hotter and more arid areas. Grazing suitability corresponds well with this breakdown, commonly conceptualised in the sourveld and sweetveld terms. (Scholes, submitted).

Evergreen sclerophyll woodlands retain their leaves throughout the year, either because they have access to groundwater (eg *Baikaiea* woodlands in Botswana, some dune forests in Maputaland) or because the leaves are adapted to withstand water stress. The latter category are more widespread in South Africa, and include the *Tarchonanthus* woodlands and *Olea* woodlands of the Northern Cape, Northwest Province and Western Free State, and *Euclea* thickets on the eastern side of South Africa. The leaves are leathery (sclerophyllous), high in tannins and have a low stomatal conductance, therefore the trees typically have a low growth rate. The climate is arid, and the soils often base-rich and alkaline.

Succulent woodlands are dominated by species that have either lost their leaves, and photosynthesise through their stems (*Euphorbia* or *Aloe* are examples, and some Commiphoras) or have thick, juicy leaves (eg *Portulacaria afra*). They are not widespread, but are locally important. The soils are typically fertile, temperatures high, and the rainfall low but relatively predictable.

Floristic breakdown

This breakdown is based on the plant family whose species are most dominant within an area. This classification is based on Low and Rebelo (1996) as re-classified in Table 1, and conceptualised in the hierarchy of Figure 2. The soon-to-be-released VEGMAP from the National Botanical Institute may improve the floristic classification used here when it becomes available.

Table 3: Functional re-classification of Low and Rebelo's (1996) Vegetation.
Those shaded in grey have not been included in the woodland classification adopted in this study.

Low and Rebelo Types	Function	Floristic Type
Afro Mountain Grassland	grassland	Unclassified grassland
Afromontane Forest	broadleaf deciduous	Unclassified forest
Alti Mountain Grassland	grassland	Unclassified grassland
Bushmanland	fineleaf	Acacia/ Mimosoid
Central Lower Karoo	fineleaf	Acacia/ Mimosoid
Central Mountain Renosterveld	evergreen sclerophyll	Asteroid
Clay Thorn Bushveld	fineleaf	Acacia/ Mimosoid
Coast-Hinterland Bushveld	fineleaf	Acacia/ Mimosoid
Coastal Bushveld/Grassland	fineleaf	Acacia/ Mimosoid
Coastal Forest	broadleaf deciduous	Unclassified forest
Coastal Grassland	grassland	Unclassified grassland
Dry Clay Highveld Grassland	grassland	Unclassified grassland
Dry Sandy Highveld Grassland	grassland	Unclassified grassland
Dune Thicket	evergreen sclerophyll	Mixed
Eastern Mixed Nama Karoo	fineleaf	Acacia/ Mimosoid
Eastern Thorn Bushveld	fineleaf	Acacia/ Mimosoid
Escarpment Mountain Renosterveld	evergreen sclerophyll	Asteroid
Grassy Fynbos	evergreen sclerophyll	Proteoid
Great Nama Karoo	evergreen sclerophyll	Euclea
Kalahari Mountain Bushveld	broadleaf deciduous	Asteroid
Kalahari Plains Thorn Bushveld	fineleaf	Acacia/ Mimosoid
Kalahari Plateau Bushveld	evergreen sclerophyll	Asteroid
Karroid Kalahari Bushveld	fineleaf	Acacia/ Mimosoid
Kimberley Thorn Bushveld	fineleaf	Acacia/ Mimosoid
Laterite Fynbos	evergreen sclerophyll	Proteoid
Lebombo Arid Mountain Bushveld	broadleaf deciduous	Combretoid
Limestone Fynbos	evergreen sclerophyll	Proteoid
Little Succulent Karoo	succulent	Succulent Karoo
Lowland Succulent Karoo	succulent	Succulent Karoo
Mesic Succulent Thicket	succulent	Portulacaceae
Mixed Bushveld	broadleaf deciduous	Combretoid
Mixed Lowveld Bushveld	broadleaf deciduous	Combretoid
Moist Clay Highveld Grassland	grassland	Unclassified grassland
Moist Cold Highveld Grassland	grassland	Unclassified grassland
Moist Cool Highveld Grassland	grassland	Unclassified grassland
Moist Sandy Highveld Grassland	grassland	Unclassified grassland
Moist Upland Grassland	grassland	Unclassified grassland
Mopane Bushveld	broadleaf deciduous	Mopane
Mopane Shrubveld	broadleaf deciduous	Mopane

Mountain Fynbos	evergreen sclerophyll	Proteoid
Natal Central Bushveld	fineleaf	Acacia/ Mimosoid
Natal Lowveld Bushveld	fineleaf	Acacia/ Mimosoid
North-eastern Mountain Grassland	grassland	Unclassified grassland
North-western Mountain Renosterveld	evergreen sclerophyll	Asteroid
Orange River Nama Karoo	fineleaf	Acacia/ Mimosoid
Rocky Highveld Grassland	grassland	Unclassified grassland
Sand Forest	broadleaf deciduous	Unclassified forest
Sand Plain Fynbos	evergreen sclerophyll	Proteoid
Short Mistbelt Grassland	grassland	Unclassified grassland
Shrubby Kalahari Dune Bushveld	fineleaf	Acacia/ Mimosoid
Sour Lowveld Bushveld	broadleaf deciduous	Combretoid
South and South-west Coast Renosterveld	evergreen sclerophyll	Asteroid
South-eastern Mountain Grassland	grassland	Unclassified grassland
Soutpansberg Arid Mountain Bushveld	broadleaf deciduous	Combretoid
Spekboom Succulent Thicket	succulent	Portulacaceae
Strandveld Succulent Karoo	succulent	Succulent Karoo
Subarid Thorn Bushveld	fineleaf	Acacia/ Mimosoid
Subhumid Lowveld Bushveld	fineleaf	Acacia/ Mimosoid
Sweet Bushveld	fineleaf	Acacia/ Mimosoid
Sweet Lowveld Bushveld	fineleaf	Acacia/ Mimosoid
Thorny Kalahari Dune Bushveld	fineleaf	Acacia/ Mimosoid
Upland Succulent Karoo	succulent	Succulent Karoo
Upper Nama Karoo	fineleaf	Acacia/ Mimosoid
Valley Thicket	evergreen sclerophyll	Euphorbiaceae
Waterberg Moist Mountain Bushveld	broadleaf deciduous	Caesalpinoid
West Coast Renosterveld	evergreen sclerophyll	Asteroid
Wet Cold Highveld Grassland	grassland	Unclassified grassland
Xeric Succulent Thicket	succulent	Portulacaceae

Based on the above and the debate which took place at the workshop, the seven floristic types depicted in Figure 2 are further developed into the thirteen classes presented in Table 4 and depicted on Map 3. Detailed descriptions of the woodland classes have not been included as these can be found in Low and Rebelo (1996). Descriptions have been limited to explanatory notes as to the logic of creating each woodland class. It was recognized at the workshop that scattered woodlands may occur within other biomes (e.g. grassland). The NLC datatset reflects the presence of woodlands and/or thickets throughout the country (The definition for these is given in Appendix 7). While recognising that some of these may not be true “woodlands”, their importance to rural communities in terms of providing resources such as timber cannot be ignored. For this reason, and as a means of allowing DWAF to monitor and report on these patches, these patches have been taken into consideration in the classification. This vast area, within which relatively small patches of woodlands occur, are depicted on Map 3 as a category named “scattered woodland”.

It is essential to mention that despite the advantages of clustering diversity into larger units, there is a danger of losing the diversity within each cluster. It *must be emphasised* that in the development of the classification proposed in this report, the diversity within each cluster has not been denied nor intentionally ignored. The report strongly recommends (see section D below) that the localized diversity be taken into consideration when setting aside woodland areas for conservation purposes.

One example of this is the patch of Miombo (*Brachystegia spiciformis*) woodland recently discovered in the Limpopo province, north of the Soutpansberg. While this community is unique in South Africa, it is recognised as being an isolated remnant in an outlier refugium and therefore does not warrant being given mapping-unit status in a classification system intended to be used at a national level by a host of different end-users. It has therefore been grouped within the Waterberg Woodland, which it most closely approximates, but should be given high conservation priority status.

Interpretation of Maps 4 – 16

The series maps depicting the details of the different woodland classes are standardized to reflect the following:

- **Actual Woodland:** *(green on maps)* — Areas classified as "woodland" or "thicket" by the NLC dataset (see Appendix 7 for definition used in NLC)
- **Potential woodland:** *(grey line on maps)* — Boundary based on Low & Rebelo (1996) classes within which the specific woodland type may occur.
- **Protected areas:** *(red hatching on maps)* — Areas under some form of conservation/protection status (from DEAT's dataset of protected areas). These may lie over natural woodland, degraded or transformed land.
- **Degraded:** *(brown on maps)* — Areas classified as "degraded" in the NLC dataset (see Appendix 7). These areas may pertain to natural woodland or transformed land.

The maps also depict provincial boundaries *(blue lines)* and major cities *(black dots)* for purposes of facilitating orientation. Built-up areas have also been included *(yellow)* to assist in understanding where woodlands may be under pressure of over-utilisation (e.g. outside the Kruger National Park in the Mopane Woodland).

Table 4: Classification of South African Woodlands into thirteen classes.

Floristic Type	Woodland Class	Description	Map No.
Acacia / Mimosoid	**High Altitude *Acacia* Woodland**	Located above the escarpment, (e.g. in the North-West Province). Characteristically these woodlands are subject to relatively high variations of minimum and mean temperatures.	**4**
	Low Altitude Acacia Woodland	Located below the escarpment, in the undulating lowlands of Kwazulu-Natal and parts of the Mpumalanga provinces. Characterised by the absence of frost and less variation in temperature than at the higher altitudes.	**5**
Asteroid	**Kuruman Woodland**	Represented by the Low and Rebelo (1996) Kalahari Mountain Bushveld vegetation type. The dominant species include *Tarchonanthus* and *Rhus* .	**6**
	Ghaap Plateau Woodland	Fairly dense bushveld, also dominated by *Tarchonanthus* but confined to the Ghaap plateau in the North-West Province and Northern Cape. It is represented by the Low and Rebelo (1996) Kalahari Plateau Bushveld vegetation type.	**7**
	Southern Renosterveld Woodland	Limited to small areas of the Western and Eastern Cape Provinces (Southern Cape). Typically characterized by the presence of "Renosterbos", *Elytropappus rhinocerotis.*	**8**
Caesalpinoid	**Waterberg Woodland**	Geographically restricted to the Waterberg mountain complex and is floristically distinct from those woodlands around it. It is classed in Low and Rebelo (1996) as the Waterberg Moist Mountain Bushveld and characterised by *Burkea africana*.	**9**
Combretoid	**Combretum Woodland**	These woodlands form part of the mixed bushveld in the North-West, Limpopo and Mpumalanga Provinces, dominated by *Combretum apiculatum and C. collinum*.	**10**
	Soutpansberg Woodland	Restricted to the Soutpansberg Mountains in the Limpopo Province. It is represented by the Low and Rebelo (1996) Soutpansberg Arid Mountain Bushveld.	**11**

Floristic Type	Woodland Class	Description	Map No.
Portulacacea:	**Spekboom Woodland**	Limited to areas of the Western and Eastern Cape Provinces (Southern Cape). Typically characterized by the presence of "Spekboom", *Portulacaria affra*.	**12**
Euphorbiaceae	**Northern Succulent Thicket**	Also known as Valley Thicket, characterized by the presence of Euphorbias but also containing bushveld elements of Kwazulu-Natal and the former Transkei.	**13**
	Southern Succulent Thicket	Also known as Valley Thicket, characterized by the presence of Euphorbias but with less bushveld elements. Located in the former Ciskei areas of the Eastern Cape.	**14**
Mopane	**Mopane Woodland**	It is recognized that this woodland type could be structurally split into tall woodlands and lower shrublands (based on geology and soils), but it was agreed that for the purposes of this classification the split would be unnecessary.	**15**
Scattered Woodlands	It was recognized by the participants at the workshop that throughout the rest of the country there are scattered patches of woodland occurring within other vegetation types (e.g. within the grasslands of the Free State). While these cannot be classified as woodland classes, they may contribute significantly to community livelihoods in terms of non-timber forest products and are therefore worth mention and mapping.		**16**

C. Statistics for woodland classes

(a) Current conservation status

Table 5 provides an overview of the area per woodland class that is protected versus the area which is currently unprotected. These two columns (protected and unprotected) sum up to the total *potential* (not actual) area within that particular woodland class in South Africa, which is given in the final column. The first line under each class in the table provides the area in hectares (ha), whereas the second line (shaded) provides the area as a percentage of the total potential woodland class area. For example, of the total potential Mopane Woodland area, 52.32 % of the area is unprotected (1 230 299 ha) as opposed to 47.68%, which is protected (1 121 037 ha).

If one combines all woodland classes, it is clear that, excluding the scattered woodlands, approximately 11% of the woodland biome is protected at this stage. It is expected, however, that the conserved areas consist predominantly of natural vegetation (often woodlands) but that the unconserved areas comprise a large proportion of converted or degraded land. Therefore, if one assumes that the conserved area is natural woodland and divides this by the areas of *actual* woodland (from Table 6), the conserved area is reflected as somewhat higher percentages (averaging out at 17 %) than those in Table 5. These are presented in Table 7. It is clear from both Table 5 and 7 that some woodland classes are well conserved while others are hardly under any formal conservation status.

Mention must be made, however, that in many instances, despite having some form of conservation status, the woodlands may still be mismanaged. The case history of the Hluhluwe Umfolozi Park is a prime example of this. Fire and elephant management have promoted some woodland types at the expense of others and several are now severely threatened by invasive alien plants particularly *Chromoleana odorata* (Watson, pers. comm.).

The scattered woodlands have not been included in these calculations for two reasons: Firstly, the fact that they are scattered throughout a vast area skews the percentages under conservation because it is reflected over an extremely vast “potential” area (approximately half of South Africa’s surface). Secondly, because these woodlands are not in a specific class, there is no mandate for DWAF to set aside any proportion of these woodlands unless it chooses to do so for some other purpose as defined in the NFA (e.g. a specific group of trees). The actual woodland patches, scattered within this vast area comprise approximately 4.7 million ha.

(b) Breakdown of land use categories per woodland class

Table 6 provides an overview of the area per woodland class that can be considered as *actual* woodland as opposed to areas which consist of a different form of land cover (e.g. cultivated). The latter are therefore not classified as *actual* woodlands in the NLC dataset but fall within the boundaries for that woodland class. They are defined in the Table as “not woodland”. The degraded areas are classified as such in the NLC dataset and are presented as a separate category. This is because they are neither “actual woodland” nor “not woodland” areas. The three categories are therefore mutually exclusive and add up to the total potential area within that particular woodland class, which is given in the final

column. Once again, as for Table 5, the first line under each class in the table provides the area in hectares (ha), whereas the second line (shaded) provides the area as a percentage of the total potential woodland class area. If one combines all woodland classes (excluding the scattered woodlands), over half the area is *actual* woodland (64%). A small percentage of the total area (9%) is degraded and the balance of the potential area is not woodland (e.g. grassland patches within a woodland, cultivated land, etc.).

Table 5: The protection status of each class of woodland in hectares (ha) and as a percentage (%) of the total *potential* area within each class.

Woodland Class	Protection Status		Total area
	Not protected	Protected	
HIGH ALTITUDE ACACIA (ha)	18 442 443	1 205 132	19 647 575
%	93.87	6.13	100
LOW ALTITUDE ACACIA (ha)	4 092 504	751 712	4 844 216
%	84.48	15.52	100
GHAAP PLATEAU (ha)	2 335 628	3 496	2 339 124
%	99.85	0.15	100
KURUMAN (ha)	1 294 580	9 410	1 303 990
%	99.28	0.72	100
SOUTHERN RENOSTERVELD (ha)	129 293	4 582	133 875
%	96.58	3.42	100
WATERBERG (ha)	967 868	267 798	1 235 666
%	78.33	21.67	100
COMBRETUM (ha)	8 390 374	1 473 269	9 863 642
%	85%	15%	100
SOUTPANSBERG (ha)	395 874	82 996	478 870
%	83%	17%	100
SPEKBOOM (ha)	1 493 276	84 379	1 577 655
%	94.65	5.35	100
NORTH SUCCULENT (ha)	1 279 392	11 652	1 291 044
%	99.1	0.9	100
SOUTH SUCCULENT (ha)	920 317	39 160	959 477
%	95.92	4.08	100
MOPANE (ha)	1 230 299	1 121 037	2 351 336
%	52.32	47.68	100
Total area (ha)	**40 971 848**	**5 054 623**	**46 026 470**
% of total area	**89%**	**11%**	**100**

Table 6: The various sub-categories (degraded, woodland and non-woodland[1]) of each class of woodland in hectares (ha) and as a percentage (%) of the total potential area within each class.

Woodland Class	Degraded	Not Woodland[1]	Actual Woodland	Grand Total
HIGH ALTITUDE ACACIA (ha)	1 858 908	7 554 361	10 234 306	19 647 575
%	9.46	38.45	52.09	100
LOW ALTITUDE ACACIA (ha)	470 337	2 022 868	2 351 012	4 844 217
%	9.71	41.76	48.53	100
GHAAP PLATEAU (ha)	81 241	94 779	2 163 103	2 339 123
%	3.47	4.05	92.47	100
KURUMAN (ha)	2 831	548 484	752 674	1 303 989
%	0.22	42.06	57.72	100
SOUTHERN RENOSTERVELD (ha)	1 701	114 119	18 056	133 876
%	1.27	85.24	13.49	100
WATERBERG (ha)	11 396	0	1 224 270	1 235 666
%	0.92	0	99.08	100
COMBRETUM (ha)	1 139 426	794 869	7 929 347	9 863 642
%	12	8	80	100
SOUTPANSBERG (ha)	49 657	0	429 213	478 870
%	10	0	90	100
SPEKBOOM (ha)	57 331	718 441	801 883	1577 655
%	3.63	45.54	50.83	100
NORTH SUCCULENT (ha)	202 028	567 650	521 366	1 291 044
%	15.65	43.97	40.38	100
SOUTH SUCCULENT (ha)	82 827	324 012	552 637	959 476
%	8.63	33.77	57.6	100
MOPANE (ha)	26 887	0	2 324 449	2 351 336
%	1.14	0	98.86	100
Total area (ha)	**3 984 570**	**12 739 583**	**29 302 316**	**46 026 469**
% of total area	**9**	**28**	**64**	**100**

Note: According to the NLC dataset, within the remaining parts of SA there are scattered patches of woodlands (including thickets) amounting to approximately 4.7 million ha (see Map 16).

[1] Non-woodland may refer to any other land-cover class besides “woodland” or “degraded”. It can include transformed land (e.g. agricultural), bare rock, urban areas, etc.

Table 7: The actual and protected area of each class of woodland in hectares (ha) and as a percentage (%).

Woodland Class	Actual woodland	Protected Area	% Protected
HIGH ALTITUDE ACACIA (ha)	10 234 306	1 205 132	12%
LOW ALTITUDE ACACIA (ha)	2 351 012	751 712	32%
GHAAP PLATEAU (ha)	2 163 103	3 496	0%
KURUMAN (ha)	752 674	9 410	1%
SOUTHERN RENOSTERVELD (ha)	18 056	4 582	25%
WATERBERG (ha)	1 224 270	267 798	22%
COMBRETUM (ha)	7 929 347	1 404 760	18%
SOUTPANSBERG (ha)	429 213	82 996	19%
SPEKBOOM (ha)	801 883	84 379	11%
NORTH SUCCULENT (ha)	521 366	11 652	2%
SOUTH SUCCULENT (ha)	552 637	39 160	7%
MOPANE (ha)	2 324 449	1 121 037	48%
Total area (ha)	**29 302 316**	**4 986 114**	**17%**

D. Setting Aside of Woodland Areas for Conservation (in terms of the NFA)

It is envisaged that the classification of woodlands and the spatial analysis of these woodlands will assist in the process of developing a woodland management strategy including the prioritisation of areas to be set aside in terms of the NFA. This could include aspects such as:

- Proximity of woodlands to human population (may have a bearing on how these woodlands are utilised).
- Areas of woodland found within or near to existing conservation initiatives.
- Proximity of woodlands to national roads.
- Proximity of woodlands to degraded areas.

While some of these attributes have been depicted on some of the maps (the scale of the maps precluded the ability to depict all information on all maps), it was recognized by workshop participants that these maps will not provide adequate information on which to base such a strategy.

Participants during both workshops were given the opportunity to put forward suggestions as to the criteria that DWAF should evaluate against when prioritising areas to be set aside in terms of the NFA for conservation.

It is generally accepted that the international benchmark of 10% of each type is a valid criterion and should aid government in its decision-making process. However, it was also agreed that such a figure may need to be altered in certain circumstances. Theoretically, for example, a small, isolated woodland class may require that 70–80% of it be conserved I order to make it a viable unit.

The recommendations from the workshop participants varied from social and economic issues to strongly scientific ones. These have all been listed, in *no order of importance whatsoever* in Appendix 5.

E. Conclusions

During the development of the classification it was agreed by the participants that the boundaries presented in this report will, in all likelihood require refining. The extent of actual woodlands is based on a dataset which is already over five years old and which did not specify 5% canopy cover as a delimiting factor for its woodland class. Fortunately, there are plans to redo the NLC project within the next few years. DWAF's inputs into that process will be essential to ensure that the outputs of the project serve DWAF's needs in terms of reporting on the woodlands.

Furthermore, it was also recognized that it will be impossible for DWAF to prioritise areas to be set aside without a thorough process of consultation and verification at a more localised level by including provincial conservation bodies and community representatives. It is at this level that people will provide valuable input as to where woodlands require additional conservation, if any. They will be able to identify areas of significance whether

that be for preserving rare or threatened species or some form of cultural heritage. DWAF can then use the spatial data available to help it to strategically decide on areas of importance at a national level. For example if the people in a province motivate that a certain area should be conserved, DWAF can assess this by checking points such as:

- How much of this class is already conserved?
- Is this area near to any obvious threats of urbanization, degradation, etc?
- Does it have any tourism potential (near large cities and main roads)?

However, these considerations alone, although conveniently available as spatial data, will probably not suffice and other criteria will also need to be considered. It is a recommendation of this report that DWAF embark on a process to develop criteria on which to strategically plan the setting aside of areas in terms of the NFA. This process may or may not overlap with the current process in the Department to develop criteria and indicators of sustainability, but the two should not be confused: the one set of criteria will measure sustainability, the other will aid a decision-making process. Appendix 6 lists some considerations and recommendations made by the participants of the workshop as to the way forward or "action plan" which DWAF should consider.

This report has presented a tentative classification of the woodlands of South Africa and based on that classification, provided some data on the extent and conservation status of these woodlands. It is envisaged that because this classification can accommodate other classifications such as Low and Rebelo (1996) and VEGMAP (in prep), it will be broadly accepted by stakeholders and end-users. It is, however, open to improvements in the form of redefining of boundaries, renaming of classes and even merging or splitting certain classes if deemed necessary at any stage. It was the recommendation of the workshop that this classification be tested more widely by DWAF once submitted in the form of this report. Several experts and end-users may still want to participate in the debate and should be allowed to do so.

This report addresses two important aspects pertaining to the sustainability of woodlands: the role that DWAF should play and the development of a basis from which to monitor and report on the woodland resource. It is the hope of the project team that these findings will assist DWAF in undertaking its important responsibility in guiding the rest of South Africa in the sustainable management of its natural woodlands.

References

Acocks, J.P.H. 1988. Veld Types of South Africa. *Memoirs of the Botanical Survey of South Africa* 57.

Balance, A., Fairbanks, D.H.K., Rowlinson, L., Shackleton, C., Thompson, M.V. and Vink, D.E. 1999. *A comparison of woodland resources as defined in the 'South African National Land-Cover' and the 'Vegetation of South Africa, Lesotho and Swaziland' databases: A preliminary analysis of boundary discrepancies*. CSIR Internal Report No.: ENV-P-I 98183.

Fairbanks, D.H.K. 2000. Physio-climatic classification of South Africa's woodland biome. *Plant Ecology* 149: 71-89.

Fairbanks, D.H.K., Thompson, M.V., Vink, D.E., Newby, T.S., van den Berg, H.M. and Everard, D.A. 2000. The South African Land-cover Characteristics Database: a synopsis of the landscape. *South African Journal of Science* 96: 69-82.

Frost, P.G.H. (1996) The Ecology of miombo woodlands. In Campbell, B. (ed) The miombo in transition: woodlands and welfare in Africa. CIFOR, Bogor.

Low, A.B. and Rebelo, A.G. (eds) 1996. *Vegetation of South Africa, Lesotho and Swaziland*. Department of Environmental Affairs and Tourism, Pretoria.

Rutherford, M.C. & Westfall, R.H. (1986). Biomes of southern Africa - an objective categorization. *Memoirs of the Botanical Survey of South Africa* No. 54.

Shackleton, C.M., Cawe, S.G. and Geldenhuys, C.J. 1999. *Review of the Definitions and Classifications of South African Indigenous Forests and Woodlands*. Report to the Department of Water Affairs and Forestry. Report No.: ENV-P-C 99007, CSIR Environmentek, Pretoria.

Scholes, R.J. (submitted) Woodlands of South Africa. In Lawes, M., Eeley, H., Shackleton, C.M., Geach, B. The use and socio-economic value of indigenous forest and woodland resources in South Africa. (Tentative title - In Preparation).

Thompson, M.W. (1996) Standard Land-Cover Classification Scheme for Remote Sensing Applications in South Africa. *SA Journal of Science* vol 92, January 1996.

APPENDIX 1 List of stakeholders and the summary of the consultation process

Institution	Contact person	Address	To be contacted by:	Questionnaire sent	DWAF Letter sent	Interview date
DEAT	Michelle H. Harck	Private Bag 447 Pretoria 0001	DWAF	28/11/01 Fax	11/12/01 Fax	Submitted to CSIR on 12 February 2002
NDA	Ivan Riggs	Private Bag X 120 Pretoria 0001	DWAF			Submitted to CSIR on 6 February 2002
Economic Affairs, Environment and Tourism Northern Province	Gerhard de Beer	P. O. Box 55464 Pietersburg 0700	DWAF	11/12/01 Fax	16/11/01 Posted	Submitted to CSIR on 6 February 2002
Agriculture, Conservation and Environment	Director: Dina Pule ?	P O Box 11219 Nelspruit 1200	DWAF	11/12/01 Fax	16/11/01 Posted	No response
Agriculture and Environmental Affairs	Director: M M Dlamini	Private Bag 9059 Pietermaritzburg 3200	DWAF	11/12/01 Fax	16/11/01 Posted	No response
Economic Affairs, Environment and Tourism	Chief Director: Dina Pule ?	Private Bag 0054 Bisho 5606	DWAF	11/12/01 Fax	16/11/01 Posted	Submitted to CSIR on 6 February 2002
Agriculture, Land Reform, Environment and Conservation Northern Cape	Elsabe Powell	Private Bag 6102 Kimberley 8300	DWAF		16/11/01 Posted	Submitted to CSIR on 6 February 2002
Agriculture, Conservation and Environment North West	Stuart Mangold Nonnie Letsolo	Private Bag 2137 Mmabatho 2735 Private Bag 2039 Mmabatho 2735	DWAF	28/11/01 Fax	16/11/01 Posted 11/12/01 Fax	Submitted to CSIR on 19 February 2001 No response
Mpumalanga Parks Board	J Eksteen Koos de Wit	Private Bag X 11338 Nelspruit 1200 Private Bag X 1038 Lydenburg 1120	DWAF DWAF	28/11/01 Fax	11/12/01 Fax	Submitted to CSIR on the 6 February 2002 Fax received 05 February 2002
KZNNCS	Trevor Sandwith		CSIR	28/11/01 Fax	11/12/01 Fax	23 Jan 2002

Institution	Contact person	Address	To be contacted by:	Questionnaire sent	DWAF Letter sent	Interview date
National Botanical Institute	Tim Hoffman Mike Rutherford	Private Bag X7 Claremont 7735	CSIR	28/11/01 Fax	11/12/01 Fax 11/12/01Fax	06 February 2002
South African National Parks	Harry Biggs	P O Box 878 Pretoria 0001	DWAF	11/12/01 Fax	16/11/01 Posted	No response
Botanical Society of SA	Director: Bruce Mackenzie	Private Bag X10 Claremont 7735	DWAF		16/11/01 Posted	No response
Tree Society of SA			DWAF			No response
WESSA	Keith Cooper	P O Box 18722 Dalbridge 4041	CSIR	28/11/01 Fax	11/12/01 Fax	28 January 2002
Plant Life	Tony Abbot		DWAF			No response
EDA (EC)	Sissie Matela	Matatiele	CSIR			29 January 2002
ARC	Terry Newby Hennie v d Berg		CSIR	28/11/01 Fax	11/12/01 Fax 11/12/01 Fax	No response
Rhodes University	Dr Charlie Shackleton Dr Sheona Schackleton Prof Christo Fabricus	P O Box 94 Grahamstown 6140	CSIR DWAF	28/11/01 Fax 28/11/01 Fax	16/11/01 Posted 16/11/01 Posted	03 January 2002 No response
Wits University	Prof Edward Witkowski		DWAF			No response
University of Natal	Prof Helen Watson		CSIR			30 January 2002
University of Venda	Ed Maboga Pablo Weise		CSIR			11 February 2002
University of the North	Dirk Wessels		DWAF			No response
INR	Miles Mander		CSIR	28/11/01 Fax	11/12/01 Fax	No response
CSIR	Bob Scholes	P.O. Box 395 Pretoria 0001				9/1/2002

APPENDIX 2 List of the participants of the workshops

WORKSHOP I				
NAME	**INSTITUTION**	**POSTAL ADDRESS**	**TEL NO.**	**EMAIL ADDRESS**
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Mr Ivan Riggs	National Department of Agriculture	Private Bag X 120 Pretoria 0001	012-319 7562	ivanR@NDA.agric.za
Mr Gerhard de Beer	Economic Affairs, Environment & Tourism (Northern Province)	P. O. Box 55464 Pietersburg (Polokwane) 0700	015-295 9300	
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Mr Lethlogonolo Gaborone	Department of Agriculture, Conservation & Environment	Private Bag X804 Potchefstroom	018-299 6718	wglg@potch1.agric.za
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APPENDIX 3 The NFA Provisions in terms of woodlands

THE ROLE OF DWAF AS DESCRIBED BY THE NATIONAL FORESTS ACT
J.J. Bester, A. Kuhn, P. Abbot

1. DEFINITIONS

FOREST: Includes natural forests, woodlands, plantations …[and] the ecosystems which it makes up **s2(1)(x)**

TREE: Includes any tree seedling, sapling, transplant or coppice shoot of any age and any root, branch or other part of it **s2(1)(xxxvi)**

WOODLAND: The NFA defines woodland as vegetation where the tree canopy cover exceeds 5% of the surface area up to canopy closure. **S2(1)(xxxix)**

COMMUNITY FORESTRY: Includes sustainable use of natural forests and woodlands outside State forests in addition to CFAs referred to in **s30, s32(1)(c)**

2. PURPOSES OF THE NFA

- Sustainable management and development of forests
- Protection of forests and trees
- Multipurpose use of forests (including environmental, economical, education, recreation, cultural, health and spiritual benefits)
- Promote Community Forestry

3. PRINCIPLES

Of the three principles stated in **s3**, two directly apply to woodlands:

- The Minister **must** determine the minimum reserve area for Woodlands
  This requires a suitable **typology** and information on the **extent** of the woodlands
- Forests (including woodlands) **must** be developed and managed to:
  – conserve biological diversity etc.
  – sustain potential yield
  – promote forest health and vitality
  – conserve soil and water

– conserve heritage resources
– advance disadvantaged people

4. CRITERIA, INDICATORS AND STANDARDS

The Minister **may** develop Criteria, Indicators and Standards on the advice of the Committee for Sustainable Forest Management of the NFAC **s4(2)(a)**

The Minister **may** create certification programmes and other incentives on the advice of the CSFM **s4(2)(b)**

The Minister **must** publish the C, I & Ss as regulations **s4(3)**

Sections 4(6) and **4(7)** elaborate on what C, I & S may cover and how they may be applied

The White Paper mentions the use of Criteria and Indicators for Woodlands as a means by which DWAF will meet its responsibility (Page25, second paragraph).

5. RESEARCH AND MONITORING

The Minister **mus**t do / commission research to promote the objectives of forest policy **s5(1), s5(2)**

The Minister **must** monitor forests (woodlands) with reference to Criteria, Indicators and Standards and report to Parliament every three years on:
–facts and trends
–whether the facts and trends are in the national interest
–measures implemented to address negative trends **s6(1), s6(2)**

Note: Degradation of the woodlands is a known fact, however, DWAF is not currently taking any action to address this negative trend, which is of national interest.

6. PROTECTION

Special Protection for Natural Forests provided by **s7(1)** does not apply to woodlands

The Minister may declare a group of indigenous trees a natural forest if there is doubt whether it is a natural forest or not **s7(2)**

In addition to State Forests or land purchased or expropriated for that purpose, the Minister may declare specially protected areas on other land at the request or with consent of the owner (This can theoretically include woodland) **s8(1)**

The Minister has managerial and financial responsibility for protected areas

Individual trees, groups of trees, species or particular woodlands can be protected in terms of **s12.** The emergency procedure provided by **s14** does not apply to the protection of a particular woodland, but would apply to trees that occur in woodlands

7. MEASURES TO CONTROL OR REMEDY DEFORESTATION

The Minister **may** declare Controlled Forest Areas on State forests or other land, including private and communal land. This provision can be applied in addition to protected status i.t.o. **s12(1)(c).**

S17(2) This provision requires prior declaration i.t.o. **s12(1)(c)** and therefore has limited value

Instead the Minister **may** enter into an agreement with the owner or interested persons that

–describe steps taken to prevent deforestation or rehabilitate a woodland
–allocate management responsibility for the area
–adopts a sustainable forest management plan
–records assistance the Minister will give to enable the owner to comply

The Minister may authorise officials of the Dept to prevent deforestation or to rehabilitate a woodland without an agreement mentioned above

8. WOODLANDS ON STATE FORESTS

The provisions of the Act for use and protection on State Forests applies to natural forests and woodlands on State forests alike. These include:

- Access for non-consumptive use
- Consumptive use
  –Licences
  –Exemption
- Community Forestry Agreements

9. COMMUNITY FORESTRY

The Act defines Community Forestry wider than CFAs and includes sustainable use of woodlands e.g.on communal land **s32(1)**

The White Paper ascribes serious woodland degradation in communal areas to the lack of Community Forestry support services. The Act clearly envisages support being given to communities for the management of woodlands. One of the purposes of the Act is to promote community forestry **s1(e), s1(f)**

The Minister may provide: **s32(2)**

–extension support
–nursery support
–material and / or financial assistance (disasters mentioned specifically) if such grants are not otherwise available.

The Minister may enter into agreements with persons or organs of State to regulate the above **s32(3)**

10. DWAF'S ROLE: OBLIGATIONS

- PERMANENT WOODLAND ESTATE
  –Woodland typology
  –Extent of the woodlands
  –Establish conservation status of different woodland types
  –Secure minimum areas for protection of different types

- PROMOTION OF SUSTAINABLE MANAGEMENT
  –Criteria and indicators are a possibility for achieving this, but the Minister is not obliged to determine C, I & S for woodlands

- MONITOR AND REPORT ON WOODLANDS

- RESEARCH

11. DWAF'S ROLE: DISCRETIONARY

- Standards, Certification Schemes Or Other Incentives
- Declare Protected Areas (Other Than The Minimum Required)
- Declare Protected Trees, Species Of Trees Or Woodlands
- Declare Controlled Forest Areas
- Enter Into Agreements For The Management And Rehabilitation Of Woodlands
- Direct Intervention To Manage Or Rehabilitate Sensitive Areas
- Extension Support By Community Forestry For Communities Or Land Owners
- Plant Supply
- Material And Financial Support

12. DWAF'S ROLE A PROPOSED POSITION

- PERMANENT WOODLAND ESTATE
  This is a clear mandate. Need for geo-spatial information is widely expressed

- PROMOTION OF SUSTAINABLE MANAGEMENT
  Consolidation of Criteria and Indicators already in use my help if this information can be disseminated through active promotion campaigns - possible duplication !

- RESEARCH
  This is mandatory, however many other institutions are also involved.
  A co-ordination role may benefit

- MONITORING AND REPORTING
  This is a clear mandate. Mechanism needed to collect and process information

- DECLARE PROTECTED TREES AND WOODLANDS
  Being done. This can benefit local communities - empower to enforce protection

- COMMUNITY FORESTRY ADVISORY SERVICE
  This is important, possible and cost effective. DWAF has gained some experience that can be shared with other implementers

- REGULATION

APPENDIX 4 List of issues from workshop I

(AS LISTED BY PARTICIPANTS)

OWNERSHIP

Need incentives
Conflict between traditional leaders and local government interests
Communal land and land reform implications
Communal ownership – difficult to manage and lack of understanding around woodland management
Land ownership not clear - as such fails to direct roles and responsibilities
Often used as an excuse not to manage – no room for negotiations
Boundaries of communal land might be problematic

MANAGEMENT

Role of traditional authorities and local government
What incentives are there for communities and implementing agencies – motivation for managing woodlands?
Ad hoc initiatives – rural development in woodlands is uncoordinated
Roles and responsibilities on management of woodlands not clear
Who manages woodlands on communal land?
Are there any communal institutional arrangements already existing?
Formulate management objectives (manage to achieve what?)
Lack of government capacity (for extension support)
Utilisation – firewood, cottage industries, carving
What should be the role of government departments?
Conflict between local government and tribal authorities often impact on natural resources
Community participation and linkage to IDP process
Uncoordinated information sources
Need of a management plan

TECHNICAL ADVICE

Needs co-ordinated approach
National database (distribution of woodlands not in private and communal land)
Confusion in the classification system
Uncoordinated programmes
Not linked to monitoring or research
Objectives of advice not linked to policy
Protective measures, which do not apply to woodlands but to the trees in woodlands, represent outdated approach – of species conservation as opposed to ecosystem conservation
Is there a National database that will regularly monitor woodlands?

POLICY ADVICE & PROCESS

Duplication of roles and responsibilities eg. Different Acts deal with various aspects of woodlands
Is there a need for implementation guidelines?
Poor understanding of what DWAF's objective is i.e resource assessment reporting or management?
Have a check and balance of processes and standards of projects and responsibilities
Have a check and balance in local government responsibilities
Consideration of cultural norms – importance of trees and effects on land
Should balance socio-economic issues with the environmental aspect.

POLICY DEVELOPMENT, AMINISTRATION AND IMPLEMENTATION

Policy not aligned with other policies e.g. Biodiversity
Reason for protecting woodlands must be articulated in social terms
Implementation policy guidelines?
Woodland resource utilisation, products and commercialization

FINANCING

Given potential (enterprise) development – who should contribute financially
Incentives for managing
Inconsistent - subject to political whim or interpretation
Needs co-ordination and monitoring
Funding donors requirements (obligations) vs National government priorities (is there conflict of interest?)
Inadequate resources – staff, funds & political support

RESEARCH

Need criteria and indicators for Sustainable Woodland Management for evaluation and reporting & also to identify negative trends for research intervensions
Resource use – patterns, quantity, catergories
Who should do research co-ordination?
Co-ordination of researchers and findings

EDUCATION AND AWARENESS

Combine education and awareness with empowerment
What training or education mechanism is necessary?
Needs to be seen as a cost effective alternative to prosecution
Lack of capacity – law enforcement
Need education and training co-ordination – technikons, universities, colleges, technical schools
Inadequate resources – staff, funds & political support

MONITORING

Resource monitoring – National resource inventory / database, sustainable resource utilisation trends?
Management system – for Provincial to inform National there is a need for criteria and indicators and standards (do we have anything on the ground to measure ourselves against?)
Should observe changes or trends – increase in density/space, imbalances, competitive between species, bush invasion /encroachment
Fragmented – need to align with biodiversity plans – link it to research
Effective monitoring and evaluation is essential
Must coordinate or link to existing SoE, IDP, EIP, HRC, Agenda 21.
Clarity on the need to co-ordinate what and why
Lack of resources and capacity
Political influence/ power

REGULATION

Fragmented approach – lack of overarching laws
Inadequate resources – staff, funds, political support
Lack of government capacity to implement - law enforcement (forestry officers)
Community forestry – where do we draw the line between sustainability and utilisation
Breakdown of traditional and government enforcement systems in post-94 Euphoria
Why should we regulate, what is the problem presently and what should be regulated?
Lack of national norms and standards that align to biodiversity convention
Data on prosecutions/arrests/offences not fed into monitor or research/ technical loop
Fatal flaw in the Act – No ecological support for "minimum area" to protect different types of woodland. Does this simply mean that the rest can simply be destroyed?
There is potential confusion between CFM (national level) and CBNRM (provincial) efforts
Effective control measures with effective awareness at community level
Co-ordination between DWAF and provincial government departments with regard to regulation
How do we regulate individual private land owners and National and provincial level
Extent – clear guidelines on management for local government and tribal authorities
Unregulated communal activities
Can be used to require Environmental Management Plan of private landowners (but is seldom)
Department of Justice does need to understand the importance of environmental crimes
Lack of intact management plans to manage woodlands especially for traditional leaders eg. Chiefs

OTHER ISSUES EMERGING

1. Poor understanding on what DWAF's objective is
2. Confusion on Management of who does what
3. Confusion on classification system of woodlands
4. Balancing of top-down and bottom-up socio-economic issues
5. There is a gap between the policy implementation and the people
6. Political support
7. Political buy in

APPENDIX 5 Criteria to consider when setting aside a minimum area of woodlands for conservation

Develop themes – social (culture, heritage), environmental (sensitive areas, rare species) and economic (valuable)

1. endemism
2. economic value – tourism potential, SMME development
3. biodiversity (richness)
4. ecosystem – multiple objectives
5. threat – degree of being threatened
6. other policies
7. resource value
8. medicinal nature
9. locality development – threat
10. heritage resources
11. utilisation
12. species type
13. importance as a “corridor”
14. locality of purpose
15. compatible with overall land use plan
16. extent and distribution
17. threatened species – plants and animals/endangered
18. viable size – no. of populations, is it big enough to be sustainable
19. uniqueness
20. state of the vegetation – degraded or intact
21. spiritual value
22. landscape – aesthetic
23. socio-economic value
24. adding value
25. state of the vegetation or condition
26. protection: socio-political (tourism) e.g. caves (shelter during battles)
27. other land use priority
28. importance relevant to other biomes or ecosystems

APPENDIX 6 List of issues from workshop II

RECOMMENDATIONS, WAY FORWARD, ACTION PLAN

1. Legal interpretation needs to be considered
2. Reporting first cut is at National level, but needs provincial verification, provinces must take into consideration criteria such as endemism, social/cultural issues, biodiversity.
3. Typology has to be specific – each type should be based more around VEGMAP (more accurate than others – based on field collected data)
4. When VEGMAP comes out, aggregate their classes and revisit our classification
5. Scientific advisory – to comment on the classification chosen at the workshop some further reviewers should be approached.

APPENDIX 7 NLC Definitions

Land-Cover Class	Definition
Forest (indigenous)	All wooded areas with a tree canopy > 70 %. A multi-strata community, with interlocking canopies, composed of canopy, sub-canopy, shrub and herb layers. The canopy is composed mainly of self-supporting, single stemmed, woody plants > 5 metres in height. Essentially indigenous species, growing under natural or semi-natural conditions (although it may include some areas of self-seeded exotic species). Excludes planted forests (and woodlots)
Forest & Woodland (*rename* as Woodland)	All wooded areas with a tree canopy between 10 - 70%. A broad sparse - open – closed canopy community, typically consisting of a single tree canopy layer and a herb (grass) layer. The canopy is composed mainly of self-supporting, single stemmed, woody plants > 5 metres in height. Essentially indigenous species, growing under natural or semi-natural conditions (although it may include some areas of self-seeded exotic species). Excludes planted forests (and woodlots) Canopy cover density classes may be mapped if desired, based on sparse (< 40%), open (40 – 70 %), and closed (> 70 %).
Thicket, Bushland, Bush Clumps, High Fynbos	Communities typically composed of tall, woody, self-supporting, single or multi-stemmed plants (branching at or near the ground), with, in most cases no clearly definable structure. Total canopy cover is greater than 10%, with canopy heights between 2 – 5 metres. Essentially indigenous species, growing under natural or semi-natural conditions (although it may include some areas of self-seeded exotic species, especially along riparian zones). Presence of alien exotic species can be modelled spatially using broad principles of unlikely structural / temporal occurrences within a given vegetation biome or region. Dense bush encroachment would be included in this category. Canopy cover density classes may be mapped if desired, based on sparse (< 40%), open (40 – 70 %), and closed (> 70 %).
Bare Rock and Soil (natural)	Natural areas of exposed sand, soil or rock with no, or very little vegetation cover during any time of the year, (excluding agricultural fields with no crop cover, and open cast mines and quarries). Examples would include rock outcrops, beach sand, and dry river bed material.
(Degraded areas) Bare Rock and Soil (erosion : dongas / gullies)	Non-vegetated areas (or areas of very little vegetation cover *in comparison to the surrounding natural vegetation*), that are primarily the result of current gully erosion processes. Typically located in association with areas of poor grassland cover along existing streamlines and / or on slightly steeper slopes than sheet erosion areas (i.e. greater than 6 degree slope). In some areas the full extent of donga activity may be obscured by either overhanging adjacent bushes, encroaching thorn bush, or, in the case of more stable dongas, by bush or grass cover along the actual streamline.