INTEGRATED
RESERVE MANAGEMENT PLAN

DURBANVILLE NATURE RESERVE

June 2011

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AUTHORIZATION PAGE

This Integrated Management Plan for the Durbanville Nature Reserve was drafted by the Area Manager and recommended by the Reserve Planning Team, a multi-disciplinary team consisting of:

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INTEGRATED RESERVE MANAGEMENT PLAN

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City of Cape Town

Durbanville Nature Reserve

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List of abbreviations

APO	**annual plan of operations**
C.A.P.E	**Cape Action for People and the Environment**
CDF	**Conservation Development Framework**
CFR	**Cape Floristic Region**
EIA	**environmental impact assessment**
GIS	**geographic information system**
IDP	**Integrated Development Plan**
IMEP	**Integrated Metropolitan Environmental Policy**
IRMP	**Integrated Reserve Management Plan**
LBSAP	**Local Biodiversity Strategy and Action Plan**
METT-SA	**Management Effectiveness Tracking Tool South Africa**
MOU	**memorandum of understanding**
NCW	**National Council of Women**
NEMPA	**National Environmental Management Protected Areas Act**
PAR	**protected-area review**
RPC	**Reserve Planning Committee**
SANBI	**South African National Biodiversity Institute**
SWOT	**strengths, weaknesses, opportunities, threats**

PART 1

DESCRIPTION

1. INTRODUCTION

Durbanville Nature Reserve conserves Swartland Shale Renosterveld, with strong elements of Cape Flats Sand Fynbos as well. The presence of these two Critically Endangered vegetation types has resulted in an extremely high species diversity. The reserve is also home to a healthy population of the *Breviceps gibbosus* (Cape Rain Frog). Although small, the reserve provides opportunities for both recreation and environmental education.

The strategic management planning process (which resulted in the development of an Integrated Reserve Management Plan, or IRMP) for Durbanville Nature Reserve began with the definition of the vision followed by the purpose for the reserve. This purpose is then supported by desired states for the reserve. The reserve objectives contribute to realising the purpose and desired states. For each desired state, a number of management objectives are identified. These management objectives are then implemented through the identification of outputs. Objectives for each desired state are prioritised for the five-year time horizon of the plan. Time frames, deliverables, performance indicators and targets are then allocated to each objective, or a group of linked outputs contributing to the desired state.

1.1 Aim of the Integrated Reserve Management Plan

The aim of the IRMP is to ensure that Durbanville Nature Reserve has clearly defined objectives and activities to direct the protection and sustainable use of its natural, scenic and heritage resources over a five-year period. The IRMP thus provides the medium-term operational framework for the prioritised allocation of resources and capacity in the management, use and development of the reserve. The IRMP intends to add value and continuity by clearly stating management objectives, scheduling action, and providing management guidelines.

The planning process for Durbanville Nature Reserve takes place against the backdrop of (i) the City of Cape Town's Integrated Development Plan (IDP) (Anon 2010); (ii) the City of Cape Town's Integrated Metropolitan Environmental Policy (IMEP) (Anon 2003[1]); (iii) the biodiversity strategy (Anon 2003[2]) and the Local Biodiversity Strategy and Action Plan (LBSAP) (Anon 2009[1]), and (iv) the bioregion (Cape Action for People and the Environment, or C.A.P.E). The major elements of the IRMP are this document (overall strategy, vision and context), the detailed subsidiary plans (as required), and an annual plan of operations (APO). The IRMP for Durbanville Nature Reserve is supported by a State of Biodiversity report (Holmes *et al.* 2008), operational guidelines, and a monitoring and evaluation

framework to ensure ongoing implementation and review of protected-area management activities (figure 1).

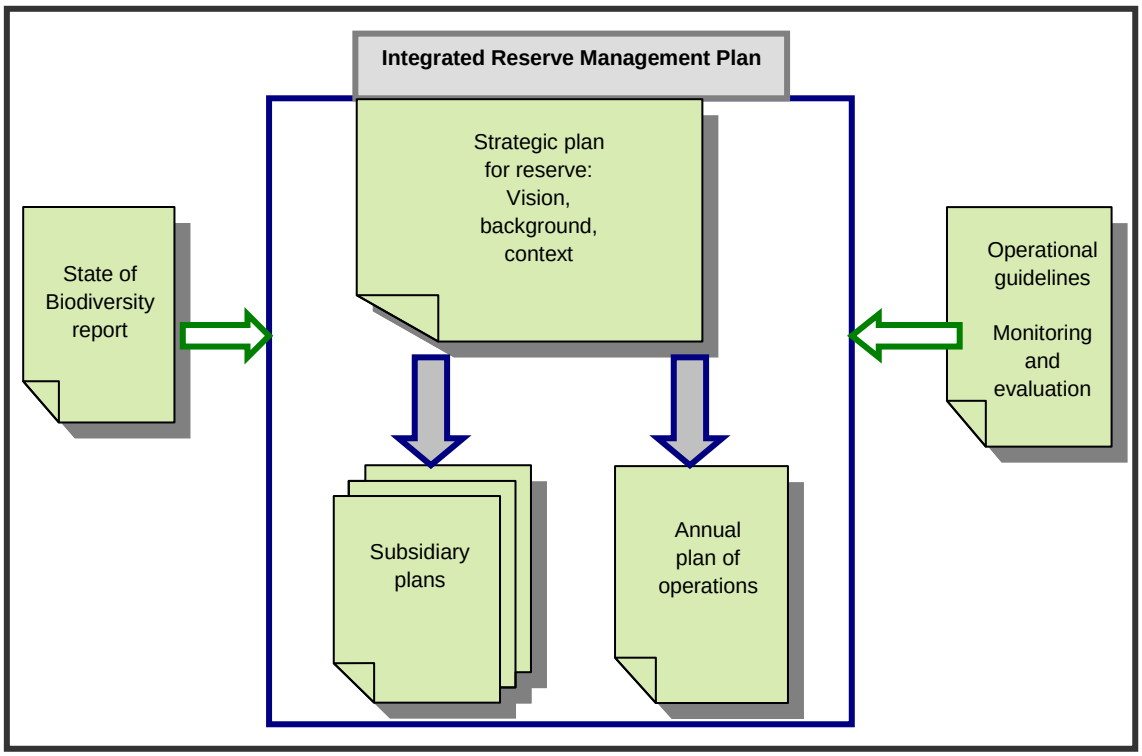


Figure 1: Elements of the IRMP

The IRMP for Durbanville Nature Reserve forms part of a tiered series of policies, legislation and related planning documents at the sector, institutional, agency and local levels (see figure 2).

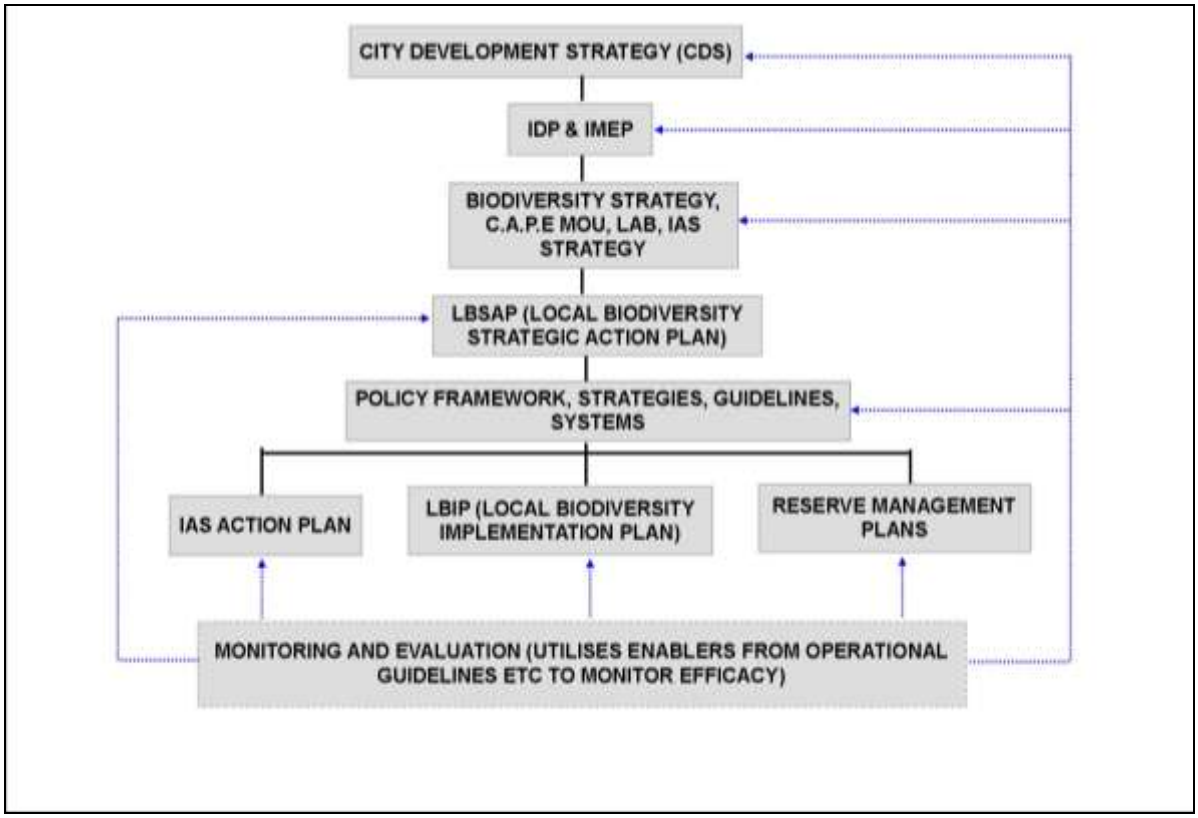


Figure 2: Legal and planning framework for the IRMP

Where possible, emphasis has been placed on the following:

- Assigning responsibility for management interventions
- Scheduling said management interventions
- Quantifying management costs

This approach is specifically intended to create a mechanism whereby management intervention can be monitored and audited on an annual basis.

In context, this IRMP is a dynamic document, and the detailed subsidiary plans should be updated on an annual basis or as soon as new information comes to light that may better inform decisions on responsible land management. The IRMP should be updated every five years.

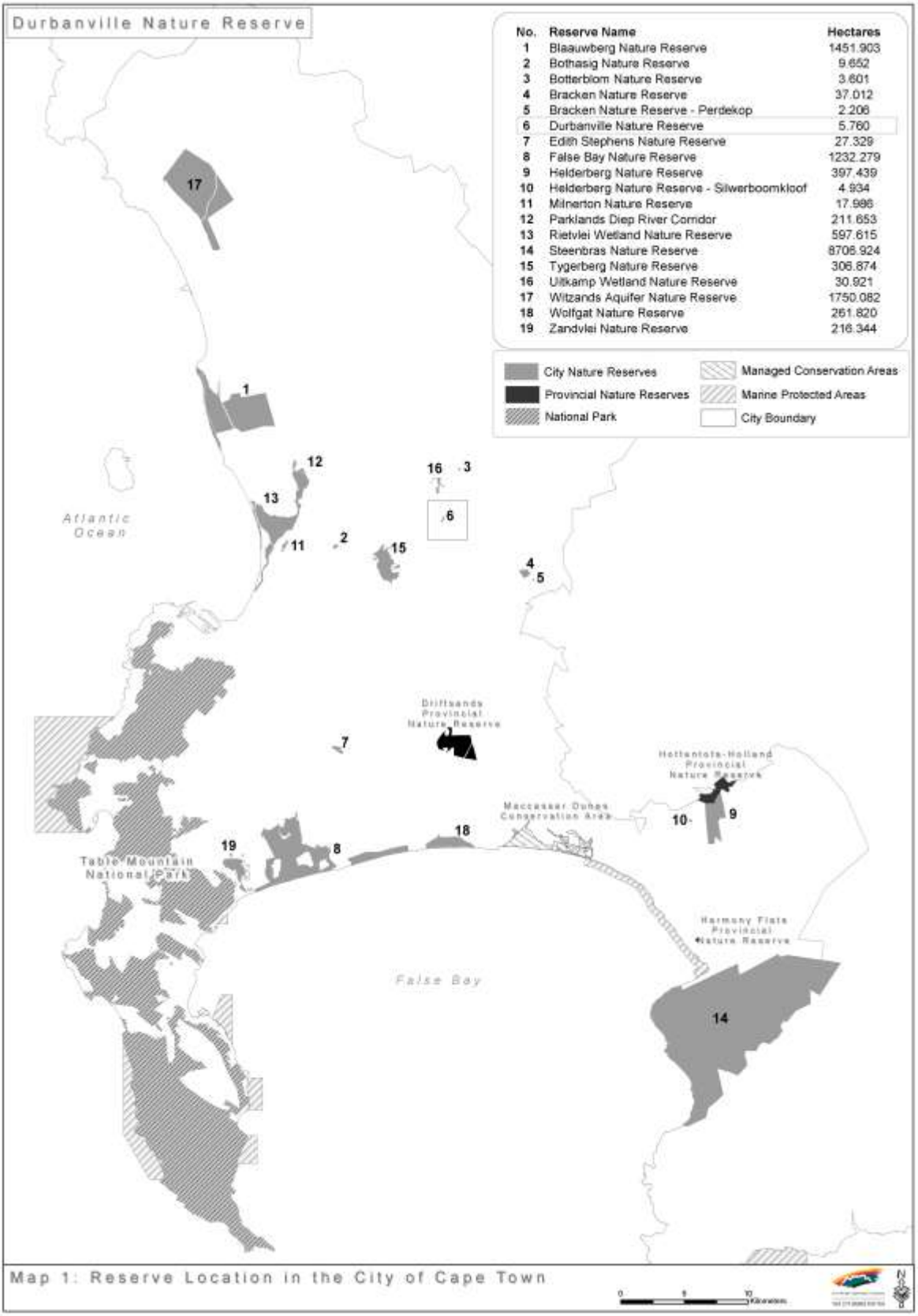
The drafting of this IRMP has been guided by a small interdisciplinary Reserve Planning Committee (RPC) comprising the branch manager, the regional manager, the area manager, various specialists, and other interested and affected persons. Repeated drafts of the IRMP were presented to, and discussed by, the RPC before broader circulation for public participation.

Pre-engagement workshops were held with community partners from March to May 2010. This afforded key community partners an opportunity to provide their input at an early stage. Where practical, the ideas and outputs from the workshops have been incorporated into the IRMP.

1.2 Location and extent

Durbanville Nature Reserve is situated within the City of Cape Town metropolitan boundaries in the Durbanville region. It is located in the Biodiversity Management Branch's central region. The reserve is bounded by Racecourse Road on the east, high-income residential development to the north, and Durbanville Racecourse to the west (map 1 and 2). Refer to appendix 2A and 3B for a description of the boundaries.

Durbanville Nature Reserve (erf 1969) was proclaimed in 1966 as a local-authority nature reserve, Proclamation No 126 of 1967, and was published in the Provincial Gazette (see appendix 2D) primarily to protect *Aristea lugens,* which was previously thought to be extinct. The reserve is known locally as Durbanville Nature Reserve, and is managed by the City of Cape Town's Biodiversity Management Branch. The centre of the reserve is approximately 30 km west of the Cape Town city centre, and is situated 180 m above sea level. Durbanville Nature Reserve covers an area of approximately 6 ha in extent, and is located at the following grid reference: 33° 50' 27.83" S, 18° 38' 36.59" E



Map 1: Reserve location in Cape Town

Map 2: Reserve boundaries

2. DESCRIPTION OF LANDHOLDINGS AND OWNERSHIP

2.1 Property details and title deed information

- Erf 64-18696, Durbanville, situated in the City of Cape Town municipality, Western Cape (Refer to appendix 2A and 3B for description of boundaries and refer to appendix 3 for the Surveyor-General map).
  In extent 5,760458 ha

  During the compilation of this report, the title deed could not be obtained. Please see appendix 2C for the proclamation confirmation documentation.

  The reserve formed part of the development of Durbanville Extension 13 by the Durbanville municipality.

  Nature Reserve refers to the area declared as such on the properties in terms of the National Environmental Management Protected Areas Act (NEMPA) as depicted on map 3.

Map 3: Reserve erven

2.2 Landscape perspective

The reserve falls within the Cape Floristic Region (CFR), the smallest yet richest of the world's six floral kingdoms, and the only one to be found entirely within one country. This rich biodiversity is under serious threat for a variety of reasons, including conversion of natural habitat to permanent agricultural area, inappropriate fire management, rapid and insensitive development, overexploitation of water resources, and infestation by alien species. The region has been identified as one of the worlds 'hottest' biodiversity hot spots (Myers *et al.* 2000).

In response to this challenge, a process of extensive consultation involving various interested parties, including local government and non-governmental organisations, resulted in the establishment of a strategic plan (CAPE Project Team 2000) referred to as the Cape Action Plan for People and the Environment, which identified the key threats and root causes of biodiversity losses that need to be addressed in order to conserve the floral kingdom. This resulted in a spatial plan identifying areas that need to be conserved and a series of broad programme activities that need to take place over a 20-year period. Based on the situation assessment and analysis of threats, three overarching, mutually complementing and reinforcing themes were developed:

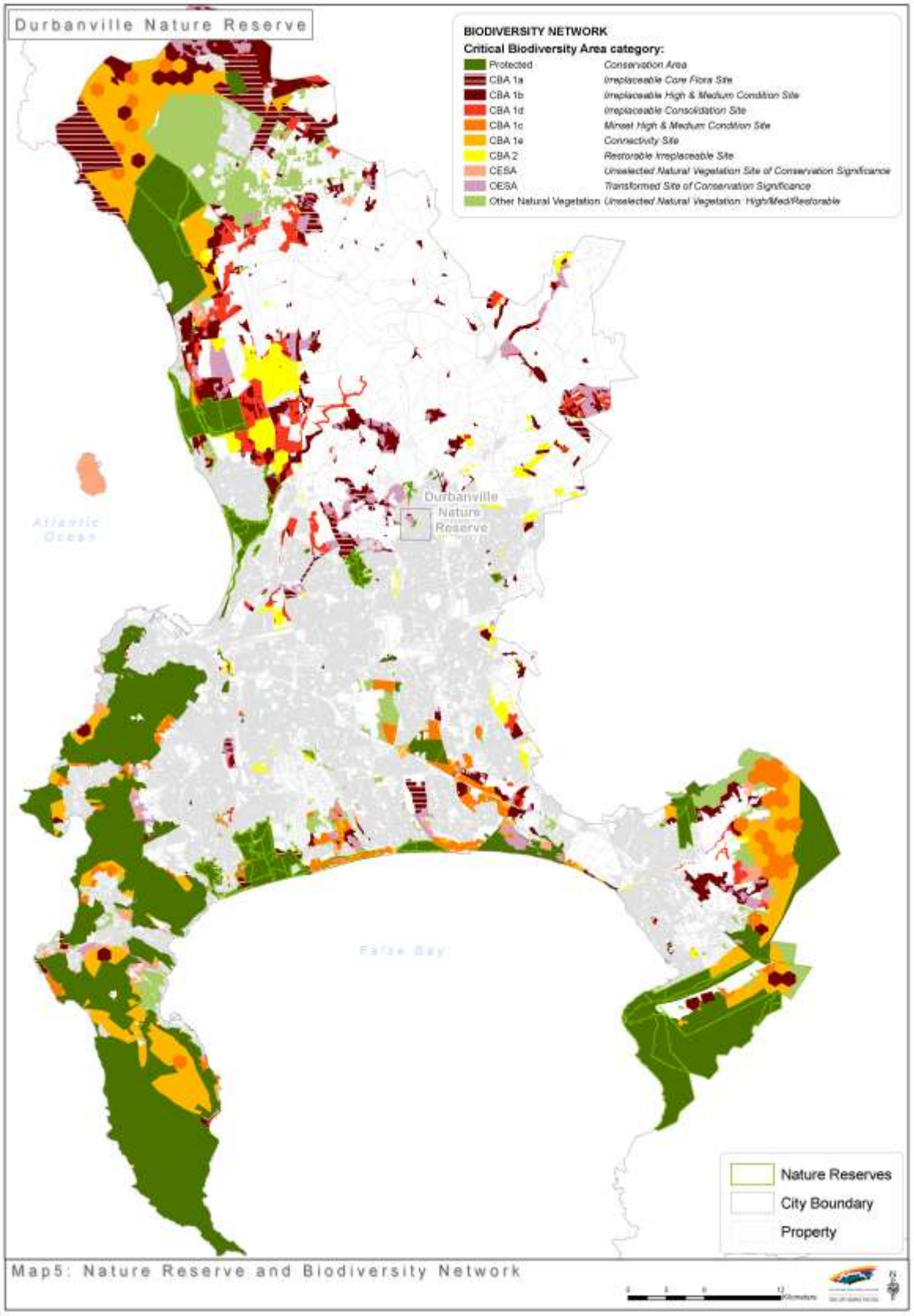
- To establish an effective reserve network, enhance off-reserve conservation, and support bioregional planning
- To strengthen and enhance institutions, policies, laws, cooperative governance and community participation
- To develop methods to ensure sustainable yields, promote compliance with laws, integrate biodiversity concerns with catchment management, and promote sustainable eco-tourism

The C.A.P.E partnership was formed and works together to implement the C.A.P.E vision and plan by strengthening institutions, supporting conservation efforts, enhancing education, developing tourism benefits, and involving people in conservation. The City of Cape Town was one of the 19 founding signatories of the C.A.P.E memorandum of understanding (MOU).

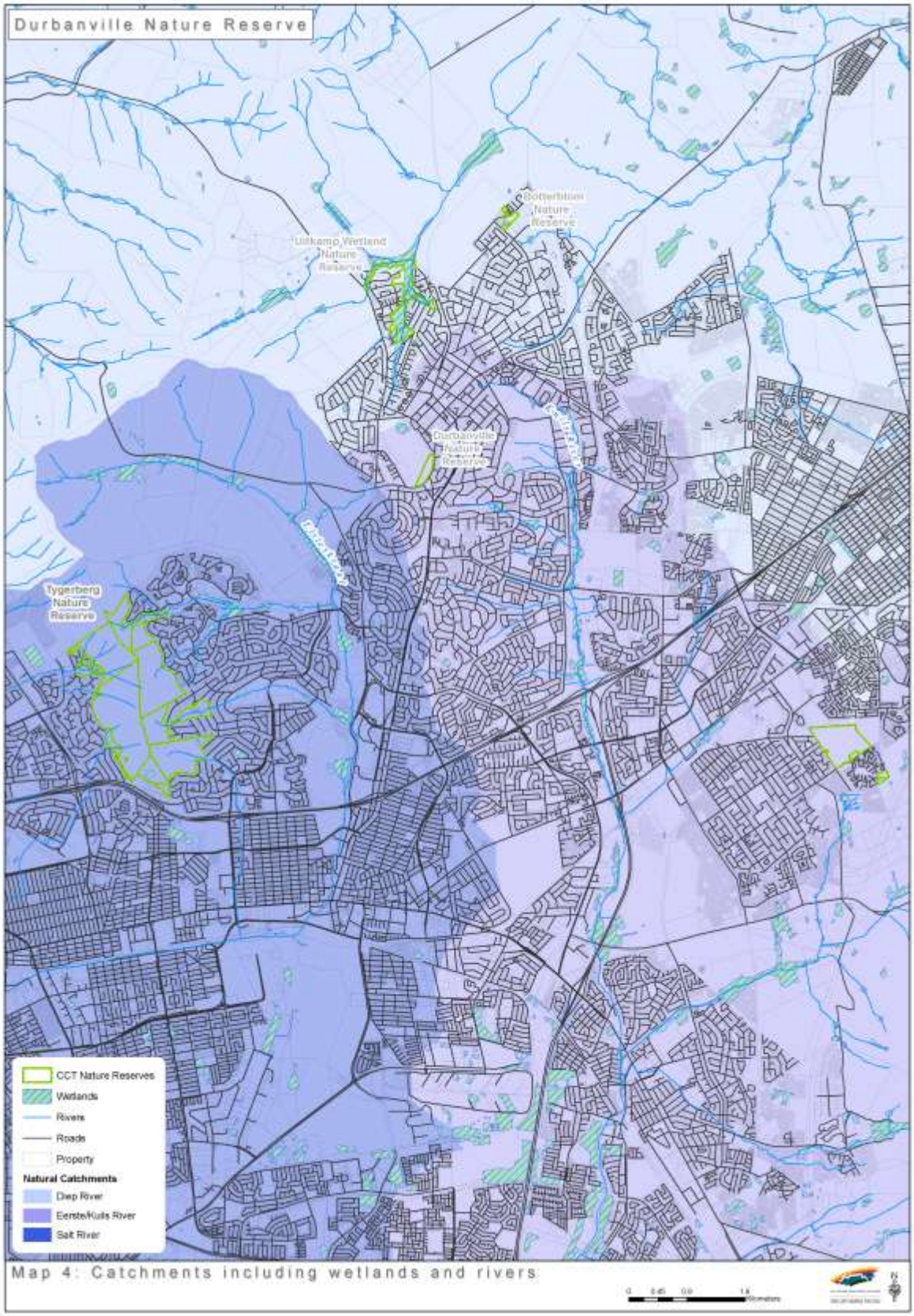
Durbanville Nature Reserve forms an important platform and integral link in the city's biodiversity network (Anon 2009[2]). This network ensures that parcels of land worthy of

conservation are included in a protective network, connected to other parcels of conservation-worthy land.

Durbanville Nature Reserve links the Uitkamp Wetland and Botterblom nature reserves with the private property Altydgedacht and Tygerberg Nature Reserve in respect of Swartland Shale Renosterveld (map 4).



Map 4: Nature Reserve and Biodiversity Network



Map 5: Catchments including wetlands and rivers

2.3 Physical environment

2.3.1 Climate

Temperatures in Durbanville are moderate, with warm to hot summer days and cool to moderate winter days. Maximum temperatures range between 18 °C and 32 °C, while minimum temperatures range between 6 °C and 14 °C. Rain is confined to winter months, with an annual average rainfall of 774,38 mm. June to July constitutes the wettest period, with an average of 133,26 mm rainfall per annum. January is the driest month, with an average rainfall of 13,9 mm per annum. A Durbanville resident has been recording rainfall figures at Uitkamp Wetland Nature Reserve since 2003. Please see appendix 1 for a summarised table of mean rainfall per month.

Prevailing winds occur in summer and winter. In summer, south-easterly winds occur predominantly in the afternoons. In winter, north-westerly winds are dominant, with frequent calm periods occurring more often in winter than in summer.

2.3.2 Geology, geomorphology, soils and land types

Durbanville Nature Reserve contains clay soils derived from Malmesbury group shales (specifically the Porterville formation in the north and east, and the Moorreesburg formation in the west). The soils contain prismacutanic and pedocutanic diagnostic horizons, and Glenrosa and Mispah forms are predominant. Due to its low-lying nature, recent nutrient-poor sandy alluvium soil has accumulated on clay soils in sections of the reserve.

2.3.3 Hydrology and aquatic systems

Durbanville Racecourse, bordering Durbanville Nature Reserve, forms part of the Kuils River drainage system. The northern limit of the drainage catchment area is the existing Langeberg Road. Map 5 illustrates the hydrological features of the Durbanville area.

Although no rivers exist within the reserve's boundaries, the underground water table links the reserve with the Durbanville Racecourse drainage system. During heavy rainfall, above-ground water movement can be observed along pathways. This results in temporary streams that do not link up with any river system.

Within the reserve, there are four concrete ponds that do not have any in or outflows, and that fill up due to rainfall.

2.4 Biological environment

2.4.1 Vegetation

The natural vegetation in Durbanville Nature Reserve consists of a transition between two major vegetation types, namely Swartland Shale Renosterveld and Cape Flats Sand Fynbos. A total of 241 plant species have been recorded within the reserve boundaries, of which four are confirmed Red List threatened species, namely *Aristea lugens*, *Serruria brownii*, *Cliffortia hirta* and *Gladiolus recurvus.* Several extra-limital fynbos species were introduced into the reserve historically, contributing to the high number of species (appendix 6A and B). These species threaten the genetic integrity of some of the locally indigenous flora, and it is thus a management priority to remove these species and re-introduce (where required) locally indigenous taxa.

Swartland Shale Renosterveld

Swartland Shale Renosterveld is a Critically Endangered vegetation type. The minimum national conservation target for this vegetation type is 26%. This is unfortunately unattainable, making the conservation of every last remnant, irrespective of size, critical (Rebelo *et al*. 2006)

The vegetation is characterised by low to moderately tall leptophyllous shrubland of varying canopy cover, as well as low, open shrubland dominated by renosterbos. Hillocks are a very prominent local feature of the environment, forming 'hummockveld' near Piketberg, and giving the Tygerberg Hills their name. Stunted trees and thicket are often associated with the hillocks. Disturbed areas are dominated by *Athanasia trifurcata* and *Otholobium hirtum*. Patches of *Cynodon dactylon* (grazing lawns) also occur in abundance (Rebelo *et al*. 2006)

Clay soils are derived from Malmesbury group shales (specifically the Porterville formation in the north and east, and the Moorreesburg formation in the west). The soils contain prismacutanic and pedocutanic diagnostic horizons, and Glenrosa and Mispah forms are predominant**.**

Cape Flats Sand Fynbos

Cape Flats Sand Fynbos is a Critically Endangered vegetation type. The minimum national conservation target for this vegetation type is 30%. However, less than 1% is statutorily conserved.

The vegetation is characterised by moderately undulating and flat plains, with dense, moderately tall, ericoid shrubland containing scattered emergent tall shrubs. Proteoid and restioid fynbos are dominant, with asteraceous and ericaceous fynbos occurring in drier and wetter areas respectively.

The soil is characterised by acid, tertiary, deep, grey regic sands, usually white, often Lamotte form (Rebelo *et al*. 2006)

2.4.2 Mammals

Durbanville Nature Reserve is home to numerous small to medium-sized mammals. Many of these species are nocturnal and inconspicuous, and it is usually only scat and spoor that betray their presence in the reserve. Due to the current size of the reserve, the area cannot support any larger mammals.

A baseline study to record species occurrence in the reserve has recently been initiated. This study aims to catalogue all species residing in and/or passing through the reserve. This information will assist reserve management in the development of appropriate management practices that would consider the full suite of species in future actions. To date, a total of six species have been recorded on site.

Species that have been recorded to date are *Galerella pulverulenta* (Small Grey Mongoose), *Herpestes ichneumon* (Large Grey Mongoose), *Cynictis penicillata* (Yellow Mongoose), *Chrysochloris asiatica* (Cape Golden Mole), *Otomys irroratus* (Vlei Rat) and *Rhabdomys pumilio* (Striped Field Mouse) (appendix 6). Historically, *Hystrix africaeastralis* (Porcupine) and *Raphicerus melanotis* (Cape Grysbok) occurred within the reserve, but their continued presence needs to be confirmed.

2.4.3 Birds

A total of 104 bird species for the area has been recorded historically by the Tygerberg Bird Club (see appendix 7). Of these, three are endemic to the fynbos region, namely *Promerops cafer* (Cape Sugarbird)*, Serinus canicollis* (Cape Canary) and *Anthobaphes violacea* (Orange- breasted Sunbird). Occasionally, *Anas undulata* (Yellow-billed Duck) visit the man-made ponds of the reserve.

2.4.4 Amphibians

Three amphibian species have been recorded in Durbanville Nature Reserve, namely *Tomopterna delalandii* (Cape Sand Frog), *Breviceps gibbosus* (Cape Rain Frog) and *Strongylopus grayii* (Clicking Stream Frog). *Breviceps gibbosus* (Cape Rain Frog) is listed as Vulnerable in the Red Data book of threatened species. Please see appendix 8 for a complete species list.

2.4.5 Reptiles

Eight reptile species have been recorded in Durbanville Nature Reserve. Of these, five snake species, one lizard species and two tortoise species have been recorded.

Of the lizard species, the most common is *Bradypodion pumilum* (Cape Dwarf Chameleon). The notable snake species occurring in the reserve are *Lamprophis aurora* (Aurora House Snake), *Duberria lufrix* (Common Egg-Eater), *Pseudaspis cana* (Mole Snake) and *Crotaphopeltis hotamboeia* (Red Lipped Snake). *Cherisna angulata* (Angulate Tortoise) and *Geochelone pardalis* (Leopard Tortoise) also occur in the reserve. It should be noted that *Geochelone pardalis* (Leopard Tortoise) has been introduced to the site. Please see appendix 9 for a full species list.

2.4.6 Invertebrates

Various research and monitoring projects still need to be conducted within the reserve to obtain sufficient data for documentation purposes.

2.5 Socio-political context

2.5.1 History

Durbanville Nature Reserve was proclaimed as a local-authority nature reserve in 1966. The discovery of a small patch of *Aristea lugens,* which had long been thought extinct, led to the establishment of the nature reserve. Mrs Ruby Linder, Dr WPO Jackson and Prof A Barnard discovered it while walking on the common near Durbanville Racecourse in 1960.

Mrs Linder, a member of the National Council of Women (NCW), reported this at the NCW's next meeting, and the Council decided to start a reserve in the area where the *Aristea lugens* was found. The then Durbanville town council was approached and 4 ha were made available to the NCW for this project. Under the guidance of Mrs Jackie Boreham and Mrs Janet Starke, the NCW laid out paths. These two ladies were the driving force behind the initiative, and worked there voluntarily from 1962 to 1967. In 1963, the Durbanville town council gave a further 2 ha of disused rubbish dump, and fenced the entire area. The NCW called on farmers to assist in the clearing of the Port Jackson in this newly added area. Mr Koos Eksteen, a local farmer, also played a major role by planting proteas in an area that had formerly been used as a rubbish dump and had been covered by Port Jackson trees.

The reserve was officially proclaimed in 1966 by the then Department of Nature Conservation (now CapeNature), who then subsidised the running costs. On 1 July 1967, the first advisory board was appointed jointly by the municipality and the Department of Conservation, under the chairmanship of Mr D Elzinga. The first curator was appointed by the municipality in 1981. The reserve was managed by the City of Cape Town's Parks Department from 2000 to 2005, and was transferred to the Biodiversity Management Branch in March 2006.

2.5.2 Socio-economic context

Durbanville Nature Reserve falls under the jurisdiction of Ward 21, Subcouncil 7. Ward 21 consists of Aurora, Bellville South, Chantecler, Durbanville, Durbanville Hills, Eversdal, Glen Ive, Roosendal, Stellenberg, Stellenryk, Valmary Park and Vygeboom. The socio-economic profile of the area surrounding Durbanville Nature Reserve ranges from affluent, large households to the north-eastern side, to more dense developments on the southern side.

The community is serious about service delivery, and takes part in various action groups. Several neighbourhood watches operate in close cooperation with the Metro Police and the South African Police Service. Also, various small venues in the Durbanville area are used for theatre. The area also has various non-profit organisations, such as Durbanville Garden Club, Kenridge Women's Club and the Tygerberg Rotary Club.

The subcouncil is the interface between the City of Cape Town and its communities, and plays an important role in promoting public participation in Council's plans and policies. The subcouncil does its utmost to be a medium between the community and the City of Cape Town, and to function as efficiently as possible within its delegated powers. The upliftment of communities and the continuous assessment of service delivery, community needs and budget priorities are ongoing activities. The subcouncil is sensitive to community aspirations, needs and participation, and supports all activities aimed at preserving the area's rich natural environment, while fulfilling its role as a facilitator of meaningful and systematic socio-economic development and good governance.

Economic attributes of Durbanville Nature Reserve:

- Ecosystem services – water catchment, wetlands, green lung, scenic landscape, positive impact on property values, etc
- Job creation and poverty relief (alien-clearing projects, etc)
- Tourism location

2.6 Protected-area expansion

The vision is to establish an ecological corridor between Durbanville Nature Reserve, the Cape Flats sand fynbos remnant of Durbanville Racecourse, and the public open space along St John's Road, adjacent to Durbanville Racecourse.

3. PURPOSE, VISION/MISSION, SIGNIFICANCE/VALUE

3.1 Purpose of the protected area

Durbanville Nature Reserve is located in the CFR, an area of global biodiversity significance. The reserve conserves a unique combination of habitats, ecosystems and species, many of which are either rare or endemic to the area.

The primary purpose of the reserve is the **conservation of its unique biodiversity and associated ecosystem features and functions.**

In conserving this unique biodiversity, secondary objectives will include the following:

- Biodiversity and ecological process conservation
- Recreation and education
- Development of high-quality visitor infrastructure, facilities and services

3.2 Vision and mission

3.2.1 Vision

Integrated Development Plan vision

The vision of the City of Cape Town remains as follows:

- To be a prosperous city that creates an enabling environment for shared growth and economic development
- To achieve effective and equitable service delivery
- To serve the citizens of Cape Town as a well-governed and effectively run administration

To achieve this vision, the City recognises that it must:

- actively contribute to the development of its environmental, human and social capital;
- offer high-quality services to all who live in, do business in, or visit the city as tourists; and
- be known for its efficient, effective and caring government.

C.A.P.E vision

We, the people of South Africa, are proud to be the custodians of our unique Cape Floral Kingdom, and share its full ecological, social and economic benefits now and in the future.

Environmental Resource Management Department vision

To ensure that sustainable and equitable development is combined with sound environmental practice for a healthy local environment, which sustains people and nature, provides protection for our unique resources, and results in an enhanced quality of life for all.

Biodiversity Management Branch vision

To be a City that leads by example in the protection and enhancement of biodiversity; a City within which biodiversity plays an important role, and where the right of present and future generations to healthy, complete and vibrant biodiversity is entrenched; a City that actively protects its biological wealth, and prioritises long-term responsibility over short-term gains.

Durbanville Nature Reserve vision

To manage and restore the natural assets of Durbanville Nature Reserve by partnering with people to ensure the area's survival for present and future generations.

3.2.2 Mission

Biodiversity Management Branch mission

- To manage biodiversity proactively and effectively
- To ensure an integrated approach to biodiversity between City of Cape Town line functions and departments, and actively pursue external partnerships
- To adopt a long-term approach to biodiversity
- To ensure sustainability of our rich biodiversity
- To adopt a holistic and multifaceted approach to biodiversity
- To continue to measure and monitor the City of Cape Town's performance in the protection and enhancement of biodiversity
- To continue to measure and monitor the state of biodiversity in Cape Town

Durbanville Nature Reserve mission

To restore and maintain the natural environment and its associated ecological processes and services through the implementation of the management objectives of Durbanville Nature Reserve.

3.3 Significance of property (biodiversity, heritage and social)

Durbanville Nature Reserve accommodates two vegetation types that are Critically Endangered. It forms an integral part of the city's biodiversity network within the area. The

reserve is registered with the South African Biodiversity Institute (SANBI) as a Core Floral Conservation Site.

The reserve has a confirmed bird species list of 97, which includes three of the six endemic fynbos species and a plant species list of 241 taxa.

The reserve offers environmental education programmes for mainly primary-school learners, with approximately 400 learners participating annually. In addition, the private organisation Cape for Kids also runs a programme in the reserve, with approximately 100 learners participating annually. The Bird Ringing Unit of the Cape Bird Club has rung various species of birds for the past 21 years in cooperation with the Animal Demographic Unit.

Summary of qualifying site assessment criteria

- The reserve hosts a transition between two different vegetation types.
- The reserve is home to 241 plant species, four of which are Red Data plant species.
- The reserve is a Core Floral Conservation Site.
- The reserve is home to the Vulnerable Cape Rain Frog (*Breviceps gibbosus*).
- The reserve offers local tourism and environmental education opportunities.

PART 2

MANAGEMENT POLICY FRAMEWORK

4. ADMINISTRATIVE AND LEGAL FRAMEWORK FOR THE MANAGEMENT AUTHORITY

4.1 Legal framework

Table 1: Legal Framework The following is a list of legislation applicable to the management of the City of Cape Town's Biodiversity Management Branch. Repealed legislation has been included as greyed-out text for information purposes only.

Legislation: **Acts, ordinances, bylaws**	**Relevance:** **Description**	**Amendment:** **Latest amendment date**	**Comment:** **Other notes**
Constitution of the Republic of South Africa, Act 108 of 1996	Lists South African citizens' environmental rights	N/A	Chapter 2: Bill of Rights assigns citizens with particular rights
ENVIRONMENTAL LEGISLATION			
National legislation			
National Environmental Management Act (NEMA), Act 107 of 1998	One of the most important environmental laws relating to most aspects of the environment, including environmental impact assessments (EIAs), environmental information and legal standing, etc.	• Amendment Act 56 of 2002 • Amended by GN 26018, Vol 464 of 13 February 2004	Provides for cooperative environmental governance
National Environmental Management: Biodiversity Act, Act 10 of 2004	The objectives of the Act are to provide for: • the management and conservation of South Africa's biodiversity within the framework of the National Environmental Management Act, 1998; • the protection of species and ecosystems that warrant national protection; • the sustainable use of indigenous biological resources; • the fair and equitable sharing of benefits arising from bio-prospecting involving indigenous biological resources; and • the establishment and functions of a South African National Biodiversity Institute. In essence, the Act was put in place to safeguard the important biodiversity attributes in the country, while allowing people to benefit equally from the natural resources. In order to achieve these goals, the Act made provision for the South African National Biodiversity Institute	N/A	The development of the IRMP will assist in ensuring that the objectives of this Act are achieved in the reserve.

	(SANBI), which has been designated certain functions and afforded powers and duties in respect of this Act.		
National Environmental Management: Protected Areas Act, Act 57 of 2003	To provide for: • the protection and conservation of ecologically viable areas representative of South Africa's biological diversity and natural landscapes and seascapes; • the establishment of a national register of all national, provincial and local protected areas; • the management of those areas in accordance with national norms and standards; • intergovernmental cooperation and public consultation on matters concerning protected areas; and • matters in connection therewith.	• Amendment Act 62 of 2008 • Amendment Act 15 of 2009	Regulations Notice 1029 of 2009 lists specific regulations for reserves proclaimed by the Member of the Executive Council (MEC) (draft August 2009).
Conservation of Agricultural Resources Act (CARA), Act 43 of 1983	The CARA regulations contain a list of alien invasive vegetation categorised according to their legal status. The Act regulates the sale, position and use of listed species.	• Amended by GN R 2687 of 6 December 1985 and GN R 280 of 30 March 2001	Alien invasive plant legislation to be included under the Biodiversity Act in future
National Veld and Forest Fire Act, Act 101 of 1998	Relates to veld fire prevention, fire protection associations, fire danger indexing, enforcement of fire legislation, and the fighting of fires	N/A	A detailed fire management plan will be developed.
Marine Living Resources Act, Act 18 of 1998	Regulates conservation of the marine ecosystem and the long term sustainable utilisation of marine living resources		
Environment Conservation Act, Act 73 of 1989	The Environment Conservation Act is the other law that relates specifically to the environment. Although most of this Act has been replaced by NEMA, some important sections still remain in operation. These sections relate to: • protected natural environments; • littering; • special nature reserves; • waste management; • limited-development areas; • regulations on noise, vibration and shock; and • EIAs.	• Environment Conservation Amendment Act 98 of 1991 • Environment Conservation Amendment Act 79 of 1992 • Environment Conservation Second Amendment Act 115 of 1992 • Environment Conservation Amendment Act 94 of 1993 • Environment Conservation Second Amendment Act 52 of 1994 • Proclamation R27 of 1995 • Proclamation R43 of 1996	

		• National Environment Management Act 107 of 1998	
National Water Act, Act 36 of 1998	Relates to all use of water and the management of all water resources in South Africa	•	
National Environmental Management: Air Quality Act, Act 39 of 2004	To provide for enhancing the quality of ambient air for the sake of securing an environment that is not harmful to the health and well-being of the people		Promulgated to give effect to section 24(b) of the Constitution. The South African Air Quality Information System is a web-based system that provides information on the quality of ambient air across the country.
Animal Protection Act, Act 71 of 1962	To consolidate and amend the laws relating to the prevention of cruelty to animals	Animal Matters Amendment Act, Act 42 of 1993	
Animal Diseases Act, Act 35 of 1985	Provides for control measures relating to animal diseases		
Animal Health Act, Act 7 of 2002	Regulates animal health		
Game Theft Act, Act 105 of 1991	Regulates the ownership and protection of game		
Mountain Catchment Areas Act, Act 63 of 1970	Provides for catchment conservation		Administered under the Western Cape Nature Conservation Board Act, Act 15 of 1998
National Heritage Resources Act 25 of 1999	Provides for the protection of heritage resources		N/A
World Heritage Conservation Act 49 of 1999	Incorporates the World Heritage Convention into South African law		N/A
Problem Animal Control Ordinance, Ordinance 26 of 1957	Regulates problem animals		Administered under the Western Cape Nature Conservation Board Act, Act 15 of 1998
Mineral and Petroleum Resources Development Act, Act 28 of 2002	Provides for equitable access to, and sustainable development of, mineral and petroleum resources		
Atmospheric Pollution Prevention Act, Act 45 of 1965		Entire Act repealed on 1 April 2010 in favour of the National Environmental Management: Air Quality Act, Act 39 of 2004	
Provincial legislation			
Land Use Planning Ordinance, Ordinance 15 of 1985	The purpose of the Ordinance is to regulate land use and to provide for incidental matters related to land use.	• Assented to on 22 November 1985 • Western Cape Land Use Planning Ordinance, 1985,	Although it might not have a direct application in the management of nature reserves, it does affect the surrounding properties, and could possibly be used to

		Amendment Act, 2004	control activities/developments around the reserves to minimise negative effects, for example in applying zoning restrictions.
Cape Nature and Environmental Conservation Ordinance, Ordinance 19 of 1974	The purpose of this Ordinance is to regulate wild animals and plants, and the establishment of nature reserves.	Publication date 1 September 1975	Administered under the Western Cape Nature Conservation Board Act, Act 15 of 1998
Western Cape Nature Conservation Board Act, Act 15 of 1998	The purpose of this Act is to promote and ensure nature conservation, render services and provide facilities for research and training and to generate income		Biodiversity agreements are signed under this Act.
Municipal legislation			
Integrated Metropolitan Environmental Policy (IMEP), 2001	Envisages a set of Citywide aligned strategies dealing with all aspects of the environment.		Influenced the Biodiversity Strategy, 2003
Biodiversity Strategy, 2003	To be a city that leads by example in the protection and enhancement of biodiversity	• Draft amendment for 2009–2019	Influenced the development of the IRMP
City of Cape Town Bylaw relating to Stormwater Management, LA 31420	To provide for the regulation of stormwater management in the area of the City of Cape Town, and to regulate activities that may have a detrimental effect on the development, operation or maintenance of the stormwater system	• Publication date 23 September 2005	Communication strategy and action plan will take effect to address the issues with the relevant departments
City of Cape Town Air Pollution Control Bylaw, LA 12649	The purpose of this bylaw is to give effect to the right contained in section 24 of the Constitution of the Republic of South Africa Act (Act 108 of 1996) by controlling air pollution within the area of the Council's jurisdiction; to ensure that air pollution is avoided, or, where it cannot be altogether avoided, is minimised and remedied.	• Publication date 4 February 2003	
Bylaw relating to Community Fire Safety, Province of the Western Cape, LA 11257	The purpose and scope of the bylaw is to promote the achievement of a fire-safe environment for the benefit of all persons within the municipality's area of jurisdiction, and to provide for procedures, methods and practices to regulate fire safety within the municipal area.	• Publication date 28 February 2002	A fire management plan to be designed
City of Cape Town Draft Animal Bylaw, 2009	The purpose of the Bylaw is to formulate a new single bylaw, including ten different municipal dog bylaws and the Animal Protection Act of	• Draft, 2009	

	1962. The Bylaw includes chapters on dogs, cats, poultry and working equines.		
HUMAN RESOURCES/ADMINISTRATION LEGISLATION			
National legislation			
Occupational Health and Safety Act, 1993	To provide for the health and safety of persons at work, and for the health and safety of persons in connection with the use of plant and machinery; the protection of persons other than persons at work against hazards to health and safety arising out of or in connection with the activities of persons at work; to establish an advisory council for occupational health and safety, and to provide for matters connected therewith.	Occupational Health and Safety Amendment Act, No 181 of 1993	
Basic Conditions of Employment Act, Act 3 of 1997	Provides for control measures pertaining to employment	• Amendment Act 11 of 2002	
Labour Relations Amendment Act, Act 66 of 1995	The Act aims to promote economic development, social justice, labour peace and democracy in the workplace.	• Labour Relations Amendment Act, 42 of 1996 • Afrikaans Labour Relations Amendment Act, 1998 • Labour Relations Amendment Act, 127 of 1998 • Labour Relations Amendment Act, 2000 • Amendment Act 12 of 2002	
Local Government Municipal Systems Act, Act 32 of 2000	Establishes core principles, processes and mechanisms relating to local government		
Promotion of Equality/Prevention of Unfair Discrimination Act, Act 4 of 2000	Provides for the prevention of discrimination and other related matters		
Criminal Procedure Act, Act 51 of 1977	Makes provision for procedures and related matters in criminal proceedings	• Criminal Procedure Amendment Act, Act 65 of 2008	
Firearms Control Act, Act 60 of 2000	To establish a comprehensive and an effective system of firearms control and, to provide for matters connected therewith		
Civil Aviation Act, Act 13 of 2009			
Fencing Act, Act 31 of 1963	Regulates all matters relating to fencing		
Hazardous Substances Act, Act 15 of 1973	Controls substances that may cause injury or ill health to, or death of,		

	human beings by reason of their toxic nature		
Land Survey Act, Act 8 of 1997	Regulates land surveying, beacons and other related matters		
Promotion of Access to Information Act, Act 2 of 2000	Promotes access to information		
Promotion of Administrative Justice Act, Act 3 of 2000	Provides for the promotion of administrative justice	• Amendment Act 53 of 2002	
Regional Services Council Act, Act 109 of 1985	Regulates and controls land, land use and other related matters		
Skills Development Act, Act 97 of 1998	Promotes the development of skills		
State Land Disposal Act, Act 48 of 1961	Regulates the disposal of state-owned land		
Subdivision of Agricultural Land Act, Act 70 of 1970	Regulates the subdivision of agricultural land		
Tourism Act, Act 72 of 1993	Provides for the promotion of tourism, and regulates the tourism industry		A tourism strategy is envisaged.
Public Resorts Ordinance, Ordinance 20 of 1971	Regulates nuisance and pollution control		
Municipal Ordinance, Ordinance 20 of 1974	Regulates pollution and waste management		
South African National Road Agency Limited and National Roads Act, Act 7 of 1998			
Aviation Act, Act 74 of 1962	Provides for the control, regulation and encouragement of aviation activities in the Republic of South Africa	• Repealed in favour of the Civil Aviation Act, Act 13 of 2009	
Provincial legislation			
Western Cape Land Administration Act, Act 6 of 1998	Regulates land and land use		
Western Cape Planning and Development Act, Act 7 of 1999	Regulates planning and development within the province		
Municipal legislation			
City of Cape Town Bylaw relating to Filming, LA30441	The purpose of the Bylaw is to regulate and facilitate filming in Cape Town.	• Provincial Gazette 6277, 24 June 2005	
City of Cape Town Bylaw relating to Streets, Public Places and the Prevention of Noise Nuisances, 2007	The purpose of the Bylaw is to regulate activities in streets and public places, and to prevent excessive noise nuisance	• Promulgated 28 September 2007, PG 6469; LA 44559	
City of Cape Town Bylaw relating to signage		•	

4.2 Legal agreement

There is a management agreement in force between the City of Cape Town and private horticulturists to propagate fynbos plant species for rehabilitation purposes (see appendix 4).

4.3 Administrative framework

Durbanville Nature Reserve is managed by the City of Cape Town's Biodiversity Management Branch of the Environmental Resource Management Department in the Strategy and Planning Directorate. The reserve is located in the central region, and falls under the oversight of the regional manager. Durbanville Nature Reserve is the management responsibility of an area manager and two permanent operational staff. In addition, the reserve is assisted by the central-region revolving team based on the premises. The operational management of Durbanville Nature Reserve is supported by various other City of Cape Town departments, including, but not limited to, Law Enforcement, Water & Sanitation, City Parks, Human Resources, and Finance.

5. PROTECTED-AREA POLICY FRAMEWORK & GUIDING MANAGEMENT PRINCIPLES

5.1 Management objectives

5.1.1 Biodiversity and heritage objectives

Table 2: Biodiversity and Heritage Objectives for Durbanville Nature Reserve

High-level objective	*Objective*	*Sub-objective*	*Initiative*	*Low-level plan*
CONSERVATION OF REPRESENTATIVE, FUNCTIONAL ECOSYSTEMS To conserve a representative sample of the region's ecosystems in a linked landscape, and maintain or restore environmental processes to enable natural spatial and temporal variation in structural, functional and compositional components of biodiversity	**Representative ecosystems** To incorporate a spectrum of viable aquatic and terrestrial ecosystems characteristic of Durbanville Nature Reserve, and to re-introduce missing elements where possible	**Consolidation and expansion of land areas** Consolidate protected areas, focusing on underrepresented ecosystems, functional linkages and processes	(1) Identify underrepresented habitats/ecosystems (2) Consolidate reserve boundaries (3) Establish corridors linking Durbanville Nature Reserve with other natural areas	Reserve expansion plan (to be compiled)
		Re-introduction of biota Where possible, re-establish locally extinct or depleted biodiversity components and populations in accordance with International Union for Conservation of Nature principles and guidelines	(1) Re-establish indigenous herbivore complement within constraints of reserve size and urban setting	Faunal management plan (to be compiled)
		Fire management Apply appropriate fire regime in fynbos areas (frequency, season, intensity, size)	(1) Implement a fire management plan in accordance with objectives of conserving biodiversity and threatened biota (2) Monitor impact of fire management regime	Fire management plan (to be compiled)
		Threatened biota Maintain viable populations of threatened species in order to meet obligations in terms of international agreements and conventions	(1) Maintain viable populations of rare/threatened plant and animal species (identify, locate and monitor populations of priority species)	Branch-wide threatened-biota plan (to be compiled)
		Monitoring plan Implement and maintain an approved monitoring plan for the reserve	(1) Implement and maintain a biological monitoring programme for the reserve	(1) Branch-wide monitoring plan (to be compiled) (2) Erosion plan (to be compiled)

	Rehabilitation Rehabilitate degraded areas, including the re-establishment of natural biodiversity patterns, and the restoration of key processes that support the long-term persistence of biodiversity	**Vegetation** Re-establish physical, chemical and biological processes in degraded vegetation areas	(1) Rehabilitate all old, degraded sites	Flora management plan (to be compiled)
		Alien plants and other alien biota Control and, where possible, eliminate alien biota to facilitate re-establishment of natural biodiversity patterns and process in invaded areas	(1) Establish the distribution and density of invasive species (2) Prioritise areas for alien removal, focusing on biodiversity restoration (3) Implement removal programmes for priority species and areas	(1) Invasive-plant management plan (draft) (2) Invasive-animal management plan (draft)
MITIGATE INTERNAL and EXTERNAL PRESSURES To reduce threats and pressures and limit environmental impacts resulting from non-biodiversity management aspects and operations on surrounding land and resource use	**Reconciling biodiversity with other reserve objectives** To ensure that non-biodiversity management aspects of reserve operations are informed and constrained by biodiversity conservation objectives, and that the impacts of these activities on biodiversity are minimised	**Internal developments** Minimise the impacts associated with the development of visitor and reserve management infrastructure, and ensure that such developments do not compromise biodiversity objectives	(1) Reserve zoning (2) Develop and implement Conservation Development Framework (CDF) (3) Develop in accordance with environmental impact assessment (EIA) process (NEMA) and corporate policies (4) Establish visitor carrying capacities (5) Implement green standards and environmental best practice based on corporate policy	(1) CDF (to be compiled) (2) Infrastructure plan for high-intensity use zone (to be compiled) (3) Infrastructure maintenance plan (to be compiled)
		Internal activities Minimise the impacts associated with visitor and reserve management activities, and ensure that such activities do not compromise biodiversity objectives		

	Reconciling biodiversity with external threats To reduce external threats and pressures, and limit impacts of surrounding land and resource use on biodiversity conservation within the reserve	**External developments** Minimise the impacts associated with inappropriate developments outside the reserve	(1) Engage regional land management authorities, including IDPs and spatial development frameworks at local and regional level (2) Align with bioregional planning, including explicitly identified areas for the maintenance of important biodiversity patterns and processes with appropriate land use guidelines (3) Provide input into planning and decision-making processes for external development that may compromise reserve and biodiversity network objectives (4) Negotiate to ensure that external developments are not visually obtrusive or out of character with the park	Branch-wide communications strategy and action plan (in draft)
		External activities Negotiate to ensure that external resource and land use does not detrimentally affect ecological processes within the reserve	(1) Negotiate to mitigate or improve the management of external, potentially detrimental impacts (2) Encourage eco-friendly resource use and land management practices on adjacent properties (3) Mitigate the impacts of oil and other pollution events through appropriate contingency planning	Risk management plan (to be compiled)
		Illegal harvesting of resources Prevent the illegal collection, removal and destruction of physical and biological resources	(1) Public liaison (2) Law enforcement	(1) Branch-wide security operational manual (to be compiled)
WILDNESS/ REMOTENESS To maintain and restore wildness/remoteness in Durbanville Nature Reserve so that the spiritual and experiential qualities of wildness are maintained, enhanced or, where necessary, restored	**Range of experiences** Provide a range of visitor experiences		(1) Reserve zoning (2) Develop CDF and sensitivity-value analysis	(1) CDF (to be compiled) (2) Reserve expansion plan
	Sense of place Maintain or restore appropriate sense of place		(1) Implement and update CDF (2) Establish and apply appropriate visitor carrying capacity (3) Negotiate to ensure that external developments are not visually obtrusive or out of character with the reserve	

5.1.2 Socio-economic objectives

Table 3: Socio-Economic Objectives for Durbanville Nature Reserve

High-level objective	Objective	Sub-objective (where required)	Initiative	Low-level plan
Nurture productive and mutually beneficial partnerships that result in gains in economic and/or biodiversity equity	Enhance socio-economic benefits to local communities	N/A	(1) Contribute to local community development by supporting the Expanded Public Works Programme/poverty relief projects (2) Contribute to local skills development by supporting the skills and learnership programmes (3) Identify and facilitate the creation of business opportunities in association with the reserve (4) Support community-based social development initiatives	Branch-wide local socio-economic development plan (to be compiled)
	Increase environmental awareness and encourage participation in conservation initiatives	Inspire visitors and communities to consider the environment as an interrelated and interdependent system, of which they are an integral part Educate learners, educators and other community focus groups to be able to take environmental action	(1) Develop and implement an interpretation plan that feeds into both the education and zoning plans (2) Implement environmental education and youth development programmes suited to the needs of each focus group (i.e. tailor-made programmes for each focus group)	(1) Branch-wide education strategy and action plan (to be compiled) (2) Regional environmental education and community involvement strategy (to be compiled)
		Support educators and community leaders with resource and information materials	(1) Establish and market an environmental resource centre and outdoor classrooms, with a range of interpretive and information resources	
Support cooperative governance that will build custodianship	Maintain good reserve/community/ stakeholder relations	N/A	(1) Identify and involve all relevant stakeholders in the reserve advisory forum (2) Develop effective communication mechanisms and responsibilities for representatives	(1) Branch-wide communications strategy (in draft) (2) Branch-wide stakeholder relations plan (to be compiled)
	Effective cooperative	Minimise degrading impact and consequences of inappropriate	(1) Establish and maintain good working relationships with relevant government departments as well as	

	governance	development in and around the reserve	internal City of Cape Town departments	
		Ensure support/buy-in for management decisions through participatory decision-making processes	(1) Define roles and responsibilities with stakeholder groups, partnerships and government through written agreements/terms of reference and MOUs	
Become the nature-based visitor destination of choice in the Durbanville area	Develop, manage and enhance a range of sustainable visitor products			
			(1) Plan for visitor infrastructure and facilities, as identified by the CDF (2) Develop and implement the infrastructure management plan (in compliance with State of Infrastructure report) (3) Compile a State of Infrastructure report	(1) Infrastructure management plan (to be compiled) (2) Branch visitor facilities plan (to be compiled)
Enhance the City of Cape Town's reputation	Enhance the reserve's reputation	N/A	(1) Develop and implement a communication plan to promote reserve activities	Branch-wide communication strategy and action plan
Advance strategic human resource management	Ensure good human resource management	N/A	(1) Implement and support learnerships and volunteer programmes (2) Ensure that all staff have access to training initiatives as per the Workplace Skills Plan (3) Ensure that all corporate human resource policies are adhered to	Regional standard operation procedures manual (to be updated)
Financial management	Ensure that sound financial management practices are applied to and underpin the reserve	N/A	Manage cost spending appropriately	Branch-wide business plan (to be compiled)

5.2 SWOT (strengths, weaknesses, opportunities, threats) analysis

Strengths

- Community support
- Community development, environmental education and awareness opportunities
- Critically Endangered vegetation types
- Proclaimed as a local-authority nature reserve
- Although surrounded by development, there is limited impact on the reserve due to good relationships with neighbours (no dumping or spread of garden plants into the reserve)

Weaknesses

- Invasive species
- Small size
- No connectivity (isolated)
- Condition of infrastructure
- Law enforcement
- Reserve open only over weekends and on public holidays, budget permitting
- Inappropriate use of road verges adjacent to the reserve
- Human carrying capacity limited; therefore, limited visitor activities can be provided

Opportunities

- Threatened plants on site
- Core Floral Conservation Site
- Recreational facilities – footpaths, picnic benches
- Only a few conservation sites proclaimed in the northern suburbs
- Environmental educational opportunities
- Add property value to neighbouring community

Threats

- ‘Dumping ground’ for domesticated animals

- Introduced indigenous species

5.3 Protected-area management policy framework and guiding principles

5.3.1 Community participation

A visionary stakeholder engagement process was held on 9 April 2010. Interested and/or affected parties and organisations were invited to attend this workshop. The purpose of the workshop was to gather ideas from the public of what their vision for Durbanville Nature Reserve for the future is.

Durbanville Nature Reserve will strive to nurture productive and mutually beneficial partnerships, which, in turn, will result in economic and/or biodiversity equity. This will be achieved through the creation of job opportunities in support of Expanded Public Works Programme/poverty relief projects. The development of local skills will be facilitated through the participation in skills development and learnership programmes. Through the support of community-based social development initiatives, the reserve can also enhance socio-economic benefits to local communities.

Through the development of an environmental education plan, Durbanville Nature Reserve will contribute to raising environmental awareness, and will encourage participation in conservation initiatives.

The main aims of the reserve education plan will be as follows:

- To inspire visitors and communities to consider the environment as an interrelated and interdependent system, of which they are an integral part
- To educate learners, educators and community focus groups to take environmental action, assisted by resource and information materials
- To develop and implement environmental education programmes suited to the needs of various focus groups
- To develop and implement an interpretation plan that complements the education plan

In order to develop and maintain good reserve/community/stakeholder relations, all relevant stakeholders need to be identified. An effective communication system needs to be developed in order to liaise with interested and affected parties. Where necessary, task teams and working groups may be established in order to assist the reserve with key issues.

An advisory board has been established for the central region, including Durbanville Nature Reserve, under the Nature Conservation Ordinance, No 19 of 1974. Advisory boards are not a legal requirement under the National Environmental Management Protected Areas Act.

However, the City of Cape Town wishes to follow best practice, and will therefore draft terms of reference for new advisory forums.

Volunteers

- Tygerberg Bird Club
- School learners
- Work-shadow learners
- University and technikon students

Reserve liaison committee, community participation

- Rotary Club of Tygerberg
- Durbanville Garden Club
- Central-region advisory board

5.3.2 Safety and security

A safety and security audit aimed at completing a rapid and verifiable analysis of the current security situation, security services, infrastructure, staffing and social context was carried out in Durbanville Nature Reserve. Although the security threat to the reserve is very low, staff have recorded sporadic acts of vandalism (annual). Please see the comprehensive security audit of the Biodiversity Management Branch of the City of Cape Town, March 2010 (appendix 11).

5.3.3 Tourism development and management

The reserve management aims to manage and develop tourism effectively and responsibly in order not to negatively affect the biodiversity of the reserve.

5.3.4 Infrastructure management

In the conservation area, infrastructure is essential for effective management and for use by visitors. It is essential to manage the infrastructure in such a manner that it has no negative impact on the environment or on visitors' experience, through regular maintenance of roads, routes and parking areas as well as any other relevant infrastructure.

In order to enhance the biodiversity potential of this reserve, a programme is under way in which to rationalise and reduce the footprint of roads and pathways in the reserve. This is being done to minimise the negative impact of so many hard surfaces on such a small site.

Unnecessary picnic areas are to be closed and rehabilitated, and the size of the yard is to be decreased. Firebreaks and visitor paths are to be kept at a width of 1 m.

5.3.5 Biodiversity conservation management

5.3.5.1 Community-based natural resource management

The harvesting of natural resources in Durbanville Nature Reserve is currently not permitted. Research on the amount of harvesting and the species harvested across the city is currently under way. Some investigations as to the types and extent of harvesting in the reserve have started, but, to date, there no detailed or conclusive data have come to light to determine where current harvesting is sustainable and/or what potential threats are foreseen should these activities persist.

5.3.5.2 Fire management

Fire plays an essential ecological role in the life cycle of fynbos species. Fire is crucial to the long-term conservation of species within Durbanville Nature Reserve, and is therefore considered an important component of reserve management. Fire management involves varying the season, frequency and intensity of fires, and reconciling ecological and practical requirements. Too frequent fires, or fires that burn out of phase with the natural burning regime, present a threat to slower-growing species, which may be entirely eliminated. The fire frequency of Durbanville Nature Reserve should be three to five years. If fire is excluded from the area, forest species can invade, resulting in fynbos species being lost. Conversely, if vegetation is allowed to burn too frequently, the area becomes degraded, and alien species, especially grasses, invade. Grasses maintain a shorter fire cycle, and permanently change the vegetation structure and biodiversity value.

The fire management programme for Durbanville Nature Reserve involves the monitoring of large wildfires as well as smaller fires, whether natural or unnatural. Historical records of fire events in the reserve area as well as post-fire monitoring records assist in the documentation of veld ages, which, in turn, influence fire management. Minimal interference takes place when naturally ignited fires occur. In cases where human-induced fires occur that would simulate a natural fire, the same management responses would apply. Natural fires are limited in spread within the constraints of ecological, project and public safety requirements. All possible actions are taken to prevent the spread of fire onto the adjacent properties. All unnatural fires that threaten the reserve ecologically, or pose a threat to infrastructure and/or public safety, are controlled.

Prescribed burning of vegetation is a management option in areas where vegetation becomes senescent (old) and there is a risk of species loss. The use of prescribed burning practices would assist in maintaining a vegetation mosaic that promotes plant and animal

diversity. Accurate fire records and post-fire monitoring data will facilitate the initiation of prescribed burns in the core area of the reserve, as deemed necessary. The decision to administer prescribed burns is considered on an annual basis and, if required, planned and implemented accordingly.

Fire may be used to keep fuel loads low so as to reduce the risk of uncontrolled fires, particularly on the urban edge and in areas that pose a potential risk to infrastructure and public safety.

Firebreaks and other fire control measures required by law will be implemented where necessary and feasible. Due to the small size of the reserve, firebreaks should not exceed 1 m from the fence line inwards. Due to the nature of the surrounding area, the road verges double up as a reasonable fire break from which to access areas for fire-fighting in case of emergencies, or while conducting prescribed burning programmes.

The nature of the area's terrain, property boundaries and extensive areas of natural veld increases the chances of fire spreading both into and out of the reserve. Reasonable pre-fire protection measures are necessary, as well as a plan of action in the event of wildfire. Interaction with various City of Cape Town departments and independent stakeholders, as well as continuous public and private landowner involvement, are essential. The development of fire protection and response plans is an important component of the reserve's fire management regime.

Fire management implementation in Durbanville Nature Reserve involves the following:

- Application of guidelines on seasonal burning intervals and species requirements acquired from relevant documentation and biophysical specialists
- Accurate record keeping of all fires, including details and maps
- Use of fire data and geographic information systems (GIS) for recording and mapping
- Application of post-fire monitoring programmes
- Application of fire data to determine prescribed burning needs
- Development and implementation of a fire protection and response plan, including affected stakeholders, such as additional City of Cape Town departments and private landowners neighbouring the nature reserve

5.3.5.3 Soil erosion and control

Within Durbanville Nature Reserve, natural erosion processes are allowed to take their course without interference, except where necessary. In the case of human-induced and natural areas that are aggravated, appropriate management action will be taken.

Potential human impacts should be avoided through correct planning and maintenance of infrastructure. Areas that had previously been degraded by human activities and are no longer in use will be restored as close as possible to their natural state. Disturbed areas and areas affected by unnatural accelerated erosion will be controlled by means of appropriate methods. The cause and management of problem erosion sites will also be considered.

Soil management implementation in Durbanville Nature Reserve includes the following:

- Identification and recording of all soil erosion sighted, including the assessment and development of restoration plans where required
- Use of soil erosion data and GIS for recording and mapping
- Application of fixed-point monitoring programmes at identified soil erosion sites
- Accurate documentation of management actions applied to restoration sites, including results from areas responding to these actions

5.3.5.4 Invasive-species management

The management of invasive and alien species is a priority in Durbanville Nature Reserve. Alien biota need to be controlled and, where possible, eliminated in order to facilitate the re-establishment of natural biodiversity and processes in invaded areas.

Invasive and alien-species management in the reserve is applied in accordance with the City of Cape Town's invasive alien species strategy and in coordination with various government-funded initiatives. Invasive alien plant species could spread rapidly should management fail to continue to implement a properly planned and coordinated programme.

Within Durbanville Nature Reserve, a number of indigenous species that are not endemic to the area have been identified. The occurrence of such species is generally the result of attempts to beautify the area. Horticultural strains of indigenous species also present a risk to naturally occurring specimens. Some species are known to hybridise with endemic species in the area, and pose a potential threat to the genetic diversity of such populations (please see appendix 6B).

In order to protect indigenous species from invasive aliens, the following is required:

- Prioritisation of areas for alien removal, focusing on biodiversity restoration
- The implementation of removal programmes for priority species and areas
- The development and implementation of an invasive and alien plant management plan as well as a management plan for alien biota

The eradication of invasive and alien faunal species is also carried out in the reserve. Formal plans outlining the monitoring of the removal of identified species is however required.

5.3.5.5 Species introductions

Species that were historically indigenous to the Durbanville area, and for which suitable habitat and eco-niches are available, may be re-introduced. Several fauna species that previously occurred in the Durbanville area are no longer present or down to small numbers.

Prior to the re-introduction of any species, a full proposal is required. Investigation into the availability of suitable habitat for the species with reference to public utilisation of areas is required, as is a full investigation into the historical occurrence and status of the species. The effect of re-introducing species to the area must also be researched. Re-introduction of potentially dangerous and problematic species may also require public participation. An investigation of suitable sources is also necessary.

All proposed re-introductions need to be recommended and approved by the fauna and/or flora committee(s) as well as provincial authorities before implementation. The implementation of any re-introduction programmes must also be specified in a plan of action, and documented accurately.

5.3.5.6 Strategic research

Research subjects beneficial to the management of Durbanville Nature Reserve need to be identified. These subjects may then be prioritised and further pursued.

Research does currently take place in the reserve, and is supported by management. However, many of the projects are conducted by outside student researchers and organisations, and are not initiated by the reserve's needs.

An effort needs to be made to obtain copies of data and results from projects conducted within the reserve's boundaries.

5.4 Sensitivity analysis of Durbanville Nature Reserve

The reserve is a considerable asset to the City of Cape Town, and significantly contributes to national conservation targets of threatened vegetation types, as listed in the National Spatial Biodiversity Assessment (Driver *et al*. 2005), as well as provides a service and facilities to local residents and schools.

The development of the sensitivity and zoning plan is one of the steps required in compiling a CDF for the reserve. CDFs are tools to reconcile the various land use needs, and to delineate visitor user zones and the positioning and nature of new infrastructure, access points, roads and facilities.

The CDF process has grown in response to the requirements of the National Environmental Management Biodiversity Act (2004), and seeks to comply with the spatial planning requirements of this Act. The CDFs will ensure that best practice and sustainable development principles are integrated with spatial planning in protected areas.

The sensitivity-value analysis is the landscape analysis portion of the broader CDF. It is a multi-criteria decision-support tool for spatial planning, designed to present the best available information in a format that enables defensible and transparent decision making. The sensitivity-value process is based on the principle that the acceptability of a development (or placement of a structure) at a site is based on that site's value (arising from the site's biodiversity, heritage, aesthetic or other values) and its sensitivity or vulnerability to a variety of disturbances (Holness 2005).

The sensitivity-value analysis, the CDF and the associated zoning plan should form part of an adaptive management system. They will grow and change over time as the understanding of the landscapes and ecosystems improves. However, they will never replace the need for detailed site and precinct planning and EIA compliance at site level.

The small size of Durbanville Nature Reserve did not warrant an extensive analysis, and resulted in a fairly straightforward subsequent zoning process. The methodology used for both the sensitivity-value analysis and the zoning process was adapted from Holness and Skowno (2008) and SRK Consulting (2008[1]; 2008[2]).

All geographic information work was carried out in ESRI's ArcMap, version 9.3.1, using the ArcInfo licence level, with Spatial Analyst and 3D Analyst extensions. See appendix 10 for the complete sensitivity-value analysis and zoning process.

5.5 Zoning of Durbanville Nature Reserve

5.5.1 Zoning informants

This section briefly outlines the values underlying the identification of broad tourism use zones. It is important to remember that the landscape/biodiversity analysis is just one of the informants in the zoning process. Although the biodiversity analysis is intrinsically a relatively objective scientific process, other informants to the zoning process are not.

Although every attempt is made to place high sensitivity-value sites into more protected zones where possible, the zoning process is essentially a compromise between environment and development. In particular, the identified high-value sites are often the key biodiversity assets that need to be made available to the eco-tourism market in an appropriate manner. The biodiversity layers and the spatial management of the reserve are directly linked during the identification of special management areas (where applicable). Even within broad high-tourist use zones, some areas are likely to be subject to very tight conservation controls (potentially involving complete exclusion of human impacts from an area).

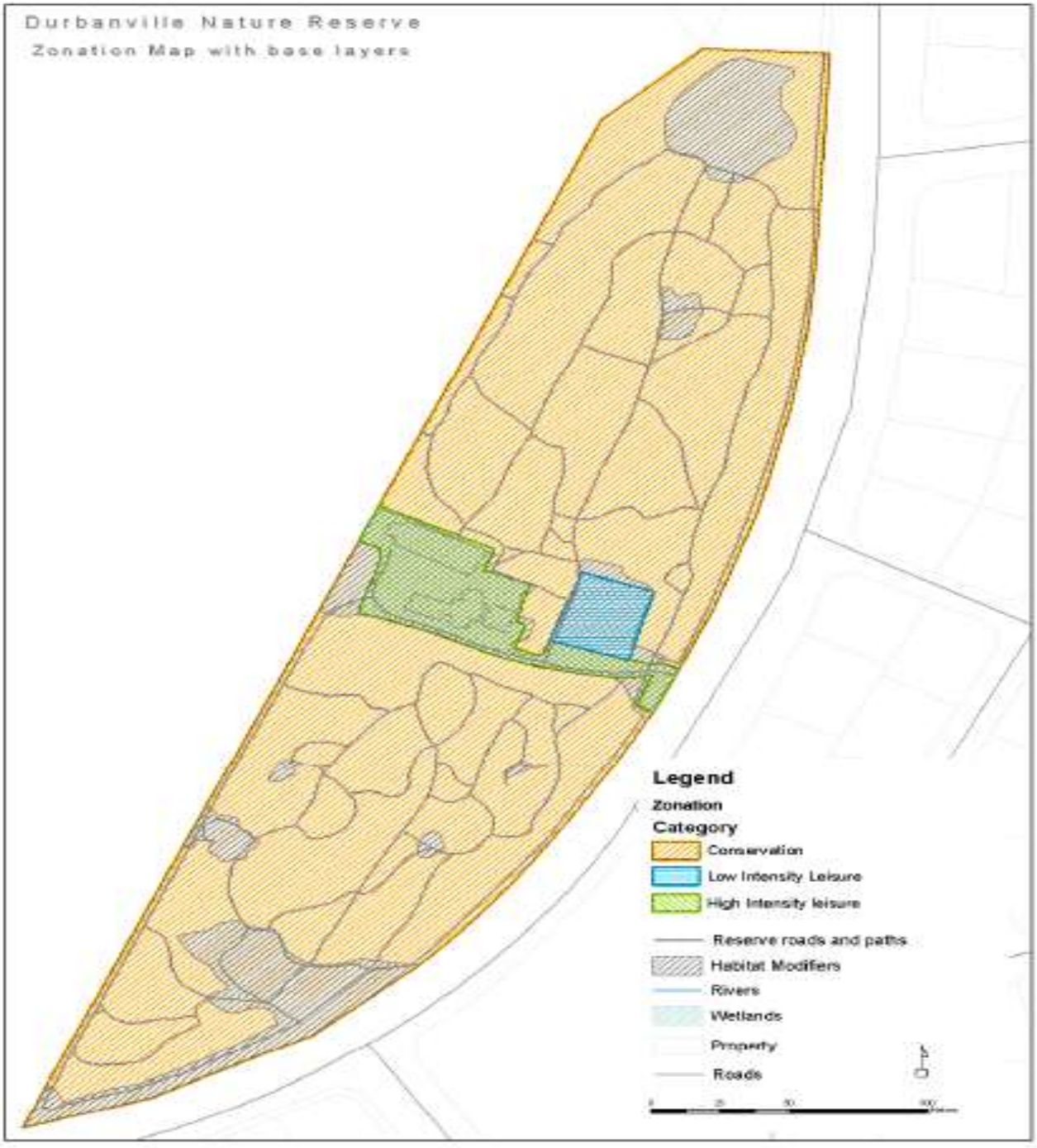
<u>Underlying decision-making rules used in the zoning process</u>

- The zoning process is aimed at striking a *balance* between environmental protection and the development required to meet the broader economic and social objectives of the reserve.
- The zoning process takes into account existing development footprints and tourism access routes.
- This is based on the underlying principle that, all else being equal, an existing transformed site is preferable to a greenfield site, from a biodiversity perspective.
- Infrastructure costs are dramatically increased when developments take place away from existing infrastructure.
- Existing tourism nodes and access routes are a reality of the economic landscape, and it would not be possible to shut down existing tourism sites that compromise the development objectives of the reserve.
- Where existing development nodes, tourist sites and access routes occur in areas with high sensitivity-value, the broad-use zoning aims to keep the development footprint as small as is realistically possible, preferably within the existing transformed site.
- Where possible, sites with high biodiversity sensitivity-value are put into stronger protection zones.

- Peripheral development is favoured and should, where possible, be located outside the conservation area.
- Two key points need to be emphasised:
    - The designation of a broad-use zone does not imply that all sites within that zone would be suitable for all the development types anticipated. Detailed site level planning is still required, and many sites may prove to be unsuitable at a site/precinct/EIA level of planning.
    - Special management areas/overlays need to be formalised and linked to the management plans.

5.5.2 Zoning definitions and descriptions

The zoning definitions and descriptions were workshopped with area and regional managers. Four categories were decided on, namely primary conservation zone, conservation zone, low-intensity leisure zone and high-intensity leisure zone (see map 6 for the Durbanville zoning map). The process is still linked to the zoning used for the CapeNature reserves (Holness & Skowno 2008), as there should be general alignment of the broader-use zones to enable comparison and integration if provincial documents so require. Please see appendix 10 for the sensitivity-value analysis and zoning process.



Map 6: Durbanville Nature Reserve zoning map

6. DEVELOPMENT PLAN

Still to be developed

7. COSTING PLAN

An operational budget is allocated for the Durbanville area, which includes three nature reserves, namely Durbanville, Uitkamp Wetland and Botterblom nature reserves. Please see table 4 for the costing plan.

Table 4: Broad category breakdown for management interventions for the Durbanville Nature Reserve for the period 2011 – 2016

Management action: Durbanville	Funding source	Approximate costs 2011–2012	Approximate costs 2012–2013	Approximate costs 2013–2014	Approximate costs 2014–2015	Approximate costs 2015–2016
1. Invasive alien plant programme • Clearing of important invasive aliens	Invasive alien species funding	R30 000,00	R31 500,00	R33 075,00	R34 811,00	R36 551,57
2. Repairs and maintenance •	Operating	R18 631,26	R19 562,82	R20 540,96	R35 946,69	R37 744,02
3. Fencing •	Capital expenditure	-	-	-	-	-
4. Infrastructure development •	Capital reserve fund	-	-	-	-	-
6. Human resources • Salaries, wages • Employee-related costs • Employee costs	Operating	R577 854,47 R129 989,15 R707 843,62	R624 082,10 R140 388,28 R764 471,10	R674 008,66 R151 619,34 R825 628,78	R727 929,35 R163 748,88 R891 679,08	R786 163,69 R176 848,79 R968 720,15
7. General expenses • General operating costs • Other materials • Contracted services	Operating	R128 009,90 R12 416,77 R3 944,92	R138 250,69 R13 410,11 R4 260,51	R149 310,74 R14 482,92 R4 601,35	R161 255,59 R15 641,55 R4 969,46	R174 156,03 R16 892,87 R5 367,02
8. Special projects •	Capital expenditure	-		-	-	-
Note: Human resource costs are escalated at 8% per annum. Operating expenditure is escalated at 5% per annum.						

PART 3

MONITORING & AUDITING

8. MONITORING & AUDITING

8.1 Annual audit procedure

8.1.1 Management Effectiveness Tracking Tool South Africa (METT-SA)

The METT-SA is a rapid, site-level assessment tool adapted from the World Bank and Worldwide Fund for Nature (WWF) system (second edition, 2007). The system is based on the idea that good protected-area management follows a process comprising six distinct stages or elements:

It begins with understanding the **context** of existing values and threats (where are we now?), then progress through **planning** (where do we want to be?), followed by allocation of resources (**inputs**) (what do we need?). As a result of management actions (**processes**) (how do we go about it?), it eventually produces products and services (**outputs**) (what were the results?), which result in impacts or **outcomes** (what did we achieve?).

This version has been compiled so that it can be applied to the full range of protected areas managed by all C.A.P.E partners. It also applies to protected areas in other regions, and, with minor adaptations, could be applied outside of South Africa as well. It may also be used for marine protected areas (MPAs) and islands, but, in the long run, it may become necessary to amend the system to be more specific to these areas. In addition, a system for off-reserve conservation areas, such as conservancies or stewardships, may need to be developed.

When applying METT-SA, it is important for the following to be kept in mind:

- The METT-SA is intended to report on the reserve's progress. Thus, the score is the baseline against which future assessments are made to see if there has been an improvement.
- It is site-specific and must therefore not be used to compare scores between different protected areas.
- It is a useful tool to give indications of management trends. In this version, the six elements of the management process, as defined in the original version, are scored as subsets of the total. This gives an indication of where management should strive for improvement.
- It is not intended to replace more detailed assessments as part of adaptive management systems.

- The METT-SA has limitations in the quantitative measurement of outcomes, and these should be measured by more objective and quantitative systems.
- This version adjusts the total score where questions are irrelevant.
- Often, low scores on some questions could be a reflection on the organisation as a whole, and do not necessarily point to issues over which the protected-area manager has control. **The performance of managers should therefore under no circumstances be measured against the METT-SA results.**

Tracking the trends of management effectiveness is a long-term process, and instant improvements are unlikely. Generally, the METT-SA is applied at three-year intervals, but an annual application is acceptable if it is understood that changes may only be slight. The METT-SA for Durbanville Nature Reserve was undertaken in 2007, and the results are presented in appendix 12. The METT-SA will be repeated in approximately September 2011.

8.1.2 Protected-area review (PAR)

The PAR is an internal review conducted annually to assist managers in reviewing their sites, and to allow for adaptive management actions to be taken where required (and within managers' control).

8.2 Management plan review

Every five years, this IRMP should be reviewed, and adjusted where necessary. To achieve this, the following questions (and others as needed) should be addressed:

- Did this management plan make a meaningful contribution to the management of Durbanville Nature Reserve?
- Were individual management 'prescripts' realistic and achievable? Were they written unambiguously or was there room for misunderstanding?
- Were budgets for each management activity realistic? Were the allocated budgets too much or too little?
- Were sufficient staff members with the right qualifications allocated to each management activity?

There will be some overlap between the review and the audit, and they should therefore be done on the same day, by the same team.

8.3 Biodiversity monitoring

Table 5: The reserve's monitoring requirements

Action	Responsible party	Means of verification	Frequency
Vegetation monitoring			
Invasive alien vegetation	Reserve staff	Weekly inspections	Weekly
Aspects to be monitored include the effectiveness of the operation, the effectiveness of the follow-up, methods used, compliance with the alien-clearing schedule, and environmental damage such as herbicide spillage	Area manager, students and interns	Final inspections Field verification sheets	Once-off – completion of contract Annually – to determine management unit clearing plan
Fire mapping	Reserve staff		
All veld fires must be accurately mapped and recorded to build up a useful record that will assist with veld interpretation. These records will take the guesswork out of the effects of fire when it occurs on the property. A simple map indicating the extent and date of the burn is the minimum requirement.	Area manager, students and interns	Veld age map, fire map	Post-fire
Post-fire recruitment	Reserve staff		
	Area manager, students and interns	Stratified sampling plots	Post-fire Six months 12 months
Abundance, density and structure	Reserve staff Reserve manager, students and interns		Annually for three years

Threatened species	Reserve staff Reserve manager, students and interns	Fixed-point photography Presence, abundance, density Field observation Sheet	Annually Seasonally
<u>Faunal monitoring</u> Nocturnal species counts Bird diversity Bird distribution Small mammals	Reserve staff Reserve manager, students and interns Reserve staff Reserve manager, students and interns Tygerberg Bird Club Reserve staff Reserve manager, students, interns and field staff	Fixed transects Field observation sheets Standardised monitoring route Field observations Bird ringing Stratified random Sherman trap array	Bi-annually Monthly Weekly Monthly Seasonally
<u>Water monitoring</u> Rainfall	Reserve staff Reserve manager, students, interns	Field collection equipment	Daily
<u>South African Biodiversity Database</u> Capturing of all monitoring data onto the database	Area manager Students Members of the public	Acceptance of data by the administrator	Monthly

PART 4

REFERENCES

9. REFERENCES

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PART 5

10. APPENDICES

A. Charts and Tables

APPENDIX 1: Summarised Average monthly rainfall

Month	Mean rainfall in mm
January	13.69
February	14.29
March	21.46
April	67.07
May	96.18
June	133.26
July	122.07
August	114.51
September	73.86
October	51.29
November	48.43
December	18.71

B. Legal Agreements

Appendix 2A: Durbanville Nature Reserve description of boundaries

PROVINSIALE ADMINISTRASIE VAN DIE KAAP DIE GOEIE HOOP
PROVINCIAL ADMINISTRATION OF THE CAPE OF GOOD HOPE

TELEFOON / TELEPHONE : 41-1487.
Ext. No.: 14.
TELEGRAMADRES / TELEGRAPHIC ADDRESS : NATUUR
IN REPLY QUOTE / VERWYS NA

DEPARTEMENT VAN NATUURBEWARING
DEPARTMENT OF NATURE CONSERVATION

POSADRES: POSBUS 659, KAAPSTAD
POSTAL ADDRESS: P.O. BOX 659, CAPE TOWN

AN.209/6/4/1.

21-8-1967

9/2

The Town Clerk,
P.O. Box 100,
DURBANVILLE.

DESCRIPTION OF BOUNDARIES OF THE DURBANVILLE NATURE RESERVE.

With reference to your letter No. 9/2 dated 3rd March, 1967, I attach 40 copies of proclamation No. 126 of 1967 regarding the description of the boundaries of the Durbanville Nature Reserve.

for DIRECTOR OF NATURE CONSERVATION.
MvH/JJF

Appendix 2B: Durbanville Nature Reserve description of boundaries

DE HAAN, ELZINGA & HORWITZ

LAND SURVEYORS & TOWNSHIP CONSULTANTS / LANDMETERS & DORPSAANLEG - RAADGEWERS
ENGINEERING & TOPOGRAPHICAL SURVEYORS / INGENIEURS- & TOPOGRAFIESE LANDMETERS

Tel. 97-4652

208 Anita Court / Hof
Voortrekker Rd./weg
Bellville

FREDERIK DE HAAN B.Sc., M.I.L.S., L.(S.A.)

DIRK ELZINGA Dip. L.S., M.I.L.S., L.(S.A.)

Our Ref.

Your Ref.

21rd January 1967

DESCRIPTION OF BOUNDARY
DURBANVILLE NATURE RESERVE.

Commencing at the Northernmost point of the long South Eastern boundary of Erf 881 Durbanville, being point "A" on plan (vide S.G. diagram 198/64); thence in a north easterly direction along the boundary of erf 881 to its terminal, "B"; thence in an easterly direction along the boundary of Erf 455 to its intersection with Race Course Road, "C"; thence in a general southerly direction, changing in a long sweep to a south westerly direction along the western and north western side of Race Course Road, " D, E , F, G, H, J, K, L, M, N"; thence in a west south westerly direction to the intersection of Race Course Road and the south eastern boundary of Erf 881, "P"; thence in a north easterly direction along the boundary of Erf 881 to the point of commencement, "A".

(vide S.G. diagram 198/64, representing Erf 1588 Durbanville);

Appendix 2C: Durbanville Nature Reserve proclamation confirmation document

PROKLAMASIE

DEUR DIE ADMINISTRATEUR VAN DIE PROVINSIE DIE KAAP DIE GOEIE HOOP.

KRAGTENS die bevoegdheid my verleen by artikel 54 (1) (a) van die Ordonnansie op Natuurbewaring, 1965 (Ordonnansie no. 26 van 1965), omskryf ek hierby die grense van die Durbanville-natuurtuin in die munisipale gebied Durbanville soos beskryf in die Bylae hiervan.

Gedateer te Kaapstad op hede die 25ste dag van Julie 1967.

J. N. Malan,
ADMINISTRATEUR.

No. 126, 1967.

BYLAE.

Beskrywing van Grense.

Vanaf die noordelikste punt van die lang suidoostelike grens van Erf 881, Durbanville, naamlik punt „A" op plan (sien L.B. Kaart 198/64); vandaar in 'n noordoostelike rigting langs die grens van Erf 881, tot by sy eindpunt „B"; vandaar in 'n oostelike rigting langs die grens van Erf 455 tot waar dit deur Renbaanpad „C" gekruis word; vandaar in 'n algemeen suidelike rigting wat verander in 'n lang kromming na 'n suidwestelike rigting langs die westelike en noordwestelike kant van Renbaanpad „D, E, F, G, H, J, K, L, M, N"; vandaar in 'n wes-suidwestelike rigting tot by die kruising van Renbaanpad en die suidoostelike grens van Erf 881, „P"; vandaar in 'n noord-oostelike rigting langs die grens van Erf 881 tot by die aanvangspunt, „A".

PROCLAMATION

BY THE ADMINISTRATOR OF THE PROVINCE OF THE CAPE OF GOOD HOPE.

UNDER the powers vested in me by section 54 (1) (a) of the Nature Conservation Ordinance, 1965 (Ordinance No. 26 of 1965), I hereby define the boundaries of the Durbanville nature reserve situated in the Municipal area of Durbanville as described in the Schedule hereto.

Dated at Cape Town this 25th day of July, 1967.

J. N. Malan,
ADMINISTRATOR.

No. 126, 1967.

SCHEDULE.

Description of Boundaries.

Commencing at the northernmost point of the long south eastern boundary of Erf 881, Durbanville, being point "A" on plan (vide S.G. diagram 198/64); thence in a north easterly direction along the boundary of Erf 881 to its terminal, "B"; thence in an easterly direction along the boundary of Erf 455 to its intersection with Race Course Road, "C"; thence in a general southerly direction, changing in a long sweep to a south westerly direction along the western and north western sides of Race Course Road, "D, E, F, G, H, J, K, L, M, N"; thence in a west south westerly direction to the intersection of Race Course Road and the south eastern boundary of Erf 881, "P"; thence in a north easterly direction along the boundary of Erf 881 to the point of commencement, "A".

N.H.D.

Appendix 2D: Durbanville Nature Reserve gazette

TELEGRAPHIC ADDRESS

IN REPLY QUOTE/ VERWYS NA
AN.209/6/4/1.

P.O. Box 659,
CAPE TOWN.

18-3-1966

The Acting Town Clerk,
P.O. Box 100,
DURBANVILLE.

FILE 9/2
19 MAR 1966
DIST. 3689

ESTABLISHMENT OF NATURE RESERVE.

1. With reference to your letter No. 9/2 dated 20th December, 1965, I wish to inform you that the Executive Committee has approved, in terms of section 3 of the Nature Reserves Ordinance, No. 18 of 1939, that your Council set apart a piece of land of which it is the owner and situated next to the Race Course road, for the purposes of a nature reserve. The Proclamation applying the provisions of the Ordinance to your Council has appeared in the Provincial Gazette of 4th March, 1966 and copies thereof are attached for your information. The Executive Committee also approved the payment of an annual subsidy of 50% of the authorised expenditure in respect of the development and maintenance of the nature reserve.

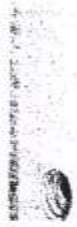
2. Section 3 ter of the Ordinance provides that a Council shall, by notice in the Provincial Gazette, define the boundaries of any area established as a nature reserve. You are, therefore, kindly requested to furnish me as soon as possible with a suitable description of the piece of land in question in both official languages.

3. I must also point out that whenever a Council has established a nature reserve, it shall appoint an advisory board for the purpose of advising it and making recommendations as regards the control, management and general welfare of the nature reserve. The new consolidated Ordinance on Nature Conservation, 1965, provides that at least two members of an advisory board ~~should~~ shall be representatives of the Administrator. The Ordinance also provides that regulations relating to advisory boards for nature reserves should in future be promulgated by local authorities in accordance with the procedure laid down in the Ordinance. Attached are pro forma regulations which can be used as a guide in this respect.

4. As it is expected that the new Ordinance on Nature Conservation, 1965, will only be promulgated ~~within the next~~ three months or so, you are requested to hold the matter regarding the promulgation of your Council's regulations in abeyance until the new Ordinance has been promulgated.

DIRECTOR OF NATURE CONSERVATION.

HHC/BJ.



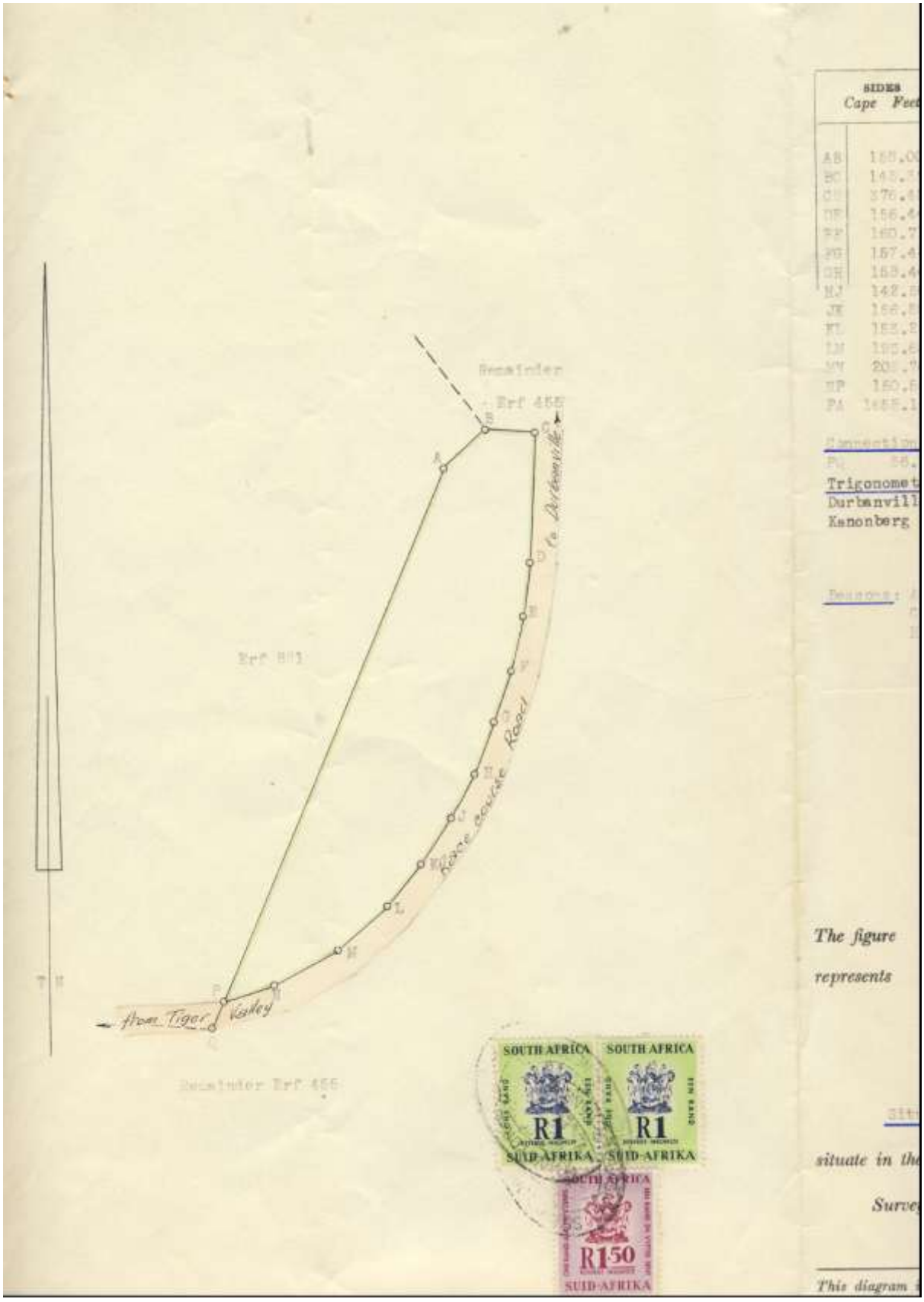
UNDER the powers vested in me by section *two* of the Nature Reserves Ordinance, 1939 (Ordinance No. 18 of 1939), I hereby declare that all the provisions of the said Ordinance shall apply to the Municipality of Durbanville.

Dated at Cape Town this 25th day of February, 1966.

KRAGTENS die bevoegdheid my verleen by artikel *twee* van die Ordonnansie op Natuurtuine, 1939 (Ordonnansie nr. 18 van 1939), verklaar ek hierby dat al die bepalings van genoemde Ordonnansie op die Munisipaliteit van Durbanville van toepassing is.

Gedateer te Kaapstad on hede die 25ste dag van Februarie

APPENDIX 3: Surveyor General Map



SIDES Cape Feet		ANGLES OF DIRECTION	SYSTEM Lo 19° CO-ORDINATES y	x
		Constant:	+ 100 000.00	+ 100 000.00
AB	158.00	227.10.40	A + 6485.67	+ 98068.10
BC	145.10	272.58.20	B + 6367.75	+ 98006.70
CD	176.45	2.32.30	C + 6222.57	+ 98097.20
DE	156.44	9.46.00	D + 6261.45	+ 98268.27
EF	160.71	15.20.10	E + 6365.52	+ 98423.58
FG	157.48	18.46.50	F + 6503.72	+ 98479.75
GH	153.44	23.30.00	G + 6552.92	+ 98328.50
HJ	149.80	28.42.10	H + 6417.10	+ 98276.18
JK	156.85	33.21.30	J + 6456.54	+ 97955.14
KL	151.27	35.56.30	K + 6571.00	+ 97830.17
LM	192.66	48.56.30	L + 6668.13	+ 97740.66
MN	206.70	67.20.10	M + 6814.18	+ 97676.57
NP	150.56	72.24.30	N + 6901.77	+ 97570.51
PA	1668.18	303.35.40	P + 6746.06	+ 97612.24
Connection:				
PQ	88.76	32.32.40	Q + 6780.75	+ 97652.76
Trigonometrical beacons:				
Durbanville ▲			+ 6174.30	+ 98021.52
Kanonberg ▲			+ 15511.70	+ 91628.98

No. 198/64

Approved

for Surveyor-General.

-6-2-1964

Beacons: A,B,C Section fencing standard.
C,D,E,F,G 1" x 3" round iron peg.
E,J,K,L,M,N,P,Q mill corner fence post 4' high.

Scale 1 : 4000

The figure A B C D E F G H J K L M N P Q R

represents 6.7201 Morgen *of land being*

Ref 1588

a Portion of Ref 455 Durbanville,

situate in the Municipality of Durbanville,

Divisional Council District

situate in the ~~Division of~~ of the Cape, *Province of Cape of Good Hope.*

Surveyed in December 1963, *by me*

Land Surveyor.

This diagram is annexed to | *The original diagram is* | *File No.*

APPENDIX 4: Management Agreement

1

MANAGEMENT AGREEMENT
(made and entered into by and between)

CITY OF CAPE TOWN
(hereinafter referred to as the **"Owner")**

and

...Deborah Wagner and Jeanne Malan...
(hereinafter referred to as the **"...Lessees ")**

PREAMBLE

WHEREAS the **Owner** is the registered title deed holder of the land and is empowered to allow the land to be used in terms of legislation and Policy on Municipal Property approved by the Council of the City of Cape Town on 31 July 2002.

WHEREAS the **...Lessees.....** intend to utilize the propagation facilities of the Durbanville Nature Reserve erf 1969 for plant propagation purposes, subject to the provisions of this agreement.

NOW THEREFORE THE PARTIES HERETO AGREE AS FOLLOWS:

1. **DEFINITIONS**

In this agreement, except to the extent to which the context may indicate a contrary intention, each of the following words and phrases shall have the meaning ascribed to them in this clause.

1.1 "the **...Lessees...**" shall mean **..._Deborah Wagner and Jeanne Malan ...**
(Registration No. .....)

1.2 "The land" shall mean portion of Erf ...1969..., in extent ±...420..m² as indicated on sketch plan attached as Annexure "A" which will be developed and maintained by the lessees with agreement / permission from the owner and used for plant propagation purposes only.

1.3 "**Owner**" shall mean the City of Cape Town, a municipality as described in the Local Government : Municipal Demarcation Act, 1998 and in terms of the Municipal Systems Act, No. 32 of 2000.

2. This agreement is subject to the **Owner** remaining the registered owner of the land, during the currency of this agreement, failing which this agreement shall terminate on transfer of the land to a new owner.

3. This agreement shall commence on ...**1 September 2010**... and shall endure for a period of one (1) year only, whereafter the parties hereto may negotiate an extension of the period of this agreement.

4. This agreement shall be subject to all servitudes and conditions, if any, binding on the **Owner** in respect of the land.

5. All payments, if applicable, in terms of this agreement shall be made at the office of the **Owner**, c/o Municipal Offices, 1 Tallent Street, Parow.

6. The land is taken over "voetstoots" by the **...Lessees.....** from the **Owner**. The **... Lessees .....** hereby records that it has inspected the land and is satisfied with it in all respects. The **Owner** or its officers, employees or agents shall not be liable for any representations (whether express or implied) in respect of the land or the provisions hereof and the **..... Lessees.....** shall acknowledge that no representations of whatever nature in respect of the land or the provisions hereof have induced him/her to enter into this agreement.

7. The **... Lessees...** shall not cede, assign of sublet its rights under this agreement.

8. The **... Lessees.....** shall at all times be responsible for the maintenance of good order, behaviour and government of the land and shall not allow the same to be frequented by persons of ill repute or bad character.

9. The **... Lessees...**agrees at all times to keep and maintain the land in a good and effective order. (No trees or vegetation may be removed without the prior written consent of the **Owner**).

10. The land may not be used for residential purposes and nobody may reside on the land overnight. No livestock may be kept on the land.

11. The **... Lessees ...** shall not make any boreholes or undertake any other means of drawing water from beneath the surface of the land.

12. The **..... Lessees .....** shall not effect any improvements or additions to the land, nor make any substantial variations or alterations to the land without the prior written consent of the **Owner**.

13. The Owner may at all convenient times through its authorised agents, officers or employees enter upon the land and inspect the same and make an

inventory of all defects or matters calling for repairs found thereon or therein for which the ... **Lessees** ..... are responsible as herein provided and within fourteen days of the receipt of a notice in writing from the **Owner** calling upon it so to do, the ..... **Lessees** ..... shall make good any defects or matters requiring repair as aforesaid and if the ... **Lessees** ... shall fail to do so that the **Owner** may enter upon the land aforesaid and remedy such defects or make and effect the repairs aforesaid and recover the costs from the ... **Lessees** ...

14. The **Owner** reserves the right of free access, without notice, to the land hereby used by the ... **Lessees** ... for as many of its authorised agents, officers or employees as may be necessary for the purpose of inspection, maintenance, cleansing, repairs and reconstruction of, or in connection with, existing foul sewers, rising mains, storm water drains, water mains, electric cables, or any works appurtenant thereto, or in regard to any such or other municipal services and the **Owner** reserving to itself the right to establish such services without notice. The ... **Lessees** .....shall not in any manner disturb such services except under the express permission in writing by the **Owner** in respect to the service concerned and upon due compliance with any specified precautionary measures. Should work involving maintenance, clearing, construction, reconstruction or repairs become necessary at any time, the **Owner** shall, in performing such work, cause as little inconvenience as possible to the ... **Lessees** ..., regard being had to the nature of the work performed, provided that the **Owner** shall not be liable for any damage whatsoever which may be sustained by the ... **Lessees**.. as a result of the performance by the **Owner** of the work aforesaid.

15. The granting of the Management Agreement shall under no circumstances be deemed to confer any real right or servitude of any kind in favour of the ... **Lessees** ... Upon demand by the **Owner** for quiet possession of the land, the ... **Lessees** ... shall be bound to give such possession without any right of retention or right of compensation whether for useful, necessary or other expenses.

16. In the event of the ... **Lessees** ... failing to pay any amounts due to the **Owner** in relation to the land or committing any breach of this agreement, the **Owner** shall have the right to cancel the agreement forthwith without prejudice to any claim for monies, charges, damages or any other loss provided that this clause shall only become applicable after written notice of 14 days has been given to the ... **Lessees** .....

17. The ..... **Lessees** ..... shall be liable for all costs arising out of and incidental to the framing of this agreement.

18. Any notice or direction given to the ... **Lessees** ... in terms of this agreement shall be deemed to have been effected and legally delivered to the ..... **Lessees** ... after seven (7) days of same having been delivered by hand or posted by prepaid registered post addressed to the ...**Lessees** ... domicilium

citandi et executandi for all purposes of this agreement and for any process which must or may be served in any action resulting from this agreement.

19. Notwithstanding anything contained in this agreement, the **Owner** may resume possession of the whole or any portion of the land at any time on giving three (3) month's notice in writing to that effect should it be required for any local authority or government purpose and may cancel or amend the agreement accordingly. In either case the **Owner** shall not pay to the ..... **Lessees** ..... compensation for any improvements made to the land by the ..... **Lessees** .....

20. The ..... **Lessees** ..... undertakes that it will, if necessary, apply for electricity or any other service supply to the land subject to the applicable standard conditions of the **Owner** regarding the supply or upgrading of an electricity supply or any other service supply as well as electrical distribution across the land.

21. The ..... **Lessees** ..... shall not be entitled to erect any permanent structures on the land.

22. The ... **Lessees** ... hereby agrees to indemnify and keep the **Owner** indemnified against all actions, proceedings, claims and demands, costs, damages and expenses which may be levied, brought or made against the **Owner** or which the **Owner** may pay, sustain or incur by reason of any act on the part of the ..... **Lessees** ..., its employees or persons acting under its control or its members.

23. **DOMICILIUM CITANDI ET EXECUTANDI**

The Owner chooses its *domicilium citandi et executandi* for all purposes hereunder at :
Durbanville Nature Reserve
Private Bag X4
PAROW
7500
c/o The Reserve Manager
Racecourse Road
DURBANVILLE
7550
(021) 970 3097
(021) 979 0093

The **ISE** chooses its *domicilium citandi et executandi* for all purposes hereunder at:

.....

.....

.....

.....

Thus done and signed at DURBANVILLE this 6th day of OCTOBER 2010.

AS WITNESSES:

1. .....

2. .....

.....
for the lessees

Thus done and signed at ..... this ..... day of ..... 2010.

AS WITNESSES:

1. .....

2. .....

.....
for **OWNER**

ANNEXURE A

A MAP OF THE PROPAGATION FACILITIES LOCATED AT DURBANVILLE NATURE RESERVE

ANNEXURE B

PLANT PROPAGATION AND MAINTENANCE

1. This Management Agreement makes provision that the lessees will be responsible for assisting with the propagation of locally indigenous vegetation as agreed by Biodiversity Management officials for the Central District as and when needed. A total of no less than 600 plants per annum will be required (plant species to be specified) for the following conservation sites:

   Durbanville Nature Reserve – 100 plants
   Botterblom Park – 100 plants
   Uitkamp Wetland – 400 plants

2. Sustainable harvesting of plant material is to take place for use by the lessee under the rules and regulations of the Biodiversity Management Branch.

3. Seed is to be collected and the seed collection maintained by the lessees.

4. Plants search and rescued for veld restoration is to be maintained by the lessees.

5. Red Data plants are only to be propagated for use by the Biodiversity Management Branch. No Red Data plants are to be propagated for own use by the lessees.

6. Only indigenous plants are to be propagated for own use by the lessee.

PROTOCOLS FOR PLANT PROPAGATION

Sourcing plant material:

a) Plants should be obtained from the nearest surviving population.

b) If it is suspected that there are different subspecies, forms, varieties or strains, or if there is the possibility of a natural gap or isolation effect, then the different forms must be kept separate and within their known areas. Good records of which strains have been introduced into which areas must be kept. Strains should never be mixed and ideally should be propagated in geographically separate nurseries. Flowering of strains and allowing them to set seed in the nursery areas should not be allowed, and all seed must be destroyed.

c) For propagation at least 10 plants must be collected (if possible) and cuttings/seeds/etc. from these must be kept separate and marked so that it can be ensured that genetic material from all 10 plants are available for planting at a specific location.

d) Where cuttings from certain mother plants persistently fail it should be ascertained why, and if not solvable, then additional mother plants should be obtained if possible.

e) Care must be taken to ensure that alien plants (especially Frankenflora) are not in the source area for propagation material, where these might hybridize with source plants. This is especially important where seeds are collected.

C. Species Checklists

APPENDIX 5A: Plant list

FAMILY	SPECIES	COMMON NAME
AIZOACEAE	*Acrosanthos teretifolia*	
AIZOACEAE	*Adenogramma glomerata*	Muggiegras
AIZOACEAE	*Tetragonia fruiticosa*	Kinkelbossie
AIZOACEAE	*Tetragonia nigrescens*	Kinkelbos
AMARYLLIDACEAE	*Amaryllis belladonna*	March Lily
AMARYLLIDACEAE	*Brunsvigia orientalis*	Kandelaar
AMARYLLIDACEAE	*Haemanthus coccineus*	April Fool/Rooikwas
AMARYLLIDACEAE	*Haemanthus sanguineus*	Brandlelie
ANACARDIACEAE	*Rhus glauca*	
ANACARDIACEAE	*Rhus laevigata* v. *villosa*	Duinetaaibos
ANACARDIACEAE	*Rhus lucida*	Blinktaaibos
ANACARDIACEAE	*Rhus rosmarinifolia*	Roosmaryntaaibos
ANTHERICACEAE	*Chlorophytum triflorum*	Gifkool
ANTHERICACEAE	*Chlorophytum undulatum*	Namakwa Gifkool
APIACAEAE	*Lichtensteinia lacera*	
ASPARAGACEAE	*Asparagus capensis*	Katdoring
ASPARAGACEAE	*Asparagus declinarus*	
ASPARAGACEAE	*Asparagus rubicundus*	
ASPARAGACEAE	*Asparagus undulatus*	
ASPHODELACEAE	*Bulbine praemorsa*	
ASPHODELACEAE	*Trychyandra hirsatiflora*	
ASTERACEAE	*Arctosis acaulis*	Renoster Gousblom
ASTERACEAE	*Arctotheca calendula*	Cape Weed
ASTERACEAE	*Arctotis angustifolia*	Smalblaar gousblom
ASTERACEAE	*Arctotis hirsuta*	Gousblom
ASTERACEAE	*Arctotis incisa*	
ASTERACEAE	*Athanasia trifurcata*	
ASTERACEAE	*Berkheya armata*	Groot Disseldoring
ASTERACEAE	*Chrysocoma ciliata*	Beesbossie
ASTERACEAE	*Chrysocoma coma-aurea*	
ASTERACEAE	*Corymbium africanum*	
ASTERACEAE	*Cotula turbinata*	Ganskos
ASTERACEAE	*Dimorphotheca pluvialis*	Reënblommetjie
ASTERACEAE	*Elytropappus rhinocerotis*	Renosterbos
ASTERACEAE	*Eriocephalus africanus*	Kapokbossie
ASTERACEAE	*Eriocephalus paniculatus*	
ASTERACEAE	*Felicia aethiopica*	
ASTERACEAE	*Felicia echinata*	
ASTERACEAE	*Felicia fruticosa*	
ASTERACEAE	*Helichrysum patulum*	
ASTERACEAE	*Helichrysum revolutum*	strand Sewejaartjie
ASTERACEAE	*Helichrysum rosum*	
ASTERACEAE	*Helichrysum teretifolium*	
ASTERACEAE	*Metalasia densa*	
ASTERACEAE	*Metalasia muricata*	Blombos
ASTERACEAE	*Nidorella fotida*	
ASTERACEAE	*Osteospermum dregei*	

ASTERACEAE	*Osteospermum moniliferum*	Bietou
ASTERACEAE	*Othonna ciliata*	
ASTERACEAE	*Senecio burchellii*	
ASTERACEAE	*Senecio elegans*	Veld cineraria
ASTERACEAE	*Senecio hastatus*	
ASTERACEAE	*Senecio pubigerus*	Skraalbossie
ASTERACEAE	*Stoebe fusca*	
ASTERACEAE	*Tripteris clandestinum*	
ASTERACEAE	*Ursinia anthemoides* subsp. *anthemoides*	Magriet
BORAGINACEAE	*Lobostemon fruticosus*	Pajama Bush/Luibos
BRASSICACEAE	*Heliophila coronopifolia*	Blou vlaks
CAMPANULACEAE	*Cyphia digitata*	Bokkies
CAMPANULACEAE	*Cyphia incisa*	
CAMPANULACEAE	*Cyphia phyteuma*	
CAMPANULACEAE	*Cyphia volubilis*	Bokkies
CAMPANULACEAE	*Lobelia erinus*	
CAMPANULACEAE	*Roella ciliata*	
CAMPANULACEAE	*Wahlenbergia capensis*	Beetle blue
CELASTRACEAE	*Putterlickia pyracantha*	Pendoring
COLCHICACEAE	*Baeometra uniflora*	Slangblom
COLCHICACEAE	*Ornithoglossum viride*	Groen spinnekoppie
COLCHICACEAE	*Wurmbea monopetala*	
CRASSULACEAE	*Crassula ciliata*	
CRASSULACEAE	*Crassula fascicularis*	
CRASSULACEAE	*Tylecodon grandiflorus*	
CYPERACEAE	*Cyperus marginatus*	
CYPERACEAE	*Ficinia indica*	
CYPERACEAE	*Ficinia oligantha*	
CYPERACEAE	*Isolepis venustula*	
DIPSACACEAE	*Scabiosa columbaria*	
ERICACEAE	*Erica baccans*	
ERICACEAE	*Erica cerinthoides*	Fire Heath/Rooihaartjie
ERICACEAE	*Erica mammosa*	Rooiklossieheide
ERICACEAE	*Erica paniculata*	
EUPHORBIACEAE	*Adenodine pauciflora*	
FABACEAE	*Aspalathus cephalotes*	
FABACEAE	*Aspalathus cordata*	Steek Ertjiebos
FABACEAE	*Aspalathus divaricata* subsp.*divaricata*	
FABACEAE	*Aspalathus ericoefolia*	
FABACEAE	*Aspalathus hispida*	Wit Ertjiebos
FABACEAE	*Indigofera digitata*	
FABACEAE	*Lotononis involucrate*	
FABACEAE	*Otholobium decumbens*	
FABACEAE	*Otholobium hirtum*	Grys Keurtjie
FABACEAE	*Podylyria calyptrata*	
FABACEAE	*Podylyria sericea*	
FABACEAE	*Priestleya tomentosa*	
FABACEAE	*Rafnia angulata*	Soet Houtbossie
FABACEAE	*Virgilia divaricata*	
FABACEAE	*Virgilia oroboides*	
FABACEAE	*Xiphotheca sp.*	
FUMARIACEAE	*Cysticapnos vesicarius*	

FUMARIACEAE	*Fumaria muralis*	
GENTIANACEAE	*Chironia baccifera*	Bitter bessiebos
GENTIANACEAE	*Sebaea exacoides*	Naeltjiesblom
GENTIANACEAE	*Sebaea schlechteri*	
GERANIACEAE	*Geranium incanum* var. *incanum*	Horlosie
GERANIACEAE	*Monsonia speciosa*	Sambreeltjie
GERANIACEAE	*Pelargonium betulinum*	
GERANIACEAE	*Pelargonium capitatum*	Kus malva
GERANIACEAE	*Pelargonium elongatum*	
GERANIACEAE	*Pelargonium myrrhifolium*	Fynblaar malva
GERANIACEAE	*Pelargonium rapaceum*	
GERANIACEAE	*Pelargonium triste*	Kaneeltjie
HAEMODORACEAE	*Wachendorfia paniculata*	Rooikanol
HYACINTHACEAE	*Lachenalia pallida*	Bleekviooltjie
HYACINTHACEAE	*Lachenalia reflexa*	
HYPOXIDACEAE	*Empodium plicatum*	Autumn star
HYPOXIDACEAE	*Spiloxene capensis*	Poublom
HYPOXIDACEAE	*Spiloxene schlechteri*	
IRIDACEAE	*Aristea africana*	Blousuurkanol
IRIDACEAE	*Aristea lugens*	
IRIDACEAE	*Aristea major*	Blouvuurpyl
IRIDACEAE	*Aristea spiralis*	
IRIDACEAE	*Babiana ambigua*	Bobbejaantjie
IRIDACEAE	*Babiana ringens*	Rotstert
IRIDACEAE	*Babiana stricta*	
IRIDACEAE	*Babiana villosula*	Klien Bobbejaantje
IRIDACEAE	*Chasmanthe aethiopica*	Klein Piempiempie
IRIDACEAE	*Chasmanthe floribunda*	Piempiempe
IRIDACEAE	*Dietes bicolor*	
IRIDACEAE	*Ferraria undulata*	
IRIDACEAE	*Geissorhiza aspera*	Blou Sysie
IRIDACEAE	*Gladiolus alatus*	Kalkoentjie
IRIDACEAE	*Gladiolus carinatus*	sand Pypie
IRIDACEAE	*Gladiolus carneus*	
IRIDACEAE	*Gladiolus gracilis*	Blou pypie
IRIDACEAE	*Gladiolus maculatus*	
IRIDACEAE	*Gladiolus priorii*	Rooi Afrikaner
IRIDACEAE	*Gladiolus recurvus*	
IRIDACEAE	*Gladiolus undulatus*	Large Painted Lady
IRIDACEAE	*Gladiolus watsonius*	rooi Afrikaner
IRIDACEAE	*Hesperantha falcata*	Bontrok aandblom
IRIDACEAE	*Ixia maculata*	
IRIDACEAE	*Ixia scillaris*	Agretjie
IRIDACEAE	*Melasphaerula ramosa*	Feeklokkie/Baardmannetjie
IRIDACEAE	*Micranthus alopecuroides*	
IRIDACEAE	*Moraea bellendenii*	Patrys uintjie
IRIDACEAE	*Moraea elegans*	
IRIDACEAE	*Moraea flaccida*	Groot Tulp
IRIDACEAE	*Moraea fugax*	
IRIDACEAE	*Moraea gawleri*	
IRIDACEAE	*Moraea minor*	pronk Tulp
IRIDACEAE	*Moraea tricolour*	

IRIDACEAE	*Moraea tripetala*	Blou uintjie
IRIDACEAE	*Romulea flava*	
IRIDACEAE	*Sparaxis bulbifera*	Botterblom
IRIDACEAE	*Sparaxis grandiflora* subsp. *fimbriata*	
IRIDACEAE	*Sparaxis villosa*	Blou kappie
IRIDACEAE	*Watsonia marginata*	Breeblaar Kanolpypie
IRIDACEAE	*Watsonia meriana*	Lakpypie
IRIDACEAE	*Watsonia tabularis*	
JUNCAGINACEAE	*Triglochin bulbosa*	Bolletjieblom
KIGGELARIACEAE	*Kiggelaria africana*	Wild Peach/Spekhout
LAMIACEAE	*Leonotis leonurus*	Wild dagga/Wildedagga
LAMIACEAE	*Salvia africana-caerulea*	Bloublomsalie
LANARIACEAE	*Lanaria lanata*	
LINACEAE	*Linum thunbergii*	
MENISPERMACEAE	*Cissampelos capensis*	
MESEMBRYANTHEMACEAE	*Carpobrotis edulis*	Suurvy
MESEMBRYANTHEMACEAE	*Herrea blanda*	
MONTINACEAE	*Montinia caryophyllacea*	Peperbos
MYRICACEAE	*Myrica quercifolia*	Maagpynbossie
OLEACEAE	*Olea europaea* subsp. *Africana*	Wild Olive,Olienhout
ORCHIDACEAE	*Corycium crispum*	Geel Bastertrewwa
ORCHIDACEAE	*Corycium excisnm*	
ORCHIDACEAE	*Corycium orobanchoides*	
ORCHIDACEAE	*Disperis villosa*	
ORCHIDACEAE	*Holothrix villosa*	
ORCHIDACEAE	*Monadenia bracteata*	Orgidekie
ORCHIDACEAE	*Pterygodium catholicum*	Moederkappie
ORCHIDACEAE	*Satyrium odorum*	Soet Trewwa
OXALIDACEAE	*Oxalis luteola*	Geel Suring
OXALIDACEAE	*Oxalis multicaulis*	
OXALIDACEAE	*Oxalis pes-caprae*	Suring,Sorrel
OXALIDACEAE	*Oxalis purpurea*	Groot Suring
POACEAE	*Cymbopogon marginatus*	
POACEAE	*Ehrharta longifolia*	
POACEAE	*Eragrostis curvula*	Weeping Love Grass
POACEAE	*Merxmuellera stricta*	
POACEAE	*Pentaschistis sp.*	
POACEAE	*Themeda triandra*	
POACEAE	*Tribolium hispidum*	
POACEAE	*Tribolium uniolae*	
PODOCARPACEAE	*Podocarpus elongatus*	
POLYGALACEAE	*Muraltia heisteria*	
POLYGALACEAE	*Muraltia spinosa*	Tortoise Berry/Skilpadbessie
POLYGALACEAE	*Polygala bracteaolata*	
POLYGALACEAE	*Polygala garcinii*	
POLYGALACEAE	*Polygala myrtifolia*	Septemberbos
POLYGALACEAE	*Rumex angiocarpus*	
POLYGONACEAE	*Rumex lativalvis*	Veldsuring
PROTEACEAE	*Leucospermum hypophyllocarpodendron*	
PROTEACEAE	*Protea burchellii*	Burchell's Sugarbush
PROTEACEAE	*Protea repens*	Cape Sugarbush
PROTEACEAE	*Serruria brownii*	Bottlebrush Spiderhead

PROTEACEAE	*Serruria fasciflora*	
RESTIONACEAE	*Elegia* cf. *tectorum*	
RESTIONACEAE	*Elegia tectorum*	Olifant riet
RESTIONACEAE	*Hypodiscus willdenowia*	
RESTIONACEAE	*Ischyrolepis capensis*	
RESTIONACEAE	*Ischyrolepis triflora*	
RESTIONACEAE	*Thamnochortus pellucidus*	
RESTIONACEAE	*Thamnochortus punctatus*	
RESTIONACEAE	*Willdenowia incurvata*	Sonkwas Riet
RHAMNACEAE	*Phylica callosa*	
RHAMNACEAE	*Phylica ericoides*	
RHAMNACEAE	*Phylica plumosa*	Veerkoppie
ROSACEAE	*Cliffortia falcata*	
ROSACEAE	*Cliffortia hirta*	
ROSACEAE	*Cliffortia juniperina*	
ROSACEAE	*Cliffortia ruscifolia*	
RUBIACEAE	*Anthospermum aethiopicum*	
RUTACEAE	*Diosma hirsuta*	
SANTALACEAE	*Thesium funale*	
SANTALACEAE	*Thesium pycnanthum*	
SCROPHULARIACEAE	*Hebenstretia dentata*	Slakblom
SCROPHULARIACEAE	*Hemimeris montana*	
SCROPHULARIACEAE	*Hyobanche sanguinea*	
SCROPHULARIACEAE	*Manulea rubra*	Rooi vingertjies
SCROPHULARIACEAE	*Nemesia barbata*	Blou bekkie
SCROPHULARIACEAE	*Orobanche racemosa*	
SCROPHULARIACEAE	*Phyllopodium capillare*	
SCROPHULARIACEAE	*Selago fruticosa*	
SCROPHULARIACEAE	*Zaluzianskya dentata*	
SOLANACEAE	*Lycium afrum*	Bokdoring
STERCULIACEAE	*Hermannia alnifolia*	Doll's Rose/Poprosie
STERCULIACEAE	*Hermannia hyssopifolia*	
STERCULIACEAE	*Hermannia prismatocarpa*	
TECOPHILAECEAE	*Cyanella hyacinthoides*	Blou Raaptol
THYMELAEACEAE	*Passerina corymbosa*	Sand gannabos
THYMELAEACEAE	*Struthiola dodecandra*	
ZYGOPHYLLACEAE	*Zygophylum sessilifolium*	

Appendix 5B: Extra-limital Fynbos plant species

FAMILY	SPECIES	COMMON NAME
ASTERACEAE	*Syncarpha argentea*	
ASTERACEAE	*Euryop* sp.	
ASTERACEAE	*Gazania* sp.	
ERICACEAE	*Erica bauera*	
ERICACEAE	*Erica inflata*	
ERICACEAE	*Erica grandiflora*	
ERICACEAE	*Erica parilis*	
ERICACEAE	*Erica peziza*	
ERICACEAE	*Erica quadrangularis*	
ERICACEAE	*Erica regia*	
ERICACEAE	*Erica speciosa*	
ERICACEAE	*Erica tomentosa*	
FABACEAE	*Crotalaria capensis*	
FABACEAE	*Psoralea pinnata*	
FABACEAE	*Virgilia oroboides*	
HYACINTHACEAE	*Lachenalia aloides*	
HYACINTHACEAE	*Lachenalia unifolia*	
LAMIACEAE	*Leonotis leonurus*	Wild dagga/Wildedagga
OCHNACEAE	*Ochna natalitia*	
OCHNACEAE	*Ochna serrulata*	
PROTEACEAE	*Leucadendron argenteum*	Silver Tree
PROTEACEAE	*Leucadendron* cf. *barkerae*	Swartberg Conebush
PROTEACEAE	*Leucodendron cinereum*	Scraggly Conebush
PROTEACEAE	*Leucodendron coniferum*	Dune Conebush
PROTEACEAE	*Leucadendron daphnoides*	DuToitskloof Conebush
PROTEACEAE	*Leucadendron discolor*	Piketberg Conebush
PROTEACEAE	*Leucadendron dregei*	Summit Conebush
PROTEACEAE	*Leucadendron foedum*	Hopefield Conebush
PROTEACEAE	*Leucadendron galpinii*	Hairless Conebush
PROTEACEAE	*Leucadendron laureolum*	Golden Sunshinebush
PROTEACEAE	*Leucodendron levisanus*	Cape Flats Conebush
PROTEACEAE	*Leucadendron meridianum*	Limestone Conebush
PROTEACEAE	*Leucadendron muirii*	Silver-ball Conebush
PROTEACEAE	*Leucadendron procerum*	Ivory Conebush
PROTEACEAE	*Leucadendron sessile*	Western Sunbush
PROTEACEAE	*Leucadendron thymifolium*	Malmesbury Conebush
PROTEACEAE	*Leucadendron teretifolium*	Needle-leaf Conebush
PROTEACEAE	*Leucadendron tinctum*	Spicy Conebush
PROTEACEAE	*Leucospermum conocarpodendron subsp. viridum*	Green Tree Pincushion
PROTEACEAE	*Leucospermum cordifolium*	The Pincushion
PROTEACEAE	*Leucospermum formosum*	Silver-leaf Wheel Pincushion
PROTEACEAE	*Leucospermum glabrum*	Outeniqua Pincushion
PROTEACEAE	*Leucospermum grandiflorum*	Grey-leaf Fountain Pincushion
PROTEACEAE	*Leucospermum gueinzii*	Kloof Fountain Pincushion
PROTEACEAE	*Leucospermum patersonii*	Silver-edge Pincushion
PROTEACEAE	*Leucospermum reflexum*	Rocket Pincushion

PROTEACEAE	*Protea compacta*	Bot River Sugarbush
PROTEACEAE	*Protea cynaroides*	King Protea
PROTEACEAE	*Protea eximia*	Broad-leaf Sugarbush
PROTEACEAE	*Protea eximia X susannae* (hybrid)	Cardinal
PROTEACEAE	*Protea laurifolia*	Grey-leaf Sugarbush
PROTEACEAE	*Protea longifolia*	Long-leaf Sugarbush
PROTEACEAE	*Protea magnifica*	Queen Protea
PROTEACEAE	*Protea neriifolia*	Narrow-leaf Sugarbush
PROTEACEAE	*Protea nitida*	Wagon Tree
PROTEACEAE	*Protea* cf. *obtusifolia*	
PROTEACEAE	*Protea pudens*	Bashful Sugarbush
PROTEACEAE	*Protea roupelliae*	
PROTEACEAE	*Protea scolymocephala*	Thistle Sugarbush
PROTEACEAE	*Protea susannae*	Stink-leaf Sugarbush
PROTEACEAE	*Serruria aemula aemula*	Cape Flats Strawberry Spiderhead
PROTEACEAE	*Serruria florida*	

APPENDIX 6: Mammal list

SPECIES	COMMON NAME
Galerella pulverulenta	Small-grey Mongoose
Cynictis penicillata	Yellow Mongoose
Otomys irroratus	Vlei Rat
Rhabdomys pumilio	Striped Field Mouse
Chrysochloris asiatica	Cape Golden Mole
Herpestes ichneumon	Large Grey Mongoose

APPENDIX 7: Bird list

SPECIES	COMMON NAME (ENG)
Apus barbatus	African Black Swift
Muscicapa adusta	African Dusky Flyctcher
Upupa epops	African Hoopoe
Columba arquatrix	African Olive-pigeon (Rameron Pigeon)
Bradypterus baboecala	African Sedge Warbler
Tachymarptis melba	Alpine Swift
Chalcomitra amethystina	Amethyst (African Black) Sunbird
Apalis thoracica	Barthroated Apalis
Ardea melanocephala	Blackheaded Heron
Elanus caeruleus	Blackshouldered Kite
Vanellus armatus	Blacksmith Lapwing (Plover)
Telophorus zelonus	Bokmakierie
Riparia paludicola	Brownthroated Martin
Serinus sulphuratus	Bully Canary
Centropus burchellii	Burchell's Coucal
Macronyx capensis	Cape (Orangethroated) Longclaw
Pycnonotus nigricans	Cape Bulbul
Serinus canicollis	Cape Canary
Francolinus capensis	Cape Francolin
Cossypha caffra	Cape Robinchat
Passer melanurus	Cape Sparrow
Promerops cafer	Cape Sugarbird
Streptopelia capicola	Cape Turtle-Dove
Motacilla capensis	Cape Wagtail
Ploceus capensis	Cape Weaver
Zosterops pallidus	Cape White-eye
Dendropicos fuscescens	Cardinal Woodpecker
Bubulcus ibis	Cattle Egret
Lanius collaris	Common Fiscal (Fiscal Shrike)
Coturnix delegorguei	Common Quail
Estrilda astrild	Common Waxbill
Vanellus coronatus	Crowned Lapwing (Plover)
Chrysococcyx caprius	Diderick (Diederik) Cuckoo
Alopochen aegyptiacus	Egyptian Goose
Merops apiaster	European Bee-eeter
Sturnus vulgaris	European Starling
Hirudo rustica	European Swallow
Stenostira scita	Fairy Flycatcher
Caprimulguspectoralis	Fiery-necked Nightjar
Sigelus silens	Fiscal Flycatcher
Sphenoeacus afer	Grassbird
Anthus novaeseelandiae	Grassveld Pipet
Cinnyris afra	Greater Double-collared Sunbird
Indicator indicator	Greater Honeyguide
Hirudo cucullata	Greater Striped Swallow
Ardea cinerea	Grey Heron
Cisticola subruficapillus	Greybacked Cisticola
Francolinus africanus	Grey-winged Francolin

Bostrychia hagedash	Hadeda Ibis
Scopus umbretta	Hamerkop
Numida meleagris	Helmeted Guineafowl
Passer domesticus	House Sparrow
Prinia maculosa	Karoo Prinia
Erythropygia corphoeus	Karoo Robin
Chrysococcyx klaas	Klaas's Cuckoo
Streptopelia senegalensis	Laughing Dove
Indicator minor	Lesser Honeyguide
Cisticola tinniens	Levaillant Cisticola
Egretta garzetta	Little Egret
Apus affinis	Little Swift
Sylvietta rufescens	Longbilled Crombec
Nectarinia famosa	Malachite Sunbird
Ploceus velatus	Masked Weaver
Oena capensis	Namaqua Dove
Turdus libonyana	Olive Thrush
Anthobaphes violacea	Orange-breasted Sunbird
Terpsiphone viridis	African Paradise-Flycatcher
Tricholaema leucomelas	Pied Barbet
Corvus albus	Pied Crow
Ceryle rudis	Pied Kingfisher
Vidua macroura	Pintailed Whydah
Crithagra leucopterus	Protea Seed-eater (Canary)
Euplectes orix	Red Bishop
Cuculus solitarius	Red-chested Cuckoo
Streptopelia decipiens	Red-eyed Dove
Urocolius indicus	Red-faced Mousebird
Onychognathus morio	Red-winged Starling
Columba livia	Rock Dove (Feral Pigeon)
Falco tinnunculus	Rock Kestrel
Hirudo fuligula	Rock Martin
Threskiornis aethiopicus	Sacred Ibis
Cinnyris chalybea	Southern (Lesser) Double-collared Sunbird
Columba guinea	Speckled (Rock) Pigeon
Colius striatus	Speckled Mousebird
Bubo africanus	Spotted Eagle Owl
Muscicapa striata	Spotted Flycatcher
Burhinus capensis	Spotted Thick-knee (Dikkop)
Buteo buteo vulpinus	Steppe Buzzard
Colius colius	White-backed Mousebird
Corvus albicollis	White-necked Raven
Apus caffer	White-rumped Swift
Serinus albogularis	Whitethroated Canary
Hirudo albigularis	Whitethroated Swallow
Serinus flaviventris	Yellow Canary
Anas undulata	Yellowbilled Duck
Milvus eagyptius	Yellow-billed Kite
Euplectes capensis	Yellowrumped Widow

APPENDIX 8: Amphibian list

SPECIES	COMMON NAME
Tomopterna delalandii	Cape Sand Frog
Strongylopus grayii	Clicking Stream Frog
Breviceps gabossus	Cape Rain Frog

APPENDIX 9: Reptile list

SPECIES	COMMON NAME
Cherisna angulata	Angulate tortoise
Geochelone pardalis	Leopard Tortoise
Continual meleagris	
Pseudaspis cana	Mole snake
Lamprophis aurora	Aurora House Snake
Duberria lufrix	Common Egg eater
Crotaphopeltis hotamboeia	Red-lipped Herald Snake
Pachydactylus labialis	Cape gecko
Bradypodion pumilum	Cape Dwarf Chameleon
Pelomedusa subrufa	Marsh Terrapin

D. Other documents as required

Appendix 10: Sensitivity value analysis and zonation process

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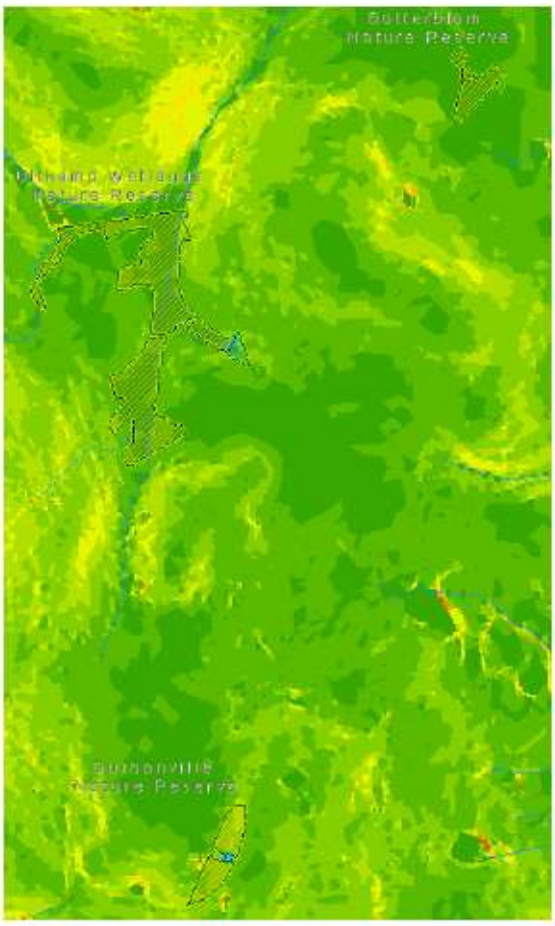
ZONATION Summary REPORT for:

Botterblom Nature Reserve,Durbanville Nature Reserve & Uitkamp Wetlands Nature Reserve



Prepared for the Biodiversity Branch and Environmental Management Systems Branch

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CITY OF CAPE TOWN | ISIXEKO SASEKAPA | STAD KAAPSTAD

THIS CITY WORKS FOR YOU

Contents

1. Introduction and Scope of Report

Durbanville, Botterblom and Uitkamp Wetlands Nature Reserves are three small reserves that occur in the Central management district in the suburb of Durbanville. They are small, isolated reserves, surrounded by urban development. They all contain critically endangered vegetation types and several rare and endemic plant species.

The vegetation types that occur are, Cape Sand Plain Fynbos and Swartland Shale Renosterveld (see Figure 1). These vegetation types are all critically endangered and are poorly represented (2 - 3% of target) within currently proclaimed protected areas.

These vegetation types are all listed as threatened ecosystems under National Environmental Management: Biodiversity Act (Act 10 of 2004), DEAT (in press).

The small size of the reserves did not necessitate a full sensitivity analysis. For all the reserves the entire area was considered highly sensitive for the purpose of this zonation exercise.

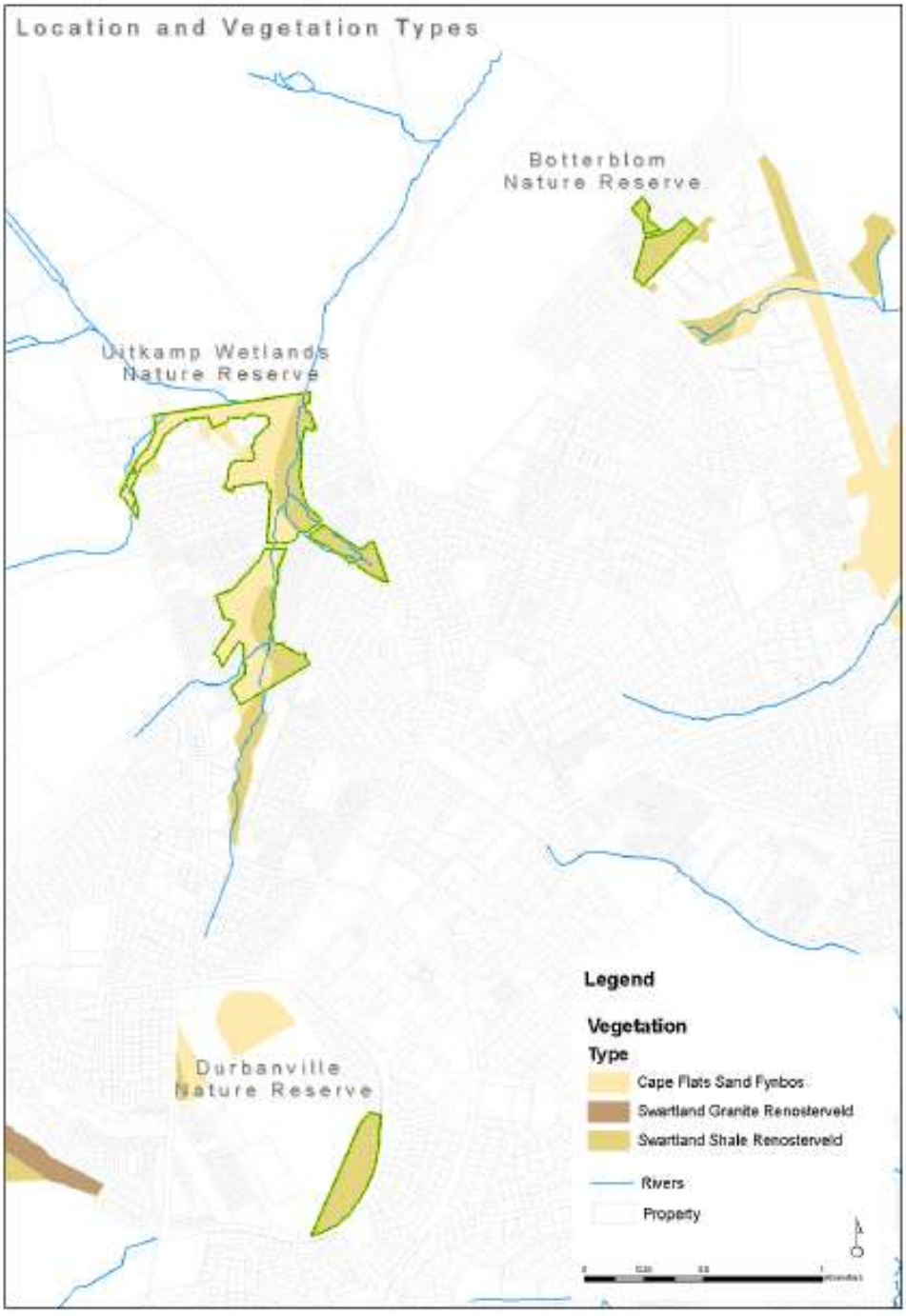

Figure 1: Location and vegetation types

1.2 Context

The development of the Sensitivity and Zonation plan is one of the steps required in compiling a Conservation Development Framework (CDF) for the reserve. CDFs are tools to reconcile the various land-use needs and to delineate visitor user zones and the positioning and nature of new infrastructure, access points, roads and facilities.

The CDF process has grown in response to the requirements of the NEMBA (2004) and is a strategy to comply with the spatial planning requirements of these acts. The CDFs will ensure that best practice and sustainable development principles are integrated into spatial planning within protected areas.

The Sensitivity-Value analysis is the landscape analysis portion of the broader Conservation Development Framework. It is a multi-criteria decision-support tool for spatial planning that is designed to integrate the best available information into a format that allows for defensible and transparent decisions to be made. The Sensitivity-Value process is based on the principle that the acceptability of a development (or placement of a structure) at a site is based on the site's value (either from biodiversity, heritage, aesthetic or a combination of values) and its sensitivity or vulnerability to a variety of types of disturbance (Holness *et al*, 2005).

- The Sensitivity-Value analysis, the CDF and the associated zonation plan should form part of an adaptive management system. They will grow and change over time as the understanding of the landscapes and ecosystems improve; and
- It does not replace the need for detailed site and precinct planning and EIA compliance at site level.

2. Background and Brief

The full Sensitivity-Value analysis was not undertaken for these reserves. The small size of the nature reserves did not require any extensive analysis, with the subsequent zonation process being fairly straight forward. Only roads, structures and disturbed areas were mapped.

All geographical information work was carried out in ESRI's ArcMap version 9.3.1 GIS (Geographical Information System) using the ArcInfo license level with Spatial Analyst and 3D Analyst extensions.

3. Sensitivity-Value Summary Analysis

(Provided as reference only as several steps were omitted from this process)

Sensitivity-Value Analysis and Zoning Process methodology

Stage 1: Data synthesis and compilation

Compilation of required data for the analysis

- Spatially define the planning domain or study area.
- Evaluate available and required datasets for the Sensitivity-Value model.
- Spatial data is collected or created for each element of the Sensitivity-Value model.

Stage 2: Layer interpretation

Layer interpretation is an important component of the Sensitivity-Value process that requires a combination of spatial data interpretation and expert knowledge.

- Using the assembled data, areas are assigned a score on a common scale for each element of the model; and
- The scores achieved for each element of the model are represented as separate input layers on a GIS.

Stage 3: Sensitivity-Value Analysis

The Sensitivity-Value analysis stage involves an iterative exploration of the input layers.

- The scores achieved for each element of the model are weighted and aggregated to obtain an overall Sensitivity-Value ranking.
- Different weightings and aggregation procedures and combinations of input layers can be explored; and
- The robustness of the Sensitivity-Value analysis is examined.

The resultant Sensitivity-Value output maps should provide an initial understanding of the spatial distribution of the important and sensitive biodiversity, landscape and heritage features.

Stage 4: Development of a draft zonation plan

The outputs of the Sensitivity-Value process are used as the foundation for the development of a draft zonation plan. The Sensitivity-Value outputs and draft zonation plan are workshopped with relevant stakeholders.

Stage 5: Refinement of the draft zonation and the identification of special management overlays

Special management areas/overlays are identified using the information derived from the Sensitivity-Value analysis. Recommendations are made regarding the management of the land-use zones and special management areas.

The draft is then presented for comment to the City and stakeholder groups to obtain broad public input into the plan prior to finalisation,

Stage 6: Final Zonation and Conservation Development Framework.

The comments and input from the public participation process are integrated into the final zonation plan. The plan is passed through Council for approval and adoption.

3.1 Input Layers

The study area for the CDF was defined as the current management boundaries of the three nature reserves.

3.1.1 Biodiversity

3.1.1a Habitat Value

The habitat unit as defined by the particular vegetation community was used as the broad proxy for biodiversity value. The vegetation communities are good surrogates for habitat value as it uses readily available information that clearly delineates the distribution of distinct subsets of biodiversity across the landscape.

For all three nature reserves the vegetation types are listed as critically endangered (see Appendices Table 2) and are considered highly sensitive (to development). See Figure 1.

Base habitat map:

The Cape Town vegetation remnant map was used to delineate habitat units according to their national vegetation type. See Figure 1.

3.1.1b: Transformation # Degradation Map:

Habitat transformation and degradation was mapped from recent aerial photography (2005, 2007 and 2008). For all three reserves the roads, paths, structures and degraded areas were mapped. These features were used as is as an informant in the zonation process. See Figures 4 - 6.

Interpretation in a local context

Critically endangered vegetation types occur in the reserves. These are the heavily transformed, lowland vegetation types which include Swartland Shale Renosterveld and Cape Flats Sand Fynbos. It should be noted that in Durbanville Nature Reserve the vegetation is more ecotonal consisting of both Fynbos and Renosterveld elements.

Showstoppers#fatal flaws and special management area informants

Development of Greenfield sites within any critically endangered vegetation types or ecosystems should be approached with extreme caution, as by definition one cannot afford further biodiversity loss in these areas within the City.

All degraded sites must be prioritised for restoration. Paths and road networks must be rationalised and reduced to the absolute minimum.

3.1.2 Topographic Sensitivity

(Included for reference only)

This layer is used to identify areas with steep slopes or with sensitive geological or geomorphologic features. Significant impacts (such as accelerated soil erosion or landslides) may occur during construction in, or with improper management.
Sensitivity to erosion was not considered in this report. The steepness and habitat values provide a good enough proxy for sensitivity to erosion.

Data Inputs (GIS methods and sources)

This layer is derived from a triangular irregular network (TIN) created in ArcView 9.3.1 using the 3D Analyst extension and ArcInfo licence level. The 2m Contour layer for the City was used to calculate the base heights for the TIN. Slope angles were calculated using the 3D Analyst extension.

Outputs - See Figure 2.

Interpretation in local context

Steeps slopes are not a major factor in the reserves. All the reserves are low lying in the landscape.

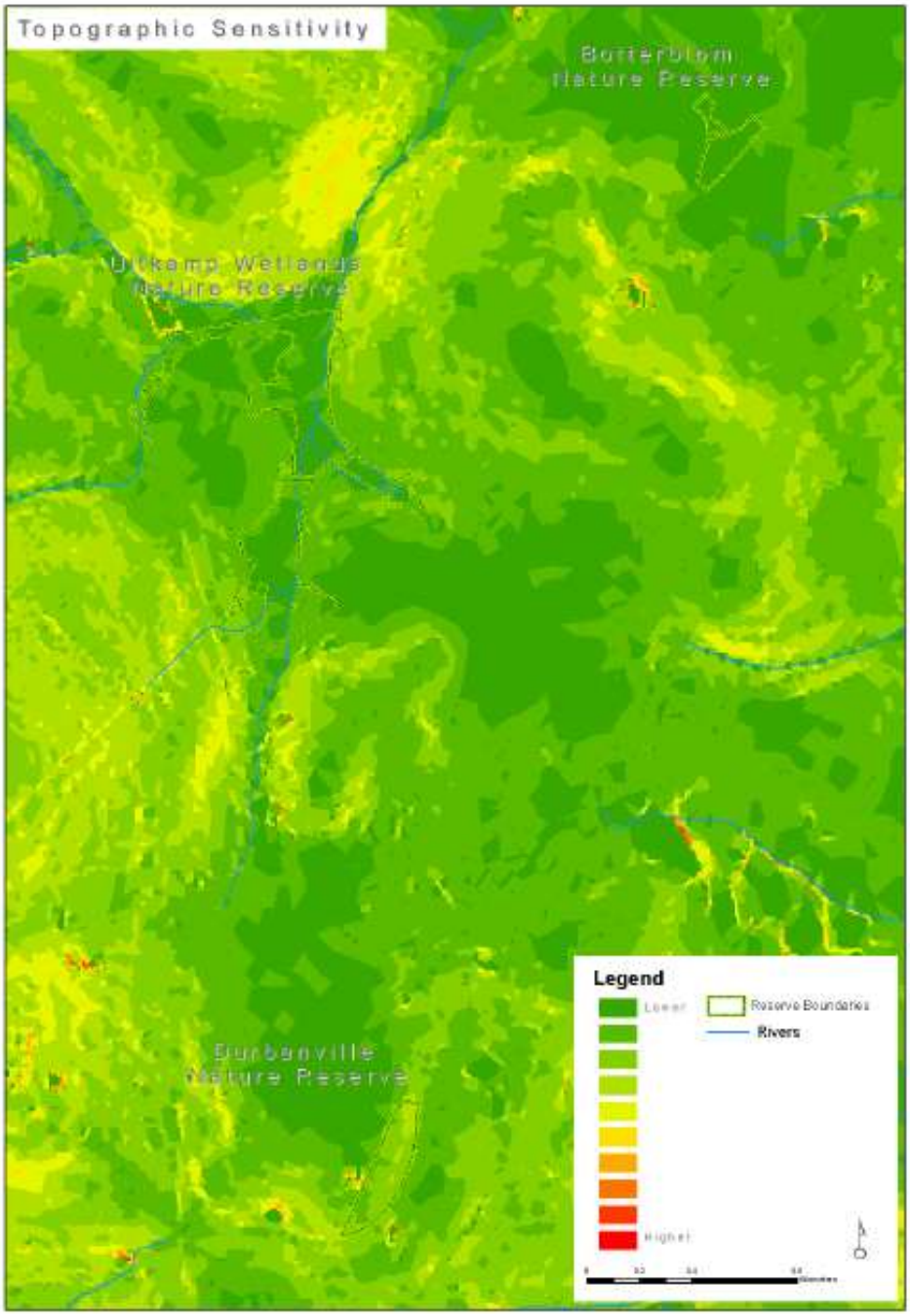

Figure 2: Topographic sensitivity map

3.1.3 Hydrological Features

The reserves are all relatively low lying in the landscape and have several small rivers and wetlands occurring within them or in close proximity.

Figure 3 shows the reserve in relation to the rivers and wetland systems. There are several storm water ponds and dams located within or near the reserves.

The hydrological sensitivity layer has two purposes: to identify areas important for maintaining hydrological processes and to identify areas where infrastructure could be damaged by flooding.

Interpretation in local context

Most of these rivers and wetlands perform an important storm water drainage function (especially in Uitkamp and Botterblom nature reserves) which is important within the urban setting. This makes the optimal functioning of these water courses and wetlands very important. The maintenance of storm water facilities (wetlands, channels and ponds) must form part of the reserve management plans where this is applicable.

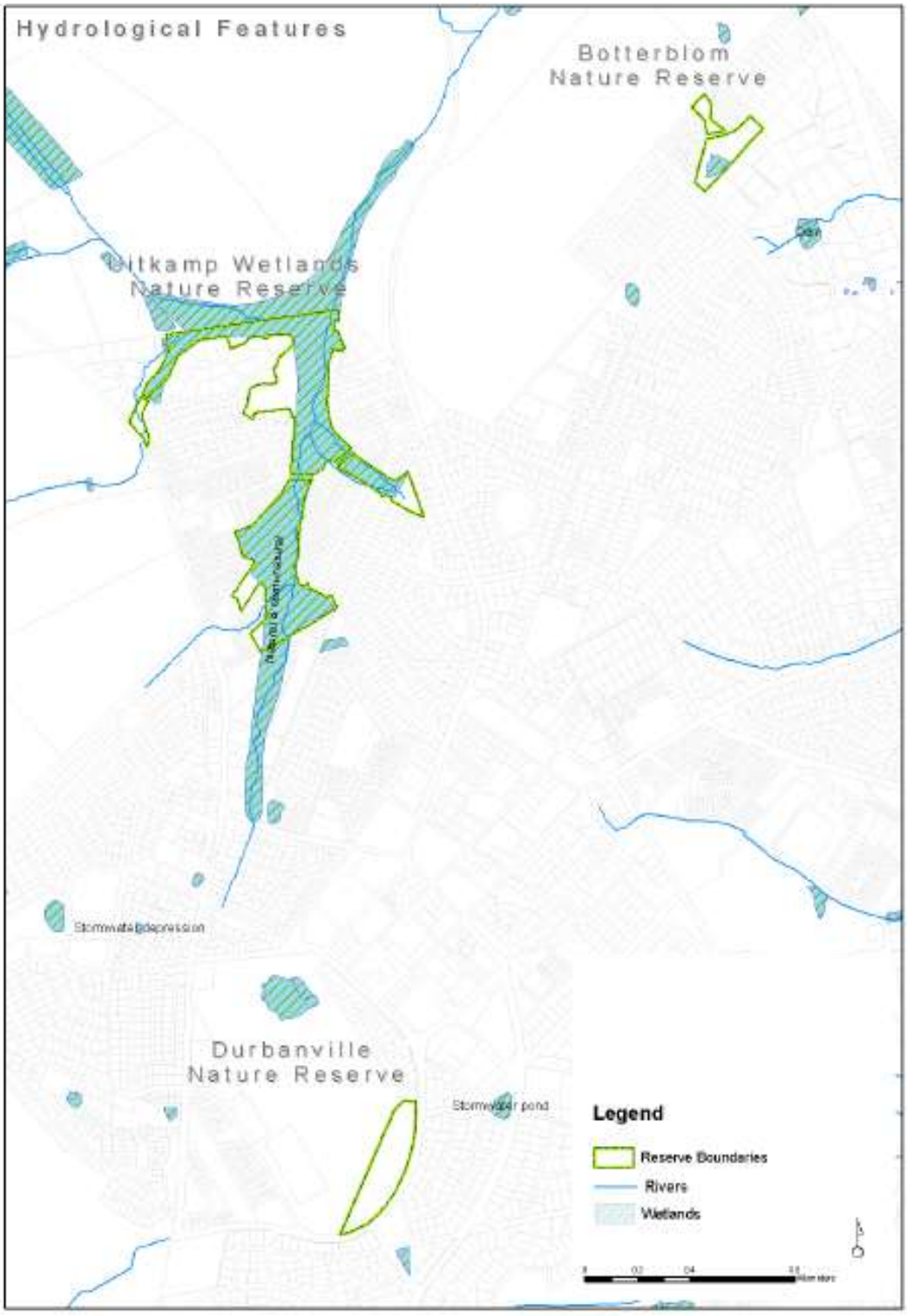

Figure 3: Hydrological features: rivers and wetlands

5. Zoning Process

5.1 Zoning Informants

This section briefly outlines the values underlying the identification of broad tourism use zones. It is important to remember that the landscape/biodiversity analysis is just one of the informants in the zonation process. Although the biodiversity analysis is intrinsically a relatively objective scientific process, other informants to the zoning process are not. Although every attempt is made to place high sensitivity-value sites into more protected zones where possible, the zoning process is in its essence a compromise between environment and development. In particular, often the identified high value sites are the key biodiversity assets that need to be made available in an appropriate manner to the ecotourism market. Direct links between the biodiversity layers and the spatial management of the reserve are made during the identification of special management areas (Where applicable). Even within broad high tourist use zones, there are likely to be areas subject to very tight conservation controls (potentially including complete exclusion of human impacts from an area).

Underlying decision making rules used in the zonation process:

- The zonation process is aimed a striking a *balance* between environmental protection and the development required to meet the broader economic and social objectives of the reserve.
- The zoning process takes into account existing development footprints and tourism access routes.
    - This is based on the underlying principle that all else being equal, an existing transformed site is preferable to a greenfields site from a biodiversity perspective.
    - Infrastructure costs are dramatically increased when developments take place away from existing infrastructure.
    - Existing tourism nodes and access routes are a reality of the economic landscape, and it is would not be possible to shut down existing tourism sites compromising the development objectives of the reserve.

- Where existing development nodes, tourist sites and access routes occur in areas with high sensitivity-value, then the broad use zoning aims to keep the development footprint as small as is realistically possible, preferably within the existing transformed site.
- Where possible, sites with high biodiversity sensitivity-value are put into stronger protection zones.
- Peripheral development is favoured and where possible should be located outside of the conservation area.

Two key points need to be emphasized:

- The designation of a broad use zone does not imply that all sites within that zone would be suitable for all the development types anticipated within that use zone. Detailed site level planning is still required, and many sites may prove to be unsuitable at a site/precinct/EIA level of planning.
- Special Management Areas/Overlays need to be formalized and the links made to the management plans.

(Adapted from Holness, 2008)

5.2 Draft Zoning Outputs

Figures 4 - 6 show the draft Zonation plans for the three reserves. The small size of these reserves makes it largely impractical to have too many small zones. Table 1 outlines the zonation category breakdown per reserve in hectares and % of total area.

Table 1: Breakdown (in HAs and % of Area) of the 3 Zonation Categories in the reserves

Zonation category	Area HA's	% of Area
	Botterblom Nature Reserve	
Conservation	3.60	100%
	Durbanville Nature Reserve	
Conservation	5.34	92.55%
Low Intensity Use	0.10	1.73%
High Intensity Use	0.33	5.72%
Total	5.77	
	Uitkamp Wetlands Nature Reserve	
Conservation	30.00	96.77%
Low Intensity Use	1.00	3.23%
Total	31	

The general consensus from the workshop was that the reserve facilities in Durbanville NR should be contained within the existing development footprint (zoned high intensity use area).

There are no development aspirations for Botterblom Nature Reserve.

In Uitkamp Wetlands NR it was felt that the highly disturbed area zoned for Low Intensity Use may be used to accommodate some kind of low impact development that would improve the accessibility of the reserve. The placement of paths and boardwalks within the conservation zone were also deemed appropriate.

Restoration and conservation should be given the highest priority in all the reserves.

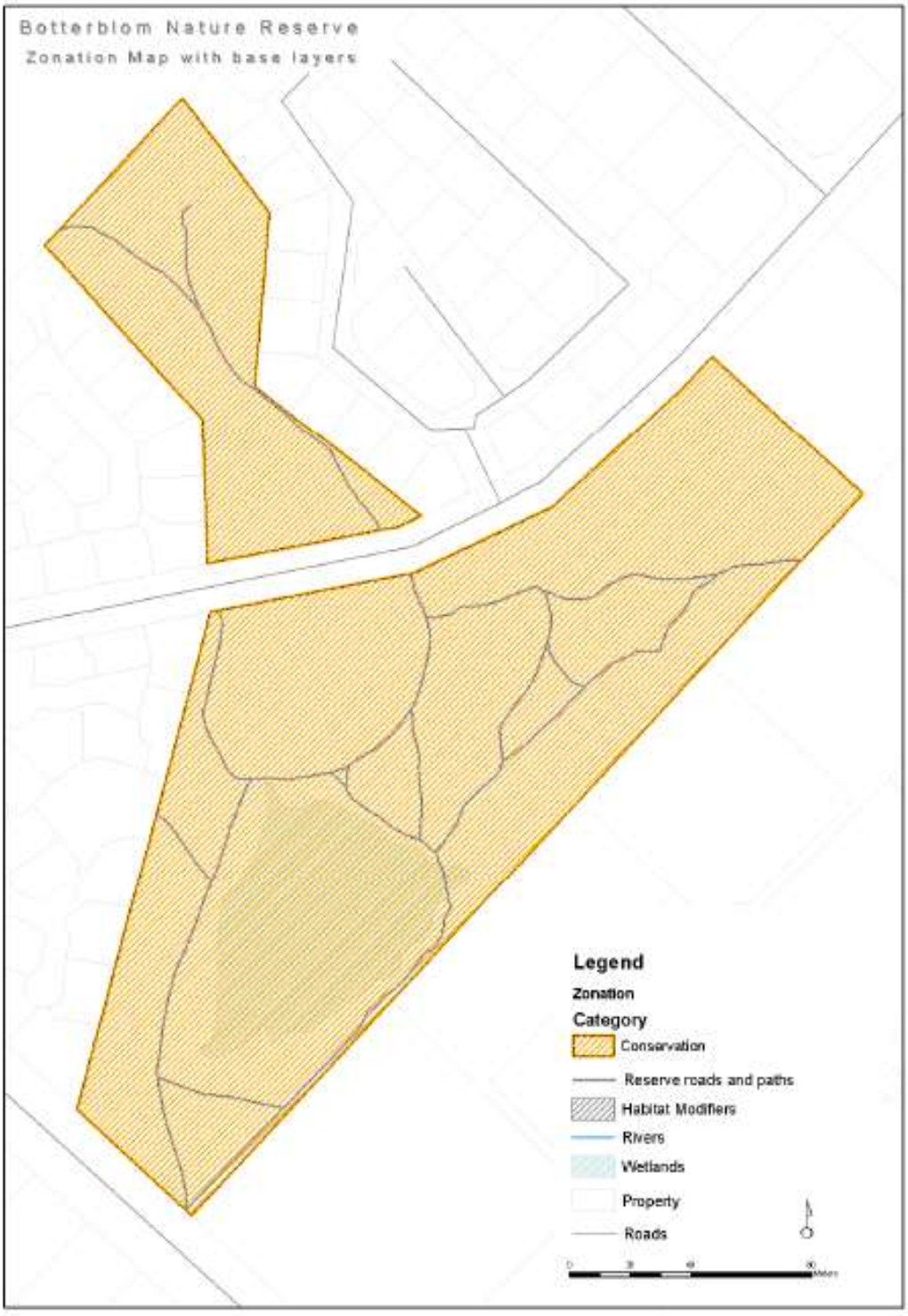

Figure 4: Draft Zonation for Botterblom Nature Reserve

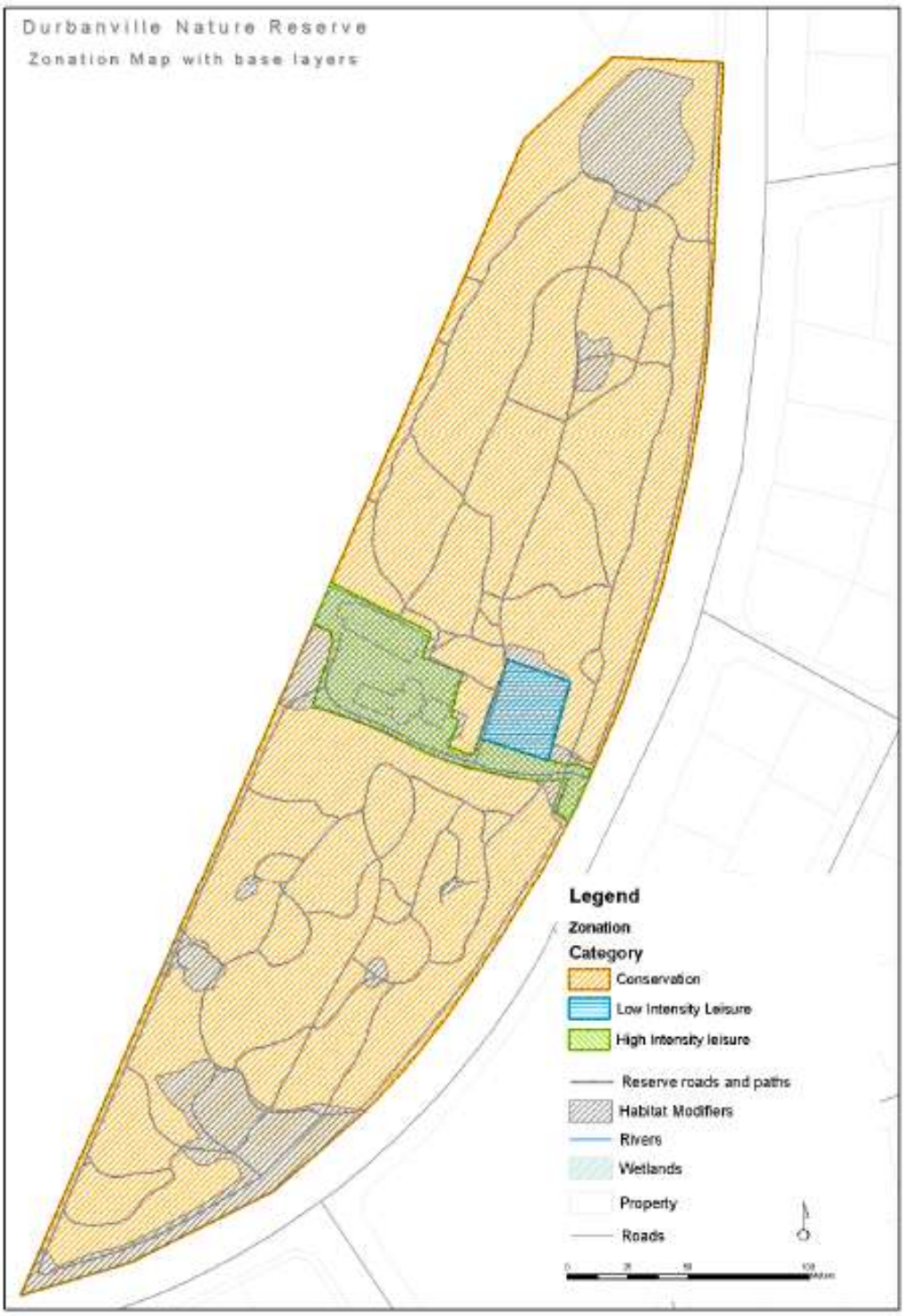

Figure 5: Draft Zonation for Durbanville Nature Reserve

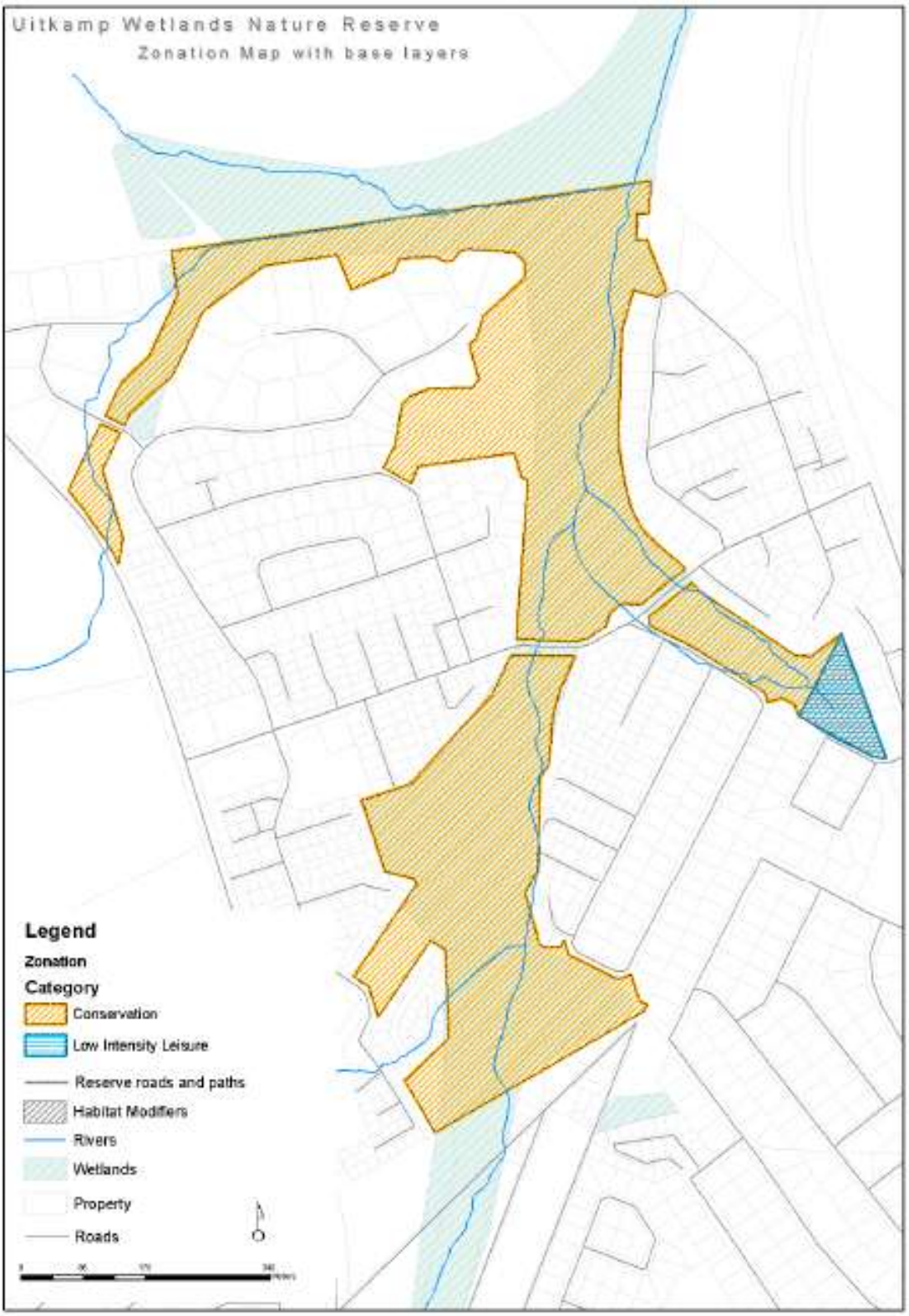

Figure 5: Draft Zonation for Uitkamp Wetlands Nature Reserve

5.3 Zoning Definitions and Descriptions

Table 3 (see Appendices) outlines the generic zones and zone descriptions. The link is still made to the Zonation used for the CapeNature Reserves (Holness, 2008) as there should be general alignment of the broader use zones for ease of comparison and integration if required in Provincial documents.

6. Conclusions and Recommendations

The 3 reserves are conserving some of the few remaining patches of CE vegetation types in the City. It is thus essential that every last square meter of degraded vegetation is restored and rehabilitated. For these reasons the following recommendations are made;

Durbanville Nature Reserve

- All infrastructure should be contained within the High Intensity Use zone as outlined in the zonation maps.
- The path network must be rationalised and all unnecessary paths closed and rehabilitated.
- All old picnic sites should be prioritised for restoration.

Botterblom Nature Reserve

- Parking should be accommodated outside of the reserve.
- The mowing of areas within the reserve should be stopped. These areas should receive the highest restoration priority.
- The maintenance and/or extension of the storm water drains/channels must be carefully managed together with catchment and storm water management.

Uitkamp Wetlands Nature Reserve

- No hard infrastructure should be constructed in the reserve
- The placement of any facility within the Low Intensity use zone should be carefully considered. Options for locating any facilities should be investigated outside of the reserve.
- The Low Intensity use area should be prioritised for rehabilitation.

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Appendices

Table 2: National vegetation types for the City of Cape Town showing historic extent, remaining extent, targets and targets achieved inside and outside Protected Areas

National Vegetation Type	Historic extent (ha)	Current extent (ha)	Selected in Bionet (ha)	Target %	Target (ha)	Extent in proclaimed Protected Areas	Target met in selected Bionet	% Target conserved	% Target met in proclaimed Protected Areas	% Selected in Bionet from current extent	% Remaining from historic extent	15% of historic extent	% that is not selected in Bionet	Conservation Status	SANBI Conservation Status
Atlantis Sand Fynbos	25234.63	15711.95	12695.95	30	7570.39	0.00	Yes	168	0	81	62	3785.19	19	VU	Not Protected
Boland Granite Fynbos	9575.31	6064.19	4807.17	30	2872.59	354.52	Yes	167	12	79	63	1436.30	21	EN	Poorly Protected
Cape Estuarine Salt Marshes	39.86	25.79	25.64	24	9.57	25.64	Yes	268	268	99	65	5.98	1	LT	Well Protected
Cape Flats Dune Strandveld: False Bay	27260.11	8467.86	7272.84	24	6542.43	1855.58	Yes	111	28	86	31	4089.02	14	EN	Poorly Protected
Cape Flats Dune Strandveld: West Coast	12700.27	10603.88	6892.82	24	3048.07	964.79	Yes	226	32	65	83	1905.04	35	LT	Poorly Protected
Cape Flats Sand Fynbos	54410.34	8466.70	8464.75	30	16323.10	464.07	No	52	3	100	16	8161.55	0	CE	Hardly Protected
Cape Lowland Freshwater Wetlands	1463.98	1095.47	1068.83	24	351.36	786.66	Yes	304	224	98	75	219.60	2	LT	Well Protected
Cape Winelands Shale Fynbos	2666.97	1706.19	1388.97	30	800.09	217.89	Yes	174	27	81	64	400.05	19	EN	Poorly Protected
Elgin Shale Fynbos	841.18	321.14	282.77	30	252.35	4.58	Yes	112	2	88	38	126.18	12	CE	Hardly Protected
Hangklip Sand Fynbos	3301.60	1910.25	1489.88	30	990.48	1363.63	Yes	150	138	78	58	495.24	22	VU	Well Protected
Kogelberg Sandstone Fynbos	9499.63	9260.73	8814.04	30	2849.89	1944.47	Yes	309	68	95	97	1424.94	VU	LT	Moderately Protected
Lourensford Alluvium Fynbos	4819.25	409.97	409.97	30	1445.77	190.30	No	28	13	100	9	722.89	0	CE	Poorly Protected
North Peninsula Granite Fynbos	1997.35	1439.12	1343.54	30	599.21	986.44	Yes	224	165	93	72	299.60	7	LT	Well Protected
Peninsula Sandstone Fynbos	21896.12	21348.95	20761.60	30	6568.83	17306.57	Yes	316	263	97	98	3284.42	3	LT	Well Protected
Peninsula Shale Fynbos	1262.79	690.37	688.96	30	378.84	686.97	Yes	182	181	100	55	189.42	0	VU	Well Protected
Peninsula Shale Renosterveld	2374.81	316.89	316.89	26	617.45	261.67	No	51	42	100	13	356.22	0	CE	Poorly Protected
South Peninsula Granite Fynbos	7148.66	2481.74	2290.70	30	2144.60	1770.19	Yes	107	83	92	35	1072.30	8	EN	Moderately Protected
Southern Afrotemperate Forest	347.52	346.79	346.79	34	118.16	276.80	Yes	294	234	100	100	52.13	0	LT	Well Protected
Swartland Alluvium Fynbos	1742.41	75.91	75.91	30	522.72	0.00	No	15	0	100	4	261.36	0	CE	Not Protected
Swartland Granite Renosterveld	8059.16	1951.89	1951.89	26	2095.38	35.64	No	93	2	100	24	1208.87	0	CE	Hardly Protected
Swartland Shale Renosterveld	46712.40	4019.33	4018.76	26	12145.22	408.13	No	33	3	100	9	7006.86	0	CE	Hardly Protected
Swartland Silcrete Renosterveld	1066.65	188.43	188.43	26	277.33	0.00	No	68	0	100	18	160.00	0	CE	Not Protected
Western Shaleband Vegetation	328.59	328.57	328.57	30	98.58	31.11	Yes	333	32	100	100	49.29	0	LT	Poorly Protected
	244749.59	97232.12	85925.67		68622.40	29935.65						36712.44			

Table 3: City of Cape Town Nature Reserves and Conservation Areas: Visitor Use Zoning - Desired State* & Experiential Qualities

Experience	Zone	Desired State*	Conservation objectives	Secondary objective	Experiential Qualities	Activities	Interaction between users	Frequency of use	Group size	Sophistication and type of facilities	Primary user movement within the zone	Roads & footpaths	Equivalent Provincial zone
Close To Nature Activities tend to be at landscape level	Primary conservation	Natural or near-natural areas (or areas that can be rehabilitated to this state) that are managed primarily for biodiversity conservation. The experience is one of relative solitude and wildness. The nature of the experience is dependant on the quality of the natural environment. The main accent of management is biodiversity conservation and "Pack it in Pack it out" principles are applied to all activities including management. There may be some signs of infrastructure mainly of a heritage nature. In the longer term, unused utility infrastructure (e.g. reservoirs) should be phased out and the site rehabilitated.	Natural areas should be kept intact in order to protect habitat required to meet biodiversity targets for various vegetation types and to provide undisturbed habitat for a range of species. Where possible degraded areas should be rehabilitated.	Managed to provide visitor experiences in a way that does not impact on the biodiversity objective. Where appropriate heritage values are managed as required	Relative sense of isolation	Controlled access** Research and monitoring. Accompanied small groups. The size and frequency of groups to be specified for each reserve.	None or very low	None -Very low	Small	No new facilities. Existing structures should be phased out where appropriate. Heritage assets are managed where appropriate	Pedestrian access in accompanied small groups Motorised for essential management only.	Absolutely essential management tracks and footpaths in accordance with the foot path and road management plan Ongoing restoration of old paths/roads to be prioritized and monitored.	Quiet
	Conservation	Natural or near-natural areas (or areas that can be rehabilitated to this state) that are managed for biodiversity conservation. This zone provides experiences of a relative sense of relaxation in an environment that is openly exposed to the sights and sounds of the city. Although it is a place of quietness and naturalness, there will be more interaction between users than in the Primary Conservation Zone. The quality of the experience is less dependant on the quality of the natural environment.	Natural areas should be kept intact in order to protect habitat required to meet biodiversity targets for various vegetation types and to provide undisturbed habitat for a range of species. Where possible degraded areas should be rehabilitated.	Managed to provide visitor experiences in a way that does not impact on the biodiversity objective.	Relaxation	Self guided hiking, non-motorised access*** bird watching, etc. In reserves where access to water bodies is allowed, this area is limited to non-motorized vessels only in accordance with the Vlei By-Laws.	Moderate	Moderate	Small	Low impact, eco-friendly facilities that facilitate ecologically sustainable activities and visitor experiences may be permitted under certain circumstances. These are strictly for achieving the social and development objectives of the reserve where appropriate and are subject to a stringent internal approval process and must be inline with an approved reserve management plan.	Pedestrian Non motorised Motorised access for management only.	Management tracks/roads and footpaths. Minimal footpath construction to prevent ecological damage. Boardwalks may be permitted where appropriate to protect sensitive areas. The footpath system should be designed so as to control access into the Primary Conservation zone. Off road wheelchair access may be provided where appropriate.	
Outdoor Natural Experience Activities tend to be at precinct level	Low Intensity leisure	Natural, near-natural or managed landscapes which are primarily managed to promote recreational and educational objectives. The main accent is on recreational activities which are more reliant on the quality of the facilities provided than in a Conservation Zone. By their nature these zones are placed in more transformed landscapes. Interaction and socialisation are an integral part of the experience.	Although some areas will be impacted by a range of activities and limited infrastructure, most areas should be kept largely intact and ecological processes should remain functioning. Where possible degraded areas should be rehabilitated.	Recreation and education Managed to provide a largely natural outdoor area to support the recreational and education objectives of the reserve.	Socialisation	Walking, non-motorised access, bird watching. In reserves where access to water bodies is allowed, motorized vessels are only allowed under strict control (e.g. no waterskiing, low speed limits and wake-free zones) in accordance with the Vlei By-Laws.	Frequent	Moderate -high	Small-moderate	Low-Medium impact, eco-friendly facilities that facilitate ecologically sustainable activities and visitor experiences. E.g. Benches, bird hides, informative signage, lookouts. Parking for access to this and other zones.	Pedestrian Non motorised Motorised access for management only	Appropriate foot paths with directional signage Boardwalks should facilitate access and protect sensitive areas. Normal wheelchair access where appropriate Parking with no facilities for access to this and other zones	Low intensity leisure
	High Intensity Use	High use landscapes, which are often largely transformed, which are managed largely to support visitor activities more dependent on facilities, education and administrative functions of reserves. High intensity visitor facilities with modern commercialised amenities with very concentrated, activities. The quality of the visitor experience is heavily dependant of the quality of the facilities which enable the visitor to experience the environment with a minimum of effort. Due to the high impacts these are concentrated at specific nodes. These nodes are generally situated at existing facilities including historic buildings and precincts. The main focus of management is to ensure a high quality visitor experience whilst ensuring that the activities have a minimal impact on the surrounding environment and that heritage resources are respected and celebrated.	The activities and infrastructure in these areas should be managed to minimize impacts on biodiversity and visitor experience in other zones. Where feasible, non-crucial infrastructure should over time be removed from the reserve and the sites rehabilitated.	Facilities are managed to facilitate and promote appropriate visitor activities and educational use of the reserve. Administration; provides appropriate management infrastructure to facilitate other objectives of the reserve.	Entertainment	Events, self guided walks, wheelchair accessible trails, parking, picnicking. In reserves where access to water bodies is allowed, this area is appropriate for high intensity uses such as power boating and waterskiing in accordance with the Vlei By-Laws.	Very frequent	Very high	Small - Large	Picnic areas, parking areas, restaurants, information centers, ablutions, environmental education facilities, nurseries etc. Provides parking from which pedestrian access is gained to other zones.	Motorised Access People movers & Pedestrian access	Access roads and associated parking. Footpaths constructed to a higher standard for the comfort of the user. Design standards to be set in the footpath and road management plan Wheelchair access encouraged in this zone.	High Intensity Leisure
Site Specific Level	Utility zone	Area used for utility functions such as bulk water provision, landfill sites within the protected /conservation areas etc.	The activities and infrastructure in these areas should be managed to minimize impacts on biodiversity and visitor experience in other zones. Where feasible, non-crucial infrastructure should over time be removed from the reserve and the sites rehabilitated.	Administration Conservation where appropriate	Utility	Determined at site	Determined at site	Determined at site	Determined at site	Determined at site	Determined at site level	Access roads and associated parking as required by the Utility Function	

* Note. The "Desired State" is the long term objective of the zone and these desired conditions may not actually exist at the time of zoning. Achieving the" Desired State" will be informed by many factors and may only be reached after many years.
** Accompanied access refers to controlled access. The level and type of control is determined at reserve level.
*** Non-motorised access refers to mountain bikes, horses, paragliding etc. These activities are reserve specific and reference must be made to the reserve management plan for a list of acceptable activities per reserve.

Appendix 11: Security audit

CITY OF CAPE TOWN

BIODIVERSITY MANAGEMENT BRANCH

Executive Brief

Comprehensive Security Audit of the Biodiversity Management Branch of the City of Cape Town

MARCH 2010

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- **INTRODUCTION**

The City of Cape Town' Biodiversity Management Branch, in wishing to ensure the safety of visitors and staff, requested assistance on conducting a security audit of all (25) its managed (and envisaged) Nature Reserves.

The need was based on the following assumptions:

- That the areas are poorly managed
- Security Agencies are inefficient in their operations
- The lack of tools to measure management effectiveness
- Safety and security of visitors as well as that of personnel are threatened.

Plan-It, in collaboration with Thorn-Ex and Titan Security, agreed to undertake the project. Owing to the budgetary constraints, it was agreed that the audit would encompass 12 priority Reserves, as selected by the Biodiversity Management Branch.

The following outcomes were proposed and accepted:

- A desktop exercise to evaluate existing information and identify gaps
- A physical Audit of the listed facilities
- Consultation with public user groups
- Recommendations in respect of security technology and infrastructure
- A comprehensive report on all findings
- A basic entry level conservation security training session for staff

The project was to be completed by the end of April 2010.

- **APPROACH**

The focus was to be on the safety and security of staff working in the different reserves, of visitors to these reserves and of the biodiversity within the reserves.

The audit was to involve the reserve managers, site managers and any other staff the Biodiversity Management Branch deemed necessary to provide information for the audit.

The Project commenced with the Branch being approached to supply maps of each reserve with as much information as possible on all types of infrastructure, bio-physiographic information etc e.g. boundaries of reserves and kind of fence along these, access points, roads, tracks, paths, power lines, telephone lines, buildings, cell phone towers, masts, aerials, bridges, streams, rivers, contours, vegetation, adjacent land use, habitation or settlements in close proximity.

Questionnaires were then drawn up and sent to all the Reserve Managers as well as separate questionnaires which were sent to the various public interest groups, via the Reserve Managers.

Upon receipt of the above the project team drafted a preliminary working document to guide and focus the audit.

The audit commenced on the 15th of February 2010 with a workshop with the various Managers and a presentation of the findings from the questionnaires to the Biodiversity Branch.

The audits commenced on the 16th of February 2010 with a visit to each Reserve..

During each audit the manager and staff were interviewed and a physical inspection of infrastructure was conducted. The audits focused on existing security systems, security infrastructure, activities, incidents, job descriptions, training and manpower

In addition to the audits workshops were scheduled, via the Reserve Manager with relevant external safety and security institutions and public interest groups. The workshops were then held with various District and Reserve-specific public interest groups.

On conclusion of the audit phase, the security technology specialist visited the Reserves to inspect the systems and infrastructure in place at each reserve. Based on and with reference to the initial draft Audit Report, the specialist undertook an assessment of technology short-comings in order to arrive at feasible recommendations for practicable improvements.

The completed report was then circulated to all the Reserve Managers as a Draft Report for comment, prior to the Final Comprehensive Report incorporating such comment being presented to the Branch.

The Project was then concluded with a basic entry level security training session for nominated staff covering aspects such as:

- Information gathering and reporting
- Patrol structuring, planing and safety
- Preparedness and response
- Handling of transgressors (armed or un-armed)
- Incident handling
- Charge office procedures
- Evidence and Statements
- Record keeping and dossier development

• EXECUTIVE SUMMARY

A safety and security audit was carried out on twelve Reserves under the jurisdiction of the Biodiversity Branch of the Directorate Environmental Resource Management.

The Audit was aimed at doing a rapid and verifiable analysis of the current security situation, security services, infrastructure, staffing, and social contexts. The information allowed for a “threat” level to be determined for each reserve.

Information acquired through a questionnaire survey with the Reserve Mangers, and information provided by the Branch was used as a baseline to guide and provide focus for the individual Reserve audits.

The Audits very quickly revealed that the location of the various reserves with their own unique social contexts primarily dictated the level of threat of each Reserve.

Some Reserves perceived as being “dangerous” were found to be “safe” with very low key incidents actually occurring. Although social ills do tend to spill over into Reserves the occurrence thereof is very localised and relate to prostitution, substance abuse, theft and illegal plant harvesting for the muti trade.

General security observations revealed that any metal infrastructure or equipment and solar panels are at greatest risk and are stolen on a regular basis. Trespassing, vagrants traversing the reserves and the harvesting of plants for the commercial flower industry and commercially driven herbal medicine /”muthi” industry are linked to an associated threat to staff and visitors. However incidents of visitors and staff being accosted by vagrants are rare.

Security activities were generally viewed as an add-on function when incidents are reported, with some Reserve Managers and Field staff trying to fit security patrols and activities into their management work schedule. The Visitor Controller Officers, on the other hand are essentially Access Control Officers who may be called on to perform some Law Enforcement function if their training enables them to do so. However staff does carry out combined operations with Law Enforcement bodies like Marine and Coastal Management, SAPS or City Law Enforcement when activities in the vicinity of the reserves warrant this in the interests of conservation.

One of the most evident security shortcomings found was that Reserves were “abandoned”, for all practical purposes, after hours, on weekends and on public holidays.

The investigation also found that very few Reserves actively patrol the Reserve and fences on a regular basis.

The Findings of each audit, including the responses received form the public interest groups were used to determine the threat level of each Reserve. The threat levels are based on a combination of factors which may affect security to the reserve, its staff and visitors as well as these threats in relation to other reserves.

The threat levels low, medium, and high reflects the safety threat to visitors, staff, and infrastructure. Further to which the threat level provides an indication in respect of intervention priority (staffing, infrastructure, equipment).

The results were as follow:

Reserve	**Threat Level**	**Threat**	**Primary Cause**
Witzands ACA	Medium	Illegal Access / Trespassing	Lack of fencing
Blaauwberg CA	Medium	Illegal Access / Trespassing	Lack of coverage
Rietvlei WR	Low	Illegal Access / Trespassing	Lack of coverage
Durbanville NR	Low	Theft	Lack of presence

Bracken NR	Low	Trespassing	Lack of coverage
Tygerberg NR	High	Trespassing / poaching	Lack coverage
Zandvlei NR	Low	Illegal Access / Trespassing	State of infrastructure
Falls Bay EP	High	Violent crime	Lack of fencing /coverage
Edith Stephens WP	Low	Theft	Lack of fencing
Wolfgat & Macassar NR	Severe	Violent crime	Location & Social
Kogelberg NR	Medium	Illegal Access / Trespassing	Extent / coverage
Helderberg NR	Low	Illegal Access / Trespassing	Lack coverage

Understaffing and poor or non-existent boundaries were found to be the primary cause of compromised Reserve security. The provision of "feet on the ground" or a management presence is therefore viewed as the first step towards improving the current situation.

The Investigation did conclude that technology solution options entailed fairly low key equipment such as Day-Night or Peak Inversion monitoring cameras, basic building alarm systems, external building detection beams, lighting, etc.

Infrastructure requirements were predominantly in respect of fencing.

Fencing is not always the preferred solution for safeguarding and demarcating an urban Reserve. However, it is suggested that failure to demarcate the boundaries of a Reserve compromises the authority's ability to manage a designated area and severely limits the authority's ability to prosecute transgressors. Simple in-expensive measures such as signage and markers will greatly aid in addressing these matters.

The relative "newness" of the Branch was found create various generic management challenges which negatively affect the efficiency and effective of Reserve management.

The aforesaid institutional matters included:

- Lack in consistency of staff designations
- Lack of consistency in functional content (job descriptions)
- Lack of career pathing and skills development program
- Lack of measurable performance standards
- Lack of training and capacity building
- Lack of uniform operational procedures and protocols
- Un-clear performance objectives of Advisory Boards
- Jurisdictional uncertainties in respect of cooperation with other environmental law enforcement agencies
- Lack of memorandums of Understanding with Utility Service Branches active in Reserves

The apparent absence of a clear and definitive Branch Policy on Reserve Safety and Security was viewed as a contributing shortcoming. Further to which, no consistency was found in respect of operational procedures or protocols. Some stations had a Management Plan whilst others were still going to develop such plans. Some stations had developed their own safety procedures.

In respect of Procedures and Protocols it is suggested that the Biodiversity branch consider the developing the following procedures and protocols;

- Incident response (poaching, trespassing, theft, fire, attack, medical emergency, land invasion, pollution, un-wanted pets)
- Reserve patrols
- Fence and gate security
- Visitor control

It is suggested that the above procedures and protocols be developed in conjunction with an auditable reserve management system which is linked to the personnel and finance performance requirements. It is also recommended that the Branch conduct an Institutional "Governance Audit" to guide the above protocols, relationships with other government institutions and law enforcement bodies as well as the Branch's legal obligations.

Consultation with public interest groups and reserve managers highlighted the benefits of "friend" groups. Some stations financial ability and conservation maintenance activities were greatly enhanced by such "friends" groups. Further to which, the social role that urban reserves play as "safe areas" for people to walk their pets, have picnics or conduct social functions was highlighted at several public meetings. It was also mentioned that in some areas where "gang turf" issues were dominant the reserves were viewed as "neutral" territories.

Advisory Boards are a requirement in terms of reserves proclaimed under the Protected Areas Act although no clarity could be defined with respect to the extent, role and responsibilities of the various Reserves Advisory Boards. Some Reserves indicated that they played an active role whilst others were not aware of their existence. The development of clear responsibilities and objectives for each Board is viewed as imperative to contributing to the achievement of the Reserve objectives whilst providing a formal link to neighbouring communities and local government.

Most Reserves have other City Utility Departments executing functions within the Reserve, share boundaries with them, or manage large tracts of land under their jurisdiction. None of the Reserves were aware of any Memorandums of Understanding which clarify joint management matters. This was viewed as institutional shortcoming requiring attention at higher level.

A variety of Security Service providers render various levels of security to Reserves. These services vary from private security firms providing uniformed guards to provide a static or gate control service to services where such guards are used as Bushrangers. It was the investigation's conclusion that each District or Reserve negotiates their own contract conditions with such service providers, a situation which does not contribute to clear and measurable security service provisioning.

The City Law Enforcement Services and structures were generally viewed as not being able to respond to conservation related incidents. Only a few Reserves reported adequate responses to call-outs or incidents with most Reserves saying they rely on the local SAPS for assistance.

Reserves which have installed alarm systems linked to the City Law Enforcement Control Rooms, reported that in the event of alarm activation the Reserve manager is phoned to investigate. No direct service benefit could be found in respect City Law Enforcement.

What was most evident during the investigation was the risk posed by staff acting outside their areas of jurisdiction. These transgressions are not through ill intent and staff is not necessarily aware that they are exceeding their authority. Urgent attention should be paid to the authority necessary for the role staff plays in enforcing provincial conservation laws, fisheries laws, and National laws. This should be done in cognisance of the criminal Procedures Act. It is further suggested that cooperation agreements and execution delegations be formalised with other environmental and conservation agencies.

Due to several reserves having a coastal boundary and the ever present activities of highly organised and dangerous Abalone poaching gangs the involvement of staff in curbing these activities need to clearly defined and coordinated. It is suggested that this should be the preserve of a highly trained and well equipped District based Law Enforcement Component conducting their duties in collaboration with other authorities and with the necessary jurisdiction.

It is the opinion of this investigation team that the establishment of a District based Law Enforcement Component will greatly contribute in addressing some of the security shortcomings highlighted. In addition, such a component will also alleviate some of the external enforcement requirements placed on Reserve staff thus allowing them to focus on reserve management and security.

- **CONCLUSION AND GENERIC RECOMENDATIONS**

The audit results correlated closely with the location and management capacity of each Reserve. High concentrations of un-employed people living in dense informal settlements adjacent to reserves do pose a greater risk to the Reserves. Staff was found to be more exposed to violent crimes in such circumstances than those located in rural or medium to high income areas.

Although social ills do tend to spill over into Reserves the occurrence thereof is very localised and relates to prostitution, substance abuse, theft and illegal plant harvesting for the muti trade.

The Findings of each audit, including the responses received form the public interest groups were used to determine the threat level of each Reserve.

The threat levels low, medium, and high reflects the safety threat to visitors, staff, and infrastructure. Further to which the threat level provides an indication in respect intervention priority (staffing, infrastructure, equipment).

The results were as follow:

Reserve	Threat Level	Threat	Primary Cause
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Helderberg NR	Low	Illegal Access / Trespassing	Lack coverage

Understaffing and poor or non-existent boundaries were found to be the primary cause of compromised Reserve security. The provision of “feet on the ground” or a management presence is therefore viewed as the first step towards improving the current situation.

The Investigation did conclude that technology solutions entail fairly low key equipment such as Day-Night or Peak Inversion monitoring cameras, basic building alarm systems, external building detection beams, lighting, etc.

Infrastructure requirements were predominantly in respect of fencing.

Fencing is not always the preferred solution for safeguarding and demarcating an urban Reserve. However, it is suggested that failure to demarcate the boundaries of a Reserve compromises the authority’s ability to manage a designated area and severely limits the authority’s ability to prosecute transgressors. Simple in-expensive measures such as signage and markers will greatly aid in addressing these matters.

In areas where fencing is vandalised on a regular basis the use of electric fencing (long distances, or Diamond Razor Mesh (short distances) is recommended. However it is recommended that spring-steel barb wire be used in all other instances.

The relative “newness” of the Branch was found to create various generic management challenges which negatively affect the efficiency and effective of Reserve management.

The apparent absence of a clear and definitive Branch Policy on Reserve Safety and Security was viewed as a contributing shortcoming.

A great inconsistency was found in staff designations, with some staff fulfilling similar conservation functions being called Conservation Officers whilst other were called Site Managers or Assistant Managers. The same problem was evident within the junior staff ranks. On some stations "labourers" conducted similar duties to those of Bushrangers.

The appointment and use of Contract staff was found to be a management challenge to most Reserves. Contract staff are generally employed by an external service provider whilst The Branch is responsible for the day to day management of said staff including the provision of uniforms and training. The opinion is held that the cost of these services could very well be such that the Branch could employ these contract staff directly to a greater benefit.

Several instances were found of junior staff being employed for several years as "Small Plant operators" or "Foreman" and having developed a keen interest and expertise in various conservation matters. The provision of career pathing opportunities to staff will not only contribute to the goals of the Branch but also provide an incentive to junior staff.

No evidence was found of a clear skills development program for officers and the impression was created that each officer arranges and sees to his or her own training. This was especially evident with some officers having been trained as Peace officers and appointed whilst others had been trained but not appointed and some still needed to be trained. Some Officers were also expressing the need to be appointed as Fisheries Officers whilst other believed they should be trained and appointed as Environmental Inspectors.

Most reserves had Conservation Students and Interns fulfilling a variety of roles and responsibilities, in some instances un-paid. The rotation of Students and interns was thought to be a good means of exposing them to various experiences and opportunities.

The investigation also found that most staff lacked basic equipment such as binoculars, handcuffs, batons or mace thereby limiting their ability to execute their duties.

The apparent lack of a dress code was viewed as a factor which contributed to the public's sense of security or respect when coming into contact with officers. The wearing of T-shirts, overalls, or golf shirts should not be promoted whilst on duty in the public eye.

No consistency was found in respect of operational procedures or protocols. Some stations had a Management Plan whilst others were still going to develop such plans. Some stations had developed their own safety procedures.

One of the most evident security shortcomings found was that Reserves were "abandoned", for all practical purposes, after hours, on weekends and on public holidays. It is understood that staff work standard working hours. However, the provision of accommodation, which most Reserves have, to either Site managers or Bushrangers are seen as a simple cost effective measure. Where there are operational staff resident on the Reserves (mostly students) it acts as a definite deterrent to illegal activities. Staff stationed on Reserves can then work on a "conservation standard" shift schedule of 20 days on 5 days off.

The investigation also found that very few Reserves actively patrol the Reserve and fences on a regular basis. Although staff shortage is a contributing factor, careful planning and allocation of available resources will ensure that Reserves are patrolled on a regular basis. It is further suggested that the sharing of resources between Reserves will allow for more frequent patrols.

With regard to Procedures and Protocols it is suggested that the Biodiversity branch consider developing the following;

- Incident response (poaching, trespassing, theft, fire, attack, medical emergency, land invasion, pollution, un-wanted pets)
- Reserve patrols
- Fence and gate security
- Visitor control

It is suggested that the above procedures and protocols be developed in conjunction with an auditable Reserve management system which includes a personnel and finance performance aspect.

Consultation with public interest groups and reserve managers highlighted the benefits of “friend” groups. Some stations’ financial ability and conservation maintenance activities were greatly enhanced by such “friends” groups. It is accepted that not all Reserves have the opportunity to have well capacitated “friends”. However, the neighbouring community’s sense of ownership was found to be a primary contributor to a Reserves state of security.

Further to which the social role that urban reserves play as “safe areas” for people to walk their pets, have picnics or conduct social functions was highlighted at several public meetings. It was also mentioned that in some areas where “gang turf” issues was dominant the reserves were viewed as “neutral” territories.

Advisory Boards are a requirement in terms of reserves proclaimed under the Protected Areas Act. The aim of which is to allow participation by interested parties and to ensure their continual engagement. With regard to reserves not yet proclaimed under the Protected Areas Act but which have Advisory Boards their role is much the same with the possible addition of raising and allocation of funds. This investigation could not clearly define the extent, role and responsibilities of the various Reserves Advisory Boards. Some Reserves indicated that they played an active role whilst others were not aware of their existence. The development of a clear responsibilities and objectives for each Board is viewed as imperative to contributing to the achievement of the Reserve objectives whilst providing a formal link to neighbouring communities and local government.

The removal of Spare tyres from Reserve vehicles by the Transport Sections should be halted as it poses a significant risk to staff operating in remote areas or providing law enforcement services.

Most Reserves have other City Utility Departments executing functions within the Reserve, share boundaries with them, or manage large tracts of land under their jurisdiction. None of the Reserves were aware of any Memorandums of Understanding which clarify joint management matters. This was viewed as institutional shortcoming requiring attention at higher level.

A variety of Security Service providers render various levels of security to Reserves. These services vary from private security firms providing uniformed guards to providing a static or gate control service to services where such guards are used as Bushrangers. It was the investigations conclusion that each District or Reserve negotiates their own contract conditions with such service providers, a situation which does not contribute to clear and measurable security service provisioning.

The City Law Enforcement Services and structures were generally viewed as not being able to respond to conservation related incidents. Only a few Reserves reported adequate responses to call-outs or incidents with moth Reserves saying they rely on the local SAPS for assistance.

Reserves which have installed alarm systems linked to the City Law Enforcement Control Rooms, reported that in the event of an alarm activation, the Reserve manager is phoned to investigate. No direct service benefit could be found in respect of City Law Enforcement.

What was most evident during the investigation was the risk posed by staff acting outside their areas of jurisdiction. These transgressions are not through ill intent and staff are not necessarily aware that they are exceeding their authority. Urgent attention should be paid to necessary authority and the role staff play in enforcing provincial conservation laws, fisheries laws, and National laws. This should be done in cognisance of the criminal Procedures Act. It is further suggested that cooperation agreements and execution delegations be formalised with other environmental and conservation agencies.

Due to several reserves having a coastal boundary and the ever present activities of highly organised and dangerous Abalone poaching gangs, the involvement of staff in curbing these activities need to be clearly defined and coordinated. It is the opinion of this team that this should be the preserve of a highly trained and well equipped District based Law Enforcement Component conducting their duties in collaboration with other authorities and with the necessary jurisdiction.

It is the opinion of this investigation team that the establishment of a District based Law Enforcement Component will greatly contribute in addressing some of the security shortcomings highlighted. In addition, such a component will also alleviate some of the external enforcement requirements placed on Reserve staff thus allowing them to focus on reserve management and security. The current practice of Law enforcement staff working a daily night shift is questioned as no evidence could be found on its effectiveness. It is suggested that through information gathering, coordination with other authorities and planning, such nightly activities could take place on a sporadic basis with much greater successes.

The investigation team was also of opinion that the management requirements of the various Reserves need to be included in the Municipal Spatial Development Framework so as to ensure that the Reserve - Neighbourhood interface receive adequate attention.

SUMMARY OF RECOMMENDATIONS

INSTITUTIONAL		
Aspect	**Issue**	**Recommendation**
Governance	1. Relationship with other National & Provincial Conservation/Environmental institutions 2. Relationship with other City Institutions 3. Obligations in respect of By-laws, Municipal Systems Act (2000) and the Municipal Finance Management Act (2003) 4. Working agreements with other Utility Services	1. Conduct Institutional Governance Audit 2. Draft MOU's
Policy & Procedures	1. Management Policies, Goals, Objectives 2. Operational Procedures &Protocols	1. Develop management Policies Goals & Objectives 2. Develop Procedures and Protocols
Management	1. Consistency in personnel designations 2. Consistency in personnel functional content 3. Career pathing 4. Skills development 5. Reserve Management Standards	1. Develop consistent Job Descriptions 2. Develop Skills Development and career pathing Protocol 3. Develop Auditable Reserve Management System linked to Personnel & Financial Performance Management System

Reserve	Additional Staffing	Security and Equipment	Infrastructure
NORTH			
Witzands	1. 3x Bushrangers 2. Small labor team 3. Staff must be trained in 4 wheel driving 4. Officers appointed as Peace Officers	1. Establish a MOU with Bulk Water 2. Replace damaged fences 3. Monitor Wood cutter activities 4. Permits must contain more information 5. Reserve map required 6. Curb illegal access 7. Regular perimeter patrols.	1. 4x4 vehicle in good condition 2. Office Trellidor and burglar bars 3. Demarcation of boundaries 4. Erect signage 5. Electric fence along north and north-eastern boundary 6. Basic staff equipment
Blaauwberg	6. 6x Bushrangers (2 x3-member teams) 7. 2 x Permanent Visitor	4. Staff be appointed as Peace Officers 5. Law Enforcement	1. Link present alarm system to security service

	Controller Off's 8. Officers appointed as Peace Officers 9. Station District Law Enforcement Component	Component duties expanded to cover "hot spots" in district. 6. Daily night shifts limited to conduct patrols across district and do ad hoc night time	provider. 2. Mount Day-Night camera to cover main resort area. 3. Active Monitor to monitor activities during peak periods. 4. Erect signage 5. Basic staff equipment
Rietvlei	1. 2 x Bushrangers 2. Officers appointed as Peace Officers	1. Regular perimeter patrols 2. Co-ordinate with MCM	1. Fence along R27 road. 2. Alarm systems at new facilities 3. Peak Inversion camera with recording facility for main gate 4. Fence open residential property boundaries 5. Patrol boat 6. Basic staff equipment
CENTRAL			
Bracken	1. 1x EE Officer/Community Officer. 2. 1x Labourer	1. Visible patrols 2. Liaison with Everite Hostel.	1. Ablutions at gate 2. Day-night camera for main access area. 3. Removal of derelict buildings 4. Guard monitoring 5. Clear alien vegetation along fences 6. Basic staff equipment
Durbanville	1. 2x Visitor Controller Officers 2. Officers appointed as Peace Officers	1. Boundary fence cleared of vegetation 2. Erect signage iro handling of unwanted pets	1. Steel gate at offices to be kept locked, and fitted with buzzer and solenoid access control 2. Video monitor for door 3. Service counter inside front door 4. Alarm system to include response 5. Long-range mobile panic buttons

			6. Lighting at offices and main gate 7. Peak Inversion camera for main gate 8. Guard Monitoring system 9. Basic staff equipment
Tygerberg	1. Employ current 3 Contract Bushrangers 2. 2x Bushrangers 3. 1x Site Manager 4. 1x Foreman 5. 5x Llabourers 6. 1x Additional EE Officer/Community Liaison 7. 2x Visitor Controller Officers 8. Officers appointed as Peace Officers 9. Station District Law Enforcement Component	1. Attend Community Police Forum and Crime Watch meetings. 2. Bushrangers obtain drivers licenses 3. Staff presence over week-ends and after hours 4. All gate remotes currently issued be recovered immediately and re-issued under a new access signal code 5. Keys handed out should be retrieved and locks changed. 6. Kanonberg be afforded controlled access in the event of a fire.	1. Replace existing camera at main entrance gate with a Peak Inversion camera with recording facility 2. Present cameras be replaced with Day-Night cameras. 3. Plattekloof and Quarry area be re-fenced with electric fence 4. Perimeter road should be constructed where feasible 5. Flatrap razer coils installed on top of all fences and along bottom of select fences 6. Accommodation for Bushranger teams 7. Installation of trigger operated floodlight in darker area of parking 8. Additional mountain bike 9. Basic staff equipment
SOUTH			
Zandvlei	1. 3x Visitor Controller Officers 2. 3x Bushrangers 3. 4x Labourers 4. Officers appointed as Peace Officers	1. Cease involvement in public amenity facilities on eastern side 2. Formal gate control required during open hours 3. Formalise relationship with Mountain Men Security Services 4. Evening security at offices by private security service provider 5. Introduce ad hoc evening patrols 6. Formalise co-operation with Marine and Coastal Management regarding	1. Northern access well designated and controlled access point 2. Signage at the entrance, parking areas & along the water 3. Re-fence office area with Diamond Razor Mesh 4. Provide appropriate security lighting 5. Replaced northern and western fence with Diamond Razor Mesh fence 6. New offices need to be completed & fitted with monitored alarm system

		control at the estuary.	and BX Outdoor Beams 7. Guard Monitoring system 8. Motorized boat 9. Basic staff equipment
False Bay	1. 9x Bushrangers 2. 4x Static Guards 3. Officers appointed as Peace Officers 4. Station District Law Enforcement Component	1. Regular patrols supported 2. Bushrangers and Visitor Control officers should be circulated & deployed to cover peak periods of public use within the Park. 3. Change permanent night shift to a planned basis during periods of specific risk or in response to specific incidents 4. Co-ordinate night activities with other law enforcement bodies 5. Visitor Controller Officers patrol Zeekoevlei picnic area during peak periods.	1. Establish two or three Bushranger bases 2. Re-fence southern and eastern boundary electric fence 3. Motorised patrol 4. 2x Quad 5. Install Guard Patrol Monitoring system 6. Fence Rondevlei offices and EE Centre with Diamond Razor Mesh Install additional trigger 7. Install flood lights at all facilities 8. Day-Night camera to Rondevlei Viewing Tower for office and entrance area 9. Upgrade all existing cameras to Day-Night cameras with recording 10. Additional cameras for Zeekoevlei entrance gate and new office complex 11. Buildings should be alarmed with a siren and linked to a security service provider 12. Buildings which do not have security staff at night should be fitted with BX80 13. Erect signage 14. Basic staff equipment
Edith Stephens	1. Replace “small plant operator” with a fence maintenance post.	1. The reserve fence needs to be patrolled daily or at least twice a week 2. Walk-in access should be controlled and documented at the gate 3. Office gate should remain locked	1. Northern and southern fences must be replaced with Razor Diamond Mesh be considered or electric fence using spring steel wire 2. Management track should be created along the fence 3. Basic staff equipment

EAST			
Wolfgat & Macassar	1. 8 x Bushrangers. 2. 3x District Law Enforcement Officers 3. 2 x Community Liaison Officers 5. Officers appointed as Peace Officers 6. Station District Law Enforcement Component	1. Weltevreeden office security system should include a response system 2. City employed private security with mobile support to patrol coastal road esp. parking areas 3. Investigate sand mining permits	1. Demarcate reserve using cement poles 2. Erect signage 3. Move Macassar Gate 4. Basic staff equipment
Kogelberg	1. 1x Visitor Controller Officer 2. 3x Bushrangers 3. Officers appointed as Peace Officers	1. Improve communication services	1. Construct Bushranger camp 2. Erect signage 3. Fence Erf 19 and north-west boundary using electric fence 4. Install alarm at all buildings 5. Install trigger lighting 6. Install depot fence at rear 7. Install Reed Switches for solar panels 8. Peak Inversion Camera for entrance gate to depot 9. Basic staff equipment
Helderberg	1. 6 existing Labourers trained to level of Bushrangers 2. Officers appointed as Peace Officers	1. Develop system for evening monies 2. Regular perimeter patrols	1. Erect signage 2. Electric fence be retained 3. Peak Inversion camera at main gate 4. Day –Night camera to cover parking area 5. Basic staff equipment

- **COSTING**

The equipment costing listed below are based on actual quotes provided.

Fencing:

Diamond Razor mesh fencing installed per 100m R 440,00/meter

1,8m, 12 strand electric fencing installed at 100m (Au Alloy wire) R 55,00/meter

12 Joule Nemtek energizer with built in fence monitor R 3400,00 excl

Alarm Equipment:

To supply and install an 8-zone alarm Paradox alarm system complete with battery back-up, keypad, 15 watt siren, four internal infra-red passives, two fixed panic buttons and two reed switches. Alarm system can be zone doubled to a 16 zone system.

R 3600,00 excl.

To supply and install one outdoor BX80 beam R 1500,00 excl.

GSM 4 channel radio, programmed to four cellular phone numbers and linked to fence energizers, Alarm systems, Solar panels and standalone panic systems R 1800,00 excl

Long Range remote panic – one long range remote R 250,00 excl.

Long Range receiver – installed R 1100,00 excl.

Cameras:

To supply and install one gate camera – Peak inversion camera, auto-iris lens, 40m co-axial cable, power supply, 4-channel embedded digital recorder (250 G) hard drive and one 17 inch monitor. Price includes camera housing and installation R 11 900,00 excl.

To supply and install one day/night camera – Day/Night camera, auto-iris lens, 40m co-axial cable, power supply, 4-channel embedded digital recorder (250 G) hard drive and one 17 inch colour monitor. Price includes housing and installation R 12 900,00 excl.

Appendix 12: METT assessment

REPORTING PROGRESS IN URBAN PROTECTED AREAS

A Site-level rapid assessment tool based on the World Bank & WWF's "Management Effectiveness Tracking Tool"

Durbanville Nature Reserve

Prepared for the

City of CapeTown

by
Howard Langley & Paul Britton

22 May 2007

REPORTING PROGRESS AT PROTECTED AREA SITES: DATA SHEET

Name of protected area	Durbanville Nature Reserve		
Location of protected area (country and if possible, map reference)	South Africa, Western Cape, Durbanville		
Date of establishment (distinguish between agreed and gazetted	*Agreed* 1960 -1966	*Gazetted* 1996	
Ownership details (i.e. owner, tenure rights etc.)	City of Cape Town		
Management Authority	City of Cape Town, Biodiversity Management Branch		
Protected area size (ha)	6ha		
Staff numbers	*Permanent* 3	*Temporary* 1 (student contract)	
Budget	Budget allocated per district not per protected area / reserve		
Designation (ICUN category), World Heritage, RAMSAR etc	Nature Reserve		
Reason for designation	Botanical importance, transition zone		
Brief detail of World Bank funded project or projects in PA			
Brief detail of WWF funded project or projects in PA			
Brief detail of other relevant projects in PA			

List two of the primary protected area objectives	
Objective 1	Biodiversity & Ecological processes conservation
Objective 2	Environmental Education / Public Utilization
List the top two most important threat to the PA (and indicate reasons why they are selected)	
Threat 1	Urban Edge Impact
Threat 2	Lack of a management plan that defines the desired state of the protected area.
List top two critical management activities	
Activity 1	Management of non-locally indigenous species
Activity 2	Development of the reserve (management plans, facilities, infrastructure etc)
Date assessment carried out:	**19-Jun-07**
Name of assessor:	**Vibeke Kragh & Erika Foot**

1: Context : Where are we now?	Criteria	Value	Score	Comments	Next steps
1.1 Legal status **Does the PA have secure permanent conservation legal status?**	The PA's permanent legal conservation status is not secured by its current legal status eg Public Open Space.	0		Proclaimed as a Local Authority Nature Reserve	
	There is a formal agreement that the PA should be afforded the highest possible legal protection, but the process has not yet begun.	1			
	The PA is in the process of being afforded the highest possible legal protection.	2			
	The PA has Local Authority Nature Reserve status, or a higher level of legal protection.	3	3		
1.2. Protected Area regulations	There are no legal mechanisms for controlling inappropriate land use and activities in the PA	0		No access control. Other legal mechanisms include City by-laws, NEMA regulations etc. Reserve manager qualified as a peace officer and can inforce city by-laws and the ordinance.	Investigating different options for access control.
	Legal mechanisms for controlling inappropriate land use activities in the PA exist but are not being implemented.	1			
	Legal mechanisms for controlling inappropriate land use and activities in the PA exist but there are some problems in effectively implementing them	2	2		
	Legal mechanisms for controlling inappropriate land use and activities in the PA exist and are being effectively implemented	3			
1.3. Law enforcement PA has capacity/resources	PA has no effective capacity/resources to enforce regulations & bylaws	0		1 manager 2 workers. Only manager can enforce the laws. Do not really need more than 1 person to conduct law enforcement .	Can investigate the possibility of a security company patrolling area as part of their rounds.
	There are major deficiencies in capacity/resources to enforce regulations & bylaws (e.g. lack of skills, no patrol budget)	1			

to enforce regulations & bylaws well enough?	PA has acceptable capacity/resources to enforce regulations & bylaws but some deficiencies remain	2	2	Made contact with local law enforcement who will also be able to assist when needed. One deficiency is that the reserve manager is not always on site seeing as it is not the only function fulfilled.	
	PA has excellent capacity/resources to enforce regulations & bylaws	3			
1.4. Protected Area boundary demarcation **Is the boundary known and demarcated?**	The boundary of the PA is not known by the management authority or local residents/neighbouring land users	0		Boundary clearly demarcated; residents and management authority knows boundary of PA.	
	The boundary of the PA is known by the management authority but is not known by local residents/neighbouring land users	1			
	The boundary of the PA is known by both the management authority and local residents but is not appropriately demarcated	2			
	The boundary of the PA is known by the management authority and local residents and is appropriately demarcated	3	3		
1.5. Resource inventory Do you have enough information to manage the area?	There is little or no information available on critical habitats, species and cultural values of the PA	0		Under new management, nature conservation started management in 2006. Baseline data collection commenced & is ongoing.	Continue with sourcing relevant information and baseline data collection.
	Information on critical habitats, species and cultural values of the PA is not sufficient to support planning and decision making	1	1		
	Information on critical habitats, species and cultural values of the PA is sufficient for key areas of planning/decision making but the necessary survey work is not being maintained	2			
	Information concerning critical habitats, species and cultural values of the PA is sufficient to support planning and decision making and is being maintained	3			

Subtotal: Context	**15**	**11**	

2: Planning: Where do we want to be?	Criteria	Value	Score	Comments	Next steps
2.1. Protected area design Does the protected area need enlarging, corridors etc to meet its objectives?	Inadequacies in design mean achieving the PA's major management objectives is impossible	0		Reserve too small to reach all biodiversity conservation objectives.	Negotiate a corridor/ link with the sand plain fynbos remnant on the adjoining racecourse. It is safe to assumethat there is bird and insect movement between the reserve, racecourse remnants and can be further researched to confirm. Bird Club already assisting with bird ringing.
	Inadequacies in design mean that achievement of major objectives are constrained to some extent	1	1		
	Design is not significantly constraining achievement of major objectives, but could be improved	2			
	Reserve design features are particularly aiding achievement of major objectives of the PA	3			
2.2 Management plan Is there a management plan (compliant with Protected Areas Act) and is it being implemented?	There is no standard Management Plan for the PA	0	0	A vague plan exist but cannot be seen as a proper management plan.	Within the branch we are looking into a standardised format for a management plan which corresponds with requirements as stipulated in the Protected Areas Act
	A standard Management Plan is being prepared or has been prepared, but is not yet approved.	1			
	An approved Management Plan exists and is being implemented, but has not been updated/reviewed during the past five years.	2			
	An approved Management Plan exists, is being implemented and has been updated/reviewed during the past three years	3			

2.3. Conservation Development Framework (CDF) Is there a visitor use zoning system indicating position and nature of operation & visitor infrastructure?	There is no CDF for the PA	0	0	No CDF exist. Attention is needed to reduce the extent of footpaths and the area covered by infrastructure.	A CDF will be prepared for the area in the near future and will feed into the Management Plan.
	A CDF is being prepared or has been prepared but is not being implemented	1			
	An approved CDF exists but it is only being partially implemented because of funding constraints or other problems	2			
	An approved CDF exists and is being implemented	3			
Additional points	The planning process allows adequate opportunity for key stakeholders to influence the management plan	1			
	There is an established schedule and process for periodic review and updating of the management plan	1			
	The results of monitoring, research and evaluation are routinely incorporated into planning	1			
Subtotal Score: Planning		**12**	**1**		

3: Inputs: What do we need?	Criteria	Value	Score	Comments	Next steps
3.1. Research Is there a programme of management-orientated research work?	Research needs have not been identified nor is any research work taking place in the PA	0		Due to a lack of previous record keeping no information is available about previous research conducted at the reserve. Tertiary Institutions have however conducted some research but it is not managemetn orientated research. A few research needs have been identified.	Our research needs can be communicated to tertiary institutions and students from the institutions can assist with research.
	Research needs have been identified, but other than for ad hoc research, no management orientated research is being done.	1	1		
	There is considerable research work but only limited "management" orientated research is being done.	2			
	There is considerable research work being undertaken, which is relevant to management needs	3			
3.2. Human Resource capacity Does the PA have sufficient HR capacity to manage the protected area?	The PA has no HR capacity	0		Staff component for biodiversity management purposes / objective is sufficient (this is only true for the nature reserve but if you take into consideration that each reserve has satelite sites to manage as well staff component will be insufficient). Staff component for conducting	Partnerships to be formed with friends groups / volunteers etc
	HR capacity is inadequate for critical management activities	1	1		
	HR capacity is sufficient, but there are deficiencies in necessary skills for critical management activities	2			
	HR capacity and expertise is adequate for management needs	3			

				education and visitor control insufficient.	
3.3. Current budget Is the current budget sufficient?	There is no dedicated budget for the PA	0		The available annual operating budget allocated to the district is shared amongst three formally proclaimed nature reserves and this funding is also used to conduct various management / operational activities on satelite sites not catered for in the annual budget.	Continue seeing funding oportunities and establish partnerships.
	The available budget is inadequate for basic management needs and presents a serious constraint to the capacity to manage	1	1		
	The available budget is acceptable, but could be further improved to fully achieve effective management	2			
	The available budget is sufficient and meets the full management needs of the PA	3			
Additional points	The budget is secure/guaranteed for the PA on an annual cycle	1	1	There is a relatively secure budget, but not an allocated amount per PA	
	The budget is secure/guaranteed on a three year cycle	2			
	The PA is not reliant on external funding	2			
Subtotal		**14**	**4**		

4: Process : How do we go about it?	Criteria	Value	Score	Comments	Next steps
4.1. Annual Plan of Operation (APO) Is there an annual work plan/APO that is approved by the organisation?	No approved/standardised APO exists	0		APO relatively new and recently implemented	APO will be revised for the new financial year.
	An approved APO exists but activities are not monitored against the plan's targets	1	1		
	An approved APO exists and actions are monitored against the plan's targets, but many activities are not completed	2			
	Actions are monitored against the approved APO's targets and most or all prescribed activities are completed	3			
4.2. Resource management Is the protected area adequately managed (e.g. for fire, invasive species, poaching)?	Requirements for active management of critical ecosystems, species and cultural values have not been assessed	0		Area recently under new management of the Biodiversity Management Branch therefore only at initial stages of implementation of management activities.	To identify clear management objections of the reserve
	Requirements for active management of critical ecosystems, species and cultural values are known but are not being addressed	1			
	Requirements for active management of critical ecosystems, species and cultural values are only being partially addressed	2			

	Requirements for active management of critical ecosystems, species and cultural values are substantially or fully addressed.	3			
4.3. Staff training Is there enough training for staff?	Staff are untrained	0		Trained in operational skills but not always conservation inclined.	A training forum has been established for the directorate. Staff training needs identified at the forum meetings and training for staff members will commence.
	Staff training and skills are low relative to the needs of the PA	1			
	Staff training and skills are adequate, but could be further improved to fully achieve the objectives of management	2	2		
	Staff training and skills are in tune with the management needs of the PA, and with anticipated future needs	3			
4.4. Budget management Is the budget managed to meet critical management needs?	Budget management is poor and significantly undermines effectiveness	0		Do not have direct control over budget.	It is suggested that the budget is split or allocated per PA and not a a sum total.
	Budget management is poor and constrains effectiveness	1	1		
	Budget management is adequate but could be improved	2			
	Budget management is excellent and aids effectiveness	3			
4.5. Operational equipment & infrastructure (as required for operational management purposes, but excluding tourism/visitor facilities)	There is little or no operational equipment & infrastructure	0		Equipment and infrastructure sufficient but needs upgrading.	Old equipment will systematically be replaced.
	There is some equipment & infrastructure but these are wholly inadequate	1			
	There is equipment and infrastructure, but still some major gaps that constrain management	2	2		
	There is adequate operational equipment and infrastructure	3			

4.6 Maintenance of equipment & infrastructure Is equipment & infrastructure (including tourism/visitor facilities) adequately maintained?	There is no approved Maintenance Plan and no maintenance is taking place	0		Various maintenance / fleet departments have maintenance plans for our reserves and equipment but on the reserve itself no maintenance plan currenty exists	Ad hoc maintenance will continue until a formalised maintenance plan has been drawn up.
	There is no Maintenance Plan and maintenance is taking place to an unsatisfactory standard.	1			
	There is no Maintenance Plan, but maintenance is taking place to a satisfactory standard.	2	2		
	There is an approved Maintenance Plan that is being fully implemented to a high standard.	3			
4.7. Education and awareness programme Is there a planned education programme?	There is no education and awareness programme	0		Established link with the Cape for Kids who will be conducting weekly programmes at the reserve.	Magement currently only has capacity to support the Cape for Kids programme
	There is a limited and *ad hoc* education and awareness programme, but no overall planning for this	1	1		
	There is a planned education and awareness programme but there are still serious gaps	2			
	There is a planned & effective education & awareness programme fully linked to the objectives and needs of the PA	3			
4.8. Government & commercial neighbours Is there co-operation with adjacent land users?	There is no contact between managers and neighbouring official or corporate land users	0		Communication / good relationship exist between the managers and adjacent land owner and or neighbours	Continue building relations
	There is limited contact between managers and neighbouring official or corporate land users	1	1		
	There is regular contact between managers and neighbouring official or corporate land users, but only limited co-operation	2			
	There is regular contact between managers and neighbouring official or corporate land users, & substantial co-operative management	3			
4.9. Advisory	There is no Advisory Committee/forum	0		Good progress has been	Advisory Board will be

committee/forum An Advisory Committee of local representatives and specialists advises on PA management & development issues.	An Advisory Committee/forum is in the process of being established communities	1		made a representative of the Durbanville sub council / Koeberg sub council now forms part of the Advisory Board Committee.	approached to comment on management objectives of the reserve once objectives have been identified.
	An Advisory Committee/forum exists, but does not contribute significantly to the management/development of the PA.	2	2		
	A well represented Advisory Committee/forum contributes significantly to the proper management/development of the PA.	3			
4.10. Community partners Do community partners have input to management decisions via the Advisory Committee?	Community partners have no input into decisions relating to the management of the PA	0		Councillors, various other officials and private individuals represent the district at an Advisory Board and they have some input.	Structure of Advisory Board Agenda to be ammended to allow more input or assistance from committee members.
	Community partners have limited input into the PA's management decisions via local governance structures	1			
	Community partners contribute to some decisions relating to management via the PA's Advisory Committee	2	2		
	Community partners are fully representative on the PA's Advisory Committee and directly participate decisions making.	3			
4.11. Commercial tourism Do commercial tour operators contribute to protected area management?	There is little or no contact between managers and tourism operators using the PA	0		Contact between management and tourism operators in the area. Numerous discussion with an indipendant tourism company to include Durbanville as part of the Durbanville Tourism Route. Also on mailing list of Cape Town Tourism.	Need to follow up on process and or progress
	There is contact between managers and tourism operators but this is largely confined to administrative or regulatory matters	1	1		
	There is limited co-operation between managers and tourism operators to enhance visitor experiences and maintain conservation values	2			
	There is excellent co-operation between managers and tourism operators to enhance visitor experiences, protect values and resolve conflicts	3			

4.12. Monitoring & evaluation	There is no monitoring and evaluation in the PA	0		Monthly Health and Safety: inspections of facilities etc.	Monitoring programmes to be established for the reserve.
	There is some *ad hoc* monitoring & evaluation, but no overall strategy and/ or no regular collection of results	1	1		
	There is an agreed and implemented monitoring & evaluation system but results are not systematically used for management	2			
	A good monitoring & evaluation system exists, is well implemented and used in adaptive management	3			
Additional points	There is open communication and trust between local stakeholders and PA managers	1	1	Refer to 4.8	
Subtotal		**37**	**17**		

5: Outputs/Outcomes: What were the results/achievements?	Criteria	Value	Score	Comments	Next steps
5.1. Visitor facilities Are visitor/tourism facilities good enough and sufficient to prevent damage to the PA?	There are no visitor facilities and services	0		The extent of footpaths and infrastructure is impacting on the extent of vegetation being conserved.	A CDF is required for the reserve and mapping of all visitor facilities to commence and corrective measures to be taken where necessary.
	Visitor facilities and services are inappropriate for current levels of visitation or are under construction	1			
	Visitor facilities and services are adequate for current levels of visitation but could be improved	2	2		
	Visitor facilities and services are excellent for current levels of visitation	3			
Additional points	There are active programmes for restoration of degraded areas within the PA and/or in associated buffer zone	1			
5.2. Ecological & Cultural condition assessment Is the protected area	Important biodiversity, ecological and cultural values are being severely degraded in the PA	0		The area is too small to effectively manage. The surrounding urban area makes the application of management burning of the	Clear management objectives to be identified.
	Some biodiversity, ecological and cultural values are being severely degraded	1	1		

being managed consistent to its objectives?	Some biodiversity, ecological and cultural values are being partially degraded but the most important values have not been significantly impacted	2		vegetation extremely difficult to implement.	
	Biodiversity, ecological and cultural values are predominantly intact	3			
5.3. Access assessment Are the available management mechanisms working to control access or use?	Protection systems (patrols, permits etc) are ineffective in controlling access or use of the PA in accordance with designated objectives	0		No access control staff or access control systems available. This creates a security problem for both staff and visitors. No access on weekends and public holidays.	Investigating various options for access control.
	Protection systems are only partially effective in controlling access or use of the PA in accordance with designated objectives	1	1		
	Protection systems are moderately effective in controlling access or use of the PA in accordance with designated objectives	2			
	Protection systems are largely or wholly effective in controlling access or use of the PA in accordance with designated objectives	3			
5.4. Economic benefit assessment **Is the Protected Area providing economic benefits to local communities?**	The existence of the PA has reduced the options for economic development of the local communities	0		Setting up a nursery which can later be used by the Friends group to propagate plants and sell excess . Nursery will initially be used to propogate rare and indangered flora for the area.	Need to review as part of CDF if the nursery is best sited in the Nature Reserve as this is reducing the effective area conserved for vegetation conservation. Comment: besides for veld rehabilitation the nursery will be a valuable visitor attraction to the reserve and a wonderful way to promote indigenous gardening and then being able to reinforce the idea by being able to sell
	The existence of the PA has neither damaged nor benefited the economy of the local economy	1	1		
	There is some flow of economic benefits to local communities from the existence of the PA but this is of minor significance to the regional economy	2			
	There is a significant or major flow of economic benefits to local communities from activities in and around the PA (e.g. employment of locals, locally operated commercial tours etc)	3			

					indigenous plants. This can also impact on economic benefits for the community.
5.5. Community benefit assessment (other than economic) e.g. recreation & education facilities, community hall, sport facilities etc.	The existence of the PA has not delivered any direct or indirect community benefits	0		Living adjacent to a nature reserve increase property value. Other value to community is that it is accessible to the public and offers recreation opportunities and information.	Find alternate community uses such as photography club rate payers etc for the facilities
	The existence of the PA has delivered some minor short term community benefits	1			
	The PA delivers some quantifiable long term community benefits that make a difference to the lives of local communities	2	2		
	The PA delivers considerable quantifiable long term community benefits that make a real difference to the lives of local communities	3			
Subtotal Score: Outcomes		**16**	**7**		

1: CONTEXT	VALUE	SCORE
1.1. Legal status	3	3
1.2. Protected Area regulations	3	2
1.3. Law enforcement	3	2
1.4. Protected area demarcation	3	3
1.5. Resource Inventory	3	1
Subtotal	**15**	**11**
2: PLANNING		
2.1. Protected area design	3	1
2.2. Management plan	3	0
2.3. Conservation Development Framework	3	0
Additional Points	3	0
Subtotal	**12**	**1**
3: INPUTS		
3.1. Research	3	1
3.2. Staff numbers	3	1
3.3. Current budget	3	1
Additional Points	5	1
Subtotal	**14**	**4**
4: PROCESS		
4.1. Annual Plan of Operation	3	1
4.2. Resource management	3	0
4.3. Staff training	3	2
4.4. Budget management	3	1
4.5. Operational equipment & infrastructure	3	2
4.6. Maintenance of equipment & infrastructure	3	2
4.7. Education & awareness	3	1
4.8. Government & commercial neighbours	3	1
4.9. Advisory committee	3	2
4.10. Community partners	3	2
4.11. Commercial Tourism	3	1
4.12. Monitoring & Evaluation	3	1
Additional Points	1	1
Subtotal	**37**	**17**
5: OUTPUTS/OUTCOMES		
5.1. Visitor facilities	3	2
5.2. Condition assessment	3	1
5.3. Access assessment	3	1
5.4. Economic benefit assessment	3	1
5.5. Community benefit assessment	3	2
Additional Points	1	0
Subtotal	**16**	**7**
TOTAL SCORES	**94**	**40**

Comment on score

An up to date management plan setting clear, achievable and practical objectives should be compiled. This should include an assessment of the type of management intervention required. The latter should include investigating alternate practical methods to use fire and alternatives to manage

the vegetation. A CDF (spatial development plan) is urgently required to reduce and curtail the reduction of conserved area by existing (and potential) facilities.