INTEGRATED
RESERVE MANAGEMENT PLAN

BOTHASIG FYNBOS NATURE RESERVE

June 2011

CITY OF CAPE TOWN NATURE CONSERVATION | ULONDONDOLO LWENDALO | NATUURBEWARING

CITY OF CAPE TOWN | ISIXEKO SASEKAPA | STAD KAAPSTAD

THIS CITY WORKS FOR YOU

AUTHORIZATION PAGE

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

Reserve Planning Team:

Branch Manager, Regional Manager, Area Manager, Biophysical Specialist, Biodiversity Coordinator, Stewardship Coordinator, Sustainable Resource Specialist and Monitoring and Evaluation Coordinator

_____

Penny Glanville – Area Manager

Biodiversity Management Branch

Environmental Resource Management Department

City of Cape Town

Name and Title	**Signature and Date**
Mr Jacob Hugo Executive Director: Economic, Environment and Spatial Planning Directorate	

Approved by:

Name and Title	**Signature and Date**
Mr Anton Bredell Minister of Local Government, Environmental Affairs and Development Planning	

DOCUMENTED

Integrated Reserve Management Plan ***This management plan replaces any previous versions***	
Document Version: *Version.02*: June 2011	Prepared by: Adele Pretorius Responsibility: Reserve Management plans
Document reference: (*DEA&DP reference to be inserted*)	Approved by: Mr Anton Bredell Position: Minister of Local Government, Environmental Affairs and Development Planning Date of approval: Date of implementation : Immediate
Distribution: Distribute as Reserve Management Plan to relevant staff in the City of Cape Town for immediate implementation.	
Date for Revision: June 2016	

INTEGRATED RESERVE MANAGEMENT PLAN

Compiled by

Penny Glanville & André Rossouw

Biodiversity Management Branch

Environmental Resource Management Department

City of Cape Town

Bothasig Fynbos Nature Reserve

June 2011

ISBN NUMBER

TABLE OF CONTENTS

List of appendices

A. Charts and tables

- Appendix 1: Rainfall table

B. Legal agreements

- Appendix 2: Surveyor-General (SG) diagrams

C. Species checklists

- Appendix 3: Plants
- Appendix 4: Mammals
- Appendix 5: Birds
- Appendix 6: Reptiles
- Appendix 7: Invertebrates

D. Other documents, as required

9. Appendix 8: Visitor use zoning – desired state and experiential qualities

List of abbreviations used

APO	**annual plan of operations**
C.A.P.E	**Cape Action Plan for People and the Environment**
CapeNature	**Western Cape provincial conservation authority**
CDF	**Conservation Development Framework**
CFR	**Cape Floristic Region**
CREW	**Custodians of Rare and Endangered Wildflowers**
EIA	**environmental impact assessment**
FoTH	**Friends of the Tygerberg Hills**
GIS	**geographic information system**
IDP	**Integrated Development Plan**
IUCN	**International Union for Conservation of Nature**
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**
NEMA	**National Environmental Management Act**
NEMBA	**National Environmental Management Biodiversity Act**
RPC	**Reserve Planning Committee**
SANBI	**South African National Biodiversity Institute**
SANParks	**South African National Parks**
SDF	**spatial development framework**
SWOT	**strengths, weaknesses, opportunities and threats**
TOR	**terms of reference**
WPSP	**Workplace Skills Plan**

PART 1

DESCRIPTION

1. INTRODUCTION

Bothasig Fynbos Nature Reserve is approximately 10 ha in extent, containing Critically Endangered Cape Flats Sand Fynbos. This important, newly formed reserve forms part of the biodiversity network, and links up with the Plattekloof Heritage site, De Grendel wine farm and Tygerberg Hills to the north. It will contribute to reaching the national target for conservation of this Critically Endangered vegetation type. Bothasig Fynbos Nature Reserve was previously managed by the City of Cape Town's Parks Department as a public open space, but is now the management responsibility of the municipality's Biodiversity Management Branch.

The strategic management planning process (which results in the development of an Integrated Reserve Management Plan, or IRMP) for Bothasig Fynbos 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, as well as reserve objectives that 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 Bothasig Fynbos 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 Bothasig Fynbos 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 Bothasig Fynbos 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).

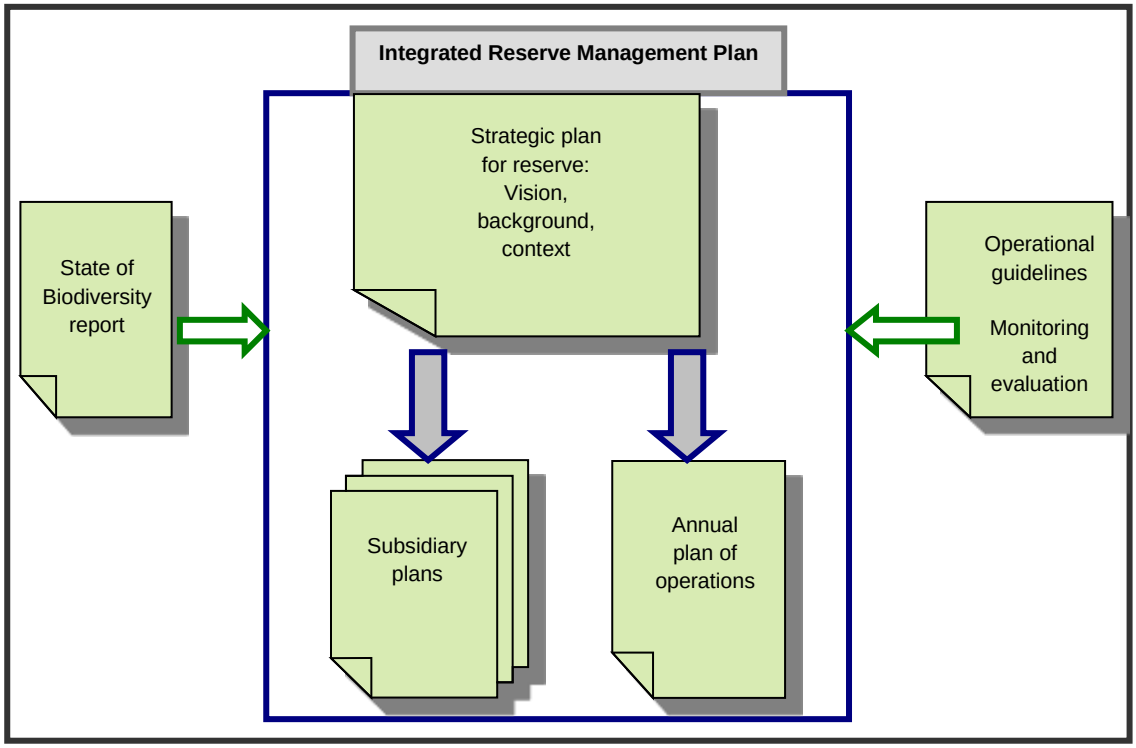


Figure 1: Elements of the IRMP

The IRMP for Bothasig Fynbos 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).

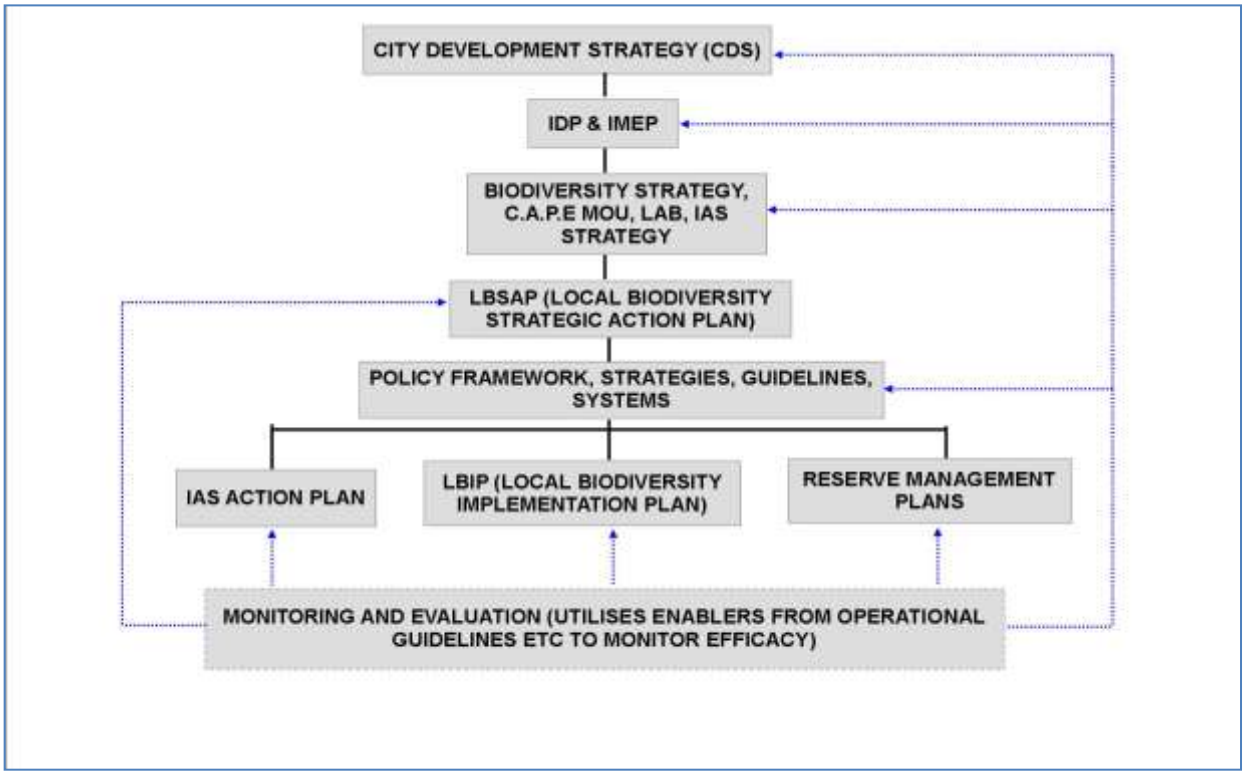


Figure 2: Legal and planning framework for the IRMP

Where possible, emphasis has been placed on the following:

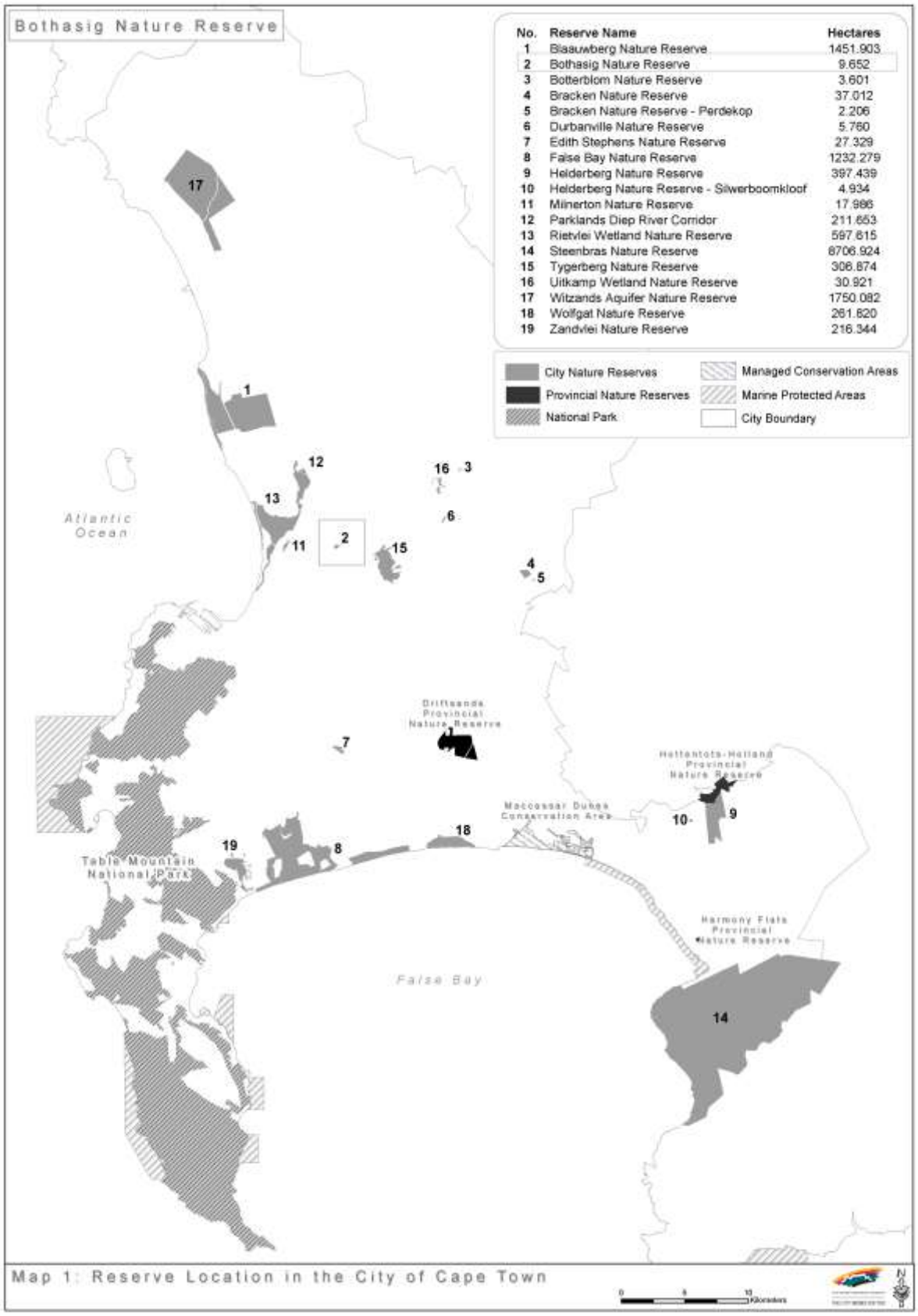
- Assigning responsibility for management interventions
- Scheduling said management interventions
- Quantifying management costs

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. Wherever practical, the ideas and outputs from the workshops have been incorporated into the IRMP.

1.2 Location and extent

Bothasig Fynbos Nature Reserve is situated on the western foothills of Tygerberg, in the suburb of Bothasig, Cape Town (33˚51'35.064"S 18˚33'8.12"E) (map 1 and 2). The reserve is still in the developmental stages, and in a process of being formally proclaimed as a provincial nature reserve under the National Environmental Management Protected Areas Act (Act 57 of 2003). The reserve comprises two erven, and is bounded by Visserhof, Bosmansdam and Potsdam roads as well as linked to the Plattekloof Heritage site by means of a road reserve. The site is found east of the N7 highway and south-west of Plattekloof Road. Map 1 illustrates the location of the reserve within the context of other City of Cape Town reserves.


Bothasig Nature Reserve
No. Reserve Name Hectares
1 Blaauwberg Nature Reserve 1451.903
2 Bothasig Nature Reserve 9.652
3 Botterblom Nature Reserve 3.601
4 Bracken Nature Reserve 37.012
5 Bracken Nature Reserve - Perdekop 2.206
6 Durbanville Nature Reserve 5.760
7 Edith Stephens Nature Reserve 27.329
8 False Bay Nature Reserve 1232.279
9 Helderberg Nature Reserve 397.439
10 Helderberg Nature Reserve - Silwerboomkloof 4.934
11 Milnerton Nature Reserve 17.986
12 Parklands Diep River Corridor 211.653
13 Rietvlei Wetland Nature Reserve 597.615
14 Steenbras Nature Reserve 6706.924
15 Tygerberg Nature Reserve 306.874
16 Uitkamp Wetland Nature Reserve 30.921
17 Witzands Aquifer Nature Reserve 1750.082
18 Wolfgat Nature Reserve 261.820
19 Zandvlei Nature Reserve 216.344
City Nature Reserves
Provincial Nature Reserves
National Park
Managed Conservation Areas
Marine Protected Areas
City Boundary
Atlantic Ocean
Driftsands Provincial Nature Reserve
Hottentots-Holland Provincial Nature Reserve
Macassar Dunes Conservation Area
Table Mountain National Park
Harmony Flats Provincial Nature Reserve
False Bay
Map 1: Reserve Location in the City of Cape Town

Map 2: Reserve Boundary

2. DESCRIPTION OF LANDHOLDINGS AND OWNERSHIP

2.1 Property details and title deed information

Below is a list of erven that make up Bothasig Fynbos Nature Reserve (map 3) (appendix 2: Surveyor General diagrams):

- Erven 31-7794, Bothasig, situated in the City of Cape Town municipality, Western Cape
  In extent: 3,277 ha; held by title deed no. T34961/2002
  Owned by the Provincial Education Department, and subject to a provincial process
- Erven 31-8354, Bothasig, situated in the City of Cape Town municipality, Western Cape
  In extent: 6,017 ha; held by title deed no. T55141/2002
- City-owned and subject to a current proclamation process run by the City of Cape Town


Bothasig Nature Reserve
VISSERHOF ROAD
31-8354
31-7794
POTSDAM ROAD
SAXENBURG WAY
Nature Reserve
Roads
Property
Map 3: Reserve Erven

2.2 Landscape perspective

The reserve falls within the Cape Floristic Region (CFR). The CFR is 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 (C.A.P.E Project Team 2000) referred to as C.A.P.E, 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, which identifies 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 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).

Bothasig Nature Reserve is of vital importance for the conservation of the Critically Endangered veld type Cape Flats Sand Fynbos . Less than 1% of this vegetation type is conserved against the national conservation target of 30%. As such, this site makes an important contribution to national conservation targets.

2.3 Physical environment

2.3.1 Climate

The climate of the reserve and surrounding areas is typically Mediterranean, with rain falling predominantly in winter (April–October). Average precipitation (millimetres per annum), as recorded at the nearest weather stations, namely Wingfield (to the west), Cape Town International Airport (to

the south) and Diemersdal (to the east), is 524, 508 and 481 respectively (appendix 1). The summers are hot, with the maximum temperatures ranging from 20,8 ºC to 38,4 ºC, while the average minimum temperatures in June (mid-winter) are between 1,3 ºC and 13,2 ºC. The strongest and most frequent winds blow predominantly in summer from the south to south-east. During the winter months, the winds blow mostly from the north-west.

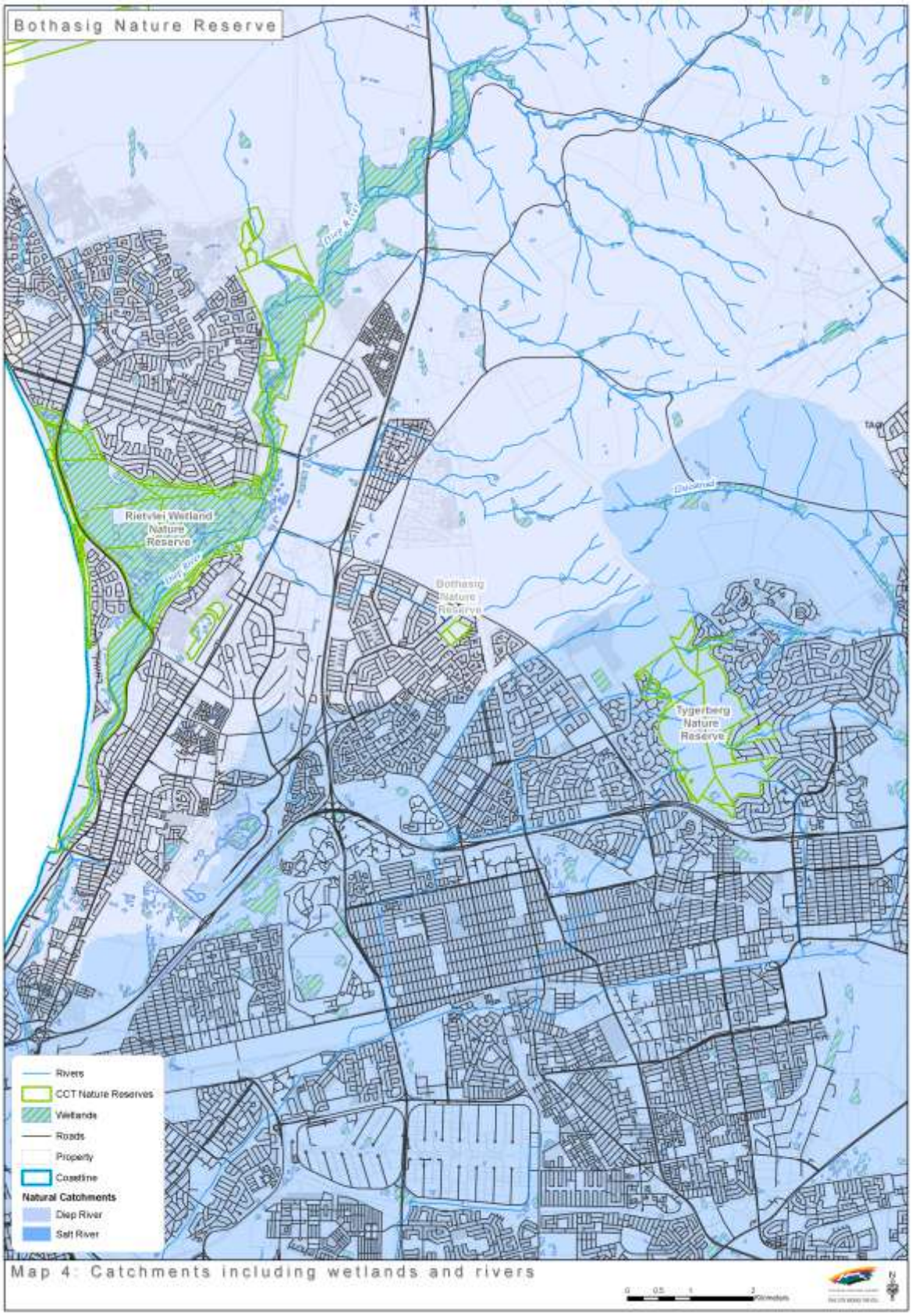
2.3.2 Geology, geomorphology, soils and land types

The reserve is located on the western foothills of the Tygerberg. The area is virtually flat. The geology of the reserve is almost exclusively deep acid sands, underlain by a Malmesbury shale layer. The Malmesbury group of rocks is about 900 million years old.

2.3.3 Hydrology and aquatic systems

2.3.3.1 Catchments, wetlands and seeps

Bothasig Fynbos Nature Reserve falls within the Diep catchment basin (map 4). There are two natural seasonal wetlands – one in the centre and one on the south-eastern section of the reserve – while a manmade wetland is found on the eastern boundary.



Map 4: Catchments including wetlands and rivers

2.4 Biological environment

2.4.1 Vegetation

According to the National Spatial Biodiversity Assessment (Driver *et al.* 2004), 16% of Cape Flats Sand Fynbos remains. Only 270 ha are protected and a further 550 ha are under conservation management. That amounts to less than 1% of its historical extent. The national conservation target is 30%. Unfortunately, this is unattainable, making the conservation of every last remnant, irrespective of size, critical.

An initial floral species list of 90 species has been compiled, including seven Red Data list threatened plant species, but a more comprehensive floral study still needs to be conducted for the site (appendix 3).

Cape Flats Sand Fynbos (sand plain fynbos) (Rebelo *et al.* 2006)
Distribution: Largely endemic to the City of Cape Town area: Cape Flats from Blouberg and Koeberg Hills west of the Tygerberg Hills, to Lakeside and Pelican Park in the south near False Bay; from Bellville and Durbanville to Klapmuts and Joostenberg Hill in the east, and to the south-west of Bottelary Hills to Macassar and Firgrove in the south. Altitude 20–200 m. Nearly 100% of this vegetation type occurs within the City of Cape Town area, and 85% is transformed.
Vegetation and landscape features: 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.
Geology and soils: Acid, tertiary, deep, grey regic sands, usually white, often Lamotte form.
Conservation: Critically endangered. Target 30%. Less than 1% statutorily conserved as small patches in Table Mountain National Park as well as some private conservation areas, such as Plattekloof and Blouberg Hills. This is the most transformed of the sand fynbos types: More than 85% of the area has already been transformed by urban sprawl (Cape Town metropolitan area) and for cultivation. Hence, the conservation target remains unattainable. Most remaining patches are small pockets surrounded by urban areas, for example Rondevlei, Kenilworth, Milnerton, 6BOD, Plattekloof and Rondebosch Common. Most of these patches have been identified as ‘core conservation sites’. They are mismanaged by mowing, fire protection and alien plant invasion. Mowing eliminates serotinous and taller species, while fire protection results in a few common thicket species (e.g. *Carpobrotus edulis* (Sour Fig), *Chrysanthemoides monilifera* (Bietou)) replacing the rich fynbos species. Alien woody species include *Acacia saligna* (Port Jackson Willow), *A. cyclops* (Rooikrans) and *Eucalyptus*. Dumping and spread of alien grasses (both annual and *Pennisetum clandestinum*, or Kikuyu) are also a major problem. Alien acacias result in elevated nutrient levels and a conversion to *Eragrostis curvula* grassland and near-annual fires. Some 94 Red Data sand fynbos plant species occur on the remnants

within Cape Town. The endemics include six species listed as extinct in the wild, some of which are being re-introduced from botanical gardens (Rebelo *et al.* 2006).

2.4.2 Mammals

Although a faunal species list for the area is largely incomplete, with only two mammal species being recorded (appendix 4), the expected historical species list for the entire area would include most of the larger mammals, such as the *Diceris bicornis* (Black Rhinoceros), *Loxadonta africana* (African Elephant), *Panthera leo* (Lion), *Panthera pardus* (Leopard), *Synerus caffer* (Cape Buffalo) and *Taurotragus oryx* (Eland). These species have become locally extinct as a result of hunting, habitat shrinkage and encroachment by township developments and agriculture. Due to the small nature and relative isolation of the site, only smaller mammals will still occur in, or could potentially be re-introduced to, the area in future.

2.4.3 Birds

A comprehensive avifaunal study will be conducted in 2011 to 2012. Appendix 5 shows a list of five bird species that have been recorded.

2.4.4 Reptiles

A comprehensive reptile study will be completed in 2011 to 2012. To date, two reptile species have been recorded (appendix 6).

2.4.5 Amphibians

A comprehensive amphibian study will be conducted in 2011 to 2012. To date, one amphibian species has been recorded, namely *Strongylopus grayii* (Clicking Stream Frog).

2.4.6 Invertebrates

A comprehensive invertebrate study will be conducted in 2011 to 2012. To date, four invertebrate species have already been identified (appendix 7).

2.5 Socio-political context

2.5.1 History

The larger erf to the north of the site was previously managed by the City of Cape Town's Parks Department, while the smaller erf to the south was managed by the Provincial Education Department. Both departments aggressively and regularly mowed the site. The reserve was previously regarded as an eyesore, and had a reputation for having been used for vagrancy, dumping, stripping of stolen goods, as well as illegal quad bike and 4x4 activities.

Since March 2010, the management of the reserve was taken over by the City of Cape Town's Biodiversity Management Branch in the Environmental Resource Management Department of the Strategy and Planning Directorate, and is managed as a satellite site from Tygerberg Nature Reserve.

Today, the reserve provides recreational and visitor services. The main visitor activities allowed in the reserve include hiking, running, sightseeing, picnicking, photography, nature appreciation, dog walking (to be phased out when fauna are re-introduced) and bird-watching. The reserve has only recently been established. Therefore, environmental education and other annual events will be developed over the next five years. The Friends of the Tygerberg Hills (FoTH) have been assisting Tygerberg Nature Reserve staff in the management of the site, and have formed a small residents working group for the site.

2.5.2 Socio-economic context

Social attributes

The main visitor activities on Bothasig Fynbos Nature Reserve include hiking, running, sightseeing, picnicking and bird-watching. The FoTH conduct weekly alien-clearing hacks.

Bothasig Fynbos Nature Reserve has a polarised social support/socio economic society, as two distinct groups (affluent and disadvantaged) put different pressures on resources. Affluent people have a greater environmental footprint, while disadvantaged people put pressure on natural resources for survival and cultural needs. The cultural and natural resources are sensitive to human disturbances.

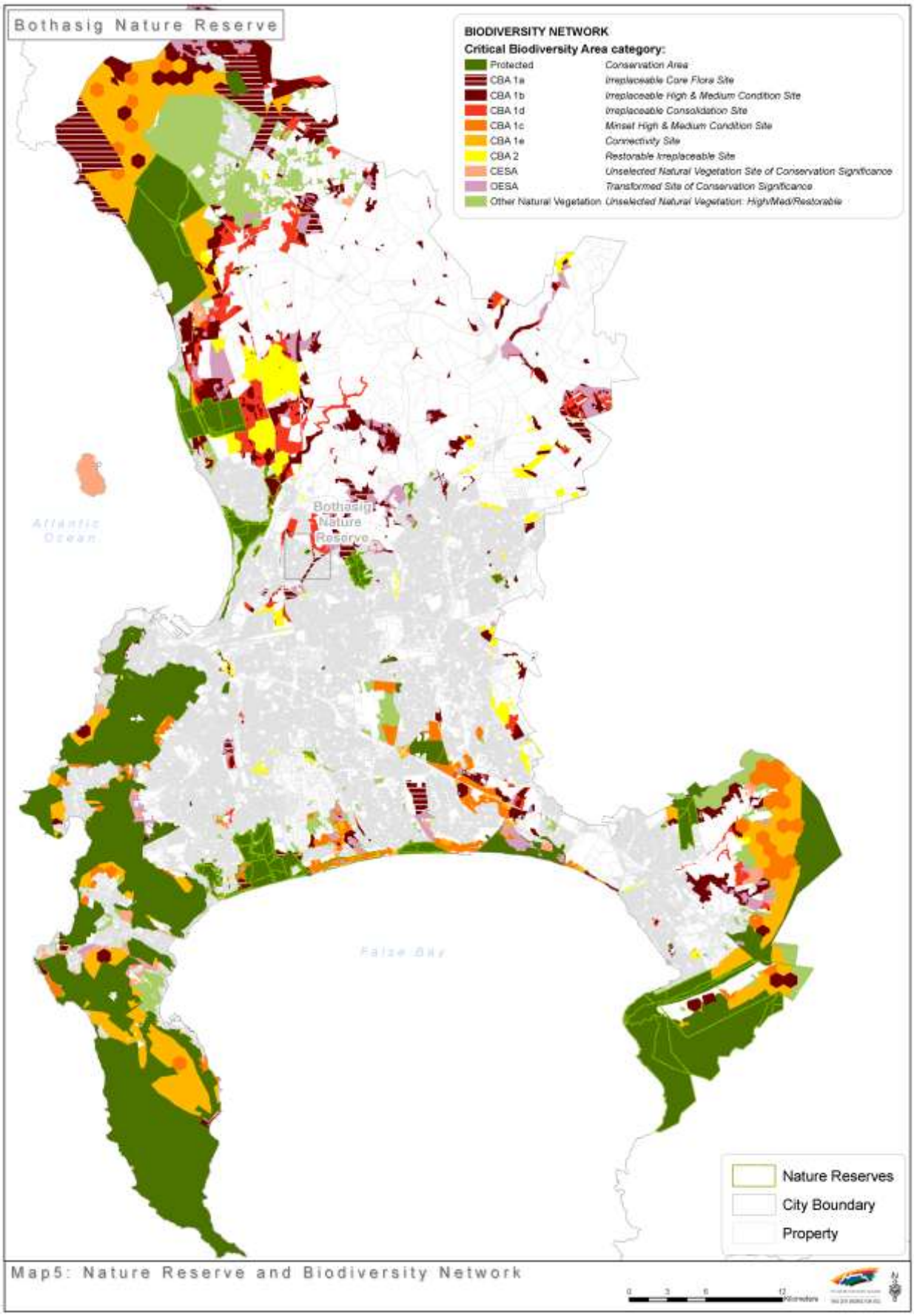
Bothasig Fynbos Nature Reserve falls under the jurisdiction of Subcouncil 3, which encompasses Tygerberg Hills, Welgedacht, Edgemead, Monte Vista, Bothasig, Plattekloof Glen, Tygerdal and Goodwood. The area surrounding the reserve is mostly affluent, and it is assumed that the employment rate is fairly high (95%). There are an estimated 93 438 residents in Subcouncil 3, the majority being white females between the ages of 35 and 54. Most residents have achieved Grade 12, and speak both English and Afrikaans (Cityweb. 2010).

The management of Bothasig Fynbos Nature Reserve works in conjunction with forums such as FoTH and the Custodians of Rare and Endangered Wildflowers (CREW), who are passionate stakeholders and are organised in structured non-governmental organisations that strengthen relationships and act as ambassadors. Furthermore, the reserve has solid institutional ties with CapeNature (the Western Cape provincial conservation authority), SANParks (South African National Parks), SANBI (the South African National Biodiversity Institute) and C.A.P.E.

2.6 Protected-area expansion

Bothasig Fynbos Nature Reserve forms an important platform and integral link in the City of Cape Town'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.

Bothasig Fynbos Nature Reserve, which is part of the regional fine-scale conservation plan, i.e. the biodiversity network, forms an important ecological node that links up with the Plattekloof heritage site, which is managed by Eskom (see map 5).


Bothasig Nature Reserve
BIODIVERSITY NETWORK
Critical Biodiversity Area category:
Protected
Conservation Area
CBA 1a
Irreplaceable Core Flora Site
CBA 1b
Irreplaceable High & Medium Condition Site
CBA 1d
Irreplaceable Consolidation Site
CBA 1c
Mineal High & Medium Condition Site
CBA 1e
Connectivity Site
CBA 2
Restorable Irreplaceable Site
CESA
Unselected Natural Vegetation Site of Conservation Significance
OESA
Transformed Site of Conservation Significance
Other Natural Vegetation
Unselected Natural Vegetation: High/Med/Restorable
Atlantic Ocean
Bothasig Nature Reserve
False Bay
Nature Reserves
City Boundary
Property
Map5: Nature Reserve and Biodiversity Network

3. PURPOSE, VISION/MISSION, SIGNIFICANCE/VALUE

3.1 Purpose of the protected area

Bothasig Fynbos 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 therefore the conservation of this unique biodiversity and associated ecosystem features and functions.

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

- The conservation of critically endangered Cape Flats Sand Fynbos
- Promoting sound environmental education principles

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 Floristic Region, 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

Adopted by Council in June 2009

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.

Bothasig Fynbos Nature Reserve vision

To manage and restore the nature assets of Bothasig 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

Bothasig Fynbos 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 Bothasig Fynbos Nature Reserve.

3.3 Significance of property (biodiversity, heritage and social)

Bothasig Fynbos Nature Reserve is highly significant due to the critically endangered vegetation type Cape Flats Sand Fynbos that is found here. It forms an integral part of the City of Cape Town's biodiversity network in the area, and has seven Red Data plant species.

The reserve has an active Friends group and working group, who have been volunteering their time to conduct alien-plant clearing since March 2010.

Summary of qualifying site assessment criteria

- The reserve contains a Critically Endangered vegetation type.
- Through natural open space, the reserve is well connected to extensive natural areas to the north and east.

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 in 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.	N/A	The development of the IRMP will assist in ensuring that the objectives of this Act are achieved in the reserve.

	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 (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;	• 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	

	• regulations on noise, vibration and shock; and • EIAs.	• 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, Amendment Act, 2004	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 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,	The purpose and scope of the bylaw is to promote the achievement of	• Publication date 28 February	A fire management plan to be designed

Province of the Western Cape, LA 11257	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.	2002	
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 1962. The Bylaw includes chapters on dogs, cats, poultry and working equines.	• Draft, 2009	
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	Provides for the prevention of discrimination and other related matters		

Discrimination Act, Act 4 of 2000			
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	Regulates planning and development within the province		

Act, Act 7 of 1999			
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 Administrative framework

Bothasig Fynbos 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. The reserve is the management responsibility of an area manager. The operational management of the reserve is supported by various other City of Cape Town departments, including, but not limited to, Law Enforcement, City Parks, Human Resources, and Finance.

Bothasig Fynbos Nature Reserve is managed as a satellite site of Tygerberg Nature Reserve.

5. PROTECTED-AREA POLICY FRAMEWORK & GUIDING MANAGEMENT PRINCIPLES

5.1 Management objectives

5.1.1 Biodiversity and heritage objectives

The following table lists the biodiversity and heritage management objectives for Bothasig Fynbos Nature Reserve:

Table 2: Biodiversity and heritage objectives

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 Bothasig Fynbos 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) Consolidate reserve boundaries (2) Incorporate untransformed fynbos (3) Establish corridors linking the reserve with Plattekloof heritage site	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 (IUCN) principles and Biodiversity Management Branch 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 (2) Feed information into Biodiversity Management Branch's biodiversity database	(1) Branch-wide monitoring plan (to be compiled) (2) Branch-wide 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 of physical, chemical and biological processes in degraded vegetation areas	(1) Rehabilitate all old, degraded sites	Branch-wide floral 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 Alien-biota management plan (to be compiled) (2) Invasive-animal management plan (draft management plan to be completed)
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 (revenue generation, including visitor, resource use, developments, management activities, etc.) 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 (3) Develop in accordance with environmental impact assessment (EIA) process (NEMA) and corporate policies (4) Implement green standards and environmental best practice based on corporate policy	(1) CDF (to be compiled) (2) Infrastructure management 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		
		Extractive resource use Minimise the impacts of extractive resource use, and ensure that such activities are aligned with corporate guidelines, are within management capacity constraints, and 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 (SDFs) 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 communication strategy (in draft)
		External activities Negotiate to ensure that external resource and land use does not detrimentally affect ecological processes within the reserve		Risk management plan (to be compiled)

		Hydrological and water chemistry changes Participate in activities to maintain river flow regimes and water chemistry within limits for the maintenance of ecosystem processes in aquatic ecosystems in the reserve	(1) Encourage enforcement of legislation applicable to the management and protection of aquatic resources (2) Facilitate regular assessments of wetland health (3) Address the issue of sewage and other point-source pollution of aquatic systems	(1) Environmental risk 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) Safety and security plan (2) Branch national manual (to be compiled)
NATURE APPRECIATION To maintain and restore nature appreciation in Bothasig Fynbos Nature Reserve so that the spiritual and experiential qualities of nature 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 (3) Invasive-alien plant management plan (to be compiled)
	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

High-level objective	*Objective*	*Sub-objective (where required)*	*Initiative*	*Low-level plan*
Nurture productive and mutually beneficial partnerships that will 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	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	(1) Establish and market an environmental resource centre and outdoor classrooms, with a range of interpretive and information resources	(1) Branch-wide education strategy and action plan (2) Regional environmental education and community involvement strategy (to be compiled)
		Educate learners, educators and other community focus groups to be able to take environmental action		
		Support educators and community leaders with resource and information materials		
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 communication strategy (in draft) (2) Branch-wide stakeholder relationship plan (to be compiled)

	Effective cooperative governance	Minimise degrading impact and consequences of inappropriate development in and around the reserve	(1) Establish and maintain good working relationships with relevant government departments as well as 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 (TOR) and MOUs	
Become the nature-based visitor destination of choice in the region	Develop, manage and enhance a range of sustainable visitor products		(1) Analyse current product usage, and identify opportunity	
			(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)
Grow the domestic visitor profile to be representative of South African society	Grow the domestic visitor profile of the reserve to be representative of regional demographics	N/A		
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	Communication programme (to be compiled)

Advance strategic human resource management	Ensure good human resource management	N/A	(1) Implement and support learnership and volunteer programmes (2) Ensure that all staff have access to training initiatives, as per the Workplace Skills Plan (WPSP) (3) Ensure that all corporate human resource policies are adhered to	Regional standard operational procedures manual (to be updated)
Financial management	Ensure sound financial management practices are applied to and underpin the reserve	N/A		Branch business plan (to be complied)
Achieve good corporate governance/ management	Manage risk profile effectively	N/A	Conduct legal review	

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

Strengths

- Local knowledge of, and expertise in, areas under jurisdiction
- Staff buy-in and positive attitude of neighbouring landowners
- Strong community involvement
- Active Friends group
- Management commitment to compile and implement the IRMP and biodiversity action plans
- Legislative support – municipal bylaws, Nature Conservation Ordinance and NEMA
- Constitutional support
- Tygerberg Nature Reserve staff and management have experience and knowledge in managing protected areas
- Existing corporate support services
- Defensible boundaries
- Access to specialist services and databases
- Staff determination and will to succeed
- Existing functional ecosystems
- Connectivity with other conservation areas

Weaknesses

- Current lack of staff component
- Few law enforcement patrols during the day, and none after hours
- Operational budget needs review, as this reserve currently falls under Tygerberg Nature Reserve budget
- Law enforcement tends to be reactive instead of proactive
- Lack of operationally mandated staff to utilise environmental legislation adequately
- Public's ignorance of applicable environmental legislation
- Currently managed by Tygerberg Nature Reserve, so no permanent staff assigned specifically to this reserve

Opportunities

- Aesthetic beauty of the reserve attracts visitors
- Creating buy-in among key stakeholders and role players
- Increased community involvement
- Job creation, and career succession and planning

- Accessing funds for Expanded Public Works/Sustainable Livelihoods programmes to assist in job creation, reserve infrastructure maintenance and development
- Proactively engaging communities bordering the reserve, and recognising their needs
- Continuous liaison with, and support for, Friends groups
- Linking up with surrounding landowners, sharing knowledge and resources in order to manage the biodiversity network effectively
- Promoting the reserve as a destination for outdoor eco-activities
- Opportunity for biological monitoring

Threats

- Threats and intimidation to conservation staff when enforcing legislation
- Lack of commitment from stakeholders
- Constant mowing by City of Cape Town Parks Department, provincial government and residents
- Vagrancy and use of site as hiding area for suspected house burglars
- Alien plant species from household gardens invading the reserve
- Previously unmonitored and unmanaged erosion
- Growing external communities with increasing needs
- Increased incidence of crime and other illegal activities – vagrancy and stripping of stolen goods
- Lack of sustained funding for students and interns
- Limited sustainable operational funding
- Loss of biodiversity due to inappropriate fire, invasive alien species, illegal activities and bad land use practices, such as mowing
- Change in local government political structures

5.3 Protected-Area management policy framework and guiding principles

5.3.1 Biodiversity conservation management

5.3.1.1 Community-based natural resource management

The harvesting of natural resources in Bothasig Fynbos 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, detailed or conclusive data have not been forthcoming that could be used to determine where current harvesting is sustainable and/or the potential threats should harvesting activities persist.

5.3.1.2 Soil erosion and control

Within Bothasig Fynbos 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 take place.

Potential human impacts should be avoided through correct planning and maintenance of infrastructure. Areas that had been previously 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 Bothasig Fynbos Nature Reserve involves 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 geographic information systems (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

5.3.1.3 Invasive-species management

The management of invasive species is a priority in Bothasig Fynbos Nature Reserve. It is vital to control and, where possible, eliminate invasive-alien species in order to facilitate the re-establishment of natural biodiversity and processes in invaded areas.

Invasive-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, including Working for Water and Working for Wetlands. Invasive alien plant species could spread rapidly should management fail to implement a properly planned and coordinated programme.

Until recently, invasive alien species management had emphasised woody alien plant species, such as *Acacia saligna* (Port Jackson), *Leptospermum laevigatum* (Australian Myrtle) and *Acacia Cyclops* (Rooikrans). Herbaceous weeds had been largely ignored. However, aggressive management of *Pennisetum clandestinum* (Kikuyu) and *Vicia* spp. will commence shortly. Recent monitoring of herbaceous weed and grass species for the reserve has also shown that some herbaceous species already pose a risk to biodiversity in the area, while others have the potential to become one.

To protect indigenous species from invasive aliens, the following is required:

- Prioritisation of areas for alien removal, focusing on biodiversity restoration
- The implementation of the invasive-species management plan concentrating on priority species

Invasive and alien faunal species are also eradicated in the reserve. Formal plans outlining the monitoring of the removal of identified species are required.

5.3.1.4 Species introductions

The re-introduction of species that were historically indigenous to Bothasig Fynbos Nature Reserve, and for which suitable habitat and eco-niches are available, will be assessed in the near future. Future introductions may include small antelope, amphibians and reptiles.

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 potential dangerous and problematic species may also require a public participation process. An investigation of suitable sources is also necessary.

All proposed re-introductions need to be recommended and approved by the faunal management committee of the Biodiversity Management Branch as well as CapeNature before implementation. The implementation of any re-introduction programme must be specified in a plan of action, and documented accurately.

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

5.3.2 Community participation

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

Through the development of a Biodiversity Management Branch education plan, Bothasig Fynbos 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, with the support of 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. Also, 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.

5.3.3 Infrastructure management

In the conservation area, infrastructure such as fencing and pathways is essential for effective management as well as for use by visitors. Through regular maintenance of fences, paths and parking areas as well as any other relevant infrastructure, any negative impact on the environment or on the experience of the visitors needs to be eliminated.

5.3.4 Strategic research

Research subjects beneficial to the management of Bothasig Fynbos Nature Reserve need to be identified and prioritised. Although research is currently undertaken in Bothasig Fynbos Nature Reserve, and is supported by management, many of the projects are conducted by outside student researchers and organisations, and are therefore not informed by the reserve's needs.

5.4 Sensitivity analysis of Bothasig Fynbos Nature Reserve

No formal sensitivity analysis has been completed for Bothasig Fynbos Nature Reserve. However, the analysis will be similar to that done for Tygerberg Nature Reserve.

The reserve is a considerable asset to the City of Cape Town, and significantly contributes to national vegetation 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 the 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 Bothasig Fynbos 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]).

5.5 Zoning plan of Bothasig Fynbos Nature Reserve

5.5.1 Zoning

The zoning for Bothasig Fynbos Nature Reserve will be intended for conservation and low-intensity leisure usage (see appendix 8).

5.5.1.1 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 will likely be subject to very tight conservation controls (potentially including complete exclusion of human impacts from an area).

Underlying decision-making rules used in the zoning process

- 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.

5.5.1.2 Zoning definitions and descriptions

The zoning definitions and descriptions were workshopped with regional and area managers. Four categories were decided on, namely primary conservation zone, conservation zone, low-intensity leisure zone and high-intensity leisure zone. Please see appendix 8, which outlines the proposed zoning and zone descriptions.

6. DEVELOPMENT PLAN

Bothasig Fynbos Nature Reserve is still in the developmental stages, and a development plan still needs to be completed.

7. COSTING PLAN

The following costing plan is based on Tygerberg Nature Reserve receiving 25% of the entire central district budget. The budget below is not a true reflection of costs, but merely a guideline.

This costing plan details the broad-category breakdown for management interventions for Tygerberg Nature Reserve for the period 2011–2016, as Bothasig Fynbos Nature Reserve itself has no allocated budget:

Table 4: Costing plan

Management action	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 alien species 1 and 2	Invasive alien species funding					
2. Fire management • Maintenance of fire belts • Planned ecological burn	Head office operating	R77 000,00	R80 850,00	R84 892,50	R89 137,13	R93 593,98
3. Repairs and maintenance	Operating	R31 052,11	R32 604,71	R34 234,95	R35 946,69	R37 744,02
4. Fencing	Capital expenditure					
5. Infrastructure development	Capital reserve fund					
6. Human resources • Salaries, wages • Employee-related costs • Employee costs	Operating	R963 090,78 R216 648,58 R1 179 739,36	R1 040 138,00 R233 980,46 R1 274 118,40	R1 123 349,00 R252 698,89 R1 376 047,80	R1 213 216,90 R272 914,80 R1 486 131,60	R1 310 274,20 R294 747,98 R1 605 022,10
7. General expenses • General operating costs • Other materials • Contracted services	Operating	R213 349,84 R20 694,62 R6 574,87	R224 017,33 R20 729,35 R6 903,61	R235 218,19 R21 765,17 R7 248,79	R246 979,09 R22 853,46 R7 611,23	R259 328,04 R23 996,13 R7 991,79
8. Special projects	Capital expenditure					
Note: Human resources costs are escalated at 8% per annum. Operating expenditure is escalated at 5% per annum.						

PART 3

8. MONITORING & AUDITING

8.1 Annual audit procedure

Annual audit procedures for Bothasig Fynbos Nature Reserve will commence in 2011. Two auditing systems will be used, namely Management Effectiveness Tracking Tool South Africa (METT-SA), which was initiated in 2007 and is done every three years, and a protected-area review, which is done annually. Bothasig Fynbos Nature Reserve has not had a METT-SA done yet, as the reserve was not managed by the Biodiversity Management Branch in 2007.

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's system (second edition 2007). The system is based on the idea that good protected area management follows a process that has 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. As Bothasig Nature Reserve is a new reserve no METT audit of the site has been completed to date. It is anticipated that the first METT-SA assessment will be conducted in approximately September 2011.

8.1.2 Protected-area review

The protected-area review is an internal review conducted annually to assist managers in reviewing their sites, and to allow for adaptive management actions to take place 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 IRMP make a meaningful contribution to the management of Bothasig Fynbos 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

Biodiversity monitoring is essential, as this is a vital tool for managers to ascertain what biodiversity exists in their reserves, and how best to manage ecosystems. Management actions can be implemented as a result of data obtained from monitoring.

Table 5: Biodiversity monitoring

Action	Responsible party	Means of verification	Frequency
Biodiversity database Records of fauna and flora in order to update species lists	Reserve staff, students and manager	Monthly database entries	Monthly
Vegetation monitoring			
Invasive alien plant species	Roving team, 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	Reserve Manager, students and Interns	Final inspections Field verification sheets	Once-off – completion of contract Annually – to determine management unit clearing plan
Fire mapping 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.	Roving team, reserve staff Reserve Manager, students and interns	Veld age map, fire map Stratified sampling plots	Post-fire
Post-fire recruitment			Post-fire
	Roving team, reserve staff	Fixed-point photography	Six months
	Reserve Manager, students and interns	Presence, abundance and density	12 months
Abundance, density and structure		Field observation sheet	Annually for three years

Threatened species	Roving team, reserve staff Reserve manager, students and interns Roving team, reserve staff Reserve manager, students and interns		Annually Seasonally
Faunal monitoring Nocturnal species counts Bird diversity Bird distribution Small mammals Fauna distribution	Roving team, reserve staff Reserve manager, students and interns Roving team Reserve staff Reserve manager, students and interns Tygerberg Bird Club Roving team, reserve staff Reserve manager, students, interns and field staff Roving team Reserve staff Reserve manager, students, interns and field staff	Modified vehicle line transect Field observations Bird ringing Stratified random Sherman trap array Motion-activated camera trapping	Monthly Weekly Monthly Seasonally Monthly
Water monitoring Rainfall Wetland monitoring	Roving team, reserve staff Reserve manager, students, interns Roving team, reserve staff Reserve manager, students, interns	Field collection equipment	Daily Quarterly

PART 4

REFERENCES

9. REFERENCES

Anon 2003[1]. The Integrated Metropolitan Environmental Policy. Unpublished report, City of Cape Town.

Anon 2003[2]. The Biodiversity Strategy. Unpublished report, City of Cape Town.

Anon 2009[1]. Local Biodiversity Strategy and Action Plan 2009–2019. Unpublished report, City of Cape Town.

Anon 2009[2]. City of Cape Town Biodiversity Network – Analysis: 2009 Methods and Results. Unpublished report, City of Cape Town.

Anon 2010. City of Cape Town, Five-year Plan for Cape Town, Integrated Development Plan (IDP) 2007–2012, 2010–2011 Review. Unpublished report, City of Cape Town.

Cape Project Team 2000. Cape Action Plan for the Environment: Strategy. Unpublished report, WWF (South Africa).

Driver, A., Maze, K., Lombard, A.T., Nel, J., Rouget, M., Turpie, J.K., Cowling, R.M., Desmet, P., Goodman, P., Harris, J., Jonas, Z., Reyers, B., Sink, K. & Strauss, T. 2004. *South African National Spatial Biodiversity Assessment 2004:* Pretoria: South African National Biodiversity Institute

Holmes, P., Wood, J., Dorse, C. 2008. City of Cape Town Biodiversity Report. Unpublished report, City of Cape Town.

Holness, 2005. Sensitivity Value Analysis Manual. A decision support tool, operating on the principles of systematic conservation planning, for integrating best available biodiversity knowledge into spatial planning within national parks. SANParks internal report.

Holness, S. & Skowno, A. 2008. Report on Sensitivity-Value Analysis and Zonation Process for the Boland Mountain Complex. CapeNature Conservation internal report.

Myers, N., Mittermeyer, R.A.C.G., Fonseca, G.A. & Kent, J. 2000. Biodiversity hotspots for conservation priorities. Nature 403:853–858.

Rebelo, A.G., Boucher, C., Helme, N.A., Mucina L. & Rutherford, M.C. 2006. Fynbos biome. In: Mucina, L. & Rutherford, M.C. (eds). The Vegetation of South Africa, Lesotho and Swaziland: Strelitzia, 19, pp. 52–219.

SRK Consulting. 2008[1]. Final Conservation Development Framework for Settlers Park Nature Reserve. Nelson Mandela Bay Municipality. Internal report.

SRK Consulting. 2008[2]. Final Conservation Development Framework for Van Stadens Wildflower Nature Reserve. Nelson Mandela Bay Municipality. Internal report.

Websites -

IDP

http://www.capetown.gov.za/IDP

IMEP

http://www.capetown.gov.za/en/EnvironmentalResourceManagement/publications

C.A.P.E

Please note that this is not a City-hosted website.

http://www.capeaction.org.za

Cityweb

http://Cityweb.capetown.gov.za

Bionet

CCT Biodiversity Network Analysis:

http://www.capetown.gov.za/en/EnvironmentalResourceManagement/publications

Wetlands work (if this is to long use Publications)

Prioritisation of City Wetlands Report:

http://www.capetown.gov.za/en/EnvironmentalResourceManagement/publications

Nature Reserve Booklet

www.capetown.gov.za/naturereserves

LBSAP

http://www.capetown.gov.za/en/EnvironmentalResourceManagement/publications

PART 5

10. APPENDICES

A. Charts and Tables

Appendix 1: Rainfall Table

Rainfall-Welgemoed	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
year	mm												
2004	7.2	0	9.4	67.2	0	0	58.9	108.1	13.1	119.1	5	8	**396mm**
2005	34.1	7	13.6	100.7	45.8	132.6	66.6	110.1	54	22.9	16	0	**603.4mm**
2006	0	12.4	5.6	36.6	143.10	47.5	101.9	62	33.5	54	34.5	33.5	**564.66mm**
2007	8.5	48	33	91	146	160	147.5	144.5	46	44	54.5	34	**957mm**
2008	19	23	9	31.5	112	118	211	113	222	16	56.5	13	**944 mm**
2009	1.5	17.	6	39	131	166.5	98	114.5	109	59	130	6	**878mm**
2010	1.5	12.5	9.5	19	152	136	58	77	19	51.5	39	14	**589mm**

B. Legal Agreements

Appendix 2: Surveyor General (SG) diagrams

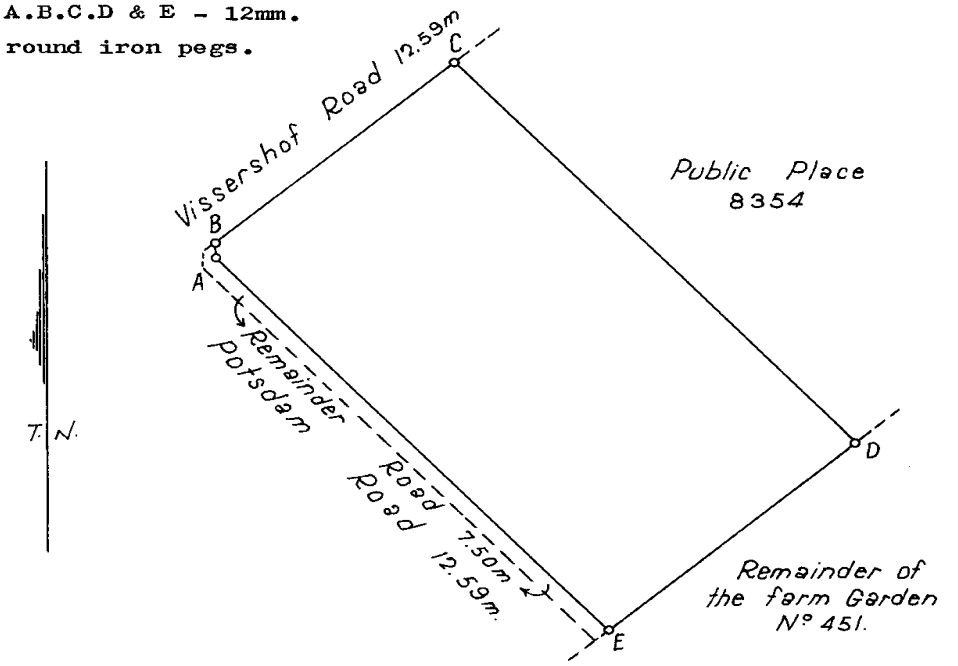
DE VILLIERS & REID
Land Surveyors, Cape Town

OFFICE COPY

SIDES Metres		ANGLES OF DIRECTION	CO-ORDINATES Y System Lo 19° X		
		Constant	+ 41 000,00	+ 3 747 000,00	
AB	7,07	183.36.00	A	+ 578,87	+ 935,99
BC	129,19	228.36.00	B	+ 578,43	+ 928,93
CD	244,33	318.36.00	C	+ 481,53	+ 843,50
DE	134,19	48.36.00	D	+ 319,95	+ 1 026,77
EA	239,33	138.36.00	E	+ 420,60	+ 1 115,51
	(30)	Tygerberg	▲	- 2 987,01	+ 213,12
	(386)	Welgemoed New	▲	- 3 641,31	+ 2 625,29

S.G. No.
7547/1975
Approved
for Surveyor-General
7-12-1975

BEACONS:
A.B.C.D & E - 12mm.
round iron pegs.



Scale: 1/2500

The figure A. B. C. D. E
represents 3,2774 Hectares of land, being situate
ERF 10670 Portion of Erf 7794 MILNERTON
in Bothasig Township Extension No. 1
~~situate~~ in the Municipality of Milnerton,
Administrative District of Cape, Province of Cape of Good Hope.
Surveyed in Sept.1967-Oct.1975
by ~~me~~, us, Land Surveyors

This diagram is annexed to	The original diagram is	File No. S.16404/1
No.		S.R. No. E.2094/75
dated	No. 7546/1975 annexed to	Comp. BH 8 AC/Y33(3268)
i.f.o.	Transfer/Grant	Gen.Plan T.P. 7858
	No.	(Sheet 5)
Registrar of Deeds		

Artcraft, C.T.

C. Species Checklists

Appendix 3: Plants

VU – Vulnerable

NT – Near threatened

DDT- Data Deficient Taxa

EN - Endangered

	FAMILY	GENUS	SPECIES
1	AIZOACEAE	Dorotheanthus	cf bellidiformis
2	AIZOACEAE	Lampranthus	bicolour[**VU**]
3	AIZOACEAE	Lampranthus	reptans [**NT**]
4	AIZOACEAE	Ruschia	macowanii
5	APIACEAE	Centella	sp
6	APIACEAE	Centella	trifurcata
7	ASPHODELACEAE	Trachyandra	ciliate
8	ASPHODELACEAE	Trachyandra	sp
9	ASTERACEAE	Arctotheca	calendula
10	ASTERACEAE	Dimorphotheca	pluvialis
11	ASTERACEAE	Gymnodiscus	capillaries
12	ASTERACEAE	Helichrysum	cf indicum
13	ASTERACEAE	Metalasia	muricata
14	ASTERACEAE	Metalasia	muricata
15	ASTERACEAE	Osteospermum	clandestinum
16	ASTERACEAE	Osteospermum	moniliferum
17	ASTERACEAE	Othonna	filicaulis
18	ASTERACEAE	Plecostachys	serpyllifolia
19	ASTERACEAE	Senecio	burchelli
20	ASTERACEAE	Stoebe	plumose
21	ASTERACEAE	Trichogyne	cf ambigua
22	ASTERACEAE	Ursinia	anthemoides
23	BRASSICACEAE	Heliophila	sp
24	CAMPANULACEAE	Microcodon	sp
25	CAMPANULACEAE	Prismatocarpus	fruticosus
26	CAMPANULACEAE	Roella	ciliata

27	CAMPANULACEAE	Wahlenbergia	capensis
28	CAMPANULACEAE	Wahlenbergia	longifolia
29	COLCHICACEAE	Wurmbea	sp
30	CYPERACEAE	Ficinia	sp
31	ERICACEAE	Erica	mammosa
32	FABACEAE	Aspalathus	albens [**VU**]
33	FABACEAE	Aspalathus	microphylla
34	FABACEAE	Aspalathus	quinquefolia subsp quinquefolia
35	FABACEAE	Aspalathus	ternate [**VU**]
36	FABACEAE	Lebeckia	contaminate [**DDT**]
37	FABACEAE	Lebeckia	plukenetiana [**EN**]
38	GERANIACEAE	Pelargonim	capitatum
39	GERANIACEAE	Pelargonium	elongatum
40	GERANIACEAE	Pelargonium	myrrhifolium
41	GERANIACEAE	Pelargonium	triste
42	HAEMODORACEAE	Wachendorfia	cf paniculata
43	HEMEROCALLIDACEAE	Caesia	contorta
44	HYACINTHACEAE	Albuca	spiralis
45	HYACINTHACEAE	Albuca	spiralis
46	HYACINTHACEAE	Albuca	canadensis
47	IRIDACEAE	Aristea	cf africanum
48	IRIDACEAE	Aristea	dichotoma
49	IRIDACEAE	Gladiolus	alatus
50	IRIDACEAE	Gladiolus	carinatus
51	IRIDACEAE	Lapeirousia	anceps
52	IRIDACEAE	Lapeirousia	anceps
53	IRIDACEAE	Micranthus	junceus
54	IRIDACEAE	Moraea	angusta
55	IRIDACEAE	Moraea	cf viscaria
56	IRIDACEAE	Moraea	flaccida
57	IRIDACEAE	Moraea	fugax
58	IRIDACEAE	Moraea	lewisiae

59	IRIDACEAE	Moraea	inconspicua
60	IRIDACEAE	Romulea	rosea
61	IRIDACEAE	Sparaxis	bulbifera
62	JUNCAGINACEAE	Triglochin	bulbosa
63	LOBELIACEAE	Lobelia	coronopifolia
64	LOBELIACEAE	Monopsis	lutea
65	MALVACEAE	Hermannia	cf multiflora
66	ORCHIDACEAE	Corycium	orobanchoides
67	ORCHIDACEAE	Holotrix	cf villosa
68	ORCHIDACEAE	Satyrium	odorum
69	ORCHIDACEAE	Sparaxis	bulbifera
70	OXALIDACEAE	Oxalis	luteola
71	OXALIDACEAE	Oxalis	obtuse
72	OXALIDACEAE	Oxalis	pes-caprae
73	OXALIDACEAE	Oxalis	purpurea
74	RESTIONACEAE	Thamnochortus	sp
75	RHAMNACEAE	Phylica	cephalanta
76	RHAMNACEAE	Phylica	thunbergiana [**EN**]
77	RHAMNACEAE	Trichocephalus	stipularis
78	ROSACEAE	Cliffortia	falcata
79	ROSACEAE	Cliffortia	filifola
80	ROSACEAE	Cliffortia	juniperina
81	RUTACEAE	Diosma	oppositifolia
82	SANTALACEAE	Thesium	funale
83	SANTALACEAE	Thesium	sp
84	SCROPHULARIACEAE	Diascia	sp
85	SCROPHULARIACEAE	Hebenstretia	sp
86	SCROPHULARIACEAE	Hebenstretia	sp
87	THYMELAEACEAE	Gnidia	juniperifolia
88	THYMELAEACEAE	Passerina	corymbosa
89	THYMELAEACEAE	Struthiola	cf ciliata
90		Typha	capensis

Appendix 4: Mammals

Number	Family	Genus	Species	Common name
1	Chrysochloridae	Chrysochloris	asiatica	Golden Mole
2	Bathyergidae	Bathyergus	suillus	Cape Dune mole rat

Appendix 5: Birds

Number	Family	Genus	Species	Common name
1	Collidae	Urocolius	indicus	Redfaced Mousebird
2	Fringillidae	Serinus	canicollis	Cape Canary
3	Ardeidae	Ardea	melanocephala	Blackheaded Heron
4	Zosteropidae	Zosterops	pallidus	Cape White-eye

Appendix 6: Reptiles

Number	Family	Genus	Species	Common name
1	Scincidae	Trachylepis	capensis	Cape Skink
2	Colubridae	Pseudaspis	cana	Mole Snake

Appendix 7: Invertebrates

Number	Family	Genus	Species	Common name
1	Nymphalidae subfamily Satyrinae	Pseudonympha	magus	Silver bottom brown butterfly
2	Nymphalidae Subfamily Nymphalinae	Vanessa	cardui	Painted lady butterfly
3				Redveined dropwing butterfly
4				Damselfly

D. Other documents as required :

Appendix 8: Visitor Use Zoning - Desired State* & Experiential Qualities

Table 11: 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.	
	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
Outdoor Natural Experience Activities tend to be at precinct level	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.