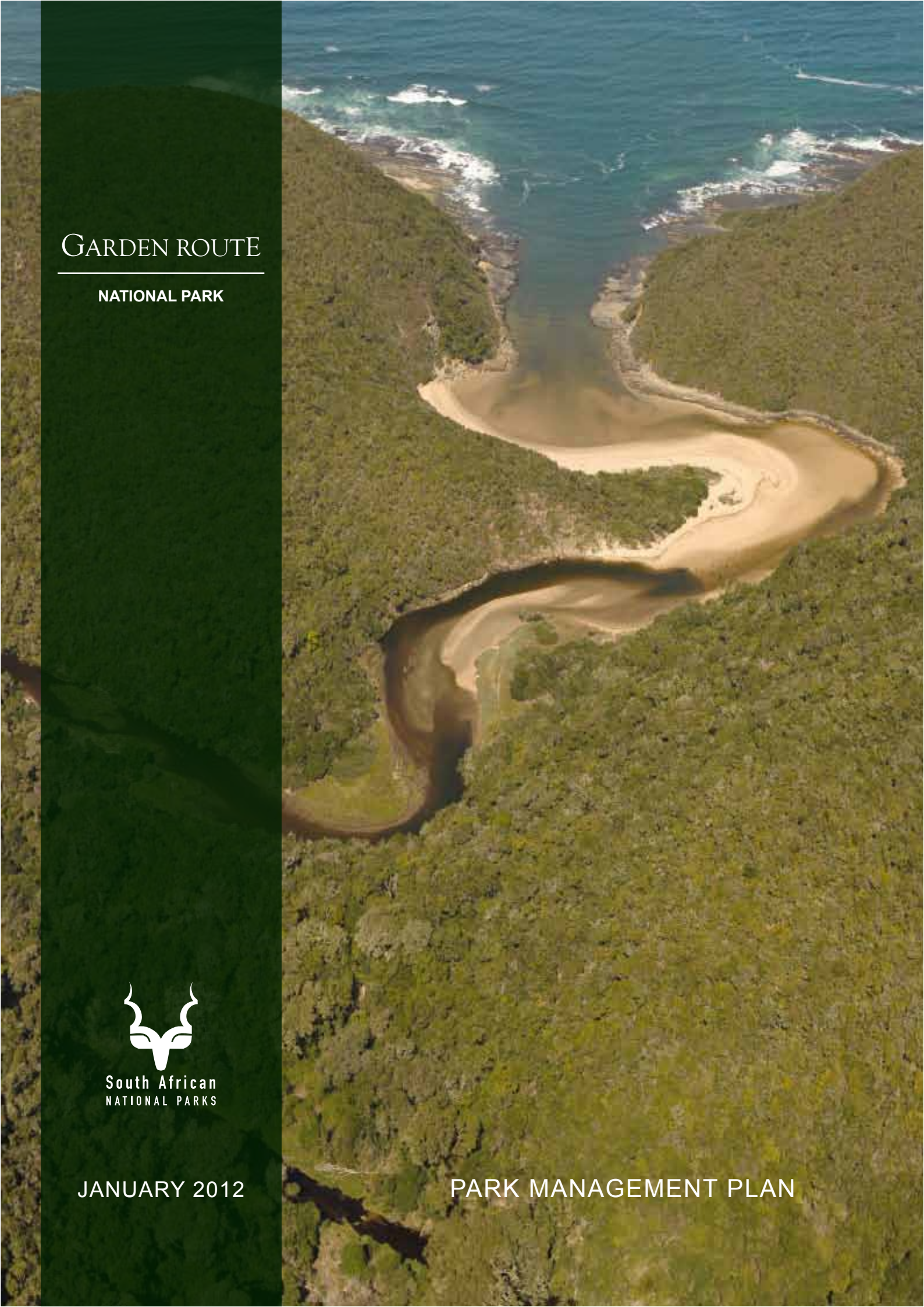
GARDEN ROUTE

NATIONAL PARK



South African
NATIONAL PARKS

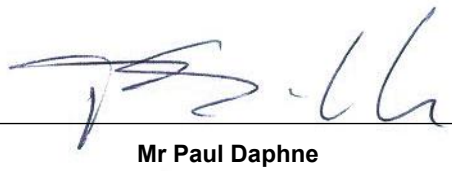
JANUARY 2012

PARK MANAGEMENT PLAN

AUTHORISATION

This management plan is hereby internally accepted and authorised as the legal requirement for managing Garden Route National Park as stated in the Protected Areas Act.

Jill Bunding-Venter
General Manager: Garden Route National Park



Mr Paul Daphne
Managing Executive: Parks

Dr David Mabunda
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Minister E Molewa
Minister: Department of Water and Environment Affairs

27 November 2012

Date:

PREAMBLE

This document serves the first single-source reference to the management and development of the Garden Route National Park (GRNP) in its current and proposed future form. By “single source” we imply that the full spectrum of interested parties and stakeholder groups will be able to find relevant information relating to the background, salient biophysical features, vision and desired state, and management and development programmes at the strategic level as well as the operational level where these are already available. This further implies that any reader may refer to the whole document, or only certain sections of interest.

The National Environment Management Act: Protected Areas (NEMA: PAA, Act 57 of 2003) contains the following set of requirements for Protected Area Management Plans. Section 41 states that:

41 *(1) The object of a management plan is to ensure the protection, conservation and management of the protected area concerned in a manner which is consistent with the objectives of this Act and for the purpose it was declared.*

(2) A management plan must contain at least—

(a) the terms and conditions of any applicable biodiversity management plan;

(b) a coordinated policy framework;

(c) such planning measures, controls and performance criteria as may be prescribed;

(d) a programme for the implementation of the plan and its costing;

(e) procedures for public participation, including participation by the owner (if applicable), any local community or other interested party;

(f) where appropriate, the implementation of community-based natural resource
management; and

(g) a zoning of the area indicating what activities may take place in different sections of the area, and the conservation objectives of those sections.

(3) A management plan may contain—

(a) development of economic opportunities within and adjacent to the protected area in terms of the integrated development plan framework;

(b) development of local management capacity and knowledge exchange;

(c) financial and other support to ensure effective administration and implementation of the co-management agreement; and

(d) any other relevant matter.

(4) Management plans may include subsidiary plans, and the Minister or MEC may approve the management plan or any subsidiary plan in whole or in part.

In compliance with the provisions of section 41 of the Act, management and development of the GRNP are located within the SANParks legislative and policy frameworks in **Part One**.

Part One (Chapter 1 and 2) further contains a summary of the relevant background information describing the salient biophysical and regional features, with further in-depth information to be found in the relevant appendices or source documents referred to. Given the importance of this new national park in conserving aquatic systems, threatened fynbos and a large tract of Afrotemperate forest, these components are described in some detail, providing justification for the management approach described in the various management programmes in Part Three..

In **Part Two** (Chapter 3), management policy, vision and threats are presented. These form the basis for the various management and development programmes, which are set out in Part Three.

In **Part Three** (Chapter 4), Park zonation is described and Management Programmes are presented. Each Programme contains a table with objectives, actions, indicators and responsibilities. A cost estimate is provided for each programme, based on a comprehensive Business Plan developed simultaneously with this Management Plan. Broad timeframes are presented but these need to be refined in the annual operational plans.

Monitoring and Evaluation are built into each Programme by the inclusion of verifiable indicators of progress. In addition, Area Managers will operationalise these Programmes and will annually report on progress per Programme within the context of the Balanced Scorecard system implemented by SANParks, (this Management Plan was formulated with reference to current Key Performance Areas, objectives and actions articulated in the Balanced Scorecard for the GRNP).

Detailed Appendices contain further background information, including details of Proclamation, Vegetation, Fauna, Hydrological Processes, Fire Management, Estuarine Management. A Marine Management Plan is being finalised at the time of production of this Management Plan.

Further, a comprehensive activity-based Business Plan, developed in conjunction with this Management Plan, with costing derived from the Actions described in each Programme in Part Three, provides details of the costs of implementing the Management Plan.

In essence, this document therefore describes the "WHAT" of management and development. By reference to relevant legislation and SANParks mandate and corporate objectives (including reference to the objectives and actions contained in the SANParks Balanced Scorecard for the GRNP), justification is provided for "WHY" certain actions are necessary. Indications of the "WHO" are provided by assigning responsibilities. In order to cascade these strategic considerations (WHAT, WHY and WHO) to an operational level, park management will produce an annual operational plan (APO) with refined budget estimates.

THE PROCESS

The document was produced by constituting a core planning team, including SANParks staff members and the appointed consultants.

A series of planning meetings and working sessions were held, during which park objectives and programme objectives were formulated or adopted from the existing Wilderness and Tstisikamma National Park plans. A dedicated zonation workshop was held, using the sensitivity-value analysis approach used by SANParks. Public meetings were held with stakeholders and interested parties. Use was also made of management plans from other national parks. A draft was produced incorporating inputs from these sources and processes. Feedback was assimilated.

ACKNOWLEDGEMENTS

The authors wish to thank all who contributed to the drafting and development of this Management Plan. Thanks also go to David Grossman, Phillipa Holden and Richard Davies for their assistance with the production of the plan.

Cover Photo: Andrew Brown

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LIST OF APPENDICES

ACRONYMS AND ABBREVIATIONS USED

AIP	Alien Invasive Plants
AM	Area Manager
ARC	Agricultural Research Council
BSC	Balanced Scorecard
CA	Cluster Adviser
C.A.P.E	Cape Action for People and the Environment
CARA	Conservation of Agricultural Resources Act
CBNRM	Community Based Natural Resource Management
CBOs	Community Based Organisations
CDF	Conservation Development Framework
CFR	Cape Floristic Region
CFK	Cape Floral Kingdom
CMAs	Catchment Management Authorities
CRM	Cultural Resource Management policy
DAFF	Department of Agriculture, Forestry and Fisheries
DEA	Department of Environmental Affairs
DEADP	Department of Environmental Affairs and Development Planning
DLA	Department of Land Affairs
DPLG	Department of Provincial and Local Government
DWA	Department of Water Affairs
DEA	Department of Water and Environment Affairs
EIA	Environmental Impact Assessment
EIP	Environmental Integrated Plan
EMP	Environmental Management Plans/ Programme
EMS	Environmental Management System
EWT	Endangered Wildlife Trust
GGP	Gross Geographic Product
GIS	Geographical Information System
GM	General Manager
GRI	Garden Route Initiative
iCAN	Integrated Conservation Area Network
IAS	Invasive Alien Species
IDP	Integrated Development Plan
IEM	Integrated Environmental Management
ISO	International Organization for Standardization
ISCU	Invasive Species Control Unit
IUCN	International Union for Conservation of Nature
OC	Oceans and Coast
MPA	Marine Protected Area
MTEF	Medium Term Expenditure Framework
NBSAP	National Biodiversity Strategy and Action Plan
NCA	National Conservation Assessment
NEMA	National Environmental Management Act
NGO	Non-Governmental Organisation
NHP	National Heritage Programme
NLC	National Land Cover
NSDS	National Sustainable Development Strategy
NSIF	National Spatial Infrastructure Forum
NSSD	National Strategy for Sustainable Development
NEM:PAA	National Environmental Management: Protected Areas Act,57 of 2003
PFM	Participatory Forest Management
PFMA	Public Finance Management Act
PIM	Planning and Implementation Manager
SABIF	South African Biodiversity Information Facility
SAHRA	South African Heritage Resources Agency
SANBI	South African National Biodiversity Institute
SANParks	South African National Parks
SBR	State of Biodiversity Report
SCH	Senility Criteria Harvesting
SDF	Spatial Development Framework
SDIs	Spatial Development Initiative
SEA	Strategic Environmental Assessment
SMME	Small, medium and micro enterprises
SOE	State of Environment
SOER	State of Environment Reports
SS	Scientific Services (SANParks)
SSA	Statistics South Africa
TOR	Terms of Reference
TPC	Threshold of Potential Concern
UNESCO	United Nations Educational, Scientific and Cultural Organization
WESSA	Wildlife and Environment Society of South Africa
WfW	Working for Water
WG1	Working Group on Biodiversity and Conservation
WWF	World Wildlife Fund

1. INTRODUCTION

1.1 LOCATION AND EXTENT

The Garden Route National Park (GRNP) can be described as a complex of protected areas managed as a single entity. The GRNP includes the previously proclaimed Tsitsikamma and Wilderness NPs, state forests and mountain catchment areas, as well as the Knysna National Lake Area. The latter is managed as a Protected Environment (with promulgated regulations). In this document all the protected areas will be collectively referred to as the Garden Route National Park. For management purposes the GRNP is divided into three distinct sections:

- The Wilderness Section that includes the Wilderness National Park and former Farleigh Forest Estate, as well as the Outeniqua Mountain Catchments
- The Knysna Section that includes the Knysna National Lake Area and the former Diepwalle Forest Estate.
- The Tsitsikamma Section that includes the Tsitsikamma National Park, the former Tsitsikamma Forest Estate, as well as the Tsitsikamma Mountain Catchments.

1.2 HISTORY

Prior to the arrival of the first European settlers in the southern Cape the area was inhabited by semi-nomadic hunter-gatherers who lived off the land. Their main impact on the landscape was probably the use of fire for hunting, which contributed to the fragmentation and location pattern of the forests.

By 1711, the occurrence of large tracts of forest in ‘Outeniqualand’ had been reported to the Cape administration. However, these forests remained largely inaccessible for the following 60 years. A woodcutter’s post was established near the present-day town of George in 1776, from where timber was transported overland to Cape Town. Reckless forest destruction was already taking place when the area was visited by Governor Joachim van Plettenberg in 1778. He appointed Johann Meeding as resident at Plettenberg Bay to try and curb the rate of exploitation. Meeding built a timber shed and entered into a contract with the woodcutters to supply timber. No conservation measures were introduced, but there was a semblance of control. The first shipment of timber left Plettenberg Bay for Cape Town in 1788. The town of George was founded in 1811. The timber market was boosted and forest destruction continued to accelerate. The forest began to be exploited for the British Royal Navy in 1812 and, in spite of the dangerous passage through The Heads, a port was developed at Knysna for the transportation of timber. There was an increase in the demand for timber for the construction of wagons when the Great Trek commenced in 1836. It was also at

this time that the Tsitsikamma forests were opened up for the first time.

In 1846 all worked-out forests were closed by the Government, divided up into lots and sold by public auction. The remaining forests were reserved as Crown forests and put under the control of local magistrates who were to issue felling licences. However, by 1847 forest destruction was so bad that all Crown forests were closed for harvesting. The first Conservator of Forests, L. Haswell, was appointed to protect the reserved forests. The Crown forests re-opened in 1856 because of the timber shortage. A second Conservator, Captain Christopher Harison, was appointed to protect the Tsitsikamma forests. The "Great Fire" of 1869, which stretched from Humansdorp to Riversdale, caused considerable damage in the region and spurred the Cape government to strengthen control over the forests. Captain Harison was appointed Conservator over the whole area in 1874, based in Knysna. An attempt was made to stem the tide of destruction, but public pressure and the increased demands for timber due to the diamond rush at Kimberley in the 1870's, the gold rush at Millwood during the 1870's and the gold rush in the Witwatersrand during the 1880's frustrated these efforts.

Professional French forest officer, Count M. de Vasselot de Regné, was appointed as Superintendent of Woods and Forests for the whole Cape Colony in 1880. He introduced the first real efforts towards conservation of the forests. The Forestry Department was developed and professional forestry officers were appointed who played important roles in the development of forest management in the region and rest of the country for decades to follow. The section system for controlling timber harvesting was introduced in 1884. The Cape Forest Act was passed in 1888, which made demarcated forest inalienable. This gave a greater degree of protection to the forests. The first timber plantations were established near Knysna so as to reduce the timber demand on the indigenous forests.

However, even under the section system forest destruction continued because the demand for timber made the woodcutters exceed the recommended volume to be removed. The registered woodcutter system was brought to an end in 1939 and an annuity was provided to the remaining woodcutters. The Department of Forestry closed the forests to all exploitation from 1940 to 1964 except for the cutting of dead and dying trees and the working of windfalls. The focus of the Department shifted to the establishment and management of plantations of exotic timber trees.

An indigenous forest research station was established at Saasveld, near George in 1964, under the leadership of Dr. Friedrich von Breitenbach. A system of multiple-use conservation management was developed and applied that formed the basis for the management system applied today. The selection system for timber yield regulation was introduced, based on basal area. This has subsequently been modified and improved upon.

After extensive negotiations between the National Parks Board and the then Secretary of the Department of Forestry and his Minister, the **Tsitsikamma Coastal and Forest National Parks** were proclaimed in 1964 (Knobel 1989, Robinson 1989) to establish South Africa's first marine protected area and conserve the associated coastal forests of the region. The size of the park has changed over the years, with the following proclamations:

1. The seaward boundary of the park between the Groot (east) - and the Bloukrans rivers was extended to three nautical miles offshore (Government Gazette No 8871, Notice 125, 3 September 1983).
2. De Vasselot Nature Reserve was added to the coastal park (Government Gazette No 11068, Notice No 2814 & 2815, 18 December 1987)
3. The small Tsitsikamma Forest National Park was deproclaimed in 1989 (Government Gazette 1989), and the name of the coastal park was shortened to the Tsitsikamma National Park (Government Gazette No 17298, Notice 1077, 28 June 1996).
4. In October 1991 a 30 year lease was signed with Rand Mines Properties Limited to contractually manage the Soetkraal area, and in 1997 Soetkraal was proclaimed a contractual park in terms of the National Parks Act, 1976 (Government Gazette No 17728, Notice 100. 17 January 1997, National Parks Act, 1976 (Act No. 57 of 1976).
5. The seaward boundary of the De Vasselot section was extended 0.5 nautical miles (0.9 km) offshore (Government Gazette No 17073, Notice 538, 4 April 1996), and in December 2000 the marine section of the park (excluding the above De Vasselot marine area) became the Tsitsikamma National Park Marine Protected Area (Government Gazette No. 21948, Notice 1429, 29 December 2000, Marine Living Resources Act 1998 (Act No. 18 of 1998).
6. In 1995 Erven 382, 444 and the Remainder of Erf 434, Nature's Valley were proclaimed as a contractual section of the park (Government Gazette No 16293, Notice 368, 10 March 1995), followed in 1996 by (Buitenverwachting) Portion 1 of Farm 299 and Portion 3 of the farm Matjies River 295 (Government Gazette No 16927, Notice 30, 19 January 1996)

The **Wilderness National Park** was proclaimed in 1983 to protect the unique lakes system of the area, with subsequent additions made in 1986 (Swartvlei System), 1987 (state lands in the Wilderness National Lake

Area), 1991 (Rondevlei and lands between Rondevlei and Swartvlei Lake), and 1997 (lower Duiwe River). The objective of the park was to conserve the Touw and Swartvlei Systems (collectively referred to as the Wilderness lakes) and associated historic and cultural assets and natural landscape features. Portions of the Touw System (Rondevlei, Langvlei, Eilandvlei, Serpentine) were designated in terms of the Convention on Wetlands (Ramsar Convention) as a Wetland of International Importance in 1991.

The Knysna National Lake Area was proclaimed in 1985 in order to protect the Knysna Estuary.

With respect to the **Former State Forests**, the former DWAF managed 41 538.6 ha of State Forest land in the southern Cape and Tsitsikamma. This land is scattered on the narrow coastal strip to the south of the Outeniqua and Tsitsikamma Mountain ranges, between George in the west and Kareedouw in the east, with a small area known as Loerie Nature Reserve occurring further east at Longmore Plantation near Hankey.

The area was managed from the Area Office in Knysna and is subdivided into three forest estates:

- **Farleigh Forest Estate** includes the areas between George and the Knysna River, consisting of the areas known as Groenkop, Bergplaas, Karatara and Goudveld. Farleigh now forms part of the Wilderness section of the GRNP (together with the former Wilderness National Park).
- **Diepwalle Forest Estate** lies between the Knysna River and Plettenberg Bay, consisting of Gouna, Ysternek Nature Reserve, Diepwalle, Fisantehoek and Harkerville (Diepwalle now forms part of the Knysna section of the GRNP (together with the Knysna National Lake Area).
- **Tsitsikamma Forest Estate**, with its office at the Storms River Village, comprises the areas to the east of Plettenberg Bay, viz. Whiskey Creek Nature Reserve, Bloukrans, Lottering, Storms River, Bluelilliesbush, Witelsbos and the Loerie Nature Reserve (Tsitsikamma Forest Estate now forms part of the Tsitsikamma section of the GRNP (together with the former Tsistsikamma National Park).

The Garden Route National Park was declared on 06 March 2009 (Government Notice 248 in Government Gazette No 13981). The Tsitsikamma National Park and Wilderness National Park were included into the Garden Route National Park on 11 February 2011 (Government Notice 95 in Government Gazette No 34017).

SANParks is responsible for the management of the GRNP, which includes the previously DWAF managed indigenous state forests and mountain catchment areas in the Outeniqua and Tsitsikamma Mountains, as well as the established Wilderness National Park, Tsitsikamma National Park, and the Knysna Protected Area (Knysna National Lake Area).

The full list of the above proclamations is included in Appendix H.

Figure 1a. Location and extent of the GRNP

1.3 LEGISLATIVE AND POLICY FRAMEWORK

Chapter 41 of the National Environmental Management Protected Areas Act 57 of 2003, requires that Management Plans be located within the context of a policy framework. SANParks policy is in turn formulated within the framework provided by national legislation. The GRNP, in common with all protected areas, is to be developed and managed within the framework of guiding statutes and policy frameworks.

- In this regard, relevant legislation includes:
- Constitution of the Republic of South Africa Act, No. 108 of 1996
- Constitution of the Western Cape Act, No 1 of 1998.
- National Environmental Management: Biodiversity Act, No. 10 of 2004
- National Environmental Management: Protected Areas Act, No. 57 of 2003
- National Veld and Forest Fire Act, No. 101 of 1998
- National Environmental Management Act, No. 107 of 1998
- Environment Conservation Act, No. 73 of 1989
- Marine Living Resources Act, No. 18 of 1998
- National Forests Act, No. 84 of 1998
- National Heritage Resources Act, No. 25 of 1999
- National Water Act, No. 36 of 1998
- World Heritage Convention Act, No. 49 of 1999
- Sea Birds and Seals Protection Act, No. 46 of 1973
- Occupational Health and Safety Act, No. 85 of 1993
- Labour Relations Act, 1995 Act, No. 66 of 1995
- Public Finance Management Act, No. 1 of 1999
- Disaster Management Act, No. 57 of 2002
- NEM Integrated Coastal Management Act, No 24 of 2008

The SANParks Coordinated Policy Framework provides the overall framework to which all Park Management Plans align. This policy sets out the ecological, economic, technological, social and political environments of national parks at the highest level. In accordance with the NEMPAA, the Coordinated Policy Framework is open to regular review by the public to ensure that it continues to reflect the organisation's mandate, current societal values and new scientific knowledge with respect to protected area management. This document is available on the SANParks website.

SANParks research may have multiple purposes (i.e. to explore, describe and explain) for understanding the ecological patterns and processes of the national parks it manages using a scientific approach. It is based on the premise that research does not always produce perfect knowledge.

SANParks research is governed by a set of professional norms and values;

- universalism – irrespective of who conducts research and regardless of which park it was conducted, the research is to be judged only on the basis of scientific merit.
- skepticism – each research is subjected to intense criticism and scrutiny.
- disinterestedness – researchers must be neutral, impartial, receptive and open to unexpected observations or new ideas
- communalism – knowledge gained from research must be shared with others within the limitations of intellectual property rights
- honesty – research demand honesty in interpretation and reporting.

The aim of the corporate policy on social science research is to develop, plan, implement, and oversee a social science research strategy, and programme, tailored to inform the fulfillment of SANParks' mandate, the realization of SANParks' full potential as well as the contribution of the Organisation in terms of playing an instrumental role in responding to national imperatives such as poverty reduction, job creation and promoting the value of conservation.

SANParks corporate level policy is reflected in the following (elements of which are highlighted in the Balanced Scorecard for the GRNP):

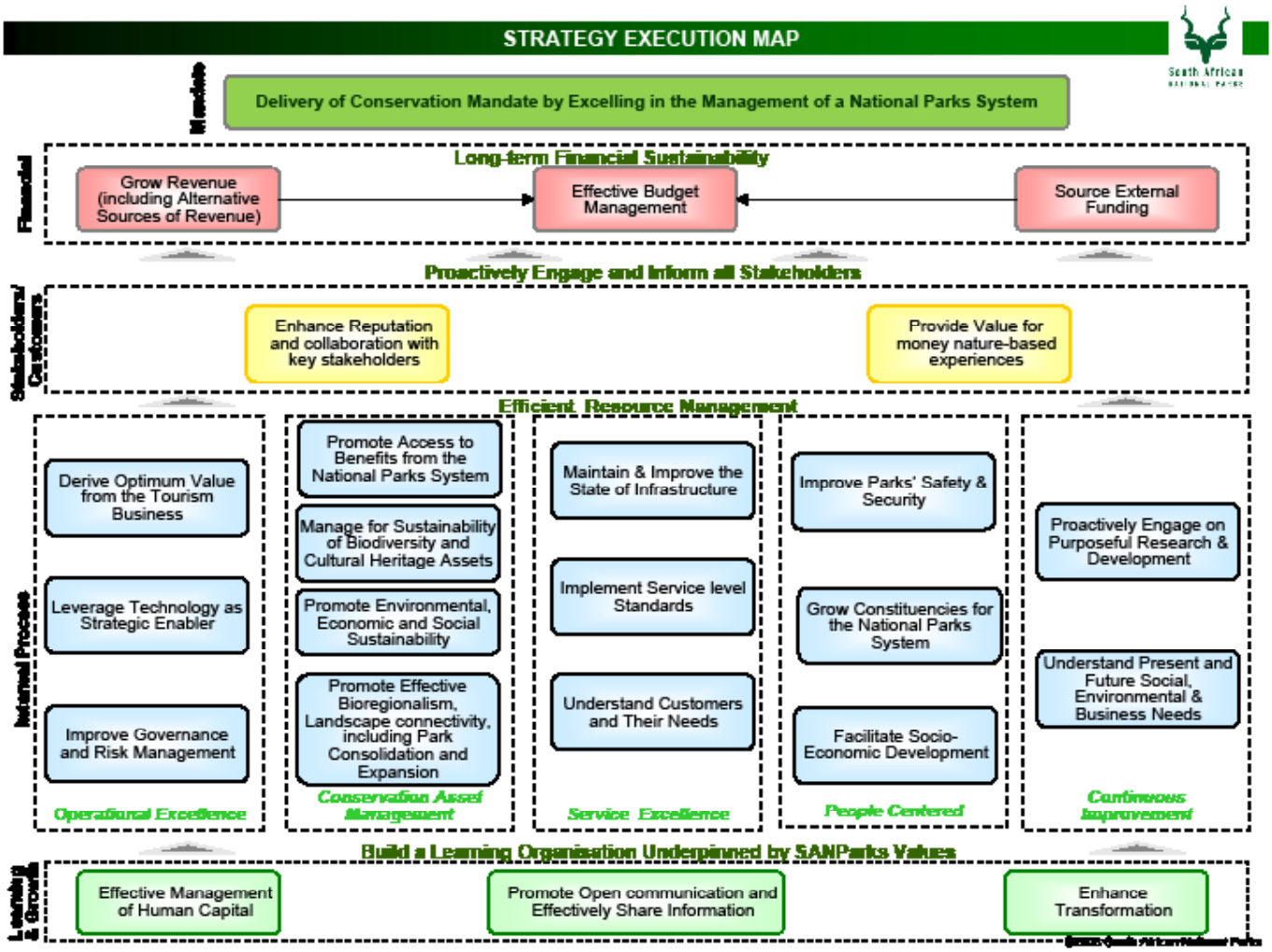

Figure 2. Strategy execution map for SANParks

1.4 BIOREGIONAL CONTEXT

The area, located in the coastal strip between the Outeniqua and Tsitsikamma mountains and the sea, contains the Garden Route National Park managed by SANParks; the Outeniqua, Keurbooms and Goukamma Nature Reserves, as well as the Brenton Blue Butterfly Special Nature Reserve, managed by CapeNature; the Formosa Nature Reserve, managed by East Cape Parks Board; as well as three marine protected area components, managed by CapeNature and SANParks. This area is subject to joint strategic planning by the conservation agencies involved, under the umbrella of the collaborative Garden Route Initiative (GRI), an initiative of the Cape Action for People and Environment (C.A.P.E.) programme.

The Wilderness section of the GRNP, with its unique saline systems, is one of the most integrated urban conservation areas in South Africa. Its borders are intertwined with residential estates (Wilderness, Kleinkrans and Sedgefield) and farmlands. Located between the town of George (16km) and Knysna (25km) in the heart of the Garden Route the area has seen a significant increase in residential development over the last five years.

The George municipality has a completed Integrated Development Plan (IDP) and currently a draft Spatial Development Framework (SDF). The Wilderness section of the GRNP is marked as a core conservation area. The Wilderness section of the GRNPs' tourism and local economic development projects are relevant to these local government plans. The Knysna municipality has a complete IDP and SDF, in which the existing parks are core conservation areas, and proposed inclusions are shown.

Collaboration also continues around the incorporation of expanded public works programmes (Working for the Coast, WfW and EPWP) into the IDP projects section of the plans.

The Tsitsikamma section of the GRNP is situated in a relatively rural area with no highly developed residential areas in close proximity. However, its' spectacular scenery and location have attracted developers of golf, sport and residential estates to its borders.

This section of the GRNP straddles the Eastern- and Western Cape border and falls within both the Koukamma Municipality (Cacadu District Municipality area, Eastern Cape Province) and the Bitou Local Municipality (Eden District Municipality, Western Cape Province). All three municipalities have both IDPs and SDFs in various stages of completion. Within the Koukamma IDP the sections on Integrated Environmental programme and the Environmental Sector Plan are applicable to the park and appropriate input has been provided by SANParks. Spatial information on

biodiversity has been provided to all the municipalities and engagement is ongoing regarding the integration of this information into the local government planning structures. Cacadu District Municipality also makes use of the STEP and EC Biodiversity Conservation Plan and an EMF is currently being undertaken for the east coast form Great Kei to Woody Cape. The Koukamma IDP notes the environment as a key economic driver. The completion of an Integrated Environmental Plan is seen as a priority for the following IDP review cycle.

In terms of the marine component, the Tsitsikamma Marine Protected Area (MPA) and the adjacent, marine area off the De Vasselot coast are the only truly marine areas of the Garden Route National Park (GRNP), because the seaward boundary of the Wilderness Area extends only to the high water mark and excludes the marine component.

The Tsitsikamma Marine Protected Area (MPA) is the oldest marine protected area in Africa (Robinson & De Graaff 1994). In 2000 the marine section east of the Groot River (west) was proclaimed as the Tsitsikamma Marine Protected Area, a Category 1 (or no-take) MPA (Government Gazette No. 21948, Notice 1429, 29 December 2000, Marine Living Resources Act 1998). The MPA includes approximately 61 km of rocky shorelines and 5 km of sandy beaches, extends between 0.5 and 3 nautical miles offshore and has a surface area of some 340 km². Although the shoreline is primarily rocky, the subtidal area of the park consists chiefly of soft bottom sediments (c. 79%) and dispersed gravel platforms and rocky reefs (c. 21%) (Flemming et al. 1986). The MPA protects four percent of rocky shoreline of the Agulhas Biogeographical region (Lombard et al. 2005). The adjacent 9 km long De Vasselot section, which was excluded from the MPA, is open to extractive resource use by the public in accordance with the Marine Living Resources Act (1998).

A Marine Management Plan is currently under preparation and will be incorporated into this Management Plan when completed and approved.

1.5 SOCIO-ECONOMIC CONTEXT

The Garden Route National Park serves an area between George in the Western Cape and Karreedouw in the Eastern Cape.

Communities within close proximity of the park, fall within two district municipalities (Eden and Cacadu) and four municipal areas:

1. The George Municipal area includes Kleinkrans, Kransvlei, Langvlei, Rondevlei, Wilderness, Wilderness Heights, Hoekwil and Touwsranten. The estimated population figure is 136,539. Main sources of income for communities surrounding the park are offered by the park (permanent positions in SANParks, Working for Water and Working for the Coast, learnerships and holiday jobs), domestic service, restaurants, hotels and B& B's, petrol stations and farms in the area. Others travel to and from George.
2. Knysna Municipality has jurisdiction over the areas between Sedgefield and Fisanthoek. The estimated population for Knysna is 65,051. The Knysna economy is based on a few main industries: Tourism, Education, Safety and Security, Health and other local services. Most people work in the town of Knysna - especially the more professional jobs.
3. The Bitou Municipality serves the Plettenberg Bay area including the rural communities of Harkerville, the Crags, Kurland, Natures Valley and Covie. The total population for the Plettenberg Bay area is 39,011. Competing land uses in this area range from industry and dairy farming to popular tourist destinations with golf courses and polo fields.
4. The Tsitsikamma and Langkloof areas fall within the Eastern Cape under the jurisdiction of the Koukamma Municipality. It is estimated that the current population is around 40,783. The Tsitsikamma economy is based on a few main industries: Tourism, Forestry and Dairy farming. The Langkloof is a 140km long valley renowned for its fruit production (apples). It includes six rural communities and two bigger villages (Joubertina and Karreedouw).

Statistics SA's 2007 Community Survey indicates a marked increase in population numbers for all the Garden Route municipal areas. Immigration from rural Eastern Cape communities is regarded as the main reason for this increase. At 49%, the dominant racial group is Coloured. The majority of the population is under the age of 30 years with slightly more females than males.

Statistics shows a major improvement in education levels across all the municipalities of the Garden Route, however it also shows Koukamma Municipal area as having the highest incidence of "no-schooling". Unemployment in the Garden Route has dropped from 17% in 2001 to 13% in 2007. Despite this and the official employment rate estimated at 57%, there are still high poverty rates with 30% of the population regarded as "Not Economically Active".

The local economic drivers, in terms of employment, shows a shift from the 2001 statistics that indicated Agriculture (including forestry) and Wholesale and Retail (including tourism related enterprises) as dominant. Agriculture currently occupies fifth place and has been replaced by "Unspecified" labour that contributes to 24% followed by Wholesale and Retail at 15%. Other dominant sectors include Construction (14%), Community Services (13%) and Manufacturing (12%).

2. BIOPHYSICAL DESCRIPTION

2.1 CLIMATE

Climate of the Southern Cape and Tsitsikamma is often referred to as moderate. Rain falls throughout the year, with a maximum in the autumn and spring months. Annual rainfall ranges between 500 to 1400 mm. The summers are warm (22-25oC) and winters mild (18-21 oC). Occasional bergwinds raise the temperatures to the upper 30oC. The mild weather can be attributed to among others, the influence of the warm Agulhas current.

The GRNP extends over roughly 150 kilometers east-west and 40 kilometers north-south. This area is large enough to show some variability in climate in both directions. In a north-south direction the altitude varies from 0 m a.s.l. to 1675 m.a.s.l. (Peak Formosa). The Outeniqua and Tsitsikamma mountain ranges influence the climate significantly (Kruger, 2004).

In summer South Africa has semi-permanent high-pressure cells (South Atlantic Anticyclone and South Indian Cyclone) in the adjacent oceans. The movement of these cells plays a dominant role in the circulation and climate of South Africa. In winter the high-pressure cells are displaced slightly to the west and north which makes the chances for convection and rain much lower than in summer. The northern movement of the westerly winds causes the cold fronts to reach the subcontinent, which bring the bulk of the rain to the southern parts of South Africa (Kruger, 2004).

The weather of the Southern Cape and Tsitsikamma is mainly shaped by a succession of east moving subtropical low-pressure cyclones interacting with subtropical high-pressure anti-cyclones lying over the oceans (Heydorn and Tinley in Scriba, 1984).

The Outeniqua and Tsitsikamma mountain ranges have a significant influence on the local climate by acting as a barrier to the inland penetration of the weather system and give rise to orographic precipitation.

Scriba (1984) describes three distinctive rainfall patterns that affect the GRNP area. The Tsitsikamma has a higher rainfall in spring, with September and October being the wettest months. The George area shows the months from September to March to have above average rainfall and the late autumn to winter months being relatively dry. The Knysna area reflects the previous areas with higher than average spring rainfall (September to November), and average figures for December to March and for May.

Tyson (in Scriba, 1984) describes rainfall fluctuations in the Southern Cape and Tsitsikama evident in three, ten and 30 year cycles. Kruger (2007) mentions that nationally variability in annual rainfall is lowest in the coastal belt from the south western Cape to the east Cape. The maximum annual rainfall can be in the order of 150% of the mean and the minimum annual rainfall as low as 60% of the mean.

Temperature in the GRNP is moderate. On rare occasions temperature may range into 40oC . In the rare event of snow or frost, temperatures can decrease to close to or below freezing. Scriba (1984) reports minimum and maximum temperatures for George as 1.3oC in July and 41.3oC in January.

Topography influences temperature over the north south gradient. The effect of altitude on air temperature is a drop of about 0.6oC for each 100 m rise. This can lead to a 10oC difference in temperature over this gradient. As the sea on the southern boundary of the park has a moderating effect on temperature, especially during the day when cool breezes from the sea will cool down the land temperature, this 10oC change may not always be apparent.

Bergwinds furthermore increase temperatures, mainly in spring, caused by strong sub-continental anti-cyclone (low pressure) systems moving from the west past the Southern Cape. Cold spells occur when strongly developed cold fronts are followed by a high pressure anti-cyclone which draws in cool polar air (Tinley in Scriba, 1984).

Daily average sunshine duration is 60% for the Southern Cape and Tsitsikamma area (Kruger, 2005) with little variation (60% for 11 months and 70% for July).

Wind is an important climatic aspect in the Southern Cape and Tsitsikamma. The south-western winds are associated with the rain patterns. The desiccating north-western bergwinds are caused by dry subsiding air moving off the interior plateau in response to strong coastward pressure gradients (Bond, 1981). These strong winds drive the fire patterns in the fynbos and thus the distribution of natural vegetation (forest and fynbos) on the landscape. Rain often follows bergwind. South-easterly winds are associated with fair weather.

Scriba (1984) describes the winter months as overall windy with northerly (bergwinds), and westerly winds dominating. Northerly winds are more evident in the Plettenberg Bay region than in Knysna. The summer months are characterized by fairly even westerly winds in the Knysna area and west to west-south-westerly winds are dominating in the Plettenberg Bay area (S.A.W.S.). Strong easterly winds blow in the Plettenberg Bay vicinity from September to March and is as common as the westerly winds. The summer months in the Knysna area are dominated by westerly winds although easterly wind occur often in these months. Mean wind speeds vary little monthly in Knysna and Plettenberg Bay.

2.2 TOPOGRAPHY, GEOLOGY AND SOILS

Rocks of the Cape Supergroup underlie most of the area, while Pre-Cape and Cretaceous rocks and unconsolidated deposits of recent age occupy smaller areas. The Pre-Cape rocks comprise the Maalgaten Granite to the west and east of George (including the Woodville - Beervlei area), separated by a variety of sedimentary and metamorphic rocks of the Kaaimans Formation that include phyllite, quartzite, grit, hornfels and schist (Saasveld and Karatara areas).

Strata of the pre-Cretaceous Table Mountain Group, which consists mainly of supermature quartz sandstones with subordinate shales, were subjected to severe north-south orientated compressive stresses. This produced the Cape Fold Belt with the more resistant strata, the Peninsula and Kouga Formations, forming the prominent east-west trending mountain ranges. The softer sandstones of the Tchando Formation and the shales of the Cedarberg and Baviaanskloof Formations have weathered to form the intermontane and platform valleys. The Bokkeveld Group is represented mainly by shales, mudstone and sandy sandstone of the Gydo Formation, which is found in a narrow strip parallel to the Tsitsikamma coastline through Nature's Valley. A second strip runs westwards from Keurboomstrand to form the edge of the plateau. These rocks are generally weathered to a considerable depth and outcrops occur only sporadically.

Cretaceous conglomerates of the Enon Formation crop out on the coastal plain at Mossel Bay, Knysna and Plettenberg Bay. Aeolian sands deposited during the Quaternary cover the coastal plateau between Knysna and Plettenberg Bay (including the Harkerville area). A narrow coastal strip of migrating and vegetation-settled dunes occur on the coastal lowlands.

See Figure 3 - geology map overleaf.

2.3 VEGETATION

Detailed descriptions of the vegetation are provided in Appendix H. Below are descriptions of the main features.

2.3.1 Freshwater and Estuarine

The area contains freshwater wetlands (as typified by the Knysna component of the Cape Lowland Freshwater Wetlands of Mucina and Rutherford (2005).

Three major categories of phytoplankton have been recorded in Swartvlei Lake viz. diatoms, flagellates and dinoflagellates (Robarts 1976) with the diatom *Coscinodiscus lineatus* the most abundant species. Other common diatom species include *Chaetoceras wighamii*, *Cocconus scutellum*, *Grammatophora oceanica*, *Grammatophora sepentia*, *Navicula pseudony*, *Raphoneis mirabunda*, *Raphoneis superba* and *Synedra tabulata* (Robarts 1973). Flagellates and dinoflagellates generally form a relatively minor part of the phytoplankton biota (Robarts 1973), though short-lived blooms do occasionally occur.

Thirty nine phytoplankton species have been identified by Korringa (1956) in Knysna Estuary. Phytoplankton biomass has never been investigated, though Day (1981) maintains that the clarity of the water in Knysna suggests that it is low.

Principal genera of epiphytic algae occurring in the Wilderness lakes include *Enteromorpha, Lyngbya, Cladophera, Percursaria, Cocconeis, Ectocarpus, Polysiphonia, Chondria* and *Hypnea* (Howard-Williams 1980; Howard-Williams & Liptrot 1980). The rocky banks at the

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Enteromorpha, Lyngbya, Cladophera, Percursaria, Cocconeis, Ectocarpus, Polysiphonia, Chondria and *Hypnea* (Howard-Williams 1980; Howard-Williams & Liptrot 1980). The rocky banks at the mouth of Knysna Estuary are colonised by a wide variety of attached algal macrophytes (Day 1981). Common species within the estuary include *Gelidium pristoides, Ulva lactuca, Enteromorpha* spp. *Chaetomorpha* spp. and *Zonaria tournefortii* (Day *et al*. 1952, Day 1967, Day 1981, Grindley 1976, Grindley & Eagle 1978, Grindley & Snow 1983).

Submerged macrophytes are widespread in the Wilderness lake systems and consist predominantly of pure and mixed stands of *Potamogeton pectinatus*, Charophyta and filamentous algae (Howard-Williams & Liptrot 1980, Weisser & Howard-Williams 1982, Whitfield *et al.* 1983) with *Ceratophylum demersum* (hornwort) having become widespread and abundant in several lakes during the 1990's. In the estuaries *Ruppia spirralis* and *Zostera capensis* predominate.

The Groot River (West) estuary is the largest and probably the only estuary in the Tsitsikamma region that has notable stands of submerged aquatic plants, with stands of *Ruppia maritima* and *R. spiralis* occurring in the creek west of "The Island" (Morant and Bickerton 1983).

Occurrence and distribution of emergent aquatic plants are given in Jacot-Guillarmod (1979, 1981, 1982), Weisser & Howard-Williams (1982), Whitfield *et al*. (1983) and Russell (2003).

The intertidal wetlands of the Knysna Estuary cover an area of 1000 ha (Maree 2000) extending landward of the mid-tide level. Fifty four plants species have been collected in Knysna saltmarshes, of which 27 occur exclusively in this habitat (Maree 2000).

In Groot River (West) estuary, the largest estuary in the Tsitsikamma region, wetland species such as *Mariscus thunbergii*, *Juncus kraussi* and *Phragmites australis* are found on the western bank, while *Samolus porosus* is abundant on the island and eastern bank (Morant and Bickerton 1983). Based on aquatic and semi-aquatic vegetation, this estuary had an intermediate botanical importance rating compared to 31 other estuaries in the Cape Province, while that of the Salt River estuary was low (Coetzee *et al*. 1997).

Truly emergent aquatic plants are a rarity in the Fynbos and Forest biomes. Common, however, is *Aponogeton distachyos* that is commonly found in slow running rivers or river pools in the forest. *Marsilea schelpeana* and *Prionium serratum* occurs on the Red Data List for plants

2.3.2 Terrestrial

The terrestrial vegetation includes fynbos and forest, with coastal vegetation, estuarine, and seashore. Indigenous forests cover 35 765.4 ha and occur from sea level to altitudes of 1 000 metres or more, but most of the high forest occurs on the coastal plateau and foothills of the mountains. Southern Afrotemperate forest is well represented in the network. More than half of the extent of these forests lies within the Garden Route National Park (Mucina and Rutherford 2006). The distribution of indigenous forest patches appears to be partly determined by recurrent, but sporadic and severe berg-wind fires (Geldenhuys 1987), and the forests are found on moist south facing slopes and in river gorges. A total of 465 plant species are known to occur in these forests. The fynbos areas are relatively small and are classified as mountain fynbos. An interesting feature of this area is the fynbos islands that are completely surrounded by indigenous forests.

Broad-scale classification and description of the vegetation of the region are provided by various authors (*viz*. Acocks 1988, Low & Rebelo 1996, Pierce 2003, Mucina & Rutherford 2006). In terms of terrestrial vegetation, ten national vegetation types, covering two biomes (forest and fynbos) as well as azonal coastal vegetation (Mucina & Rutherford 2006), are represented in the park. Approximately 1635 plant species, representing 688 genera and 198 families have been recorded for the park, including a number of red data species. Vegetation maps for the park and Garden Route domain, based on the classification by Mucina & Rutherford (2006) as well as the fine-scale vegetation classification for the Garden Route region conducted by Vlok *et al*. (2008), are shown below (Figures 4 and 5).

2.3.3 Coastal

This vegetation group is represented by Cape Seashore Vegetation along the coastal dunes and cliffs between Wilderness and Sedgefield, covering less than 1% of the park area. Important taxa include succulent shrubs such as *Tetragonia decumbens* and *Scaevola plumieri*, the low shrub *Hebenstretia cordata*, and the herbs *Gazania rigens*, *Senecio elegans*, as well as the succulent herb *Arctotheca populifolia* (Mucina & Rutherford 2006). Cape Seashore Vegetation has been classified as "Least threatened" owing to large areas represented in other coastal National Parks and nature reserves.

2.3.4 Marine

In terms of the marine vegetation, the coastline within the Tsitsikamma MPA provides a diverse habitat of exposed and sheltered reefs, with some 25% (or 211 species) of the seaweed flora of South Africa. It consists of 22 green-, 86 brown-and 103 red algal species, including

two previously undescribed species (Bolton and Stegenga 2002, Stegenga *et al. in lit.* 2002; Stegenga *et al.* 2000: 2001).

2.3.5 Red data and endemic plant species

A number of endemic and red data species have been recorded for the park. This for example, include *Mimetes splendidus*, *Acmadenia alternifolia* and *Erica aneimena*, all rated as endangered according to the interim Red Data List of South African Taxa which can be found on the SANBI website (http://www.sanbi.org/biodiversity/reddata.htm).

In addition, a number of unique plant populations are found within the boundaries of the park. This includes disjunct populations of the forest species such as *Prunus africana* and *Rothmannia globosa*, while a number of wide-spread species reach their most eastern (e.g. *Platylophus trifoliatus*) and western (e.g. *Zanthoxylum davyi*) distribution limit in the park (Geldenhuys 1992).

2.4 FAUNA

Detailed descriptions of the fauna are provided in Appendix I. Below are descriptions of the main features.

2.4.1 Zooplankton

The highest diversity of species in Touw River Estuary has been recorded close to the mouth, with the highest daytime number of individuals in the Touw system recorded from Eilandvlei (14 641 indiv. m^{-3}) and Rondevlei (13 108 indiv. m^{-3}) (Coetzee 1983).

Zooplankton communities in the Swartvlei system consist primarily of estuarine species, with 45 forms having been recorded by Grindley & Wooldridge (1973).

A comprehensive description of zooplankton communities in the Knysna estuary is given by Grindley (1985).

2.4.2 Invertebrates

Abundant species of benthic invertebrates in Swartvlei Estuary include *Melita zeylinaca*, *Loripes clauses*, *Natica tecta* and *Palaemon pacificus* in vegetated areas (principally *Zostera capensis*), whereas those of bare sand areas are *Urothoe pulchella*, *Callianassa kraussii*, *Iphinoe truncate* and *Pontogeloides latipes* (Whitfield 1989e). The supratidal invertebrate community is dominated by *Orchestia* spp. which feed on wrack detritus.

The benthic macrofauna in Knysna Estuary includes approximately 310 species (Day 1981). Estuarine species are widespread in the estuary, whereas "brack-water species" favour oligohaline conditions at Charlesford Rapids (Day *et al.* 1952). The mudprawn *Upogebia africana* is abundant and is the most widely used bait species in Knysna Estuary (Patterson 1986).

The critically endangered false limpet *Siphonaria compressa*, originally described by Allanson in 1958 from the Langebaan Lagoon, has been found living in intertidal eelgrass meadows at Bollard Bay, Leisure Isle (Allanson & Herbert 2005). This represents only the second known site of occurrence of the species The Knysna population is considered to be viable (Allanson & Herbert 2005).

Three species of indigenous oyster species occur in Knysna Estuary, namely South African Oyster (*Crassostrea margaritacea*), 'weed-oyster' (*Ostrea algoensis*) and Red Oyster (*Ostrea atherstonei*) (Grindley 1985). The Pacific Oyster (*Crassostrea gigas*) was introduced in 1973 and today forms the basis of a flourishing local industry.

Early studies of aquatic invertebrates in southern Cape rivers were undertaken by Harrison & Agnew (1962). Filmalter & O'Keeffe (1997) provide a comprehensive list of invertebrates in rivers flowing into the Wilderness lakes. Biotic index values occasionally exceeded 2 in the Diep River indicating slightly enriched waters. In the Hoëkraal, Karatara, Duiwe and Touw river biotic index values were always below 2.

Aquatic invertebrate surveys in the Salt River showed that in the four orders of insects examined in detail (Plecoptera, Ephemeroptera, Trichoptera and Diptera) there were 13 undescribed species, as well as three possible new genera, and some remarkable range extension of certain species. The river also produced the richest known diversity of species in the mayfly family Teloganodidae for Africa (De Moor *et al.* 2004).

Terrestrial Invertebrates

The Garden Route National Park's position within two vegetation biomes, one a floral kingdom and biodiversity hotspot, contributes to a range of habitats in diverse successional stages that no doubt harbour rich invertebrate species diversity.

While a few specialist invertebrate surveys have identified several species (Appendix J), insect collections to date have been uncoordinated and are not representative of the entire GRNP as large parts of the region have never been surveyed for invertebrates, and existing data consists largely of scattered records and species descriptions for individual taxa.

An invertebrate of significance found in the forest areas is *Peripatus*. It is an ancient life form that is believed to have survived unaltered for 500 million years and can be considered as living fossils dating back to the Cambrian period (Hey, 1973 cited in Cameron, 1982. Members of *Onycophora*, a rare, primitive Arthropod phylum, are relatively abundant in the Harkerville area and were collected by researchers from the United Kingdom (Vermeulen *et al.*, 1995). A number of apparently new species of *Drosophilae* were also collected in the area (Vermeulen *et al.*, 1995).

Endangered species that possibly occur (Picker *et al*, 2004) in the GRNP include all the *Colophon* (Stag Beetles) spp. The genus is highly sought after by collectors and is thus listed as a red data book genus.

2.4.3 Fishes

Estuarine fishes

Accounts of fishes in the Swartvlei system are given by Kok & Whitfield (1986) and Russell (1996a), and in the Touw system by Hall (1985a, 1985b), Hall *et al*. (1987) and Russell (1996a), who demonstrate that communities are typically dominated by juvenile marine species. Both Hall (1985a) and Russell (1996a) found that the number of species in the Touw system declines the further removed a waterbody is from the sea.

The importance of the surf zone for estuarine associated fishes has been demonstrated by Whitfield (1989c, 1989d), with larvae and postlarvae of 16 families identified from the surf zone off Swartvlei Estuary. The effect of prolonged closed phases on the recruitment of fishes in the Wilderness lakes was evaluated by Russell (1996a). The importance of also having a closed phase in the Wilderness Lakes estuaries to provide an ideal nursery habitat, in terms of nutrition for juvenile marine fishes is emphasised by Kok & Whitfield (1986).

The Knysna seahorse (*Hippocampus capensis*), classified as Endangered (Hilton-Taylor 2000), is widespread in Swartvlei and Knysna estuaries though not abundant.
In excess of 200 species of fish have been recorded in the Knysna Estuary (Bulpin 1978). A complete species list is given in Grindley (1976), with the more common species listed in Grindley (1985). The permanently open estuary enables free access to typical marine species, with the result that there are many records of species which do not normally occur in estuaries (Grindley 1985).

Harrison *et al.* (1996) recorded 15 fish species in the

major estuaries of the Tsitsikamma region. Three of the species were estuarine-dependent, the others were marine species, having various degrees of dependence upon estuaries during the juvenile phase of their life cycle.

Marine fishes

A rich diversity of fish is found in the marine section of the park, with a total 202 fish species from 84 families recorded (Buxton and Smale 1984; Burger 1991; Wood et al. 2000) The size and species composition of fish differ between shallow and deep reefs in the park (Buxton and Smale 1984), and species diversity and richness tends to increase with depth (Burger 1990).

Freshwater fishes

Nine fish species have been recorded in the Duiwe and Touw rivers (Russell 1999b) three of which are alien. A further one indigenous species, two translocated species and five estuarine species could potentially occur in these rivers (Russell 1999b). Both black bass and trout species have been introduced in the past though appear not to have become established (Le Roi Le Riche & Hey 1947).

2.4.4 Birds

The GRNP with its combination of forest, fynbos, estuarine and marine habitats has a diverse avifauna. A total of 262 bird species have been recorded in the former WNP (Randall *et al.* 2007) and 257 in the former TNP (Skead & Liversidge 1957; Crawford 1983; N Hanekom & G McIlleron pers comm). These comprehensive park accounts, together with avifaunal studies in the former State Forests (e.g. Koen 1988), reveal that about 305 bird species have been recorded in what now comprises the Garden Route NP.

Species of special concern include representatives of most of the major habitat types in the GRNP: marine (Cape cormorant *Phalacrocorax capensis*, crowned cormorant *P.coronatus* & African black oystercatcher *Haematopus moquini*), wetlands (African marsh harrier *Circus ranivorus,* African finfoot *Podica senegalensis,* halfcollared kingfisher *Alcedo semitorquata* & African grass-owl *Tyto capensis*), forest (Knysna warbler *Bradypterus sylvaticus*, Knysna woodpecker *Campethera notata* & crowned eagle *Stephanoaetus coronatus*) and general (peregrine falcon *Falco peregrinus*).

The wetlands of the Touw and Swartvlei systems support one of South Africa's most significant waterbird assemblages, which was the prime motivation for the listing of parts of the Touw system as a Ramsar wetland. About 110 bird species, over 35% of all species at GRNP, are dependent upon or primarily associated with

wetlands. Rondevlei and Langvlei support the most diverse and abundant water bird communities (Boshoff & Piper 1992), with surveys on Langvlei indicating that at times water bird abundance can exceed 7000 individuals comprising 65 species (Boshoff & Palmer 1981). This abundance of water birds, and in particular Anatidae (ducks and geese) which on Langvlei alone at times exceeds 2000 individuals of nine species, represents the largest concentration of species and individuals along the southern and eastern Cape coasts (Underhill *et al*. 1980).

2.4.5 Mammals

The Garden Route National Park's (GRNP) location within the fynbos and forest biomes, the inclusion of a marine and unique wetland/estuarine lake system and the rugged mountain and coastal landscape provides diverse habitat in varied successional stages that consequently contribute to a reasonably diverse mammal fauna. The Garden Route National Park is unique in the sense that it is largely unfenced and mammal species are able to freely move in and out of the Park.

Eighty-seven species of mammal comprising fourteen orders and thirty-two families are known to occur within the Park of which eighteen species (21%) are restricted to the marine ecosystem. Sixty-nine species (79%) have been formally recorded (Appendix J).

Several species that historically would have occurred in the Garden Route ecosystem are now locally extinct – Panthera leo (Lion), *Diceros bicornis* (Black rhinoceros), *Hippopotamus amphibius* (Hippopotamus), *Syncerus caffer* (Buffalo), *Tuarotragus oryx* (Eland), *Alcelaphus buselaphus* (Red hartebeest) and *Equus zebra zebra* (Cape Mountain Zebra) (Lloyd 2002; Skead, 1980)
The last small relict population of Knysna elephants (*Loxodonta africana*) face a similar outcome despite conservation intervention (NB An Elephant Management Plan is under preparation and will be incorporated into this Management Plan when completed.).

According to the IUCN categories (IUCN 2001), that were used to evaluate the threat status of the South African mammals (Friedmann and Daly 2004), the Park protects populations of twenty-eight red data book species that originate from seven orders and thirteen families. In the threatened categories, 7.1% of the Parks mammals are listed as endangered (EN) and 14% as vulnerable (VU).

2.4.6 Reptiles

The GRNP forms the eastern limit of a distinct zoogeographic zone, called the Cape Faunal Centre where the fauna gradually changes to include more Ethiopian elements characteristic of much of Africa. Unfortunately, little is known of the reptiles inhabiting the National Parks of the eastern and southern Cape (Branch, 1981, 1983).

The Garden Route National Park is considered to fall within one of the eight major centres of herpetofauna diversity in southern Africa (Branch, 1998) and forms part of the mountainous region stretching from the Cape in the south northwards to tropical Africa that is considered to function as a corridor along which various faunal taxa can move.

2.4.7 Amphibians

The GRNP holds twenty-two species (19.1% of SA and 44% of WCP), 10 genera and six families. Fourteen of the listed species (63.6%) have been formally recorded within the Park's boundaries. The true species total is likely to be higher as the distribution ranges of number of species that could possibly occur within the Park end just short of Knysna.

Ecological knowledge of the amphibians of the GRNP is limited, consisting primarily of published and unpublished (SANParks) records of occurrence of species. The only papers produced on frogs in the GRNP to date were by Carruthers and Robinson (1977) and Branch and Hanekom (1987).

2.5 FRESHWATER & ESTUARINE ISSUES AND PROCESSES

Salient features are described in this section, for more detailed descriptions see Appendix K.

2.5.1 Hydrology

Touw system

The catchment area of the Touw system comprises three rivers – Touw River (96.2 km^2), Duiwe River (42.1km^2) and the Langvlei Spruit (8.2km^2) (Hughes & Filmalter 1993, Fijen & Kapp 1995). Virgin MAR into the Touw system has been estimated by Fijen (1995a) as 24.6 x 10^6 m^{-3}. Modelling of flood events emphasised the short residency time of flood waters and hence potential for rapid increases in water level in the lower lakes, particularly the Touw Estuary (Görgens 1979). CSIR (1981) and CSIR (1982) concluded that maintaining the height of the sand sill at the estuary mouth at between 2.1 m and 2.4 m amsl should prevent flooding of low-

lying properties by floods with a return frequency of 1 in 50 years or lower. It was also concluded that although the dredging of the connecting channels would improve the circulation of water throughout the system, it would not significantly reduce the peak water levels.

Swartvlei system

Rivers draining into the Swartvlei System are the Diep River (98.3 km^2), Klein Wolwe River (17.2 km^2), Höekraal River (111.0 km^2), and Karatara River (101.6 km^2) (Whitfield *et al.* 1983, Hughes & Filmalter 1993). Estimates of freshwater input into the Swartvlei system are given in CSIR (1978), Whitfield *et al.* (1983) and Fijen (1995b). Severe floods in the Swartvlei system are infrequent. However, when river floods coincide with periods when the estuary mouth is closed, or even with very high spring tides when the estuary mouth is open, then flooding of adjacent land can be expected, especially in the Sedgefield Extension 1 area (Howard-Williams & Allanson 1979). It has been recommended that for hydrological, ecological and social reasons Swartvlei Estuary mouth be artificially breached at 2.0 m amsl (CSIR 1978, Howard-Williams & Allanson 1979, Whitfield *et al.* 1983).

Knysna system

The Knysna River runs mainly north south and cut deep narrow incisions into the underlying Table Mountain Sandstone. The Knysna River feeds from two catchments, K50a and K50b. The northern part of K50a hosts Oubos River (4.7km) and two other unnamed rivers. These originate in mountain fynbos largely planted with plantation. The Bobbejaan River (7km) is the first major west-east tributary inside the park. The Kruis River (18.7km) enters below the Bobbejaan River and drains mainly from plantation covered vegetation. Many smaller unnamed tributaries join the Knysna River from both east and west, often from forest, but more often from plantation areas. The next major tributaries are the Lawnwood River (6km) from the west and the Rooiels River (13.9 km) from the east. From the confluence of the Knysna- and Rooiels Rivers, the Knysna River runs between private land on the west and forestry/farmland on the east. The tributaries from the west drains mainly from indigenous forest and to a lesser extent cultivated land.

The Gouna River (21.8km) is the largest tributary of the Knysna River. The Steenbras River (9.4km) is the largest tributary of the Gouna River. Both these rivers drain mainly from indigenous forest and to a much lesser extent, fynbos. The Gouna River and the Steenbras River are both boundaries of SANParks' land and the most northern rivers in catchment K50b.

Tributaries entering the Knysna River below the confluence of the Knysna and the Gouna Rivers drain from indigenous forest and to a lesser extent farmland to the

west of the Knysna River, and plantation to the east of the Knysna River.

A few rivers join the Knysna River in the Knysna Estuary. These rivers run through populated areas, industrial areas and informal settlements and are often of poor quality.

The Knysna estuary is an S-shaped stretch of water, 1633 ha in extent (Duvenhage 1983); with a channel approximately 19 km long and up to 2 km wide. It has a tidal reach of about 17 km (Reddering & Esterhuysen 1984).

Tsitsikamma systems

Thirteen perennial rivers flow southward through the Tsitsikamma region of the park (see map below showing hydrology). The largest of these rivers are the Groot River (West), the Bloukrans-Vark, Storms-Witteklip and Elands-Kruis systems, which have calculated catchment areas of 87, 80, 98 and 82 km² respectively (Morant and Bickerton 1983; Chief Director of Surveys and Mapping, 1979, 1980, 1981). The delegation of DWAF managed State Forest land in the southern Cape to SANParks in 2005, allows SANParks greater jurisdiction over the catchment of tributaries of the Elands-, Storms-, Elandsbos-, Bloukrans- and Groot (West) rivers. Soetkraal 'encompasses' the upper catchment of Langbos, Palmiet and Diep rivers (Russell 2002).

2.5.2 Physical and chemical processes

Touw system

Temperature variations in the lakes and estuaries of the Touw system follow a seasonal pattern, generally ranging between 10-14°C in winter and 25-29°C in summer (Whitfield *et al*. 1983; Russell 1996b). The salinity of the lakes increases the further they are removed from the sea, with Eilandvlei averaging between 6 and 10 g kg^{-1}, Langvlei 10 and 13 g kg^{-1}, and Rondevlei between 12 and 16 g kg^{-1} (Whitfield *et al.* 1983; Russell 1999a).

The importance of the sea as a source of P in the Touw River Estuary has been emphasised by Allanson & Whitfield (1983)., Elevated concentrations of both NO_3-N and PO_4-P have been recorded in the Touw River Estuary, Eilandvlei and Langvlei during flood periods, whereas the concentration of N- and P-ions in Rondevlei, with no feeder streams, remained relatively unaltered (Allanson & Whitfield 1983).

Investigations of the concentration of chlorinated hydrocarbon, PCB and Dieldrin residues in the body tissues of aquatic birds in the Touw system have yielded conflicting results. In 1983 De Kock & Boshoff (1987) detected low concentrations of t-DDT and PCB in the body tissues of reed cormorant, darter, whitebreasted cormorant, blacknecked grebe, great crested grebe and grass owl. Similarly, a fish eagle egg, collected at Sedgefield during 1985 had a low concentration of t-DDT (0.21 µg g^{-1} wet weight), and no PCBs or Dieldrin residues (De Kock & Lord 1986). In contrast, in 1984 and 1985 De Kock & Simmons (1988) recorded high levels of Dieldrin (1.89 µg g^{-1}) and t-DDT (6.26 & 5.08 µg g^{-1}) in African marsh harrier eggs from the Touw system, with low ratios of DDE/t-DDT in several eggs indicating recent inputs of DDT into the environment.

Swartvlei system

Temperature variations in the Swartvlei systems follow a seasonal pattern, generally ranging between 10-14°C in winter and 25-29°C in summer (Whitfield *et al*. 1983; Russell 1996b). Whitfield *et al*. (1983) maintain that closure of the Swartvlei Estuary mouth has little effect on water temperature, though during summer when the estuary mouth is open, the waters near the mouth are generally 1°C cooler than further up the estuary. Water temperatures as high as 32°C have been recorded in Swartvlei Estuary (Russell 1996b).

Swartvlei Lake is normally meromictic, as a result of its usual stratification into water layers of different densities, caused by vertical stratification in salt concentration (Robarts & Allanson 1977; Howard-Williams & Allanson 1978). The bottom layer of high salinity water can be up to 5 m thick (Whitfield *et al*. 1983). Stratification prevents wind from mixing the oxygenated surface water with those below, thus decomposition of organic matter in the bottom sediments rapidly uses up the oxygen and increases the concentration of carbon dioxide (Howard-Williams & Allanson 1979) making the bottom half of Swartvlei Lake a very toxic environment for animal life. When Swartvlei Estuary mouth is closed, wind mixing of the surface waters of the lakes gradually breaks down the salinity layering (Robarts & Allanson 1977; Allanson & Howard-Williams 1984). The longer the mouth remains closed the more likely it is that stratification will break down, with resultant oxygenation of the lower waters of the lake.

The oligotrophic status of Swartvlei Lake has a number of biological consequences, which include low phytoplankton primary production (Robarts 1976), low zooplankton biomass (Coetzee 1981a) and low ichthyoplankton densities (Whitfield 1989b The main source of P for the estuary is the sea, and during the tidal phase there being a net import and accumulation of P in the estuary (Liptrot 1978; Whitfield *et al*. 1983). An

extensive net outflow of P occurs from Swartvlei Estuary during the strong outflow phases immediately after the estuary mouth is opened. The concentration of N-ions in Swartvlei Estuary are generally low, with concentrations in 1976 being found to range from not detectable to 21 µg l^{-1} [NO_2+NO_3]-N (Coetzee 1978). Howard-Williams and Allanson (1979) recorded values for nitrate (NO_3-N) ranging from 3 to 30 µg l^{-1}, and Robarts (1973) recorded values for ammonia (NH_4-N) ranging from not detectable to 4 µg l^{-1}.

High levels of nickel from sediments in Swartvlei Estuary may represent contamination from adjacent residential areas. Watling (1977) also suggests that a significant increase in the concentration of lead (and in several instances the concentration of other trace metals) in the upper portions of cores from the Swartvlei system indicate possible pollution from motor fuels or paint.

Knysna system

Ranges of the water quality parameters water temperature, salinity, dissolved oxygen, pH and secchi disk depth in Knysna Estuary from 1990 to 1994 are given in Russell (1996b) and compared with earlier data as given by Day *et al*. (1952), Day (1967, 1981), Grindley & Eagle (1978) and Haw (1984). It was concluded that no clear long-term changes in recorded water quality parameters were evident. Nevertheless the potential of elevated sediment inflow into the estuary as a result of runoff from quarries and disturbed catchment areas (Reddering 1994) remain an environmental concern (Russell 1996b, Allanson *et al*. 2000), particularly with regard to overall water transparency, the growth of intertidal sandbanks, and the disruption of nutrient pathways for filter feeders.

Allanson *et al*. (2000) provide values for water quality indicators (pH, TSS, chlorophyll-a, ammonium, nitrate+nitrite, soluble reactive phosphate), measured in Knysna Estuary during 1996 and 1997. In terms of the input of plant nutrients it was concluded that dilution and dispersion by tidal flow is sufficient to prevent overt signs of enrichment either through excessive phytoplankton growth or accumulation of floating macroalgae (Allanson *et al*. 2000), contrary to the earlier findings of Grindley & Snow (1983).

The potential for pollution of the Knysna Estuary is high, with in excess of 111 drainage pipes, drainage ditches and culverts discharging storm-water from residential and industrial areas directly into the estuary. In the Ashmead channel, in the region of the overflow from the Knysna sewage treatment works, elevated nutrient concentrations, increased pH, supersaturation of oxygen, and high Coliform bacilli (1800 100ml^{-1}) concentrations have previously been recorded (Grindley & Eagle 1978). It was noted in this study, however, that with the exception of potential pathogenic bacteria, the effects of effluent discharge on water chemistry,

substratum, and biota, at the time of sampling, did not appear to be serious (Grindley & Eagle 1978). Later studies indicated elevated nitrogen and phosphorous levels in the region of the sewage works outfall (Grindley & Snow 1983), though due to the short residence time of water in the lower estuary eutrophication is unlikely.

Watling & Watling (1980, 1982) found the concentration of certain metals in sediment and water samples in the estuary to be elevated above true background values as determined for other south-eastern Cape estuaries, though concluded that there was no real indication of metal build up, or of levels which could be considered as a pollution hazard.

The development of the Knysna Quays Marina in 1996 exposed sands contaminated with creosote. Investigating the possible presence of polynuclear aromatic hydrocarbons, Allanson *et al.* (2000) found that napthalene was the dominant moeity in the creosote-contaminated groundwater seepage (3200 µg l^{-1}) followed by fluorane (74 µg l^{-1}) and phenanthrene (25 µg l^{-1}). The remainder of the array of chemical components commonly found in creosote approached or were below detectable limits (0.1µg l^{-1}). An initial creosote residue (as phenol) of 350 µg l^{-1} was found to decay to close to 40 µg l^{-1} within 24 days once the seepage was contained.

Tsitsikamma systems

Harrison *et al*. (1995, 1996), using seven parameters (dissolved oxygen, oxygen absorbed, unionised ammonia, *E. coli*. nitrate nitrogen, phosphate phosphorous and chlorophyll- *a*) calculated a water quality index rating value (between 0 (poor) - 10 (good)) for the various estuaries along the Cape Province. The index ratings for the estuaries (or river mouths) within the Tsitsikamma region ranged from approximately 5.5 to 9.0, with elevated *E. coli* levels impairing the water quality of several of these estuaries. Additional water quality data exists for the estuarine section of the Sout / Salt River and Groot River (west) (Morant & Bickerton 1983), as well as the freshwater section of the Salt River (De Moor *et al*. 2004).

2.5.3 River Management

Many of the challenges SANParks faces with respect to managing river ecosystem in national parks are common to all parks. Prominent issues include:

Fragmented catchment ownership: For most rivers in parks, only portion of river ecosystems or catchment occur within the park boundaries. In the Tsitsikamma section of the GRNP only the very lower reaches of the major rivers (Salt, Groot [West], Bloukrans, Lottering, Elandsbos, Storms, Elands, Groot [East]), and the upper reaches of the Palmiet River in the contractually managed Soetkraal properties, occur within the park. Many anthropogenic changes to rivers originate in catchment areas outside of parks, and are consequently processes or activities over which SANParks has little or no influence.

Reduced ecosystem variability: Scientific studies have demonstrated that the maintenance of inherently variable physical processes, and in particular variability in the flow of water, is essential for healthy functioning of river ecosystems. Past river management by government agencies, however, was frequently directed at minimizing fluctuations in flow to ensure stability of supply for off-channel, non-ecological uses. This has resulted in a legacy of, for example, water storage behind dams and regulating flow for irrigation or domestic supply, which presents considerable operational challenges when attempting to achieve a new ideal of managing for healthy river ecosystem rather than just predictable water supply.

Legislated management: Section 3 of the National Water Act (Act 36 of 1998) clearly identifies the National Government as the public trustee of the nation's water resources, which acting through the Minister of Agriculture, Forestry and Fisheries has the power to regulate the use, flow and control of all water in South Africa. SANParks thus does not directly, and in most cases also indirectly, manage hydraulic processes and resource use in rivers. The Act also states that the Department of Agriculture, Forestry and Fisheries must devolve most of the catchment management issues to Catchment Management Agencies (CMA's) that include representatives of local interest groups and relevant government agencies. Although CMA's will provide opportunity for cooperative catchment management, the Tsitsikamma-to-Fish CMA to whom management of river catchments in the Tsitsikamma area will be devolved, has not yet been established.

The most productive future role for SANParks in the management of rivers in parks would be the active participation in structures and processes for cooperative catchment management involving all stakeholders. Via such mechanisms the case could be made for resource utilization that is not only equitable and efficient, but also results in the protection of a healthy aquatic environment for present and future generations.

Prominent activities would most likely include lobbying for and active participation in determination of ecological reserves; facilitating assessment of ecosystem and river health; and provision of information and insight obtained through research and monitoring to facilitate informed

decision making and the successful implementation of catchment-scale adaptive management systems.

2.5.4 Marine and coastal processes

The Tsitsikamma MPA is situated near the centre of the Agulhas Bioregion, which extends 1706 km from the Mbashe River to Cape Point (Lombard *et al.* 2005). Nineteen percent (or 327 km) of the bioregion's coastline is fully or partially protected through MPA's or closed areas (Lombard *et al*. 2005) with the Garden Route N.P. contributing four percent ((Lombard *et al.* 2005). The MPA includes approximately 61 km of rocky shoreline and 5 km of sandy beaches, extends between 0.5 and 3 nautical miles offshore and has a surface area of some 340 km². Although the shoreline is primarily rocky, the subtidal areas consist chiefly of soft bottom sediments (*c.* 79%) and to a lesser extent dispersed gravel platforms and rocky reefs (c. 21%) (Flemming *et al.* 1986). The adjacent 9 km long De Vasselot section, which was excluded from the MPA, is open to extractive resource use by the public in accordance with the Marine Living Resources Act (1998).

The marine fauna of the MPA includes a variety of mammals (dolphins, whales & seals), birds (gulls, terns, gannets & penguins), fishes (reef & migratory species) and invertebrate reef fauna (sponges, ascidians & crustaceans). However, the MPA is too small to provide permanent residence for most of the marine mammal and seabird species recorded for the park, but it is large enough to provide an important feeding ground and/or nursery area. Spawning grounds for commercially exploited chokka squid and all life stages of 17 fish species which are commercially and/or recreationally exploited have been recorded in the park (Sauer 1995; Wood *et al.* 2000).

In the marine environment extreme endemism is relatively rare (Hockey & Branch 1994), and the ecological case for protection of an area is often based on the safeguarding of an important habitat for commercially or recreationally important species, or protection of a particularly good example of a habitat type and its associated communities (Robinson & De Graaff 1994). The biggest threat to the marine environment in this southern Cape region is extractive living marine resource use (Lombard *et al.* 2005). Therefore, a key conservation function of the Tsitsikamma MPA is to provide a safe and pristine refuge for exploited fish and invertebrate species.

The Marine Management Plan is to be included when completed and approved.

3. PROTECTED AREAS MANAGEMENT FRAMEWORK

3.1 SETTING THE DESIRED STATE

SANParks uses the concept of a “desired state” to guide the management and development of National Parks.

The ‘desired state’ of a park is the parks’ long-term vision (30-50 years) translated into sensible and appropriate objectives though broad statements of desired outcomes. These objectives are derived from a park’s key attributes, opportunities and threats and are informed by the context (international, national and local) which jointly determine and inform management strategies, programmes and projects. Objectives for national parks were further developed by aligning with SANParks corporate strategic objectives, but defining them in a local context in conjunction with key stakeholders. These objectives are highlighted in each of the **Programme Tables**

The desired state is based on a collectively developed vision of a set of desired future conditions (that are necessarily varying), integrating ecological, socio-economic, technological, political and institutional perspectives within a geographical framework. The vision, formulated within the context of SANParks’ corporate values and the purpose and vital attributes of the GRNP together with the thresholds of potential concern (TPCs) and the Zonation Plan, make up the desired state of the GRNP.

In the adaptive management of ongoing change in socio-ecological systems, thresholds of potential concern are the upper and/or lower limits of flux allowed, literally specifying the boundaries of the desired state. TPCs specify the measurable “boundaries” of the desired state, flowing out of the objectives developed for the park. If monitoring (or better still monitoring in combination with predictive modelling) indicates certain or very likely exceedances beyond these limits, then mandatory management options of the adaptive cycle are prompted for evaluation and consideration.

Within the GRNP, TPC’s already exist for certain components. These are specified in the relevant sections below. Other TPC’s will be developed over time.

3.2 VISION

"An integrated protected area that effectively conserves a functionally linked mosaic of diverse terrestrial, freshwater, estuarine and marine ecosystems, landscapes, and cultural heritage, representative of the Garden Route, that contributes to the well being of present and future generations."

3.3 OPERATING PRINCIPLES AND VITAL ATTRIBUTES OF THE PARK

The GRNP takes its operating principles from the SANParks biodiversity values:

- We adopt a complex systems view of the world while striving to ensure the natural functioning and long term persistence of the ecosystems under our care.
- We aim at persistent achievement of biodiversity representivity and complementarit**y** to promote resilience and ensure ecosystem integrity.
- We can intervene in ecosystems responsibly and sustainably, but we focus management on complementing natural processes under a "minimum interference" philosophy.
- We accept with humility the mandate of custodianship of biodiversity for future generations while recognising that both natural and social systems change over time.

The vital attributes underscore the rationale for proclamation as a National Park:

Biophysical and Environmental Attributes:

- Important aquatic ecosystems (Wetlands (Ramsar); all estuary types
- Potential to conserve whole ecosystems from catchments to sea.
- Single largest block of Afromontane forest in South Africa
- Outeniqua and Tsitsikamma sandstone fynbos
- Important ecologic goods and services
- Mountains, forest and coast in close proximity + mosaic
- Rehabilitation potential (resilience) because of high rainfall
- Scenic beauty
- Functional Marine Protected Area representing inshore marine environments.
- Important threatened lowland vegetation

Socio-Political Attributes:

- Relationships with local authorities – IDP's, municipalities, town engineers
- Management forums (catchment, PFM, other forums, various levels of participation and governance
- Institutional coordination (unification/inter organizational and other government departments)
- Passionate stakeholders that are organized in structured NGO's strengthen relationships and build ambassadors
- Established community structures (Active functioning street comities)
- Resources base with potential to deliver benefits to people
- Diverse cultures and cultural heritage sites that has tourism opportunities
- Polarized social support.
- Cultural and natural resources that are sensitive to human disturbance.
- Recreational and spiritual resources (experiences)

Economic Attributes:

- Established tourism route and brand
- Established partnerships (neighbouring conservation initiatives)
- Ecosystem services (water catchments, scenic landscapes and associated impacts on property values)
- Extractible resources (timber, etc.)
- Established tourism infrastructure
- Job creation
- Diverse Tourism product (cultural, nature based, adventure, coastal…) - attracting funding (Poverty relief funding, etc.)
- Low crime level area
- Educational opportunities

3.4 THREATS AND CHALLENGES

Brief descriptions of major threats are outlined below.

3.4.1 Alien invasive species

Biological invasion by certain alien plants, animals and microbes is well-recognised as a key threat to biodiversity (Mooney & Hobbs 2000). With ongoing and increasing levels of human movement and the transport of goods, the size and severity of this threat continues to increase globally. The most effective form of management for this threat is preventing the introduction of alien species into countries, regions and parks. However, management of existing populations of already invasive species is equally necessary.

The biggest threat for the Garden Route National Park in terms Alien Invader Species is in the form of Alien Invader Plants. A number of exotic plants with invasive potential have been recorded in the Garden Route National Park. A systematic approach in terms of alien plant control in the Garden Route National Park is essential. The most effective control method for a specific species and situation, taking into consideration the objective for control in the specific case, should be used. This is usually a combination of mechanical and chemical methods, and biological control, where applicable. The single most important aspect of success with alien invader plant control is well planned follow-up operations. Invader plant control should be budgeted over the long term so as to ensure that programmes can be maintained.

3.4.2 Development pressure

The Garden Route, is characterised by its' outstanding scenic quality and beauty. Similarly, the unique coastal lake systems, indigenous forests and rugged coastline, comprise an extensive network of protected areas; South African National Parks and Provincial Nature Reserves, often interspersed by urban development. It is this feature which makes the area unique; the juxtaposition between urban development on the doorstep of conservation areas of national, and international importance. Similarly, the uniqueness of the area is attributed to topographical and scenic beauty, rural and agricultural sense of place, the lakes themselves, coastal frontage, indigenous and monoculture forests, small protected residential enclaves (villages), and large tracts of undeveloped landscape. It is obviously this attraction and perceived quality of life that has become a significant real estate marketing and selling approach over the past decade, with property prices reaching some of the highest in South Africa. This apparent demand has placed significant pressure on the Garden Route, from a land use, conservation, *Genus Loci* and resource utilisation perspective, fuelling the development of exclusive golf and lifestyle estates across the area, and numerous applications in process. The long term and cumulative impact of large scale land use and landscape character change is of great concern to local, provincial and national authorities, as well as the exacerbated direct and peripheral (edge effects) impact on the Garden Route National Park. With unchecked and uncontrolled development the Garden Route could very easily lose its appeal and attraction.

3.4.3 Water resource management

The mid and lower river reaches, and the majority of the

catchments of most Garden Route river systems, fall outside of formal conservation areas and are, like most rivers in South Africa, extensively utilised. Factors which result in changes in natural water chemistry and flow characteristics include water abstraction for urban and agricultural usage, both instream and offstream impoundment, extensive pine plantations, alien plant invasion, and polluted agricultural and urban return flows. Invasion by alien species also poses a significant threat to indigenous biota in aquatic systems.

3.4.4 Climate change

Climate change is one of the biggest emergent challenges facing the Garden Route National Park. Regional predictions suggest a drying trend with a weakening of winter rainfall, a shift to more irregular rainfall of possibly greater intensity, and rising temperatures everywhere. It is likely that the greatest impacts will be on water supply. The anticipated increase in temperatures may result in increased fire frequencies and more intense fires which could have a major impact on the biodiversity of the region. Other impacts include sea level rise and increased flooding. Areas may be subject to increased alien invasion and to new alien invasive species. It is critical to recognize that the impacts of climate change are not isolated but are intrinsically linked to other pressures on biodiversity such as habitat fragmentation, alien vegetation and over-abstraction of freshwater.

The major response strategy for the Garden Route National Park is to safeguard Critical Biodiversity Areas. As a strategy against the impacts of climate change, the CBA map has identified a network of important biodiversity areas linking the inland mountains to the coast and along the coast. These corridors enable biodiversity to persist with the migration of plants, animals and birds in response to changing climatic conditions. The Critical Biodiversity Area maps also identify key areas required to mitigate the effects of climate change related disasters. These areas include riparian corridors, primary dune systems, estuarine mudflats and sand dunes. As the impacts of climate change are not isolated, but rather are interrelated with threats such as alien vegetation, incorrect fire regimes, and poor water resource management etc, the responses to these threats should be seen as an integral part of the climate change response strategy.

3.4.5 Fire

Across the Garden Route, wildfires have a negative impact on socio-economic activities and have caused loss of life and damage to property to the residents of the Garden Route and damage to the sensitive environment of the area. Economic losses of millions of rand have occurred in the past. Fire is vitally important in the management of fynbos systems, but damaging wildfires have also caused the loss of biodiversity in the

region, including within the formal protected areas. Fire is also an important tool in the management of invasive alien plants. For the conservation of biodiversity and for the social and economic well being of the region, it is vitally important that fire is managed properly and in an integrated manner.

The importance of fire in managing fynbos is widely recognized. In terms of actually using fire appropriately for the management of natural areas both within and outside of the formal protected areas, the current situation in the Garden Route is far from adequate. There are numbers of strategic questions to be asked and answered to address this situation. Do the conservation agencies and municipal authorities have sufficient resources available to manage fire adequately? What is the best way of addressing the burning requirements on private land important for conservation? Given the known critical biodiversity areas across the Garden Route, how best could land uses and land management regimes be rearranged spatially to enable appropriate burning where needed, and greater socio-economic and ecological resilience to uncontrolled wildfires?

3.4.6 Stakeholder support and buy-in

Maintaining meaningful and beneficial relationships with a wide range of stakeholders that support SANParks' core business and developing effective cooperation between the Garden Route National Park and its' stakeholders is critical to ensure successful implementation of park initiatives.

Without stakeholder support and effective cooperation SANParks risks:

- A decrease in quality of service and how business is conducted which will lead to overall failure of park initiatives / projects.
- An increase in external impacts (e.g. up-stream pollution) and counter-productive activities (e.g. poaching)
- Less support from powerful stakeholders that can lead to a decline in business revenue and external resources.

3.4.7 Unsustainable marine and estuarine resource use

Recreational angling is a popular and growing activity in South Africa. In 1995 the estimated number of participants within this fishery was around 412 000 with an annual increase of around 2% (McGrath *et al*. 1997). The smaller subsistence sector was estimated to consist of around 29 000 individuals with the majority being found on the East coast (Clarke *et al*. 2002). Subsistence ishers harvest a variety of species from invertebrate bait and food organisms to linefish species, which they rely on as a source of protein or to sell (Clarke *et al*. 2002, Branch *et al*. 2002). The collective annual harvest by all sectors was estimated at 4.5 million fish weighing 3000 tonnes each year (Brouwer *et al*. 1997). Estuarine angling has also increased in popularity, particularly since the ban on beach driving (MacKenzie 2005), with an estimated 70 000 participants (Lamberth and Turpie 2003).

Recreational and subsistence fishing within the Garden Route National Park currently takes place within the De Vasselot portion of the Tsitsikamma Section, the Knysna Estuary, the Swartvlei system (estuary and lake) and within the Touw estuary and Island Lake of the Wilderness Lake system in accordance with the regulations of the Marine Living Resources Act (1998). However, despite the fishery management strategies employed (size restriction, bag limits, closed seasons) and amendments implemented over time, various studies suggest that catch rates in recreational fishing along the South African coastline have decreased and species composition of catches have changed (Crawford & Crous 1982, Hecht & Tilney 1989, Brouwer *et al*. 1997, Penney *et al*. 1999, Griffiths 2000, Brouwer & Buxton 2002). Causal reasons for these changes include inadequate law enforcement by management authorities, poor compliance amongst fishers and inadequate regulatory restrictions. (Bennett *et al.* 1994).

Extractive overexploitation of resources has been highlighted as a both a threat to estuarine ecosystems (Whitfield 1997) and the greatest threat to marine biodiversity (Lombard *et al.* 2005). Estuaries are highly productive acting as both nursery and feeding areas for a number of important linefish species, several of which form important components of the recreational and commercial line-fisheries. Careful management is required in order to ensure adequate protection of resources and maintaining the sustainability of the line-fishery. Consequently, it is essential to monitor and evaluate the sustainability of fishing and bait collecting in the open areas of the GRNP. SANParks needs to be aware of the activities and trends occurring in adjacent line-fisheries, as well as maintaining a close liaison with local fishing communities and Oceans and Coast, which regulates fishing activities and quotas in South African waters.

4. PROGRAMMES TO ATTAIN PARK DESIRED STATE

4.1 ZONING

4.1.1 Introduction

The primary objective of a park zoning plan is to establish a coherent spatial framework in and around a park to guide and co-ordinate conservation, tourism and visitor experience initiatives. A zoning plan plays an important role in minimizing conflicts between different users of a park by separating potentially conflicting activities such as game viewing and day-visitor picnic areas whilst ensuring that activities which do not conflict with the park's values and objectives (especially the conservation of the protected area's natural systems and its biodiversity) can continue in appropriate areas. A zoning plan is also a legislated requirement of the Protected Areas Act, which stipulates that the management plan, which is to be approved by the Minister, must contain "a zoning of the area indicating what activities may take place in different sections of the area and the conservation objectives of those sections".

The zoning of Garden Route National Park was based on an analysis and mapping of the sensitivity and value of the park's biophysical, heritage and scenic resources; an assessment of the regional context; and an assessment of the park's current and planned infrastructure and tourist routes/products; all interpreted in the context of park objectives. The zoning for Garden Route National Park needs to be seen in the context of the ongoing consolidation process of this park. This was undertaken in an iterative and consultative process. This chapter sets out the rationale for use zones, describes the zones, and provides management guidelines for each of the zones.

A conservation development framework (CDF) will be developed for the Park during the current five year Management Plan cycle. The CDF will also spatially indicate what water based activities will allowed within the lakes and estuaries of the GRNP, with special reference to carrying capacity.

4.1.2 Rationale for Use Zones

The prime function of a protected area is to conserve biodiversity. Other functions such as the need to ensure that visitors have access to, and that adjoining communities and local economies derive benefits from the area, potentially conflict with and compromise this primary function. Use zoning is the primary tool to ensure that visitors can have a wide range of quality experiences without comprising the integrity of the environment.

Further, people visit a park with differing expectations and recreational objectives. Some people are visiting a park purely to see wildlife as well as natural landscapes. Others wish to experience intangible attributes such as solitude, remoteness, wildness, and serenity (which can be grouped as wilderness qualities), while some visit to engage in a range of nature-based recreational activities, or to socialize in the rest camp. Different people have different accommodation requirements ranging from extreme roughing it up to luxury catered accommodation. There is often conflict between the requirements of different users and different activities. Appropriate use zoning serves to minimize conflicts between different users of a park by separating potentially conflicting activities such as game viewing and day-visitor picnic areas whilst ensuring that activities which do not conflict with the park's values and objectives (especially the conservation of the protected area's natural systems and its biodiversity) can continue in appropriate areas. Use zones serve to ensure that high intensity facilities and activities are placed in areas that are robust enough to tolerate intensive use, as well as to protect more sensitive areas of the park from over-utilization.

4.1.3 Park Use Zonation System

The zoning system

SANParks has adopted a dual zoning system for its parks. The system comprises:

- Visitor use zones covering the entire park, and
- Special management overlays which designate specific areas of a park that require special management interventions.

The zoning of Garden Route National Park is shown in Figure 7, and summarized in Table 1.

The zoning process and its linkage to the underlying environmental analysis

The park use zonation plan is a lean version of the Conservation Development Framework (CDF). The park use zonation is based on the same biodiversity and landscape analyses undertaken for a CDF. However, certain elements underlying the CDF may not be fully incorporated into the park use zonation. In particular, the park use zonation plan will usually not incorporate elements such as a full tourism market analysis. Typically the park use zonation approach is applied to developing parks such as Garden Route National Park, though the long term objective is to have a full CDF for all parks.

The zoning for Garden Route National Park was underpinned by an analysis and mapping of the sensitivity and value of the biophysical, heritage and scenic resources. This analysis examined the biophysical attributes of the park including habitat value (in particular the contribution to national conservation objectives), special habitat value (the value of the area to rare and endangered species), hydrological sensitivity (areas vulnerable to disruption of hydrological processes such as floodplains and wetlands), topographic sensitivity (steep slopes), soil sensitivity (soils that are vulnerable to erosion) and vegetation vulnerability to physical disturbance. In addition, the heritage value and sensitivity of sites was examined (including palaeontological, archaeological, historical and current cultural aspects). The visual sensitivity of the landscape was also examined in order to identify sites where infrastructure development could have a strong aesthetic impact. This analysis was used to inform the appropriate use of different areas of the park, as well as to help define the boundaries between zones. The zoning was also informed by the park's current infrastructure and tourism products, as well as the regional context (especially linkages to neighbouring areas and impacts from activities outside the reserve). Planned infrastructure and tourism products were also accommodated where these were compatible with the environmental informants. These were all interpreted in the context of the park objectives. This was undertaken in an iterative and consultative process.

Figure 8 shows the relationship between the use zoning and the summary products of the biodiversity and landscape sensitivity-value analysis. This indicates that in general it was possible to include most of the environmentally sensitive and valuable areas into zones that are strongly orientated towards resource conservation rather than tourist use. Table 2 summarizes the percentage area of the park covered by each zone, as well as the percentage of the highly environmentally sensitive and valuable areas (defined as areas with values in the top quartile of the sensitivity value analysis) that are in each zone. The analysis suggests that although the zonation scheme helps protect most environmentally sensitive areas, this protection is a function of the high proportion of conservation orientated zones, rather than a function of these zones being particularly well located. Almost 87% of the park is covered by zones that are strongly conservation orientated in terms of their objectives (i.e. Remote and Primitive), with a very significant 38% zoned Remote, the most strongly conservation orientated zone. The result is that almost 85% of the highly sensitive habitats of the park are protected by conservation orientated zones. Unfortunately, as a legacy of existing infrastructure and use patterns (especially around the sensitive lake systems), there isn't a strong spatial correlation between highly sensitive habitats and the conservation orientated zones. It should however be noted that many of the sensitive habitats present in high use areas are covered by Special Conservation Overlays.

Table 2: Summary of the percentage area of the park covered by each zone, as well as the percentage of the highly environmentally sensitive and valuable areas (defined as areas with values in the top quartile of the sensitivity value analysis) that are in each zone.

Garden Route National Park		Zone as a percentage of park area	Percentage of highly sensitive areas that are in the zone
Conservation orientated zones	Remote	37.5	37.2
	Primative	49.1	46.4
Tourism orientated zones	Quiet	9.2	12.5
	Low Intensity Leisure	3.6	2.9
	High Intentsity Leisure	0.7	1.1

4.1.4 The Zones

Remote Zone

Characteristics

This is an area retaining an intrinsically wild appearance and character, or capable of being restored to such, and which is undeveloped. There are no permanent improvements or any form of human habitation. It provides outstanding opportunities for solitude with awe inspiring natural characteristics. If present at all, sight and sound of human habitation and activities are barely discernable and at a far distance. The zone also serves to protect sensitive environments from development impacts and tourism pressure.

Visitor activities and experience

Activities: Access is strictly controlled and on foot. Groups must be small, and can either be accompanied by a guide or unaccompanied. Several groups may be in area at the same time, but if necessary densities and routes should be defined so that no signs can be seen or heard between the groups. The principles of “Pack it in Pack it out” must be applied.

Interaction with other users: There is no interaction between groups. The numbers of groups within the area will be determined by the ability to ensure that there is no interaction between groups.

Conservation objectives of the zone (Limits of acceptable change)

The conservation objective is to maintain the zone in a natural state with no impact on biodiversity pattern or processes. Existing impacts on biodiversity either from historical usage or originating from outside the zone should be minimized. The zone should be managed within the following Limits of Acceptable Change:

Zone	General Characteristics	Experential Qualities	Interaction between users	Type of Access	Type of activities	Type of Facilities	Conservation Objectives	Limits of acceptable change: Biophysical	Limits of acceptable change: Aesthetics and recreational
REMOTE*	Retains an intrinsically wild appearance and character, or capable of being restored to such.	Solitude and awe inspiring natural characteristics	None to very low	Controlled access, only on foot	Hiking in small groups	Established footpaths where erosion may be a problem. Essentially undeveloped and roadless	Maintain the zone in a natural state with no impact on biodiversity pattern or processes. Existing impacts on biodiversity either from historical usage or originating from outside the zone should be minimized.	Deviation from a natural/pristine state should be minimized, and existing impacts should be reduced	Activities which impact on the intrinsically wild appearance and character of the area will not be tolerated.
PRIMITIVE	Generally retains wilderness qualities, but with basic self-catering facilities. Access is controlled. Provides access to the Remote Zone, and can serve as a buffer.	Experience wilderness qualities	Low	Controlled access. Accompanied or unaccompanied. Foot; 4x4 vehicles	Hiking; 4x4 drives; game viewing; horse riding	Small, basic, self-catering; or limited concessions with limited numbers; 4x4 trails; hiking trails	Maintain the zone in a generally natural state with little or no impact on biodiversity processes, and very limited and site specific impacts on biodiversity pattern. Existing impacts on biodiversity either from historical usage or originating from outside the zone should be minimized.	Deviation from a natural/pristine state should be small and limited to restricted impact footprints. Existing impacts should be reduced.	Activities which impact on the intrinsically wild appearance and character of the area should be restricted, and impacts limited to the site of the facility.
QUIET	This zone allows non-motorised access to areas which generally retain a natural appearance and character. Access is not specifically controlled.	Wide range of activities; relaxation in a natural environment	Moderate to high	Unaccompanied non-motorised access. Mainly on foot, non-motorised access to specific facilities.	Hiking; walking; rock climbing; bird watching; possibly mountain biking and horse riding	Hiking trails; footpaths; management tracks; bird hides. Ablution facilities may be provided in high use areas. No accommodation; and no tourist access by vehicle.	Maintain the zone in a generally natural state, with the proviso that limited impacts on biodiversity patterns and processes are allowed in order to accommodate park recreational and tourism objectives.	Some deviation from a natural/pristine state is allowed, but care should be taken to restrict the development footprint. Infrastructure, especially paths and viewpoints should be designed to limit the impacts of large numbers of visitors on the biophysical environment	Activities which impact on the relatively natural appearance and character of the area should be restricted, though the presence of larger numbers of visitors and the facilities they require, may impact on the feeling of wildness found in this zone
LOW INTENSITY LEISURE	The underlying characteristic of this zone is motorised self-drive access with basic self-catering facilities. The numbers of visitors are higher than in the Remote and Primitive Zones. Camps are without modern facilities such as shops and restaurants.	Comfortable facilities in a relatively natural environment.	Moderate to high	Motorised self-drive access.	Motorised self-drive game viewing, picnicking, walking, cycling; rock climbing; hiking; adventure activities.	Facilities limited to basic self-catering picnic sites; ablution facilities; information/education centres; parking areas. Small to medium self-catering (incl. camping) rest camps with ablution facilities, but not shops or restaurants. Low spec access roads to provide a more wild experience.	Mitigate the biodiversity impacts of the relatively high levels of tourism activity and infrastructure that are accommodated within this zone through careful planning and active management, and to ensure that both the negative effects of the activities and infrastructure are restricted to the zone, and that the zone is maintained in a generally natural state that is in keeping with the character of a Protected Area.	Deviation from a natural/pristine state should be minimized and limited to restricted impact footprints as far as possible. However, it is accepted that some damage to the biophysical environment associated with tourist activities and facilities will be inevitable	Although it is inevitable that activities and facilities will impact on the wild appearance and reduce the wilderness characteristics of the area, these should be managed and limited to ensure that the area still provides a relatively natural outdoor experience
HIGH INTENSITY LEISURE	The main characteristic is that of a high density tourist development node, with modern amenities, where more concentrated human activities are allowed.	Comfortable and sophisticated facilities while retaining a natural ambiance	High	Accessible by motorised transport (car/bus) on high volume transport routes, including delivery vehicles.	As above. Additional sophisticated infrastructure. Larger, organised adventure activities (orienteering, fun runs). Dining at restaurants.	High density tourist camps with modern amenities. Footpaths, transport systems, accommodation, restaurants, curio and refreshment stalls; education centres. High volume roads.	Ensure that the high levels of tourism activity and infrastructure that are accommodated within this zone have a minimal effect on the surrounding natural environment.	The greatest level of deviation from a natural/pristine state is allowed in this zone, and it is accepted that damage to the biophysical environment associated with tourist activities and facilities will be inevitable.	Although it is inevitable that the high visitor numbers, activities and facilities will impact on the wild appearance and reduce the wilderness characteristics of the area, these should be managed and limited to ensure that the area generally still provides a relatively natural outdoor experience appropriate for a national park.

Table 1: Zoning definitions for Garden Route National Park. (Note that areas suitable for declaration as Wilderness will be identified within the Remote Zones once the inland areas of the GRNP have been consolidated)

Biophysical environment: Deviation from a natural/pristine state should be minimized, and existing impacts should be reduced.

Aesthetics and recreational environment: Activities which impact on the intrinsically wild appearance and character of the area, or which impact on the wilderness characteristics of the area (solitude, remoteness, wildness, serenity, peace etc) will not be tolerated.

Facilities

Type and size: No facilities are provided. Should overnight facilities be required to serve this zone, these should be placed in the adjoining zones.

Sophistication of facilities: No facilities except self carried portable tents. Guidelines for washing, ablution and cooking must be defined according to the “Pack it in Pack it out” principles. Camping only at designated sites.

Audible equipment and communication structures: None.

Access and roads: Public access is non-motorized. Vehicular access and parking is provided in the adjoining zones. Established footpaths may be provided where erosion risks occur. Limited low specification management tracks (i.e. not built up roads) are acceptable within this zone, though these should be rationalized, and eventually removed.

Location in Park

Remote areas were designated in the mountainous areas of the park such as Soetkraal, as these areas are both logistically difficult for development and sensitive to development pressures (in particular disruption of catchment areas). Remote areas were also designated to protect sensitive coastline east of the Dolphin Trail. Although this area is adjacent to pine plantations, it is below the coastal escarpment and is visually and aesthetically isolated from these transformed landscapes. Consolidation of the coastal buffer in this section is important in order to maintain the Remote characteristics of this zone. This section of the Remote Zone extends into the marine areas of the park.

Primitive Zone

Characteristics

The prime characteristic of the zone is the experience of wilderness qualities with the accent on controlled access. Access is controlled in terms of numbers, frequency and size of groups. The zone shares the wilderness qualities of Wilderness Areas and Remote zones, but with the provision of basic self-catering

facilities and access. It also provides access to the Remote zone and Wilderness Area. Views of human activities and development outside of the park may be visible from this zone.
This zone has the following functions:

- It provides the basic facilities and access to serve Wilderness Areas and Remote zones.
- It contains concession sites and other facilities where impacts are managed through strict control of the movement and numbers of tourists, for example if all tourists are in concession safari vehicles.
- It serves as a buffer to the fringe of the park and other zones, in particular Wilderness and Remote.
- It serves to protect sensitive environments from high levels of development.

Visitor activities and experience

Activities: Access is controlled in terms of numbers, frequency and size of groups. Activities include hiking, 4x4 drives and game viewing. Access is controlled either through only allowing access to those with bookings for specific facilities, or alternatively through a specific booking or permit for a particular hiking trail or 4x4 route. Several groups may be in area at the same time, but access should be managed to minimize interaction between groups if necessary.

Interaction with other users: Interaction between groups of users is low, and care must be taken in determining the number and nature of facilities located in the area in order to minimize these interactions.

Conservation objectives of the zone (Limits of acceptable change)

The conservation objective is to maintain the zone in a generally natural state with little or no impact on biodiversity processes, and very limited and site specific impacts on biodiversity pattern. Existing impacts on biodiversity either from historical usage or originating from outside the zone should be minimized. The zone should be managed within the following Limits of Acceptable Change:

Biophysical environment: Deviation from a natural/ pristine state should be small and limited to restricted impact footprints. Existing impacts should be reduced. Any facilities constructed in these areas, and activities undertaken here should be done in a way that limits environmental impacts. Road and infrastructure specifications should be designed to limit impacts.

Aesthetics and recreational environment: Activities which impact on the intrinsically wild appearance and character of the area, or which impact on the wilderness characteristics of the area (solitude, remoteness, wildness, serenity, peace etc) should be restricted and impacts limited to the site of the facility. Ideally visitors should only be aware of the facility or infrastructure that they are using, and this infrastructure/facility should be designed to fit in with the environment within which it is located in order to avoid aesthetic impacts.

Facilities

Type and size: Facilities are small, often very basic, and are distributed to avoid contact between users. Alternatively facilities designed for high levels of luxury, but limited visitor numbers can be accommodated here (e.g. controlled access private camps or concession sites).

Sophistication of facilities: Generally facilities are small, basic and self-catering, though concession facilities may be significantly more sophisticated.

Audible equipment and communication structures: None.

Access and roads: Vehicular access to facilities is limited to low-spec roads, often 4x4 only. Tourist and game viewing roads are 4x4 only. Established footpaths are provided to avoid erosion and braiding.

Location in Park

The designation of Primitive areas in the Wilderness sections of Garden Route National Park in the areas that were historically under SANParks management was severely limited by existing infrastructure impacts associated with the peri-urban nature of this section of the park. Although the zone can contain limited access roads and the potential for basic small-scale self-catering accommodation facilities such as a bushcamp, this would be inappropriate within the limited extent of the high conservation value area protected by the Primitive Zone. Primitive areas were designated to protect the high conservation value and Ramsar listed Rondevlei, Bo-Langvlei and surrounding areas from tourist and infrastructure impacts. The areas previously managed by DWAF and the forest exit areas provide far more scope for the designation of Primitive areas in order to both protect sensitive environments and to provide the scope for appropriate controlled tourist use and resource utilization of these areas. Most forest and fynbos areas identified as environmentally sensitive, that were not included in the Remote zones or subject to existing infrastructure impacts, were include in the Primitive Zone. This included the bulk of the indigenous Harkeville forest as well as forest and fynbos areas north of Knysna.

In the Tsitsikamma section, the controlled access Otter and Dolphin trails are in this zone. Primitive areas were also designated in valleys in the Soetkraal section

to allow management and controlled tourist 4x4 access into the Remote zone. Primitive areas were designated at both ends of the coastal Remote zones to buffer them from higher use tourist areas and external impacts from outside the park. In areas where Remote zones border on the park boundary, a 100m wide Primitive zone was designated to allow park management access to boundaries.

Quiet Zone

Characteristics

This zone is characterized by unaccompanied non-motorized access without specific access control and permits. Visitors are allowed unaccompanied (or accompanied) access, mainly on foot, for a wide range of experiences. Larger numbers of visitors are allowed than in the Primitive zone and contact between visitors is frequent. The main accent is on unaccompanied non motorized access. Larger numbers of visitors are allowed and contact between visitors is frequent. It is important to note that this zone may have different interpretations in different parks and the CDF documentation for each park should set the objectives specific to that park. Thus, in some instances horses and mountain bikes could be accommodated. This zone can also provide non motorized access within Low and High Intensity Leisure zones away from vehicular access roads.

Visitor activities and experience

Activities: Hiking, canoeing, sailing, rock climbing, bird watching, self guided constructed trails and walks.

Interaction with other users: Interaction between groups of users is frequent.

Conservation objectives of the zone (Limits of acceptable change)

The conservation objective is to maintain the zone in a generally natural state, with the proviso that limited impacts on biodiversity patterns and processes are allowed in order to accommodate park recreational and tourism objectives. The zone should be managed within the following Limits of Acceptable Change:

Biophysical environment: Some deviation from a natural/pristine state is allowed, but care should be taken to restrict the development footprint. Infrastructure, especially paths and viewpoints should be designed to limit the impacts of large numbers of visitors on the biophysical environment.

Aesthetics and recreational environment: Activities which impact on the relatively natural appearance and character of the area should be restricted, though the presence of larger numbers of visitors and the facilities they require, may impact on the feeling of “wildness” found in this zone.

Facilities

Type and size: Hiking trails, footpaths, bird hides. No accommodation. Ablution facilities may be provided in high use areas. Heritage structures may be used for recreation purposes.

Sophistication of facilities: Where provided these should be basic.

Audible equipment and communication structures: Allowed, but should be managed to retain a relative level of solitude.

Access and roads: Essentially pedestrian access, but in certain parks horse and mountain bikes can be accommodated. Pedestrian only or in some cases cycles. No access for tourists by vehicle. The only roads are essential two wheeled management tracks. In lake and estuary areas, the Quiet zone implies that only non-motorized vessels will be allowed access.

Location in Park

In Garden Route NP, Quiet zones were designated to allow visitors access on foot to hiking trails around the higher use Low intensity leisure areas and the major access nodes such as Nature's Valley and Storms River. Sections of beach away from major access points (such as west of Gericke Point) were also zoned Quiet. River areas limited to non-motorized access such as the Touw River above the railway bridge were zoned as Quiet. In the forest areas previously managed by DWAF, Quiet zones were designated around the access points and development nodes at Goudveld, Gouna, Diepwalle and Harkerville to encourage non-motorised tourist access to these areas. Sensitive estuary areas such as the Salt River and the Groot River were included in this zone to preclude infrastructure development. As far as possible, the sensitive sections of the park which were not included into the Primitive zone were zoned Quiet to protect them from infrastructure development and excessive tourist impacts.

Low Intensity Leisure Zone

Characteristics

The underlying characteristic of this zone is motorized self-drive access with basic self-catering facilities. The numbers of visitors are higher than in the Remote and Primitive zones. These camps are without modern facilities such as shops and restaurants. Relatively comfortable facilities are positioned in the landscape retaining the inherent natural and visual quality which enhances the visitor experience of a more natural and self providing experience. Access roads are low key, preferably gravel roads and/or tracks to provide a more wild experience. Facilities along roads are limited to basic self-catering picnic sites with toilet facilities. In some parks, large busses and open safari vehicles are not permitted.

Visitor activities and experience

Activities: Self drive motorized game viewing, picnicking, walking, cycling, rock climbing, hiking, adventure activities.

Interaction with other users: Moderate to high

Conservation objectives of the zone (Limits of acceptable change)

The conservation objective is to mitigate the biodiversity impacts of the relatively high levels of tourism activity and infrastructure that are accommodated within this zone through careful planning and active management, and to ensure that both the negative effects of the activities and infrastructure are restricted to the zone, and that the zone is maintained in a generally natural state that is in keeping with the character of a Protected Area. The zone should be managed within the following Limits of Acceptable Change:

Biophysical environment: Deviation from a natural/ pristine state should be minimized and limited to restricted impact footprints as far as possible. However, it is accepted that some damage to the biophysical environment associated with tourist activities and facilities will be inevitable.

Aesthetics and recreational environment: Although it is inevitable that activities and facilities will impact on the wild appearance and reduce the wilderness characteristics of the area (solitude, remoteness, wildness etc), these should be managed and limited to ensure that the area still provides a relatively natural outdoor experience.

Facilities

Type and size: Picnic sites, view sites, information centres, ablution facilities, parking areas, education centres etc. Small self-catering (including camping) camps of low to medium density 25-35 beds. Additional facilities can include swimming pools. Trails for 4x4 vehicles can also be provided. Day visitor site are not placed within the camps. Day visitor sites should generally be compliant with the general self-catering characteristic of the zone, but may include limited catered facilities and kiosks.

Sophistication of facilities: Self contained self-catering units with bathroom facilities. Camp sites will include ablution facilities. These camps are without modern

facilities such as shops and restaurants.

Audible equipment and communication structures: Cell phone coverage in vicinity of camps. Code of use for cell phones and radios required to retain relative level of solitude.

Access and roads: Motorized self drive sedan car access (traditional game viewing) on designated routes which are preferably gravel roads. In some parks, large busses and open safari vehicles are not permitted. When busses are permitted some roads should be designated as accessible to self drive only. Roads are secondary gravel tourist roads or minor game viewing roads. In lake and estuary areas, Low intensity leisure implies that motorized vessels are generally allowed, but they may be excluded from certain sections either to minimize environmental impacts or to reduce conflict with other recreational water users. Low intensity leisure does not imply motorized access to beaches.

Location in Park

Low intensity leisure areas were designated in most of the high use beach areas of the park (except around the Touw River mouth), in the area between the Touw River mouth and the Ebb and Flow Rest camp, Eilandvlei, Swartvlei, Sedgefield Lagoon, and large portions of Knysna Estuary. Park infrastructure at Rondevlei is accommodated within this zone. In lake and estuary areas, Low intensity leisure implies that motorized vessels are generally allowed, but they may be excluded from certain sections either to minimize environmental impacts or to reduce conflict with other recreational water users. In the areas previously managed by DWAF, low intensity leisure areas were designated along the access routes to Diepwalle (including Kom se Pad), the Diepwalle tourism facilities, Gouna, Goudveld and its access, a section of the Harkerville forest near the N2 identified for potential development, the “Big Tree” boardwalk area which allows high numbers of visitors easy access to forested areas, as well as the access routes to Krantzkloof. Most of the Low Intensity Leisure areas represent existing development nodes and access routes to the major forest stations.

High Intensity Leisure Zone

Characteristics

The main characteristic is that of a high density tourist development node with modern amenities such as restaurants and shops. This is the zone where more concentrated human activities are allowed. As impacts and particularly cumulative impacts are higher, such facilities should be placed on the periphery of the park. Staff not directly associated with tourism facilities should be accommodated outside of the park if possible. All industrial type facilities such as laundries, abattoirs,

maintenance depots and workshops should ideally be located outside of the park within suitably zoned adjoining urban or rural areas. Accessible by motorized transport (Car/bus) on high volume transport routes. More concentrated activities occur than in than Low Intensity leisure.

Visitor activities and experience

Activities: Traditional game viewing routes with associated more sophisticated infrastructure, sight seeing at tourist destinations, picnicking, walking, cycling, rock climbing, hiking, adventure activities (orienteering, scuba diving, fun runs), activities associated with amenities such as dining in restaurants.

Interaction with other users: High

Conservation objectives of the zone (Limits of acceptable change)

The conservation objective is to ensure that the high levels of tourism activity and infrastructure that are accommodated within this zone have a minimal effect on the surrounding natural environment. The zone should be managed within the following Limits of Acceptable Change:

Biophysical environment: The greatest level of deviation from a natural/pristine state is allowed in this zone, and it is accepted that damage to the biophysical environment associated with tourist activities and facilities will be inevitable. However, care must be taken to ensure that the zone still retains a level of ecological integrity consistent with a protected area.

Aesthetics and recreational environment: Although it is inevitable that the high visitor numbers, activities and facilities will impact on the wild appearance and reduce the wilderness characteristics of the area (solitude, remoteness, wildness etc), these should be managed and limited to ensure that the area generally still provides a relatively natural outdoor experience.

Facilities

Type and size: High density camps providing tourist accommodation with modern amenities. Restaurants, shops, education centres, botanical gardens, picnic sites, major view sites, information centres, ablution facilities, parking areas, education centres etc. Day visitor sites are provided outside of main camps. Day visitor sites or picnic sites may provide catered facilities and kiosks. In some parks it may be necessary to provide high density recreational sites with a wide range of intensive activities close to the periphery of the park. Staff villages and administrative centres restricted to core staff. Non essential staff housing, administration and industrial activities positioned outside of or peripheral to the park.

Sophistication of facilities: Moderate to high density facilities. Self-catering and catered. These camps have modern facilities such as shops and restaurants.

Audible equipment and communication structures: Cell phone coverage in vicinity of camps. Code of use for cell phones and radios required to retain relative level of solitude.

Access and roads: The zone is highly motorized including busses and delivery vehicles on designated routes which are often tarred. Care must be taken to distinguish between roads that serve as high access delivery routes to camps, link roads between camps, and game viewing roads to minimize conflict between users.

Location in Park

Limited High Intensity Leisure areas were designated in Garden Route National Park. These are the Storms River Mouth Camp (including the staff and administrative areas), Ebb and Flow Camp and the Touw River Mouth. Note that the public access roads that cut through the park (e.g. the N2) are outside the park and are excluded from its zoning scheme.

Overview of the Special Management Overlays of Garden Route National Park

Special management overlays which designate specific areas of the park that require special management interventions were identified. Three overlay types were designated namely Special Conservation Areas; Resource Use Management Areas; and Aquatic Access and Activity Control Areas. Numerous specific areas are currently designated in each of these categories within the park, and others may be designated by park management when required (see Figures 9 to 12 below):

Special Conservation Areas – Forest Special Protection: Particular areas of specified forest types were designated for special protection in order to reduce the risk of habitat loss and mitigate any ongoing environmental impacts.

Special Conservation Areas – Wetlands: High conservation value wetlands such as Rondevlei, Bo-Langvlei, Eilandvlei, the Serpentine channel and floodplain, and Swartvlei Estuary below the railway line were identified for special protection in order to reduce any potential habitat loss and minimize tourist and development impacts.

Special Conservation Areas – Catchments: The Palmiet River catchment in the Soetkraal section was designated for special protection to strictly control any

development, tourism activity or management activity which may impact on the river (including its catchment and especially the riparian zone) and its biota.

Resource Use Management Areas – Fishing exclusion area: Rondevlei, Bo-Langvlei and the channels between them were designated as fishing exclusion areas to prevent impacts associated with fishing and bait collection.

Resource Use Management Areas – Bait collection exclusion area: The eastern sections of Knysna Estuary were designated as a bait collection exclusion area to prevent impacts associated with bait collection.

Resource Use Management Areas – Marine Restricted: The marine areas of the park except the Groot River estuary, the marine areas west of Nature's Valley and Nature's Valley beach were classified as Restricted Marine Protected Areas in accordance with the appropriate legislation (Marine Living Resources Act). Effectively this declares the areas a "no-take" zone for any marine living resources.

Resource Use Management Areas – Marine Controlled: The remaining marine areas of the park were identified as Marine Controlled areas. These are currently managed Marine Controlled areas under the PAA legislation, but it is proposed that these areas will also be officially declared Controlled Marine Protected Area within the Marine Living Resources Act. Specified and strictly controlled use of marine living resources is allowed in this zone.

Resource Use Management Areas – Terrestrial: Certain terrestrial areas within the GRNP have been identified for resource use. These areas are mainly located in the Indigenous Forest Areas and Mountain Fynbos areas where historical resource use has taken place. The products identified for resource use include timber; ferns; and certain fynbos species. Additional products are currently being assessed for resource use. These products include species to be harvested for medicinal purposes.

Aquatic Access and Activity Control Areas – Speed controlled areas: Touw River Mouth to Railway Bridge has limits on equipment type and speed (maximum of 5 HP, idle speed only, or electric motor). Lower areas of Swartvlei such as Kingfish Drive Slipway have an idle speed only restriction.

Aquatic Access and Activity Control Areas – Motorised vessel exclusion areas:
Canoes are allowed, but motorized boats are prohibited. For example, the Railway Bridge to Waterfall on the Touw River and the mouth region of the Swartvlei Estuary.

Aquatic Access and Activity Control Areas – Jetski exclusion areas:

Motorized boats are allowed, but jet-skis are prohibited. This layer is applied on Island Lake.

Aquatic Access and Activity Control Areas – Skiing exclusion areas:
Motorized boats are allowed, but skiing is prohibited.

Aquatic Access and Activity Control Areas – Exclusion areas: All vessels are excluded from these areas (including canoes and motorized boats). This layer is applied in Swartvlei, close inshore along the northern and southern banks of the lake.

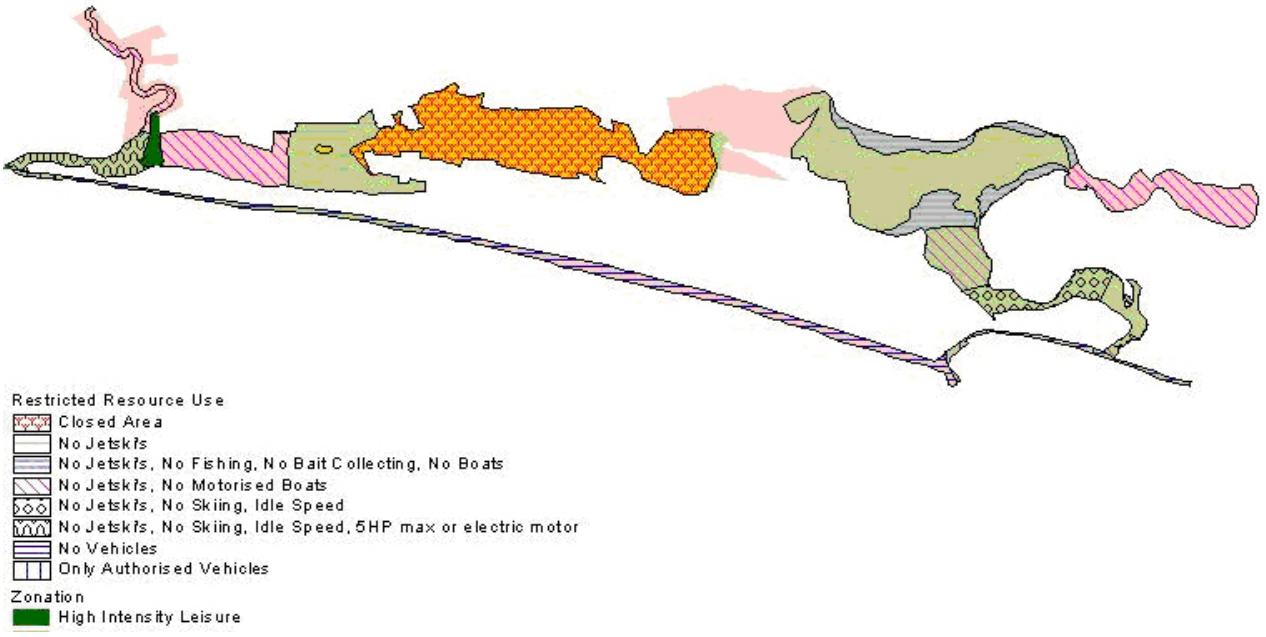


Figure 9: Aquatic Zoning - Wilderness

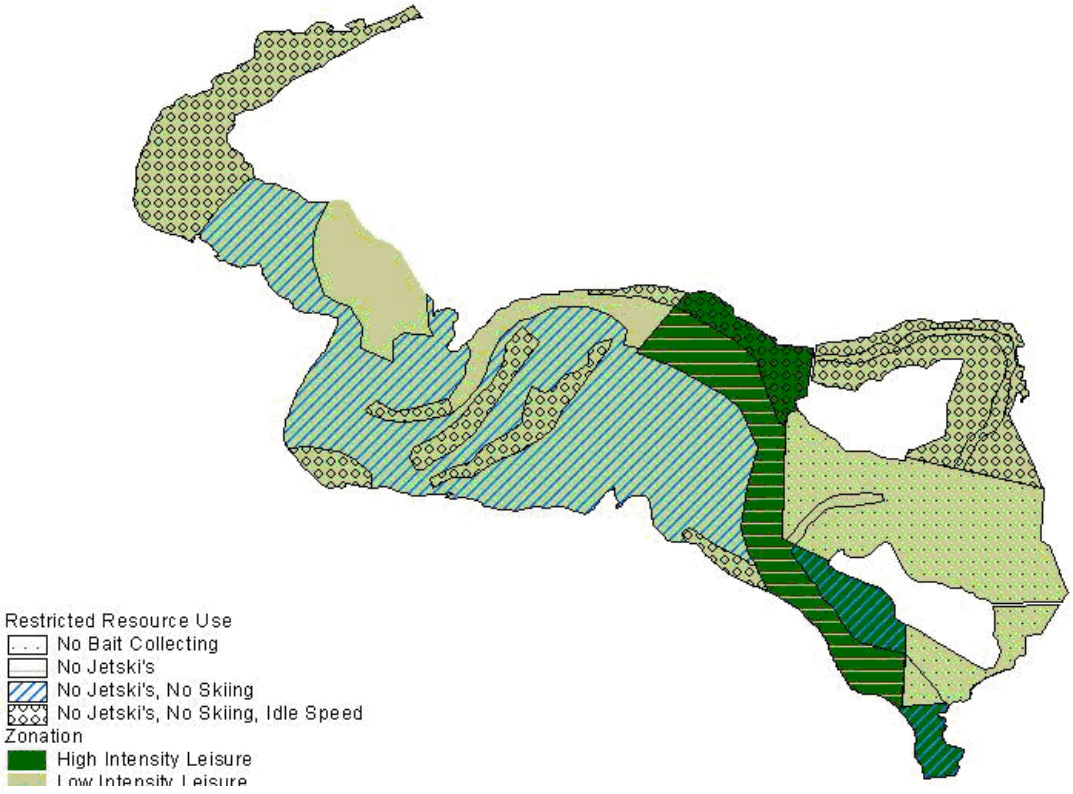
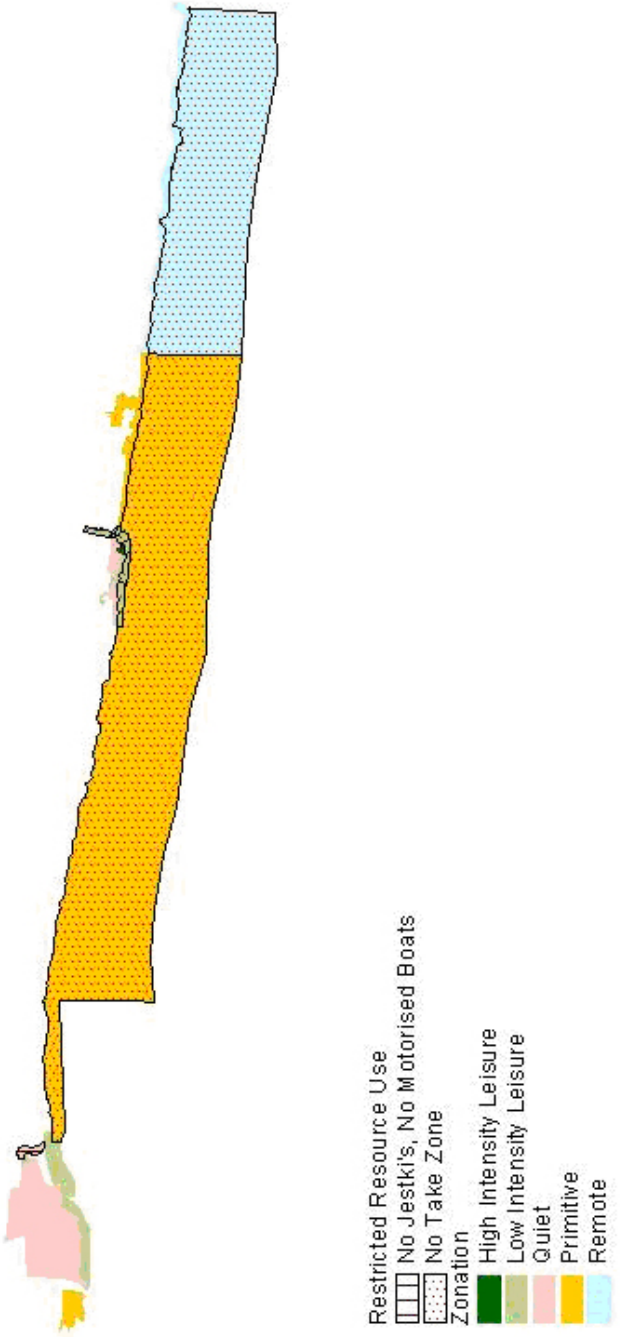


Figure 10: Aquatic Zoning - Kynsna


Restricted Resource Use
No Jestki's, No Motorised Boats
No Take Zone
Zonation
High Intensity Leisure
Low Intensity Leisure
Quiet
Primitive
Remote

The Park Buffer Zone

A National Park Buffer Zone is the identified area within which activities (e.g. landuse change) have an influence on the park (current and future extent). This section of the management plan is aligned with the DEA (formerly DEAT) Policy on Buffer Zones for National Parks (2009) and the SANParks Buffer Zone Policy. This section of the management plan formally identifies and defines the buffer zone (see Figure 13 below).

The Park Buffer Zones shows the areas within which landuse changes could affect a national park. The zones, in combination with guidelines, will serve as a basis for a.) identifying the focus areas in which park management and scientists should respond to EIA's, b.) helping to identify the sort of impacts that would be important at a particular site, and most importantly c.) serving as the basis for integrating long term protection of a national park into the spatial development plans of municipalities (SDF/IDP) and other local authorities. In terms of EIA response, the zones serve largely to raise red-flags and do not remove the need for carefully considering the exact impact of a proposed development. In particular, they do not address activities with broad regional aesthetic or biodiversity impacts.

The Garden Route National Park has three Buffer Zone categories. The first two are mutually exclusive, but the final visual/aesthetic category can overlay the others.

Priority Natural Areas

This zone aims to ensure the long term persistence of biodiversity, within and around the park, by identifying the key areas on which the long term survival of the park depends. This includes areas important to both biodiversity pattern (especially reasonably intact high priority natural habitats) and processes (ecological linkages, catchments, intact hydrological systems, etc.). This does not imply any loss of existing rights (e.g. current agricultural activities or legal extractive biodiversity use such as fishing), but rather aims to ensure the parks survival in a living landscape.

Priority natural areas include areas identified for future park expansion as well as reasonably natural areas of high biodiversity value which are critical for the long-term persistence of biodiversity within the park. These include adjacent natural areas (especially high priority habitats) which function as an ecologically integrated unit with the park, as well as areas critical for maintaining ecological links and connectivity with the broader landscape.

Development guidelines

Inappropriate developments and negative land use changes (such as additional ploughing of natural veld, development beyond existing transformation footprints, urban expansion, intensification of landuse through golf estates etc) should be opposed within this area. Developments with site specific impacts (e.g. a lodge on a game farm) should be favourably viewed if they contribute to ensuring conservation friendly land use within a broader area. Guidelines applicable for the Catchment Protection Section would also apply to these areas.

Catchment Protection

These are areas important for maintaining key hydrological processes (surface and groundwater) within the park.

Development guidelines

Within these areas inappropriate development such as dam construction, loss of riparian vegetation and excessive aquifer exploitation should be opposed. In addition, the control of alien vegetation, the control of soil erosion, and appropriate land care (e.g. appropriate stocking rates) should be promoted.

Viewshed protection

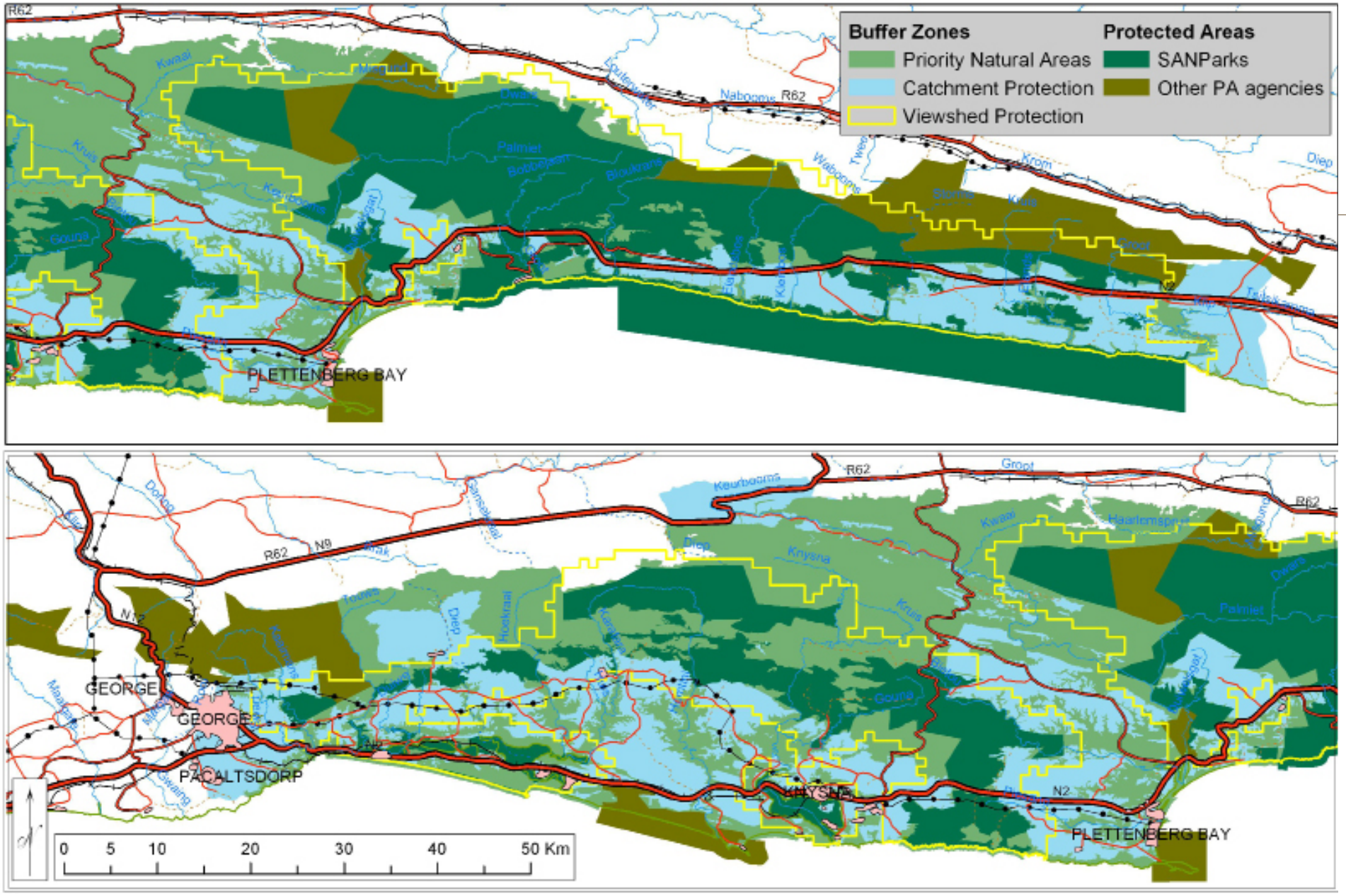
These are areas where developments could impact on the aesthetic quality of a visitors experience in a park. This zone is particularly concerned with visual impacts (both day and night), but could also include sound pollution.

Development guidelines

Within these areas any development proposals should be carefully screened to ensure that they do not impact excessively on the aesthetics of the park. The areas identified are only broadly indicative of sensitive areas, as at a fine scale many areas within this zone would be perfectly suited for development. In addition, major projects with large scale regional impacts may have to be considered even if they are outside the Viewshed Protection Zone.

4.1.5 Current Status and Future Improvements

The zoning for Garden Route National Park needs to be seen in the context of the consolidation of this new park. This rapidly changing context will potentially require re-assessment of the current park zoning. The current park use zonation is based on the same biodiversity and landscape analyses undertaken for a Conservation Development Framework (CDF); however certain elements underlying the CDF such as a tourism market analysis are not be fully incorporated into the park use zonation. A full CDF will be developed for Garden Route National Park within the current update cycle.


Buffer Zones
Priority Natural Areas
Catchment Protection
Viewshed Protection
Protected Areas
SANParks
Other PA agencies
R62
N2
N9
N12
PLETTENBERG BAY
GEORGE
PACALTSDORP
KNYSNA
0 5 10 20 30 40 50 Km

4.2 BIODIVERSITY AND CULTURAL HERITAGE CONSERVATION

4.2.1 Bioregional programme

The Garden Route National Park consists of a large number of often spatially separated sections with a highly diverse mix of land uses in the intervening areas. This provides a unique challenge in terms of expanding the park to the extent required for it to fulfil its mandate as a national park, and to ensure that the park is not excessively impacted by inappropriate land use in areas adjacent to it and within its catchments, and that the park contributes optimally to protecting the biodiversity of the Garden Route region.

It is recognized that because of the highly fragmented nature of that areas surrounding the current areas of the Garden Route National Park, the extremely high land values of these properties and the socio-economic costs of displacing current economic activity, the consolidation of the National Park needs to work towards a sustainable conservation outcome on priority properties rather than only focussing on land purchase as a consolidation mechanism. An appropriate conservation outcome on these properties is also required to reduce the pressures on the park from invading alien species, inappropriately sited commercial agriculture, afforestation, urban development, water pollution and excessive water extraction.

The Garden Route Bioregional programme aims to expand the conservation estate of the GRNP and to seek conservation outcomes on private properties within identified priority natural areas (critical biodiversity and ecological support areas) within the planning domain. Bioregional corridors that span from mountain catchments to sea and coastal corridors, in areas of high biodiversity or important for ecosystem services have been identified. The threats to biodiversity conservation and sustaining environmental integrity are development pressure and invader plants, whilst climate change could pose a long-term threat. The Bioregional Programme has various complementary components from planning to implementation. These are set out below.

Bioregional planning/ framework / expansion strategy

The Bioregional planning framework and strategy is an ecosystem conservation approach focused on maintaining associated ecological patterns and processes required to ensure the long term persistence of biodiversity within the Garden Route National Park.

The Buffer zone Policy for National Parks (still a draft at the time this plan was compiled) will serve as the basis for the GRNP Bioregional planning framework. Identified Priority Natural Areas (PNA); Catchment protection Areas (CPA); and Viewshed Protection Areas (VPA) will be the main focus areas for the GRNP to pursue a conservation outcome through a suite of mechanisms.

Land consolidation

Various land parcels on state land have been identified for inclusion into the Garden Route National Park. These parcels consist mainly of land currently managed by SANParks that is not proclaimed as part of the GRNP, as well as land to be exited from commercial forestry (MTO land). A variety of surveying, legal and management issues have to be resolved prior to agreement for the proclamation and inclusion of these areas into the GRNP. All this land has been identified, and the processes described to resolve the current encumbrances will form the core focus area for the GRNP expansion/land consolidation for the next five years.

In certain instances SANParks managed land borders directly on land managed by provincial conservation agencies (CapeNature and Eastern Cape Tourism and Conservation Board). MOUs need to be signed with these agencies in order to ensure cooperation and accountability, within the agreed framework of the Integrated Conservation Area Network of the Garden Route Initiative.

Mainstreaming biodiversity into land use planning and decision making

The Garden Route bioregional programme aims to achieve a conservation outcome on properties within the Priority Natural Areas of the GRNP. It is important to ensure the Garden Route National Park and bioregional linkages are included in SDFs and IDPs to ensure biodiversity priorities are incorporated in documents that guide land-use planning. Two district municipalities and four local municipalities are involved.

Other interventions being planned or implemented relate to: the Garden Route Environmental Management Framework commissioned by DEA, using the Priority Natural Area maps to guide EIA and land-use change proposals, collaborating with local and municipal authorities regarding cross-cutting environmental issues, promoting conservation outcomes on private land via a range of mechanisms , initiating river restoration projects, representation on Environmental Liaison Committees and using environmental management plans as “best practice” mechanisms even if not required in terms of NEMA.

Maintaining environmental integrity

Environmental impacts that SANParks deal with regularly include: pollution of estuaries and rivers, potential loss of threatened fynbos, subtropical thicket and forest resulting from developments, alien vegetation, especially in river corridors and mountain catchments, beach erosion and possible loss of private and municipal infrastructure, illegal developments and uncertain effects of resource utilisation and of altered fire regimes.

To ensure environmental integrity within the GRNP it is necessary to monitor water quality and impacts external to the park as these impacts are often transferred into the park with potential consequences for visitors and ecosystem health.

Pro-active interventions such as making literature available e.g. fire-wise and flood-wise booklets and discussing wild land/urban interface and urban conservation issues with stakeholders contribute to a better understanding of resource use and biodiversity conservation.

EIA comments generally make reference to resource efficiency, waste reduction, rehabilitation and avoidance or minimisation of erosion and pollution. The ultimate goal is to promote the wise use of natural resources, the protection of important ecosystems, the effective management of alien invasive species and fires, ensuring grazing or harvesting does not damage the veld and sustainable resource use.

Figure 13: Buffer Zones

BIOREGIONAL PROGRAMME

Conservation of Representative, Functional Ecosystems

Representative ecosystems:
To incorporate a spectrum of viable aquatic and terrestrial ecosystems characteristic of the Garden Route, and to re-introduce missing elements where possible.
Consolidation and expansion of all areas:
Consolidation of protected areas focusing on under- represented ecosystems, functional linkages and processes

Objective	Management / Monitoring Activities	Responsibility	Indicators / Measures	Timeframe	Reference to other documents
To develop a bioregional framework for GRNP	Align bioregional framework with the national DEA buffer zone policy to spatially reflect the GRNP Priority Natural Areas and Viewshed Protection Areas.	PIM	Bioregional Framework finalised	Year 1	
	Taking cognisance of the SANParks land inclusion framework and GRI fine scale biodiversity assessment, review the existing GRNP land consolidation strategy and priorities	GM and PIM	Updated and current strategy in place	Year 1	
	Implement actions to promote appropriate conservation outcomes on identified priority natural areas beyond the GRNP	PIM	Conservation outcomes achieved	Year 1 and ongoing	
To incorporate land and sea identified for inclusion into GRNP (refer to desired state map)	Finalise the re-delineation of state forest areas recommended by the VECON study and approved by cabinet to be retained for commercial plantations in collaboration with DAFF and MTO.	GM and PIM	Areas re-delineated promoting consolidation of conservation areas	Year 1	
	MTO plantation exit areas: Develop exit programme in collaboration with DAFF and align exit programme with GRNP operational plans.	PIM	Exit programme in place	Year 2	
	Exited areas: proclamation as part of the GRNP	GM	Areas gazetted	Year 2	
	Soetkraal: Finalise the expropriation order from DEA and proclaim Soetkraal as part of GRNP	PIM and GM	DEAT engaged Document in hand	Year 3	
	Other land under SANParks management that is not proclaimed as part of GRNP: 1. Determine the boundary on all land where only part of a title deed/cadastral is managed by SANParks 2. Engage with landowners for transfer of title to SANParks	PIM	All land under SANParks management surveyed where necessary and proclaimed as part of GRNP	1.Year 1 and ongoing 2. Year 2	

Objective	Management / Monitoring: Activities	Responsibility	Indicators / Measures	Timeframe	Reference to other documents
	Knysna PE: Regulations to be promulgated and national park status sought for the biodiversity control area and other state land vested in SANParks within the Knysna National Lake Area (erf 211, Thesen's Island, airfield)	GM and AM	Areas gazetted	Year 1	
	Review the recommendations from the integrated marine management plan for the Garden Route (WWF) and investigate opportunities and requirements necessary to establish and proclaim any additional MPA areas for the GRNP	GM and PIM	Boundaries defined and mapped	Year 2	
To mainstream biodiversity into land use planning and decision making To	Engage with municipalities to ensure that IDPs and SDFs incorporate biodiversity priorities	PIM	Biodiversity priorities adequately reflected in SDFs and IDPs	Ongoing	
	Engage with all relevant land use planning processes within the defined GRNP priority natural areas to ensure that biodiversity priorities and objectives are addressed (including EIA's)	PIM	SANParks comments submitted as an interested and affected party for EIA's within GRNP priority natural areas.	Ongoing	
	Establish a network with relevant authorities and parties to ensure that SANParks are timeously notified of land use change and development applications that may negatively impact on the possible conservation outcome in priority natural areas. Monitor compliance with environmental authorisations where appropriate.	PIM	Records available. Networks established	Ongoing	

Budget Allocation	**Development**	R 312,009
	Operational (Year 1)	R 1,702,845

4.2.2 Terrestrial vegetation programme

SANParks strives to maintain the extent, biodiversity and ecological patterns and processes of the terrestrial vegetation types occurring within the Garden Route National Park.

The floristic diversity of terrestrial vegetation is described and recorded to provide a sound basis for conservation management. The ten national vegetation types, including eight fynbos and two forest types, occurring in the park have been described by Mucina & Rutherford (2006). Vlok *et al.* (2008) conducted a regional classification of the vegetation in the greater Garden Route Region and describe more than 50 forest and fynbos types within the boundaries of the Garden Route National Park. Areas of high conservation value must be prioritised for more detailed floristic surveys, classification and mapping. Approximately 1650 plant species, including more than 900 fynbos species, have already been listed for the park. The species list is continuously being expanded and updated, with special attention given to plant species expected to occur within the park boundary, but not yet verified. Specimens of all plant species found in the park should be preserved in the park herbaria.

An improved understanding of ecosystem functioning is necessary to support management practices. Research and monitoring programmes are developed and implemented to meet identified needs and complement existing programmes. Goal-orientated monitoring is essential to assess whether management objectives are met and to gain better understanding of ecological processes that drive the system.

Natural ecosystem patterns and processes must be maintained through the development and implementation of appropriate management prescriptions and practices, so as to ensure optimum biodiversity. A range of planning and management activities relate to the protection and conservation of the terrestrial vegetation in the park. An appropriate management classification system must be developed and applied. Habitats or areas that may require specific management interventions, such as ecotones, rivers and wetlands, need to be identified and management guidelines developed. Fire management, conservation of rare and endangered species, invader plant control, and fynbos rehabilitation in plantation exit areas are important aspects of terrestrial vegetation management. Management guidelines and action plans are developed to mitigate the effects of events that potentially or actually impact on the ecosystems of the national park. A safety and security programme is applied to ensure the state of area integrity of the park. An audit and review process, through the application of Forestry Stewardship Council (FSC) certification since December 2002, ensures sustainable forest management according to national and international standards.

The effective management and conservation of indigenous fauna requires the compilation and expansion of fauna species lists, through surveys where appropriate. Monitoring programmes are developed and implemented for selected species or taxa, including species of special concern such as the Knysna elephant and crowned eagle. Fauna management prescriptions are developed and implemented where required.

TERRESTRIAL VEGETATION CONSERVATION PROGRAMME

CONSERVATION OF REPRESENTATIVE FUNCTIONAL ECOSYSTEMS:
To conserve a representative sample of the region's ecosystems in a linked landscape and the maintenance or restoration of environmental processes to enable natural spatial and temporal variation in structural, functional and compositional components of biodiversity.

Intact ecosystems:
Maintain ecosystem intactness and natural ecological processes.
Functional ecosystems:
To ensure the long term persistence of biodiversity patterns and processes, enabling natural variation in structure, function and composition over space and time.

Objective	Management / Monitoring Activities	Responsi-bility	Indicators / Measures	Timeframe	Reference to other documents
To ensure that floristic diversity of terrestrial vegetation is described and recorded to provide a sound basis for conservation management	National and regional classification and mapping of vegetation types	SS	Maps and description of types Up to date GIS databases	Year 1	
	Prioritise and conduct detailed floristic classification and mapping of high conservation value areas	SS	Maps and description of communities Up to date GIS databases	Year 2 and ongoing	
	Compile, maintain and expand plant species lists and acquire specimens to house in herbarium	SS, AMs	Updated species lists Species represented in herbarium	Ongoing	
To improve understanding of ecosystem functioning through appropriate research and monitoring, to support management practices	Identify research and monitoring needs	SS & AMs	Register of needs and priorities	Ongoing	
	Develop, implement and maintain research and monitoring programme	SS	Register of projects developed and implemented Reports of research / monitoring results	Ongoing	

Objective	Management / Monitoring Activities	Responsi-bility	Indicators / Measures	Timeframe	Reference to other documents
To maintain natural ecosystem patterns and processes through the development and implementation of appropriate management prescriptions and practices, so as to ensure optimum biodiversity	Develop a management classification system: Subdivide areas into management units and assign management classes	SS	Documented descriptions of management classes and assignment as per compartment list and GIS database	Year 1 and ongoing	Zoning
	Identify habitats or areas requiring specific management intervention (e.g. ecotones, rivers, wetlands) and develop guidelines for their management	SS & AMs	Map with areas identified Management guidelines developed and indicated on APOs	Year 1 and ongoing	
	Develop and apply an appropriate fire regime in fynbos areas	SS	Updated fire programme	Ongoing	Fire Management Programme
	Maintain viable populations of plant species of special concern	SS & AMs	Species identified, plans in place	Ongoing	Species of Special Concern Programme
	Effectively manage alien and invasive terrestrial plants and facilitate the recovery of natural vegetation	AMs	Alien Control Plan	Ongoing	Rehab-ilitation programme
	Facilitate the rehabilitation of plantation exit areas	AMs	Rehab plans	Ongoing	Rehab-ilitation programme
	Investigate and describe events with potential impacts on natural vegetation extent (pro/re active) and develop guidelines and implement action plan to mitigate impacts (including monitoring)	SS & AM's	Register of events investigated and reports Register of special projects Guidelines and Action plan developed and implemented where required	Year 1 and ongoing	
	State of area integrity management: Plan and conduct patrols, identify and gather information on security threats, meetings with local police, prosecutions, etc.	AMs	SoAIM audits Cybertracker reports Minutes of meetings with enforcement agencies	Ongoing	Safety and Security programme
	Implement an audit and review process to ensure sustainable forest management according to national / international standards	PIM; GM; AMs; SS	Forest management audited annually according to FSC principles and certification retained : Audit reports, certification certificates	Ongoing	
To ensure the effective management and conservation of indigenous fauna	Compile, maintain and expand fauna species lists, including species of special concern	SS, AMs	Species list	Ongoing	
	Develop and implement fauna biodiversity surveys of selected taxa and monitoring programmes for selected fauna species or taxa, including species of special concern	SS, AMs	Monitoring results	Ongoing	
	Develop and implement management prescriptions for fauna, where required	SS, AMs	Management prescriptions	As required	

Budget Allocation	**Development**	R 396,743
	Operational (Year 1)	R 6,351,229

4.2.3 Aquatic programme

The Garden Route area is characterised by the high number of coastal rivers which drain the southern slopes of the Outeniqua and Tsitsikamma mountain ranges (see Fig 6 above). Along the approx. 110km of coastline incorporated in the SANParks conservation areas there are two estuarine lake systems comprising four lakes (Swartvlei, Rondevlei, Langvlei, Eilandvlei) and associated estuaries (Touw and Swartvlei) into which seven rivers drain (Touw, Duiwe, Langvlei, Wolwe/ Diep, Klein Wolwe, Höekraal, Karatara) and 24 river systems which drain directly into the Indian Ocean (Kaaimans, Goukamma, Knysna, Noetsie, Grooteiland, Kranshoek, Keurbooms, Brak, Sout, Groot (West), Helpmekaars, Klip, Bloukrans, Witels, Lottering, Elandsbos, Geelhoutbos, Kleinbos, Storms, Bruglaagte, Langbos, Sanddrif, Elands, Groot (East)). Not all of the rivers, however, have associated estuaries, which are defined as partially enclosed coastal bodies of water which are either permanently or periodically open to the sea, and within which there is a mixture of seawater with freshwater derived from land drainage. In 11 of the river systems (occurring predominantly along the rocky Knysna and Tsitsikamma coastlines), there is no significant input of seawater. These systems thus cannot be considered to have an estuarine component. In the 13 remaining river systems in the GRNP, estuaries do occur at the interface with the marine environment. Of these, 10 estuaries occur within the GRNP (Knysna, Noetsie, Salt, Groot (West), Bloukrans, Lottering, Elandsbos, Storms, Elands, Groot (East)) whereas three (Kaaimans, Goukamma, Keurbooms) fall outside SANParks managed conservation areas. cannot be considered to have an estuarine component. In the 13 remaining river systems in the GRNP, estuaries do occur at the interface with the marine environment. Of these, 10 estuaries occur within the GRNP (Knysna, Noetsie, Salt, Groot (West), Bloukrans, Lottering, Elandsbos, Storms, Elands, Groot (East)) whereas three (Kaaimans, Goukamma, Keurbooms) fall outside SANParks managed conservation areas.

Estuaries, as the end recipients of freshwater are also significantly impacted by catchment and resource use changes affecting water quality and quantity in rivers. Estuaries themselves also supply numerous goods and services including fishing, boating, swimming, and they are important tourist destinations. As ecosystems they also act as nurseries for numerous marine fish and invertebrate species contributing significantly to the health of our coastal fisheries. Environmental changes occurring in estuaries include freshwater depravation, water quality changes, increases in pathogens, sedimentation, altered environmental processes (e.g. breaching patterns in temporarily open/closed systems), habitat loss, species changes and aesthetic changes. Some of the major causes of such changes are estuary margin development, increased recreational utilization, catchment development, development in estuaries, land clearance and reclamation, invasive species, resource extraction and climate change.

AQUATIC PROGRAMME

CONSERVATION OF REPRESENTATIVE, FUNCTIONAL ECOSYSTEMS: To conserve a representative sample of the regions ecosystems in a linked landscape, and the maintenance or restoration of environmental processes to enable natural spatial and temporal variation in structural, functional and compositional components of biodiversity.

Functional ecosystems: To ensure the long term persistence of biodiversity patterns and processes, enabling natural variation in structure, function and composition over space and time.

FRESHWATER

Hydrological and water chemistry changes: Participate in activities for the maintenance of river flow regimes, water chemistry and physical properties for the maintenance of ecosystem processes in freshwater aquatic ecosystems either partially or wholly within the park.

Objective	Management / Monitoring Activities	Responsibility	Indicators / Measures	Timeframe	Reference to other documents
Maintenance of physical chemical and hydrodynamic properties and processes in freshwater systems	Liaison with Catchment Management Agencies, DAFF and relevant government agencies regarding effective management and conservation of aquatic systems.	AMs, SS	Participate in relevant meetings	Ongoing	
	Encourage reserve implementation by lobbying for appropriate water abstraction licensing, flow and water quality monitoring, remedial action if water quantity and/or quality deteriorate below reserve values, and reserve assessment through in systems where these have been determined through ecosystem monitoring and assessment.	SS, AMs	Appropriate licensing, resource monitoring, reserves not exceeded, follow-up assessments undertaken	ongoing	
Facilitate regular assessments of River Health.	Liaise with implementing agencies to ascertain program schedules.	SS	Notification of schedule	Year 1	
	Facilitate and implement field assessments where required.	SS and AMs	Field surveys undertaken	Year 1	
	Assist with production of State of Rivers report where required.	SS	State of Rivers report	Year 3	

Objective	Management / Monitoring Activities	Responsibility	Indicators / Measures	Timeframe	Reference to other documents
Reduce pollution inputs, including sewage, and unnaturally elevated suspended sediment levels in freshwater systems.	Identify known and potential pollution and sediment sources.	AMs, SS	Incidence reports	ongoing	
	Maintain database of available water quality test results.	SS	Database	ongoing	
	Liaise with responsible government structures to address and prevent pollution events and elevated sediment loading.	GM, AMs, SS	Action taken as required	ongoing	
	Motivate for public works programs to facilitate freshwater wetland rehabilitation in degraded systems.	AMs, ISCU CA	Applications & approvals	Year 1	
Align GRNP Management Plan with other relevant international and national plans in terms of aquatic management.	Align GRNP plan to accommodate RAMSAR Requirements.	PIM	RAMSAR Plan	Year 1	

Effective management of river and estuarine systems can only be achieved through an integrated catchment approach involving all major roll players acting as a cooperative team to find the appropriate blend of utilization and conservation (See also Estuarine Implementation Plan in Appendix L).

During the next five year cycle, SANParks will work towards aligning estuarine management with the National Estuarine Management Protocols developed in terms of the Integrated Coastal Management Act (see Legislation and Policy Framework), adapted to conform with the requirements of the NEMPAA. This will also apply to the draft Estuarine Management Plan compiled for the Knysna Estuary.

The main objective of artificial breaching of estuaries is to reduce the probability of inundation of residential areas on adjacent floodplains whilst at the same time maintaining sufficient head of water to maximise the scouring of sediments from the estuary mouth on breaching and maintain natural inundation flux in marginal wetlands, by maintaining the system of artificially breaching estuaries in the Touw, Swartvlei and Groot (West) systems

ESTUARIES					
Estuary Management: Rehabilitation and maintenance of processes to achieve ecosystem conservation in estuarine systems					
Objective	**Management / Monitoring Activities**	**Responsibility**	**Indicators / Measures**	**Timeframe**	**Reference to other documents**
Artificial breaching of the Touw; Swartvlei; and Groot (West) estuaries.	Implement the estuary management plan (contained in Appendix L) regarding the timing, conditions and methods for artificially breaching and closing estuaries.	AMs	Incident reports	ongoing	Estuary Management Plan
	Update the Swartvlei estuary section of the management plan to include all required management actions.	AM and SS	Plan updated	Year 1 and ongoing	
	Assess the potential of early warning systems for high water level occurrences in the Touw and Swartvlei systems	AM and SS	Specialist report available, decision made	Year 1	
Increase connectivity between waterbodies in the Touw system by removing sediment which has accumulated at point localities in interleading channels due to anthropogenic factors.	Undertake survey of the locality and extent of sediment deposition in the estuary and identify what management action is required.	AM and SS	Surveys completed, reports available	Year 1	
	Implementation of identified management actions as per RoD and outcome of survey.	AM	Completion of program	Year 2	
Ire Increase connectivity between waterbodies in the Touw system by regular cutting of emergent and submerged aquatic plants in the Serpentine channel, and interleading channels between Eilandvlei, Langvlei and Rondevlei.	Implementation as required.	AM	Action taken as required	ongoing	
Management of aquatic plants in the Touw system to reduce the trend towards single species domination by manipulating flooding and/ or cutting of *Phragmites* stands to simulate natural disturbance at selected sites in Serpentine, Eilandvlei, Langvlei and/or Rondevlei.	Liaise with interested parties regarding the implementation of the program.	AM	Minutes of meeting	Year 1	
	Identify areas for plant cutting.	AM and SS	Updated plan	Year 2	
	Execute program.	AM	Completion of field work	Year 2	
	Follow up monitoring of program effectiveness.	SS	Monitoring report available	Year 3 - 4	

Objective	Management / Monitoring Activities	Responsibility	Indicators / Measures	Timeframe	Reference to other documents
To assess environmental changes in priority estuarine systems through monitoring of selected environmental indicators.	Implementation of indicator monitoring program in Wilderness and Tsitsikamma.	SS and AMs	Monitoring report available	ongoing	Reports on monitoring of environmental indicators in Wilderness & Tsitsikamma
	Define the indicator monitoring program for Knysna estuary and implement new projects.	SS and AM	Monitoring document available.	Year 2	
Develop an improved understanding of the hydrodynamics of priority estuarine systems, where possible emphasizing linkages between freshwater, estuarine and marine systems.	Formulate a Terms of Reference in order to conduct a hydrological study of the Swartvlei and Touw systems	SS and AM	ToR completed	Year 1	
	Source funding to conduct hydrological study	GM	Funding secured	Year 1 - 2	
	Reassess hydrodynamics of key systems through modelling based on new input parameters, the extent of which is dependant on funding available.	AMs and SS	Reports and a working model available for targeted systems and processes (funding allowing)	Year 2 - 3	
Reduce pollution inputs, including sewage and unnaturally elevated suspended sediment levels in estuarine systems	Participate in water quality monitoring	SS , AMs	Monitoring results	Ongoing	
	Identify pollution sources and address and ensure or enforce mitigation measures to achieve required performance standards	AMs, SS	Monitoring results	As required	
Rehabilitation of estuarine wetland areas	Define rehabilitation areas.	AMs and SS	Maps	Year 2	
	Plan intervention measures and prioritize.	AMs and SS	Planning document	Year 2	
	Source external funding where appropriate or required.	AMs	Program applications, funding secured	Year 2	
	Implementation within resource constraints (caring for the coast).	AM and ISCU CA	Completion of field work	Year 3-5	

Budget Allocation	**Development**	R 213,998
	Operational (Year 1)	R 898,038

4.2.4 Marine and Coastal programme

The Marine Living Resources Act (MLRA) is the primary act controlling the use of marine biotic resources, other than seals and seabirds, in the sea and Oceans and Coast (OC) the lead authority. The Act prohibits extractive resource use in restricted (no-take) Marine Protected Areas (MPAs) and set limits on the number and minimum sizes of bait and fish organism that may be caught in open areas. The National Spatial Biodiversity Assessment identified extractive use of living marine resources as the overriding threats to South African marine biodiversity (Driver *et al.* 2004), and the ecological case for protection of a marine area is often based on the safeguarding of an important habitat for commercially or recreationally exploited species. Thus SANParks strategy is to effectively manage its coastal and marine areas through cooperative governance with OC and Cape Nature.

Marine (i.e. below the high water mark) areas incorporated in the GRNP are restricted to the Tsitsikamma Marine Protected Area (MPA), and the adjacent De Vasselot coast. The MPA, extending from the Groot River (east) to Groot River (west), includes the oldest marine national park in Africa (Robinson & De Graaff 1994), and is a Category 1 (or no take) MPA. It consists of approximately 61 km of rocky shores and 5 km of sandy beaches, and protects seven percent of rocky shoreline of the Agulhas Biogeographical region (Lombard *et al*. 2005). The MPA extends between 0.9 km and 5.56 km (or 0.5 & 3 nautical miles) offshore and has a surface area of some 340 km. The subtidal area consists of soft bottom sediments (c. 79%) and dispersed rocky reefs and platforms (c. 21%). The MPA is managed in accordance with the legislation of both the Marine Living Resources Act (MLRA) and the National Environmental Management: Protected Areas Act (NEMPA).

In the adjacent De Vasselot section, which is comprised of 6 km of rocky shore and 2.5 km of sandy beaches and extends 0.9 km offshore, fishing and bait collecting is permitted in accordance with the legislation of the MLRA for recreational and commercial fishing in open areas.

The dominant marine fauna of the MPA can be grouped into marine mammals (seals, dolphins, whales), birds (penguins, gannets, terns), fish (migratory and reef species) and highly diverse benthic fauna on the reefs. The MPA is too small to provide permanent residence for most of the marine mammals and seabirds recorded in the park, but it is large enough to provide an important feeding ground or nursery area. The subtidal reefs provide an important habitat for sparid fish species, many of which are particularly sensitive to over exploitation due to life history traits of longevity, late sexual maturity and residency. All life stages of 17 fish species that are exploited for commercial and recreational purposes (Wood *et al*. 2000), as well as spawning grounds for commercially exploited chokka squid have been recorded in the MPA (Sauer 1995), and a key role of the MPA is to protect these species

In addition to the marine environment, the GRNP includes the shoreline immediately above the high water mark along the Tsitsikamma MPA and De Vasselot section, as well as Harkerville area and Wilderness sections of the park. Most of this shoreline is rocky and fairly resilient to anthropogenic activities. However, the sand dunes found at Nature's Valley, Sedgefield and Wilderness are vulnerable to destabilization through human trampling, while seabird, such as the oystercatchers, breed on the upper shore.

SANParks will strive to meet its conservation objectives in the marine and coastal environments through appropriate co-operative governance with relevant government departments/agencies, adequate training and law enforcement and liaison with stakeholders.

NB. A Marine Management Plan is in the process of compilation and will be appended to this Management Plan when completed.

MARINE PROGRAMME

CONSERVATION OF REPRESENTATIVE, FUNCTIONAL ECOSYSTEMS:
To conserve a representative sample of the regions ecosystems in a linked landscape/ seascape, and the maintenance or restoration of environmental processes to enable natural spatial and temporal variation in structural, functional and compositional components of biodiversity.

Functional ecosystems:
To ensure the long-term persistence of biodiversity patterns and processes, enabling natural variation in structure, function and composition over space and time.

Marine Management:
Strive to maintain long term persistence of biodiversity patterns and processes in marine ecosystems, particularly the protection of fish stocks

Objective	Management / Monitoring Activities	Responsibility	Indicators / Measures	Timeframe	Reference to other documents
To ensure effective management of the marine and coastal component of the park (through the implementation of the Service Level Agreement with DEA),	Implement appropriate co-operative governance with relevant government departments/agencies and proactively engage the judiciary	AMs	Co-operative governance in place	Year 1 and ongoing	
	Adequately train and capacitate specialised staff for the marine research, management and law enforcement	SS and AMs	Trained specialised staff	Year 1 and ongoing	
	Liaise with stakeholders to promote protection of marine resources	AMs	Minutes of meetings	Year 1 and ongoing	
	Comply with and enforce applicable legislation	AMs	Records of enforcement	Year 1 and ongoing	
	Undertake beach cleanups, dune rehabilitation and trail maintenance	AMs	APOs	Year 1 and ongoing	

Objective	Management / Monitoring Activities	Responsibility	Indicators / Measures	Timeframe	Reference to other documents
Promote and undertake research and monitoring of key patterns and to a lesser extent processes in the marine and coastal sections of the park	Monitor population densities or catch per unit effort of marine biota targeted by fishers or displaced by alien invasive species.	SS	Monitoring results	Year 1 and ongoing	
	Continue to liaise and cooperate with other research agencies on joint projects	SS	Joint research projects	Year 1 and ongoing	
Monitor marine biota, including resource stocks, harvesting, and alien invasions	Re-evaluate and adapt monitoring programme as required	SS	Monitoring outputs	Year 2 and ongoing	
	Explore opportunities for securing external funding for new projects	AMs and SS	New projects initiated	Year 1 and ongoing	

Budget Allocation	**Development**	**R 1,583,265**
	Operational (Year 1)	R 13,304,585

4.2.5 Integrated fire programme

A large part of the Garden Route National Park is covered by natural fynbos, representing eight national fynbos types (Mucina & Rutherford 2006). Fire is the most important disturbance agent in fynbos vegetation, and essential in maintaining biodiversity and natural ecological processes (Stock & Allsopp 1992, Van Wilgen *et al*. 1992), important management objectives with the Garden Route National Park. Policy guidelines to achieve this are described by Seydack et al. 1986.

Fire regime

Of critical importance is fire frequency, fire season and fire intensity (Van Wilgen et al. 1992, Bekker 1994). In addition to fire frequency and fire season, post-fire regeneration and plant species composition after fire, could also be severely impacted by fire intensity (Van Wilgen et al. 1992, Bekker 1994). The ideal fire regime for the maintenance of natural diversity in fynbos is one exhibiting a natural range of variability in respect of fire frequency, fire intensity and also fire season, creating numerous transient niches (Seydack 1992, Bekker 1994). The management challenge for fynbos management in the park is thus to develop and implement a fire management system that would incorporate the different aspects of a natural fynbos fire regime to ensure the conservation of biodiversity and the maintenance of natural ecological processes, but within the constraints of fire protection considerations. The most appropriate fire management system should make appropriate provision for meeting objectives of biodiversity conservation, the implementation of appropriate fire protection measures, meeting requirements of the National Veld and Forest Fire Act, but must be cost-effective and implementable.

Considering the extent of the Garden Route National Park, the level of fragmentation of the management area, adjacent land-uses and the variation of the natural fire regime in the bigger area, two broad fire management zones that require different fire management approaches, were distinguished. These are (i) the Mountain Catchment Areas (MCAs) comprising largely the southern slopes of the Tsitsikamma and Outeniqua Mountains, and (ii) the lower-lying fragmented plateau and coastal fynbos. In consultation with internal and external stakeholders, the most appropriate fire management systems for each zone were selected. (See Appendix M for detailed Fire Management System for Outeniqua Mountain Catchment).

Adaptive Interference Zone

The adaptive interference zone comprises the largest part of the Tsitsikamma MCA and a significant (and increasing as more plantations exit) part of the Outeniqua

MCA. In this zone man-made fires would be limited with lighting fires the main source of ignition. The extent of the area and the limited extent of transformation of the natural vegetation (apart from invader plants), should allow for a self-driven fire regime, based on natural climatic patterns in the area. As fire management intervention in this zone would be limited, self-ignited fires would, as far as possible, be allowed to burn themselves out. This should ensure a fire regime for maintaining natural ecological processes and patterns, i.e. a fire regime characterized by natural spatio-temporal variability in terms of frequency, seasonality, intensity and size.

As required by an adaptive management approach, and as part of the wildfire management process, an assessment would be conducted annually to decide on the most appropriate, pro-active measures in anticipation of wildfires.

Block-belt zone

This zone is largely confined to the west-east running ridges in the catchments just north of the commercial plantations, and only where indigenous forest does not form a natural buffer between fynbos and plantations. The objective with this zone is to effectively reduce the risk of damage to plantations by fires originating in the catchment areas, through strategically placed block burns for wildfire control, while retaining the biological integrity of the area as far as possible

Fragmented plateau and coastal fynbos

This consists of relatively small areas of mainly plateau and coastal fynbos, artificially fragmented by development and other types of land conversions such as agriculture, commercial forestry activities, etc. Especially on the plateau, it also includes a large number of so-called “fynbos islands”. These islands are considered to be remnants of a once much larger fynbos areas completely (true islands) or partly (false islands) cut off from the mainland by expanding natural forest. They are of unique conservation value, both from a biodiversity and ecosystem functioning perspective. Floristically they largely consist of South Outeniqua Sandstone Fynbos and Tsitsikamma Sandstone Fynbos, as well as smaller areas of lowland fynbos i.e. Knysna Sand Fynbos and Garden Route Shale Fynbos. The management of these “islands” has previously been neglected as they were considered to be anthropogenic in origin, and many where converted to pine plantations.

For fragmented fynbos patches associated with forests, the natural fire regime is largely determined by the topographic location of the fynbos patch in the landscape, in relation to natural fire patterns as influenced by prevailing wind conditions. The fire regime and management approach for small patches, especially those cut off naturally from the mainland fynbos, could thus differ from that of the mainland fynbos.

Prescribed burning

Where prescribed burning is relevant, fire season and intensity, in addition to fire frequency, are important considerations that need to be captured in management prescriptions, as is the case with the Tsitsikamma and Outeniqua catchment areas. Consistent with natural fire ignition patterns, late summer and early autumn fires are the most favourable for post-fire regeneration success. In terms of fire intensity, the natural fire season usually has weather associated with higher intensity fires. Considering the negative impact that continual low intensity fires could have on species composition and survival, a high intensity fire would thus be the ideal. Conditions should preferably be severe enough to obtain a clean burn. The minimum fire frequency, as captured in the management prescriptions, is determined by the time for the vegetation to reach maturity, i.e. adequate regeneration of slow maturing species. As this could vary considerably between mesic and drier sites, the broad differentiation between mountain, plateau and coastal fynbos was required.

Implementation

All fynbos patches will be assessed according to bio-geographical features and practical management considerations, and the most relevant management category with objectives that should be pursued, identified. All fynbos patches will thus be allocated to a management category, either to be managed as forest or fynbos in the long-term. Patches to be subjected to prescribed burning will be included in a long-term burning schedule, aligned with the burning schedule for the Tsitsikamma and Outeniqua catchment areas to ensure an equal spread of workload and budget requirements.

See also Fire Management System for Tsitsikamma Mountain Catchment in Appendix M.

FIRE MANAGEMENT PROGRAMME

CONSERVATION OF REPRESENTATIVE, FUNCTIONAL ECOSYSTEMS:
To conserve a representative sample of the regions ecosystems in a linked landscape, and the maintenance or restoration of environmental processes to enable natural spatial and temporal variation in structural, functional and compositional components of biodiversity.

Functional ecosystems:
To ensure the long term persistence of biodiversity patterns and processes, enabling natural variation in structure, function and composition over space and time.

Objective	Management / Monitoring Activities	Responsibility	Indicators / Measures	Timeframe	Reference to other documents
Finalisation of Integrated Fire Management Plan for the GRNP	Align GRNP Integrated Fire Management Plan with the GRI Integrated Plan that includes other management agencies like MTO; Cape Nature; ECPB; and local and district municipalities objectives	SS and PIM	GRNP plan aligned with larger landscape initiatives	Year 1	GRI Integrated fire management plan
	Development of fire management systems for Outeniqua mountain catchment; Tsitsikamma mountain catchment ; and fragmented plateau and coastal fynbos patches	SS and PIM	Systems developed	Year 1	
To apply appropriate fire regime in fynbos areas	Development of APO's that reflect the fire management systems for the various sections of the GRNP	PIM and AM's	APO's developed	Year 1	
	Research and long-term monitoring to improve understanding of the natural fire regime to include the review of spatio-temporal fire configuration to inform adaptive fire management and monitoring of the impacts of fire regime on the vegetation	SS	Monitoring results recorded and informing management guidelines	Year 1 and ongoing	
Wildfire suppression and prevention	Determine location of all firebreaks in terms of legislative requirements and enter into agreements with adjacent landowners.	PIM, AMs, SS	Locations determined and mapped and agreements signed	Year 1	
	Actively participate in Fire Protection Associations and Aerial Fire Fighting Support Working groups	PIM, AMs	SANParks reps on EXCO committees	Ongoing	

Budget Allocation	**Development**	R 244,694
	Operational (Year 1)	R 6,245,375

4.2.6 Rehabilitation programme

Alien Invasive species

With the exception of human population growth and its associated impacts, alien and invasive species are responsible for the greatest loss of biodiversity in natural ecosystems. Biodiversity and ecosystems are vulnerable to acute disturbances caused by alien and invasive species. The invasion of ecosystems by alien and invasive species, results in significant changes which exacerbate ecosystem vulnerability and could potentially cause a decline in biodiversity or the extinction of indigenous species. In the absence of their natural predators, competitors and pathogens, alien and invasive species are known to prosper in new environments, eventually displacing the habitat's naturally-occurring species. While in the past many of these losses have gone unrecorded, today, there is an increased realization of the ecological cost associated with the irretrievable loss of biodiversity and ecosystem services, resulting from biological invasions. While it is widely accepted that preventing the introduction of alien and invasive species is most desirable, this approach is not always possible and thus containing or controlling their impact is imperative.

Since 1992, the Convention on Biological Diversity (along with Agenda 21) has set the global framework for addressing the problems associated with the management of alien and invasive species. SANParks has an ecological, ethical and legislative obligation to ensure that efforts are made to prevent the spread (including the control and eradication) of declared alien and invasive species in National Parks under its management responsibility in accordance to the National Environmental Management: Biodiversity Act.

Rehabilitation of plantation exit areas

An original 40 000 ha of state land used for growing commercial pine plantations (MTO) would have been converted over time to natural vegetation (in most cases fynbos). A subsequent decision by parliament to re-commission roughly half of these areas back to commercial forestry, led to the "exit strategy" being placed on hold for a period. Once the delineation of the re-commissioned areas are finalised, the exit programme will be re-visited. Geographical units to be exited will be identified to be handed over to SANParks over time. These areas will systematically be incorporated into the GRNP. A rehabilitation plan for each of the geographical areas is to be developed that will include management interventions such as alien plant control and scheduled burning.

There is a number of infrastructure related rehabilitation projects envisaged for the plantation exit areas. These include the rehabilitation of identified gravel and quarry pits as well as roads that will not be used for conservation management purposes.

REHABILITATION PROGRAMME

CONSERVATION OF REPRESENTATIVE, FUNCTIONAL ECOSYSTEMS:

To conserve a representative sample of the regions ecosystems in a linked landscape, with particular emphasis on the Wilderness Lake systems, and the maintenance or restoration of environmental processes to enable natural spatial and temporal variation in structural, functional and compositional components of biodiversity.

Rehabilitation:

Rehabilitate degraded areas, including the re-establishment of natural biodiversity patterns, and the restoration of key processes which support the long term persistence of biodiversity.

Alien plants and other alien biota:

Control and where possible eliminate alien biota to facilitate re-establishment of natural biodiversity pattern and process in invaded areas.

Wetlands:

Re-establishment of physical, chemical and biological processes in degraded wetland areas.

Objective	Management / Monitoring Activities	Responsibility	Indicators / Measures	Timeframe	Reference to other documents
To effectively manage alien and invasive terrestrial plants and facilitate the recovery of indigenous vegetation	Establish the distribution and density of invasive terrestrial plant species, with modelling for the cost implications of management	PIM and ISCU CA	Map available	Year 1	
	Produce a consolidated Management Unit Clearing Plan for GRNP and potential land for inclusion (in coordination with other relevant agencies)	PIM and ISCU CA	Consolidated MUCP	Year 1	MUCP / Alien Plant Clearing Plan
	Prioritise activities according to current available budget, including follow up	PIM and ISCU CA	APO	Year 1	
	Implement removal programmes for priority species and areas	ISCU CA and AMs	Progress against APO	Year 1 and ongoing	
	Secure further funding for AIP clearing programme shortfall	GM	Funding secured where possible	Year 2	
	Identify and develop working partnerships with other relevant agencies (Cape Nature, DAFF, municipalities)	PIM and ISCU CA	Partnership agreements in place	Year 2	
	Establish an early warning system for emerging AIPs	ISCU CA and AMs	System established	Year 2	
	Establish a rapid response team and capacity for dealing with emerging AIPs	ISCU CA	Team established	Year 2	
	Establish a high altitude team to conduct alien plant clearing operations in inaccessible high altitude mountain areas (camp out)	ISCU CA	Team established	Year 1	

Objective	Management / Monitoring Activities	Responsibility	Indicators / Measures	Timeframe	Reference to other documents
	Determine what bio control agents are already existent in the various areas, as well as areas that are not covered by bio control and introduce bio control to these areas	ISCU CA and SS	Report available	Year 2 - 3	
	Monitoring to assess success of biocontrol	ISCU CA and SS	Monitoring results	Year 2 and ongoing	
To effectively manage alien and invasive aquatic plants and facilitate the recovery of indigenous vegetation	Assess the occurrence and distribution of Azolla in Wilderness	AM	Annual TPC report	Ongoing	
	Apply biocontrol when TPC indicates necessary	ISCU CA	Record of release	Ongoing as required	
	Assess occurrence and distribution of Spanish Reed	AM	Map available	Year 1	
	Report to the rapid response team and ensure elimination of plants where recorded, with follow up monitoring	AM and ISCU CA	GIS database	Year 2	
Effectively control alien fish populations	Investigate options for the control of alien fishes	SS	Reports available	Year 2 - 3	
	Assess the desirability of constructing a weir in the lower Palmiet system of the Tsitsikamma	AM and SS	Report available	Year 2	
	Assess the occurrence of alien fish species in river systems on private properties and negotiate with landowners around remedial options in high priority systems	SS	GPS record of species occurrence	Year 1 and ongoing	
To rehabilitate wetland systems in the GRNP	Conduct feasibility study on reintroduction of large herbivores in Wilderness wetlands to effect vegetation changes	SS and AM's	Report available	Year 2	
	Re-establish more natural wetland flooding regime (where possible) – refer to hydrological modelling study in estuary programme	SS; AM's	Regime re-established	Year 2	

Objective	Management / Monitoring Activities	Responsibility	Indicators / Measures	Timeframe	Reference to other documents
To control accelerated erosion in the GRNP resulting from human activities	Identify and map areas of excessive erosion (including roads, trails, quarries) and assess what remedial action may be required	AMs	Map available	Year 1	
	Undertake erosion rehabilitation as required	AMs	Sites rehabilitated	Year 1 and ongoing	
	Prepare rehabilitation plan with costs for all inactive gravel pits and quarries on forest areas	PIM	Plan available	Year 1	
	Undertake gravel pit rehabilitation	AMs	Sites rehabilitated	Year 2 and ongoing	
	Prepare management plans with costs for all active gravel pits and quarries in GRNP	PIM and SS	Plan available	Year 2	
To ensure rehabilitation of plantation exit areas	Develop a plantation exit landscape restoration plan, including identification of roads no longer required for park management or tourism purposes	PIM and SS	plantation exit landscape restoration plan available	Year 1	
	Implement restoration plan	AMs and SS	Implemented plan	Ongoing as plantations exit	
	Conduct research and monitoring to evaluate success of rehabilitation measures as well as spread of Alien Plants	SS	Monitoring Projects implemented and reports available	Year 1 and ongoing	

Budget Allocation	**Development**	R 659,504
	Operational (Year 1)	R 51,652,206

4.2.7 Human Wildlife Conflict

The GRNP is predominantly made up of open access areas, which by its very design leads to potential for human wildlife conflicts. It is thus a Park priority to minimise the potential of any economic losses or physical damage being incurred by neighbours through human-wildlife interactions in the Park. Most common perpetrators include monkeys, caracal, baboons, bushpig and porcupine.

Baboons and vervet monkeys often frequent rest camps and picnic sites in the park. They are primarily attracted by food and refuse bins. On occasions these animals do lose their fear of humans, resulting in “food grabbing” and raiding of chalets and tents. Park staff have embarked on a programme to raise awareness levels among park visitors about the problems experienced in these conflict areas. The park is also modifying all refuse bins so that they are animal proof. These two initiatives are focused on minimizing the people/animal conflict.

Where applicable all control measures must conform to the SANParks Standard Operating Procedures for Lethal Population Management or the SANParks Standard Operating Procedures for Capture, Translocation and Maintenance in Holding Facilities of Wildlife. Other institutions like CapeNature which has a long history and experience in dealing with human wildlife conflict, should also be consulted. Where methodology needs to differ from the Standard Operating Procedures it should be submitted to the SANParks Animal Use and Care Committee for approval.

HUMAN WILDLIFE CONFLICT MANAGEMENT PROGRAMME

CONSERVATION OF REPRESENTATIVE, FUNCTIONAL ECOSYSTEMS :
To conserve a representative sample of the regions ecosystems in a linked landscape, and the maintenance or restoration of environmental processes to enable natural spatial and temporal variation in structural, functional and compositional components of biodiversity.

Functional ecosystems:
To ensure the long term persistence of biodiversity patterns and processes, enabling natural variation in structure, function and composition over space and time.

Safety and security:
To ensure the safety and security of all people visiting and working in the GRNP, and also the natural assets within it, through implementation of a plan that ensures that such potential risks are identified and mitigating measures are readily available to minimise such risk.

Objective	Management / Monitoring Activities	Responsibility	Indicators / Measures	Timeframe	Reference to other documents
To minimize human wildlife conflict in and around the GRNP through the development of an appropriate plan.	Ensure that infrastructural designs, construction and maintenance are done in a manner that does not allow for the “creation” of damage causing animals through allowing access to food sources or potential roosting/ breeding/nesting sites	AMs,	Appropriate infrastructure designs	Ongoing	
	Ensure effective waste management from source (refuse bins) to final disposal (incinerator or removal)	AMs	Effective waste disposal	Ongoing	
	Inform and liaise with provincial authorities, other government institutions and affected stakeholders regarding problem biota management and to formulate possible joint management action.	AMs,	Joint management actions identified	Ongoing	
	Identify and regulate the introduction of animals with the potential to cause human wildlife conflict, to the park (i.e. domestic animals included)	AMs	Cases of Introduction identified and regulated	Ongoing	

Budget Allocation	**Development**	R 17,506
	Operational (Year 1)	R 60,511

4.2.8 Species of Special Concern Programme

The GRNP contains diverse habitats in one of the most scenic parts of South Africa. The fynbos and forest biomes are the main contributors to vegetation diversity. The gradient from sea level to the peaks of the Outeniqua- and Tsitsikamma Mountains adds further diversity to the two biomes. Intermingled with this are several lakes and estuaries and deep ravines running roughly north-south. This composite of factors gave rise to a beautiful and diverse flora.

The downside of the above is that the area was inhabited from the earliest days of settlement. The towns of George, Sedgefield, Knysna, Plettenberg Bay and Stormsriver nestle close to the Park and continuous pressure is placed on the last remaining natural land. This is often closest to the coast and places severe pressure on natural vegetation that is poorly represented in protected areas. The coastal plains and flatter areas were turned over to agriculture. The less fertile accessible land, mostly mountain fynbos, and to a lesser extent lowland fynbos, were converted into plantations.

The GRNP is to some extent unique in the South African conservation scenario in that it's not a single contiguous area. Further, the Park is linear in shape and has private land (farms and plantation) on its borders and even inside the park. This makes the GRNP vulnerable to many threats that often have very little distance to travel to influence the natural vegetation. The biggest threats in the GRNP are alien plant infestation and wildfires.

The natural vegetation in the landscape is fire driven or shaped. Fynbos needs fire for its reproduction strategies to function properly, while forest patterns are mainly determined by fire; both current fires and historical fires. Topography and wind, mainly, determine fire behaviour.

Fire is not the major threat to Threatened Species in our area. It is however a management problem as both the lack of fire, too frequent fires on the same area, and ecologically undesirable conditions when burning, all lead to some species being threatened by fire. The fact that the GRNP is interspersed with pine plantations leads to an understandably conservative outlook on burning, by managers. This leads to fynbos growing into a senescent phase where certain species will be favoured and others disadvantaged. The opposite will happen if areas are burned on a too frequent cycle. In both circumstances the species composition changes. Structural changes will also occur. When these scenarios occur, certain species become threatened by fire.

Alien plant infestation is a major problem in the fynbos biome and to a lesser extent in the forest biome. The major infestations in mountain fynbos, roughly in order of impact, is *Pinus* species, *Hakea sericea*, and to a lesser extent, *Acacia mearnsii*, *A. melanoxylon* and *A. longifolia*. All of these species are well adapted to cope with fire. The threats posed by these species are direct competition for space and soil nutrient enrichment. But most important is the change they bring about in fire intensity (heat) as a result of much larger flammable biomass availability. This leads to seed of natural species being depleted and resprouting species that would normally survive, being killed off. *Gleichenia polypodioides*, although indigenous, is a major problem plant in areas where fires were kept out for too long.

In coastal areas habitat is quickly transformed by alien species. The most important weeds are *Acacia cyclops* and *A. saligna*. These changed the habitat from a low, mostly shade intolerant coastal fynbos type into a shaded habitat with much higher flammable biomass. Alien plant species holds the largest threat for fynbos species.

As the GRNP is largely made up of fynbos and forest, many of the threatened species occur in these biomes. However, in the coastal parts of the park, there are remnants of vegetation types that are now mostly under crop cultivation or urbanization outside the park. These habitats/vegetation types are severely threatened; i.e., the species on the threatened species list mainly have their threats outside the park, and the park serves as a refuge for these species. Some of these threats are: habitat destruction by urban development, ethno-botanical use (e.g. for medicinal use or financial gain), collection value for botanical or horticultural trade and severely fragmented habitat.

Other factors that play a role in the species' Red List status are small populations, species restricted to few localities and that habitat gets severely fragmented due to development and agriculture.

The GRNP's threatened species program has determined the species both occurring in the park and immediate surrounds that have IUCN Red List status. The list was produced by SANBI and was published during 2009. The GRNP list consists of 88 species of which 8 are "Declining" (not an IUCN category but created by SANBI as an indicator of imminent threat).

Natural fire regimes and control of alien species will go far in ensuring the threat inside the GRNP diminishes.

No development of any kind should be started inside the park unless the site was inspected by an expert in the specific vegetation type.

Three red-data listed fishes occur including one of only three populations of the Knysna seahorse; and several species of water birds where the size of local populations supported on the Wilderness lakes regularly exceeds one percent of the world population. The Knysna seahorse is threatened by habitat destruction resulting from recreational boating and altered hydraulics of Swartvlei Estuary. Water birds are vulnerable to disturbance by boating activities and destruction of their food base (mostly aquatic plants) through altered water chemistry and hydraulic processes in the lakes

The most threatened biota in the Tsitsikamma region are associated with river and wetland habitats. They include the Endangered slender redfin (minnow) *Pseudobarbus tenius* in the rivers of Soetkraal (Russell 2002), the Endangered Knysna leaf-folding frog *Afrixalus knysnae* in wetlands of the De Vasselot region (Branch & Hanekom 1987), and probably some of the previously undescribed genera (3) and species (13) of aquatic invertebrate recorded in the Salt River (De Moor *et al.* 2004). Current management actions to protect:

No special management action is taken to protect the above species, other than limiting human disturbance. Similar management measures would be taken to protect the avifauna, which includes Red Data seabirds breeding in the park (e.g. Cape cormorant *Phalacrocorax capensis* (Crawford1983)), 'resident' forest species (Knysna warbler *Bradypterus sylvaticus* & Knysna woodpecker *Campethera notata* and crowned eagle *Stephanoaetus coronatus*) and water-birds (African finfoot *Podica senegalensis* and halfcollared kingfisher *Alcedo semitorquata*) (Skead & Liversidge 1967). Future research should determine the detailed distribution of the above species within the park, and undertake periodic assessments of their abundance.

SPECIES OF SPECIAL CONCERN PROGRAMME

CONSERVATION OF REPRESENTATIVE, FUNCTIONAL ECOSYSTEMS :

To conserve a representative sample of the regions ecosystems in a linked landscape, with particular emphasis on the Wilderness Lake systems, and the maintenance or restoration of 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, and to re-introduce missing elements where possible.

Threatened biota:

Maintain viable populations of threatened species in order to meet SANParks obligations in terms of international agreements and conventions.

Reintroduction of biota:

Reestablishment where possible, of locally extinct or depleted biodiversity components and populations in accordance with IUCN principles and guidelines.

Objective	Management / Monitoring Activities	Responsibility	Indicators / Measures	Timeframe	Reference to other documents
To identify, locate & monitor populations of priority species	Systematic desk top and field surveys	SS and AM's	Distribution data for species of special concern	Year 1 ongoing	
Maintain estuarine, wetland and marine conditions suitable for rare/threatened waterbirds and seabirds, including species where local population periodically exceeds 1% global population	Park zonation to limit physical disturbance in areas of high waterbird density and in nesting areas.	AM's	Map	Year 1	
	Maintain hydraulic processes within estuarine systems as described under Estuary Management, which in turn influence the distribution and abundance of aquatic plants and fishes.	AM's	Planning & fieldwork executed	Year 1 onwards	Park Plan: Aquatic Program
	Prevention of boating activity in areas that support dense stands of aquatic macrophytes.	AM's	Patrols & enforcement	Year 1 onwards	
	Exclude boating activities and extractive use of marine resources within the Tsitsikamma MPA, to provide a rich feeding ground and safe breeding area for seabirds.	AM's	Patrols and enforcement	Year 1 onwards	
	Monitoring of bird abundances in high priority areas.	SS	Monitoring data	Year 1 onwards	

Objective	Management / Monitoring Activities	Responsibility	Indicators / Measures	Timeframe	Reference to other documents
Maintain viable population of red-data fishes, with particular emphasis on the Knysna seahorse in Swartvlei Estuary.	Maintain hydraulic processes within estuarine systems as described under Estuary Management, which in turn influences water chemistry and the distribution and abundance of submerged aquatic plants.	AM's	Planning & fieldwork executed	Year 1 onwards	Park Plan: Aquatic Program
	Elimination of damage of submerged aquatic macrophytes in Swartvlei Estuary by powerboats by means of zonation and law enforcement.	AM's	Patrols and enforcement	Year 1 onwards	
	Negotiation with DWA and CMA's for the maintenance of flow and water chemistry in rivers appropriate for the maintenance of freshwater fishes within rivers, and freshwater inputs into estuarine systems for the maintenance of estuarine processes.	AM's & SS	Participate in relevant meetings	Year 1 onwards	National Water Act
	Liaise with CapeNature to prevent the further introduction of alien fishes in river catchments.	AM's & SS	Participate in relevant meetings	Year 1 onwards	NEMBA: Alien and Invasive species regulations
	Monitoring of fish communities in high priority areas.	SS	Monitoring data	Year 2	
Maintain viable populations of rare/ threatened plant species)	Appropriate management of the vegetation as a whole. Of importance are processes fundamental to the maintenance of plant diversity that can be influenced by management, e.g. fire	AM's	Management actions undertaken	Year 1 onwards	
	Encourage and partake in research and monitoring initiatives on plant SSC within the park.	AM's & SS	Programs executed	Year 1 onwards	

Objective	Management / Monitoring Activities	Responsibility	Indicators / Measures	Timeframe	Reference to other documents
	Prevent/mitigate potentially negative impacts of external source (e.g. surrounding land use/management, climate change) and endeavour to promote conservation-friendly land use and practices around the park, as well as linkages/corridors with other areas of natural habitat.	AM's	Agreements, contracts	Year 1 onwards	
Re-establish indigenous herbivore complement within constraints of park size and urban setting.	Establish historical occurrence of large herbivores in the area	AM's & SS	Report	Year 2	
	Assess habitat suitability for locally extinct herbivores within park	AM's & SS	Evaluations	Year 3	
	Evaluate land and infrastructure requirements to enable reintroductions	AM's & SS	Plan	Year 4	
	Undertake reintroductions where feasible	AM's & SS	Self sustaining populations	Year 5	
Maintain viable populations of species of special concern	Establish linkages with other roleplayers such as CREW /OC	AM's & SS	Linkages established	Ongoing	
	Compile and maintain a register of species of special concern	SS	Register available	Ongoing	
	Determine status of seahorse population	SS	Numbers of seahorses / purse seine	Year 1, ongoing	
	Determine status of abalone population	SS	Numbers of abalone / transect or random search.	Baseline survey -Year 2-3,	
	Develop and implement a monitoring programme for selected species, where required	AM's & SS	Populations Abalone, seahorse, TOPS linefish species CPUE		
	Develop and implement management prescriptions for selected species, as required	AM's & SS	Abalone – preventative poaching initiatives, number of arrests etc Seahorse – management plan? Decrease bag limits, increase size limits, no fishing for TOPS linefish species		
	Information dissemination				

Budget Allocation	**Development**	R 250,837
	Operational (Year 1)	R 741,679

4.2.9 Cultural Heritage Resource programme

The main purpose of this programme is to conceptualise, plan, strengthen and oversee implementation of Cultural Resource Management and Indigenous Knowledge in the GRNP.
The SANParks managed areas in the Garden Route incorporate various cultural heritage sites. These range from Khoisan cultural heritage sites such as caves, shell middens and rock art to the more recent historical sites such as the ruins of small fishing settlements, remnants of the past forestry and mining industries, railway lines, shipwrecks and grave sites. The conservation of these sites and their related oral history are part and parcel of the conservation mission of SANParks.

Running concurrently is an ongoing Oral History Collection and Cultural Mapping Project and an Oral History Collection project, both of which are implemented with the purpose of keeping an up to date catalogue of all Cultural Heritage assets (tangible and intangible) associated with the Park. Site management plans are developed for cultural sites and a living heritage survey conducted to ensure appropriate management of and controlled access to sites.

The programme furthermore aims to develop opportunities to interpret and promote Cultural Heritage as part of the experiences offered to park visitors. These projects are implemented in conjunction with local community members, the organisations representing community interests, as well as relevant academic institutions and researchers.

CULTURAL HERITAGE MANAGEMENT PROGRAMME

Manage for sustainability of biodiversity and cultural heritage assets

Enhance the sustainable management of cultural heritage assets

Acknowledge the area's diverse cultural heritage and commit to ensuring the safeguarding of this heritage.
Ensure that the effective protection, preservation and sustainable utilisation of cultural resources are integrated into the process of environmental management of the Park.
Cultural and heritage assets must be taken into account in development projects and the needs and values of local and neighbouring communities honoured in this respect.

Objective	Management / Monitoring Activities	Responsibility	Indicators / Measures	Timeframe	Reference to other documents
Create Awareness and solicit public involvement in the GRNP cultural heritage management programme	Identify and implement awareness programmes	Manager P & C	Programmes identified and initiated	Ongoing	Cultural historical asset register; National Heritage Resources Act No 25 of 1999 (NHRA)
To develop and implement management plans to ensure the conservation of cultural heritage sites, relics and the related intangible heritage associated with the areas managed by SANParks.	Catalogue and document Resources	Manager P & C	Up to date catalogue and databases	Ongoing	
	Identify and Map Sites (Tangible Assets)	Manager P & C and AM's	Up to date Site map available	First Round done and ongoing updating	
	Develop and implement management plans for each site	Manager P & C	Site plans available	Year 1 & 2	
	Implement routine Monitoring and reporting system on the status of sites with inclusion of management prescriptions for Conservation or restoration interventions where required.	Manager P & C	Site status reports available	Ongoing – As required in accordance with management plans	
To record the oral history and information relating to cultural heritage	Collect, record and make use of Oral History (Intangible Assets) through initiatives.	Manager P & C	Oral History records available	2nd Round Year 4	

Objective	Management / Monitoring Activities	Responsibility	Indicators / Measures	Timeframe	Reference to other documents
To develop and implement interpretative resources and cultural tourism concepts for each management unit of the GRNP	Interpret information relating to cultural heritage in collaboration with local communities, academic researchers and other relevant sources and stakeholders.	Manager P & C	Interpretive resources about cultural heritage available to the public	Year 1 Or as required in accordance with management and interpretation plans	Cultural historical asset register; National Heritage Resources Act No 25 of 1999 (NHRA)
	Develop detail plans for Cultural Tourism Products and source funding.	Manager P & C	Plans for cultural tourism products	Year 2 Or as required in accordance with site management and interpretation plans	
	Implement Cultural Tourism Products	Manager P & C	Cultural Tourism Products available to the public	Year 3 Or as required in accordance with site management and interpretation plans	
	Establish a Cultural Heritage Management Forum / Working Group to facilitate Involvement of local community stakeholders	Manager P & C and AM's	Forum established	Year 1	

Budget Allocation	**Development**	R 63,710
	Operational (Year 1)	R 578,042

4.3 SUSTAINABLE USE OF NATURAL RESOURCES

4.3.1 Terrestrial

Extractive resource use from terrestrial ecosystems is an important component of the management of the Garden Route National Park. This is both from the historical perspective as well as to comply with policy directives to accommodate the need for access to resources, to optimise socio-economic benefits to neighbouring communities, and to generate income for the organisation. The resource use programme makes provision for the harvesting of timber and non-timber forest products, as well as the harvesting of fynbos products. The area zoned for extractive resource use includes a diversity of vegetation types to allow for the harvesting of a wide range of species and products.

Timber

Timber from the indigenous forests is used mainly for the manufacture of high quality furniture and ornaments, in an industry that is important in the local economy. Approximately 9 200 ha of the indigenous forest area is allocated to the timber utilisation management class. Biodiversity conservation remains the primary aim of management in these areas, so a yield regulation system was developed that has minimum ecological impacts, causes minimum deviation from the natural turnover and disturbance mechanisms of the forests and produces an optimal sustainable yield. Specialised harvesting techniques and equipment are used to limit damage to the forest.

Timber yield regulation

The timber yield regulation system and its implementation are described in detail by, amongst others, Seydack (1995), Seydack *et al.* (1995) and Durrheim (2000). Harvesting takes place on a 10-year cycle and is limited to forest types and sites that are the least ecologically sensitive. Individual trees are selected for harvesting according to the locally developed Senility Criteria Harvesting (SCH) yield regulation system, which is based on natural mortality patterns. The system aims to pre-empt, and thus utilise natural mortality, resulting in the harvesting of the most senile trees. Individual trees are selected for harvesting by applying selection criteria that are based on external, visible signs of senility, declining vigour and low future life expectancy. The criteria are described for each of the main canopy species, and are calibrated to the natural senility patterns as determined by long-term research results. Trees falling within the selection criteria are marked for removal by trained markers if they can provide marketable utilisable timber.

Timber harvesting

Reduced-impact logging techniques were introduced into the southern Cape forests in the 1960s and have been applied consistently since the early 1980s. There has since been a continuous development and improvement in techniques and equipment. A comprehensive timber harvesting policy and guidelines document that addresses all aspects of timber harvesting has been compiled. Measures applied to reduce the impacts of timber harvesting include the following:

- No harvesting is carried out in ecologically sensitive areas.
- Large crowns are removed before trees are felled, a procedure known as topping.
- Logs are slipped out of the forest with horses or winches.
- Large, specially designed machinery is only used on the main slipping paths.
- Slipping of logs is only carried out when the soils are sufficiently dry.

The harvested timber is taken to depots where it is usually sold on public auction, sometimes on tender.

Monitoring

Long term monitoring of yields, growth rates and regeneration is important to ensure that harvest levels and mixes of products are sustainable. The effects of timber harvesting are monitored in timber utilisation areas by means of permanent sample plots, full count monitoring and post-harvest audits.

By-products from timber harvesting

Much potential exists for the harvesting of plant products as by-products from timber harvesting areas. This includes, for example, the harvesting of tree seedlings from forest roads (that would get damaged during harvesting operations) for establishment in indigenous trees nurseries, and the harvesting of timber off-cuts (branch wood and logs of small dimensions are not harvested during normal timber harvesting operations) for carving and turning. In addition, the bark of many timber species (e.g. *Curtisia dentata*, *Rapanea melanophloeos* and *Pterocelastrus tricuspidatus*) is also in demand for medicinal use. During harvesting operations only the utilisable timber is extracted for the furniture timber market. Owing to quality specifications for most furniture timber, branchwood and logs of small dimensions are not harvested, and bark for medicinal use could be stripped from the remaining wood. These, and other options would be explored, as needs for access to products are identified.

Harvesting of non-timber forest products (NTFPs)

This programme entails the commercial harvesting of NTFPs, as well as access for domestic use. Currently this includes the harvesting of seven weeks fern (*Rumohra adiantiformis*) and coral fern (*Gleichenia polypodioides*) for florist greenery, medicinal plant products (e.g. the corm of *Bulbine latifolia*), and the collection of firewood. The forest management and zonation system provides for expansion to other products and species, should the need be identified, but subject to principles of sustainability. Resource use needs and potential already identified, include a range of medicinal plants species (forest and fynbos), the commercial harvesting of fynbos species for the florist market, and products such as tree seedlings for tree nurseries, timber off-cuts for carving wood turning, and medicinal tree bark as by-products from timber harvesting areas. Applications from stakeholders for the harvesting of plant products will be assessed objectively in terms of viability and compatibility with other park management objectives. Where resource use is allowed, harvest systems and monitoring programmes will be developed to ensure sustainability.

Harvesting of seven-weeks fern (Rumohra adiantiformis)

Dense and medium-dense populations of seven-weeks fern, largely in moist and medium-moist High Forest, have been identified and mapped for commercial harvesting of fern fronds. The right for commercial ferns harvesting in the park is put out on open tender. Fern picking by the successful bidder and his harvest team, takes place under strict control by forest guards. Harvest prescriptions to ensure sustainability have been developed over more than a decade, through an adaptive management approach. Only 50% of pickable fronds, defined as “a normally shaped mature fern leaf, longer than 250 mm, measured from the base of the leaf to the apex of the leaf, with not more than 10% of the surface of the leaf damaged through discolouration, wilting or any other defect” is harvested on a 15 month harvest cycle. Accurate records are kept of the number of fern fronds harvested from the different fern picking areas.

An intensive monitoring programme is in place to ensure that harvesters abide by the harvest prescriptions, as well as to assess harvest impact on the resource. Forest guards accompanying the harvest team conduct daily monitoring as described in the guidelines for daily monitoring, to monitor for over- and under-picking and obtain data on the health of the remaining population (frond size, fronds per plant, presence of spores, etc.). In addition, monitoring is also conducted in permanent plots in undisturbed fern populations outside picking areas, to assess long-term trends in population dynamics and to serve as a control to harvest areas.

Harvesting of coral fern (Gleichenia polypodioides)

Coral fern often forms dense mats in fynbos and plantations, especially in moist sites and areas not exposed to the normal fynbos fire regime, and pose a major management problem in some areas. It sometimes also invades disturbed forest areas (especially after fire) as part of the natural forest succession process following disturbance.

The species, however, is also in demand for florist greenery. Suitable areas for the harvesting of the species have been identified and are indicated on management maps. As plants growing in direct sun are not suitable for harvesting (leaves easily wilt), only populations growing in shade or are partially shaded were mapped. Considering the dense impenetrable mats that the species form, and that only single leaves are harvested, harvest impact would be minimal and no detailed harvest prescriptions to ensure sustainability are considered necessary. Detail records of fern leaves harvested are, however, kept to monitor long-term yield from harvest areas.

Harvesting of medicinal plants

A range of fynbos and forest plant species used for medicinal purposes, are found within the boundaries of the Garden Route National Parks and the demand for access to these resources is growing. This entails whole plant harvesting and the harvesting of certain plant parts from a range of species. Currently only *Bulbine latifolia* is harvested under controlled conditions from the wild, while initiatives were also taken to develop a medicinal plant garden to reduce pressure on natural populations. Applications for the harvesting of a range of medicinal plant species were received and are under consideration.

Other products

Other resource use activities taking place within the Garden Route National Park, include, for example the controlled harvesting of firewood, while a bee-farming project in fynbos areas has also been initiated, in consultation with stakeholders. New applications for resource use would be subject to a formal process of objectively scrutinising the feasibility and viability of projects.

4.3.2 Marine and Estuarine

Marine and Estuarine

SANParks strategy to manage resource use within the open areas is adaptive and ongoing relying on information gathered from monitoring programs aimed at quantifying use, assessing the resource base and relating the two.

Recreational and subsistence fishing within the Garden Route National Park currently takes place within the De Vasselot portion of the Tsitsikamma Section, the Knysna Estuary, the Swartvlei system (estuary and lake) and within the Touw estuary and Island Lake of the Wilderness Lake system in accordance with the regulations of the Marine Living Resources Act (1998).

The Knysna and Swartvlei estuaries are on the urban fringe, easily accessible and hence subjected to heavy fishing pressure by both recreational anglers and unemployed subsistence fishers. Estuaries are ecologically important, because they act as both nursery areas for juveniles and feeding grounds for adults of many fish species, several of which form important components of the recreational and commercial marine linefisheries. Based on rating scores for size, habitat importance, zonal type rarity and biodiversity importance, the Knysna- and Swartvlei estuaries are the 1st and 7th most important estuarine system in South Africa (Turpie & Clark 2007), while the De Vasselot section of coastline has a very high linefish habitat score (Clark & Lombard 2007).

Extractive over-exploitation of resources has been highlighted as both a threat to estuarine ecosystems (Whitfield 1997) and the greatest threat to marine biodiversity (Lombard *et al.* 2005). Despite the fishery management strategies employed (size restriction, bag limits, closed seasons) and amendments implemented over time in South Africa, various studies suggest that catch rates, in both the recreational shore (Attwood & Farquhar 1999, Cowley *et al.* 2002) and ski-boat fisheries (Penney *et al*. 1999, Griffiths 2000, Brouwer & Buxton 2002) have decreased, and research has shown that stocks of most of South Africa's linefish species are currently over-exploited (Griffiths 2000, Mann 2000).

Managing the interface between resource use and biodiversity conservation within the marine and estuarine environment whilst taking cognisance of cultural, social and economic incentives of resource users will be a key challenge in ensuring that park objectives are met and resources remain sustainable.

SUSTAINABLE EXTRACTIVE RESOURCE USE PROGRAMME

CONSERVATION OF REPRESENTATIVE, FUNCTIONAL ECOSYSTEMS

To conserve a representative sample of the regions ecosystems in a linked landscape, with particular emphasis on the Wilderness Lake systems, and the maintenance or restoration of environmental processes to enable natural spatial and temporal variation in structural, functional and compositional components of biodiversity.

Terrestrial and Aquatic:

To facilitate sustainable natural resource use based on sound environmental principles to the benefit of stakeholders and SANParks

Reconciling biodiversity with other park objectives:

To ensure that non-biodiversity management aspects of SANParks operations (revenue generation including tourism, 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.

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.

TERRESTRIAL

Objective	Management / Monitoring Activities	Responsibility	Indicators / Measures	Timeframe	Reference to other documents
To ensure a streamlined process for the objective assessment of applications and proposals for resource use	Develop procedures for the assessment of resource use applications by relevant roleplayers, taking into consideration ecological and socio-economic dimensions of sustainability	P&C, AMs, SS	Procedure documented	Year 1	Corporate resource use policy
	Implement procedure for assessing applications and proposals for resource use	P&C, AMs	Record of applications and assessments	Year 1	
To enhance optimum use and ensure compatibility with other park management objectives through effective zonation	The terrestrial section of the GRNP that include a range of vegetation types, and is compatible with other park management objectives	SS, PIM, AMs	Map with resource use zone	Year 1	

Objective	Management / Monitoring Activities	Responsibility	Indicators / Measures	Timeframe	Reference to other documents
To ensure that resource use is sustainable, in terms of species and products harvested	Develop, through research and monitoring, and implement harvest systems for sustainable use, following an adaptive management approach	SS, AMs	Harvest systems documented and record of access for controlled use	Ongoing	
	Conduct long-term monitoring to assess sustainability of resource use and long-term impact on the resource	SS	Monitoring procedures described and results available	Ongoing	
To assess trends in resource use in terms of volumes harvested and income generated	Maintain database of volumes harvested and income generated for all species and products subjected to harvesting	AMs, P&C	Database available and up to date	Ongoing	
To ensure that timber harvesting from the indigenous forest is carried out in accordance with acceptable national standards and based on sound scientific principles.	Selection of individual trees for harvesting according to SCH harvesting system	SS	Timber marking reports	Ongoing	Timber harvesting guidelines
	Pre-harvest operations, felling, cutting of timber and extraction, preparation of depots	AM's	Pre and post harvesting audits	Ongoing	Timber harvesting guidelines
	Auction timber	AM's	Auction reports	Ongoing	
MARINE & ESTUARINE					
To ensure / promote sustainable use of marine and estuarine resources within the open areas of the GRNP	Quantify extractive resource use activities through relevant monitoring programs.	SS and AM's	Annual reports	Year 1, ongoing	
	Evaluate anglers attitudes towards, knowledge of and compliance with relevant legislation.	SS	Reports	Year 1, updated every 2 years	
	Determine status of fish and bait stocks in exploited areas.	SS and AM's	Reports	Year 2, ongoing at 5 year intervals	

Budget Allocation	**Development**	R 314,201
	Operational (Year 1)	R 3,577,153

4.4 SUSTAINABLE TOURISM

4.4.1 Tourism Development Programme

The purpose of the Tourism Development Programme for the Garden Route National Park is to recommend a range of tourism products and services that are appropriate to the (i) leisure pursuits of tourists wishing to visit the National Park; (ii) to the conservation aims of the National Park and (iii) the economic aspirations of the host community wanting to benefit economically and financially from hosting tourists in and around the National Park. The challenge in tourism development planning is to recommend a range of sustainable development interventions that balance these desires and demands based on available tourism resources, attractions and experiences in the National Park that also need to be conserved for future generations.

The methodology used for tourism development planning in the GRNP complies with the principles of sustainable and responsible tourism development as well as to SANPark's Conservation Development Framework (CDF).

The Garden Route National Park has been described spatially as a number of Tourism Development Areas (TDAs) in which the potential for tourism development is considered to be high. A range of tourism products and experiences have been identified for each TDA based on the expected demand for the tourism resources of the TDA by a tourist market segment that is considered preferred due to the desired benefits that that market segment may deliver to the Park and the people living around the Park. Each TDA is planned as a stand-alone entity within the broader context of the National Park. Tourism products recommended for one TDA are independent of tourism products recommended for another TDA. It is recommended that all the tourism development interventions stipulated for a TDA are implemented as one process as they form an integrated tourism development product aimed at meeting the full set of market demands, which in turn should deliver a range of benefits to the Park and surrounding communities. These interventions are identified in the table below. It should be noted that the recommended timelines for the development of the identified TDA's are totally dependant on the availability of financial resources. NB Details are to be found in the companion Tourism Plan.

Best practice principles for sustainable tourism development have evolved over the past ten years. These principles are used as a framework to guide the planning process for tourism development in the GRNP and to ensure that recommendations adhere to current best practice for sustainable tourism development.

These best practice principles are:

- The concept of sustainable development shifts the focus away from the traditional "growth versus development" argument. The focus of this development plan is on increasing opportunities for employment, income and improved local well-being while ensuring that all development decisions reflect the full value of the natural and cultural environment.
- Tourism development involving any loss of existing natural or cultural wealth or environmental capital will increasingly indicate how future generations will be compensated. The loss of natural and cultural assets can no longer simply be substituted for by capital wealth created by new development.
- Tourism, as an industry can enhance environmental quality and at the same time create jobs. This provides a positive relationship between tourism and the environment. While some tourism salaries may not be as high as other sectors, tourism jobs do provide for longer-term development opportunities where other industries are not sustainable.
- Economic growth must be adequately measured. It must include the real cost of protection and recycling not only in the present but also the future when these costs will be much higher. When tourism is compared to other industry sectors in this way, its image will greatly improve.
- Sustainable tourism development must provide for intergenerational equity. To be fair to future generations of tourists and the travel industry we must leave them a resource base no less than we have inherited. Each generation of tourism developers, planners and operators is obliged to look after the generations that follow.
- Sustainable tourism development in the GRNP must avoid all actions that are irreversible. Some natural and cultural resources can be replaced. But old-growth forests, wildlife species and similar features, once lost, can never be enjoyed by future generations. As well, old monuments, historic areas, bushman paintings / middens and distinct landscapes are irreplaceable.
- Development that causes major changes in the environment usually has a greater impact on the poor and the previously disadvantaged than the rich and previously advantaged. In the cases of relatively poor or developing communities the preservation of sustainable livelihoods must be taken into account. This is a concern where there is dependence upon fish stocks, wildlife, water supply, and other resources upon which tourism can have an impact.
- Development in one area of the planning domain clearly can have positive or negative effects on other of the planning domain. Therefore all management areas and protected area management agencies of the planning domain should work together to ensure that tourism is integrated into the overall planning and management of the environment. Cooperation in establishing and attaining economic, social and environmental goals in regard to tourism is necessary.
- In situations where the tourism resource base has been seriously degraded, mitigation and rehabilitation actions must be undertaken to reflect the concept of sustainable tourism development.
- Sustainable tourism development involves promoting appropriate uses and activities that draw from and reinforce landscape character, sense of place, community identify and site opportunity.
- Sustainable tourism development must be given policy definition and direction for each area in the planning domain where it is to occur. This must be done in the light of environmental, social and economic conditions and requirements that exist there.
- Sustainable tourism development as defined for the GRNP requires guidelines for levels and types of acceptable growth but does not preclude new facilities and experiences.
- Sustainable tourism development means promoting working partnerships among the network of actors and linking scientific research and public consultation to decision-making.
- Sustainable tourism development involves the establishment of education and training programs in the planning domain to improve public understanding and enhance business and professional skills.
- Sustainable tourism development involves making hard political choices based on complex social, economic and environmental trade-offs.

TOURISM DEVELOPMENT PROGRAMME

Enhance SANParks's provision of tourism products & experiences:
To establish a range of appropriate, profitable tourism products that focus on the needs and demands of preferred tourism and recreation market segments that are developed in accordance with the principles of responsible tourism development within the limits of acceptable change of the tourism resources on which the tourism activities are based

Objective	Management / Monitoring Activities	Responsibility	Indicators / Measures	Timeframe	Reference to other documents
Develop and implement a Tourism Development Plan to guide the systematic development of tourism products in the GRNP.	Develop and endorse a 25 year strategic approach to tourism development recognising potential for boundaries of Park to change over time.,	GM and AM's	Tourism development plan available.	Ongoing	
	Recognise & encourage potential partnerships and establish liaison & cooperation forums between Park & partners and define procedures for dealing with partners.	GM and AM's	Liaison & cooperation forums established and procedures defined	Year 1	
Manage tourism development in the GRNP, based on discrete spatial & market focused Tourism Development Areas (TDAs).	Define & agree upon boundaries of TDAs.	GM and AM's	TDA's defined	Ongoing	.
	Develop a tourism development plan for each TDA.	GM and AM's	Development plans in plans	Ongoing	
	Compile business plans to lobby for funds to finance development of TDA's.	GM and AM's	Business plans developed.	Year 1 and ongoing	
Strive to increase length of stay of visitors in Park through the provision of additional tourism & recreation activities.	Motivate to develop additional tourism & recreation activities in accordance with recommendations in Tourism Development Plan.	GM and AM's	Business plans	Year 2 & Ongoing	Tourism development plan for GRNP.

Objective	Management / Monitoring Activities	Responsibility	Indicators / Measures	Timeframe	Reference to other documents
Focus tourism & recreation products on the needs & demands of preferred market segments that deliver tangible benefits as defined in the Strategic Tourism Development Framework.	Only provide facilities for preferred market segments as indicated in Tourism Development Plan.	GM and AM's		2 Year	Tourism development plan for GRNP.
Increase provision of recreation products for domestic leisure market.	Provide appropriate recreation products for domestic leisure market.	GM and AM's		Ongoing	Tourism development plan for GRNP.
Encourage involvement of HDIs in the utilization and service provision of tourism & recreation products in Park.	Ensure tourism & recreation provision opportunities are specifically marketed to historically disadvantaged communities.	GM		Ongoing	Tourism development plan for GRNP
	Ensure that SANParks procurement policies favouring HDIs are implemented.	GM			SANParks procurement policies, guidelines & procedures.

Budget Allocation	**Development**	(refer to Tourism Development Plan)
	Operational (Year 1)	R 232,789

4.4.2 Marketing Programme

The Garden Route region is considered as the 3rd most preferred destination in South Africa (after Kruger NP and Cape Town). The Garden Route National Park will be market driven & create happy, loyal customers & stakeholders who become ambassadors and marketers for the Park, with a high return rate. This will be done through regular monitoring of Customer Feedback in the Park, effective communication with clients through e-mail enquiries to the Park and customer care training for all frontline staff in the Park. The Garden Route National Park will give effect to the primary purpose of the organisation which is “facilitate and stimulate sustainable, responsible tourism development and conservation area management.

Garden Route National Park Product Portfolio:

Ecotourism: The conservation areas of the Park are a big draw card for both local and international tourist.

Culture and History: There is great variety and discovery opportunities which include ruins from the Goudveld Gold Mines , The Circles of The Forest etc.

Adventure: The Garden Route National Park has the potential to become a popular outdoor activity and adventure destination, as it has the quality products and range of experiences that can attract local and international enthusiasts. The Park provides opportunities to engage in mountain biking, hiking, cycling, canoeing, wilderness walks and bird viewing.

Sports and Events: The Garden Route National Park will focus much of its marketing activity on the marketing of events in the Region. A range of events, from sporting i.e. Trail Runs to leisure events such as Forest Concerts will be offered.

Garden Route National Park has the following general tourism marketing targets:

- To increase the number of domestic and international visitors to the Park.
- The focus on attracting visitors to the Park during off-peak seasons through the promotion of activities . The 4X4, camping/caravan and hiking markets are the markets showing continued growth and these are the markets that will be targeted, in addition to the loyal client market. The Adventure activities are the Garden Route’s National Park Unique Selling Feature.
- To identify new products to ensure a diversity of visitor experiences, including adventure, leisure and sporting market segments
- To organise and coordinate annual and once off events successfully to combat seasonality patterns.

- To ensure visitors to the Park are satisfied with their experience and to promote multiple visitations.
- GRNP will adhere to quality industry tourism standards to ensure sustainability.
- Promote the Park at Tourism Indaba and other National Tourism Shows.
- The Garden Route National Park will link up with other Tourism and Marketing Routes and SANParks Cape Region and Frontier Parks, to establish a profitability driven relationship to grow arrivals.
- Inter-Park marketing, through the use of brochures, posters or pull-up banners, promotional DVD's
- Make use of plasma screen televisions in the four sections of the Park's reception areas and restaurants to promote the Park's offerings.
- Garden Route National Park will continue to work closely and form MOU's with the Eastern Cape Tourism Board, Cacadu District, Nelson Mandela Bay, Koukamma, Eden District and Cape Town Routes Unlimited.

MARKETING PROGRAMME

To market the Garden Route National Park Product as the Pride and Joy of all South Africans and the World, and to ensure service excellence so as to increase the number of visitors whilst effectively promoting the GRNP as a destination of choice.

To contribute to the financial sustainability of the park through ensuring strong local, national and international support for the park and a consistent flow of tourists to the park, generating revenue that can be utilised to offset conservation management costs

Objective	Management / Monitoring Activities	Responsibility	Indicators / Measures	Timeframe	Reference to other documents
Develop and implement a marketing strategy for the GRNP	Review the use and relevance of all park marketing material to maximize its effectiveness in conveying essential information and reaching target visitor groups	Manager: Marketing	Marketing strategy developed	Year 1	Corporate marketing guidelines
To increase the number or Visitors and enhance the GRNP Brand	Develop and implement a Marketing Plan for the GRNP	Manager: Marketing	Marketing Plan available	Year 1	
	Ensure Brand consistency	Manager/ Communications Marketing	Promotional Collateral developed	Ongoing	
	Focused marketing campaigns for all new and emerging GRNP products	Manager: Marketing	Focused campaigns	Ongoing	GRNP Tourism development plan
To grow and maintain our Primary Market	Conduct direct contact consumer focus Monthly Monitoring visitor feedback forms Monitor the Monthly Statistics	Manager: Marketing	Marketing Plan executed Visitor Feedback Forms Statistical Reports	Ongoing	
Smooth current seasonality patterns	Increase and diversify Short Break Travel Opportunities	Manager Marketing	Awareness of year round attractions and niches.	Ongoing	

Budget Allocation	**Development**	R 6,086
	Operational (Year 1)	R 96,332

4.5 CONSTITUENCY BUILDING

4.5.1 Stakeholder Engagement Programme

The GRNP straddles two district Municipalities and four local Municipalities. The district Municipalities are Eden and Cacadu and the local Municipalities are George; Knysna; Bitou; and Koukamma. The GRNP is situated within two provinces, namely the Western Cape and Eastern Cape. Co-operative governance systems are being developed and strengthened for the park in accordance with the following principles whereby all spheres of government (National, Provincial, and Local) co-operate with one another in mutual trust and good faith by:

- fostering friendly relations;
- assisting and supporting one another;
- informing one another of, and consulting one another on, matters of common interest;
- co-ordinating their actions and legislation with one another;
- adhering to agreed procedures; and
- avoiding legal proceedings against one another

The GRNP aims to enhance biodiversity conservation through the promotion of a conservation ethic and developing healthy community custodianship for the Park. In the context of the GRNP, strategic partnerships are important to ensure the long term sustainability of the Park. To this end both formal and informal partnerships are initiated, maintained and nurtured with various Government Departments and institutions.

Park Forums were established to encourage the building of constituencies in support of natural and cultural heritage conservation goals of SANParks. The Park Forum facilitates constructive interaction between the park and surrounding communities and other stakeholders. Park Forums are a means of providing a legitimate platform to communicate park / SANParks issues and to ensure participation of stakeholders on matters of mutual relevance affecting the Park.

The GRNP aims to foster good media relations. Not only is the media regarded as an ally to market our tourism products, but also as key communication tool to keep stakeholders informed and to promote a positive image of the GRNP.

The GRNP is an active participant in the greater Garden Route Initiative under the aegis of C.A.P.E.

STAKEHOLDER ENGAGEMENT PROGRAMME

To grow constituencies for the national parks system
Enhance reputation and collaboration with key stakeholders

To establish and maintain meaningful and beneficial relationships with a wide range of stakeholders supporting SANParks core business

Objective	Management / Monitoring activities	Responsibility	Indicators / Measures	Timeframe	Reference to other documents
To develop a Communications strategy for the Garden Route National Park.	Compile a Communications strategy for the GRNP	Manager Communications	Communication Plan.	Year 1	GRNP Communication Plan
	Hold structured interviews with appropriate Stakeholders to determine the stakeholder satisfaction of service delivery (access, tourism facilities, biodiversity management, etc) from the Garden Route National Park	Manager Communications	Records of structured interviews available	Year 2	Stakeholder Engagement Plan
	Analyse stakeholder responses and determine the value of the current and potential relationships key issues and identify and implement mechanisms to strengthen these partnerships where needed.	Manager Communications	Report of analysed data submitted	Year 2	Stakeholder engagement Plan
	Develop and manage a database of our diverse stakeholders and their level of expertise and/or contribution through institutionalised structures (i.e. honorary rangers) and non institutionalised structures (i.e. Friends of the GRNP) towards the goals of the GRNP	Manager Communications	Stakeholder engagement plan	Year 2	Stakeholder engagement plan
To implement the GRNP media protocol.	To ensure that all media/park interactions are conducted in accordance with the GRNP media policy.	Manager Communications	Monthly reports	Ongoing	GRNP media policy.
	To analyse and review monthly media reports and attend to enquiries from local and national media houses.	Manager Communications	Monthly reports	Ongoing	GRNP media policy. MSA Media analysis reports.

Objective	Management / monitoring activities	Responsibility	Indicators / measures	Timeframe	Reference to other documents
To establish a GRNP Park Forum	Review existing structures (including park and PFM forums) and recommend a park forum structure appropriate for the GRNP	Manager P& C	Recommendation report	Year 1	
	Implement recommendations in order to operationalise a representative and effective system of fora	Manager P& C AMs	Minutes of meetings available	Year 1 and ongoing	SANParks terms of reference for the establishment and operation of park forums
Nurture co-operative relationships with local and provincial authorities	Develop and maintain appropriate fora	GM	Forums established and maintained. Meetings and information exchanged on a regular basis	Ongoing	

Budget Allocation	**Development**	R 31,607
	Operational (Year 1)	R 820,050

4.5.2 Socio-Economic Programme

The Garden Route National Park will contribute to local socio economic development mainly in the following ways:

Business opportunities and support of local entrepreneurs:

The Garden Route National Park procures contracted services ranging from maintenance to tourism related services. Where possible, local SMME's are favoured when sourcing contractors, provided that all procurement conditions as stated in the SANParks Procurement Policy can be adhered to. Further support for the development of local initiatives related to biodiversity conservation or eco-tourism, is provided through mutually beneficial project partnerships. These partnerships have in the past involved craft groups, catering businesses, indigenous plant nurseries, bee farming, eco-guide services, etc. A Socio Economic Study recently conducted under the auspices of the Garden Route Initiative, provides tools to guide future socio-economic initiatives and partnerships.

Expanded Public Works Programmes:

The Expanded Public Works Programme (EPWP), under the Invasive Species Control Unit (ISCU) remains a significant focus area of the organisation to effectively contribute to local socio economic development. There are currently two programmes within the unit, namely; the Working for Water (WfW) programme and the Working for the Coast (WftC) programme. These programmes all focus on poverty alleviation and are therefore labour intensive projects that create temporary jobs in the short term. Great importance is also afforded to the skills development component of these programmes, with specific targets set for both hard and soft skills development. Sustainability is further supported by investigating and implementing exit strategies through the development of entrepreneurial opportunities for local communities.

SOCIO ECONOMIC DEVELOPMENT PROGRAMME

To play a significant, targeted and effective role in contributing to local economic development, economic empowerment and social development in communities and areas adjacent to National Parks.

To facilitate socio-economic development and develop alternative sources of revenue
To implement Enterprise development programme; EPWP and Community based socio economic programme

Objective	Management / Monitoring Activities	Responsibility	Indicators / Measures	Timeframe	Reference to other documents
To facilitate Private Public Partnerships in the GRNP	To identify possible PPP opportunities within the GRNP	GM; AMs	Opportunities identified	Year 1 and ongoing	Tourism Development Plan; Socio economic study
	Align existing business opportunities within GRNP with SANParks commercialization strategy	GM; AMs	Business opportunities aligned	Ongoing	SANParks commercialisation strategy
To identify possible socio economic benefits and potential risks associated with conservation areas, their management and related activities	Review literature of case studies that relates to potential interventions for the Garden Route	Manager P&C	Case studies noted	Year 1	Garden Route Socio Economic Study Report
	Identify broad types of intervention and conduct value chain and production chain	Manager P&C	Project Document available	Year 1	
	Identify and review existing and planned conservation related activities that may have a negative socio economic impact on the GRNP	Manager P&C	Activities identified	Year 1	
	Compile recommendations for avoiding negative impacts or undertaking mitigation measures necessary if impacts may be unavoidable	Manager P&C	Recommendations available	Year 1	
To implement a decision-making framework to initiate smaller scale and emerging projects in accordance with SANParks policy	Facilitate approval of process for assessing project applications	Manager P&C	Frameworks and documents reviewed	Year 1	Decision-making Framework for Socio-economic Enterprise Development
	Implement an analytical decision-making framework appropriate to the GRNP context	Manager P&C; AM's	Decision making framework in place	Year 1	
	Develop action plans for priority projects	Manager P&C	Action Plans for priority projects	Year 1	Garden Route Socio Economic Study Report

Budget Allocation	**Development**	R 38,467
	Operational (Year 1)	R 38,467

4.5.3 Environmental Interpretation and Education Programme

The Garden Route National Park offers opportunities for day and overnight programmes which interpret the park's rich natural and cultural heritage. Activities have different themes to ensure that the biodiversity conservation message is conveyed whilst facilitating a variety of experiences which cater for wide participant interest. Guided and self-guided experiences are offered and are complemented with various interpretive displays, signage and information resources.

The Environmental Interpretation and Education Programmes have each been designed with specific focus groups in mind, such as schools, youth, visitors and stakeholder groups with the greatest potential impact on or contribution to conservation. To reach park goals and develop a healthy community custodianship for the park, most projects are developed and implemented in partnership with related NGO's, CBO's and government departments, as well as the private sector and community liaison structures.

Activities are sometimes grouped together and offered as packages or conducted as part of community outreach programmes, training programmes, visitor programmes, etc. This combination of processes forms an integrated network of solutions that work together ("cross pollination") to support meaningful, practice based learning that will ensure sustainable results as well as the enhancement of park-community relations.

ENVIRONMENTAL INTERPRETATION AND EDUCATION PROGRAMME

To build constituencies amongst people in support of SANParks' conservation endeavours by playing a significant, targeted and effective role in promoting a variety of educational opportunities and initiatives.

Grow constituencies for the national parks system
To improve environmental education

Objective	Management / Monitoring Activities	Responsibility	Indicators / Measures	Timeframe	Reference to other documents
To implement programmes that facilitate meaningful environmental education amongst communities, stakeholder groups, and schools as well as contributes to youth development and environmental awareness amongst staff.	Compile and implement programme plans as required.	P & C Manager	Programme plans submitted	Ongoing	Environmental Interpretation and Education plan
	Implement funded Environmental Education Programmes (such as Kids in Parks, Khula Nam Forest excursions, Adopt-a-Beach)	P & C Manager	Education Programmes conducted	Ongoing	
	Facilitate and/or participate in Educator Support and Development initiatives such as Eco Schools and Environmental Educators Networks (e.g. TEEN, GREEN, CAPE-EDEN, MCEN, EEASA)	P & C Manager	Educator network activities maintained	Ongoing	
	Plan and Implement youth development programmes such as Junior Rangers, Imbewu and Eco-guides.	P & C Manager	Youth Programmes Conducted	Ongoing	
	Plan and implement campaigns to enhance Environmental Awareness in local Communities and stakeholder groups, with specific emphasis on groups with greatest potential impact on or contribution to conservation.	P & C Manager	Campaigns conducted	Ongoing	Annual Environmental Calendar Plan
	Plan and implement programmes to enhance the environmental awareness of staff	P & C Manager	Programmes Conducted for staff	Ongoing	
To improve awareness and reputation of SANParks with visitors and the public in general.	Plan and implement programmes for visitors and stakeholders as required, with reference to Holiday Programmes and activities arranged for Special interest groups.	P & C Manager	Visitor Programmes Conducted	Ongoing	Environmental Interpretation and Education plan
	Plan, develop and implement a range of appropriate interpretive materials to enhance Environmental Awareness	P & C Manager	Interpretive materials available to the public	Ongoing	Annual Plan of Operations

Budget Allocation	**Development**	
	Operational (Year 1)	R 1,230,074

4.6 EFFECTIVE PARK MANAGEMENT

4.6.1 Environmental Impact Management Programme

The Minister of The Department of Water and Environmental Affairs has, in terms of section 24(2) of The National Environmental Management Act, 107 of 1998 (NEMA), identified activities that may not commence without authorisation from the competent authority. NEMA is of general application throughout South Africa and relevant provisions therefore apply to the GRNP.

Further to the provisions of NEMA, the GRNP will develop standards of best practice to guide all operational activities that may have an impact on the environment. These activities will include any new infrastructure development that is not listed under NEMA; as well as general maintenance. The development of best practice standards will be guided by the precautionary principle.
The precautionary principle states that if an action might cause harm to the environment, in the absence of a scientific consensus that harm would not ensue, the burden of proof falls on those who would advocate taking the action.

ENVIRONMENTAL IMPACT MANAGEMENT PROGRAMME

CONSERVATION OF REPRESENTATIVE, FUNCTIONAL ECOSYSTEMS:

To conserve a representative sample of the regions ecosystems in a linked landscape, with particular emphasis on the Wilderness Lake systems, and the maintenance or restoration of environmental processes to enable natural spatial and temporal variation in structural, functional and compositional components of biodiversity.

Functional ecosystems:

To ensure the long term persistence of biodiversity patterns and processes, enabling natural variation in structure, function and composition over space and time.

Reconciling biodiversity with external threats:

To reduce external threats and pressures, and limit impacts of surrounding land & resource use on biodiversity conservation within the park.

Objective	Management / Monitoring Activities	Responsibility	Indicators / Measures	Timeframe	Reference to other documents
To ensure compliance with environmental legislation and best practice principles for all management activities in the GRNP	Make all new environmental legislation available to GRNP management.	PIM	Updated environmental legislation and best practice principles available	Ongoing	
	Develop a set of best practice principles for identified activities as required.	PIM	Best practice principles developed	Ongoing	Internal scoping register
	Conduct internal scoping of all activities that may potentially impact on the environment and ensure that EIAs and HIAs are conducted where required and that EMPs are developed to guide activities	PIM	Compliance as required	Ongoing	Occupational health and safety manual

Budget Allocation	**Development**	R 34,477
	Operational (Year 1)	R 233,405

4.6.2 Safety and Security Programme

Protection Plan

Ensuring visitor safety to the park is about securing SANParks' international reputation as the custodian of choice for protected area management. The GRNP with its unique brand of biodiversity and its role as an emerging new national park model across a living landscape, is such that, any compromises to visitor safety could receive high profile negative international coverage.
Visitor safety is both about securing the SANParks tourism income stream from the park and securing the GRNP's wider economic role in the regional and national tourism economy. Therefore the strategic intent of the safety and security plan is to firstly ensure that effective visitor safety measures are in place, and secondly to ensure that tourist perceptions are managed in order to protect the brand and reputation of SANParks and South African Tourism at large. Investment in the core business of visitor safety allows SANParks to protect its reputation and to sustain its long term tourism income required to deliver on its conservation mandate both in the park and across SANParks nationally.

The Security and Safety Operational Plan comprehensively addresses both the strategic and operational aspects of visitor safety and security within the framework set out by SANParks. The park recognizes the need to facilitate various partnerships with the public and private sectors in order to realise this Safety and Security Plan.

The strategic intent of a safety and security plan for the Garden Route National Park is to:

- ensure that effective visitor safety measures are in place,
- ensure the safety and security of SANParks employees and concessionaires,
- ensure that tourist perceptions are managed in order to protect the brand and reputation of SANParks and SA Tourism Industry at large,
- ensure that activities in the Park are appropriately regulated in order that ecosystem structure and functioning is not compromised and that the Park is able to meet its various objectives.
- ensure the protection and maintenance of Park's assets and infrastructure in order that the Park is able to meet its various objectives.
- ensure a visible presence of professional, well trained and highly motivated field rangers.

The Plan will be informed by analysis of the following aspects:

- The identification of high risk/use areas.

- Associated crime statistics for each identified area.
- The associated risks and criminal behaviour for each area.

GRNP disaster response and recovery plan

The GRNP is prone to both natural as well as man made disasters. The potential natural disasters are mainly fires and floods, whereas the man made disasters are associated with aquatic pollution (i.e. oil spills). Due to the urban context of certain areas in the GRNP there is a need for close co-operation between SANParks and other disaster management agencies like district and local municipalities. There are currently a number of initiatives from these agencies underway that need to be incorporated into a strategic disaster response and recovery plan for the park and surrounds. These initiatives include an early warning system for floods; an integrated fire management plan for the entire Garden Route; as well as an oil spill contingency plan for the Knysna estuary involving provincial and local agencies.

SAFETY AND SECURITY PROGRAMME

Improve the Park's safety and security

To ensure the safety and security of all people visiting and working in the GRNP, and also the natural assets within it, through implementation of a plan that ensures that such potential risks are identified and mitigating measures are readily available to minimise such risk.
To ensure efficient collaboration with other stakeholders to mitigate the negative affects of disasters through appropriate response and recovery measures.

Objective	Management / Monitoring Activities	Responsibility	Indicators / Measures	Timeframe	Reference to other documents
To compile a combined Safety and Security Plan for the GRNP, taking into account the existing plans already done for the various sections	Review all existing plans of the various sections of the GRNP and collate these plans into a single GRNP Safety and Security Plan	GM, AMs, Section Rangers, PIM	All plans reviewed, relevant data extracted	Year1	Tsitsikamma; Knysna; and Wilderness safety and security plans
	Initiate workshops for relevant role-players to provide input	PIM, AMs	Workshops conducted	Year 1	
	Review disaster management initiatives and plans by other agencies, to include into the GRNP safety and security plan	PIM, AM's	Integrated GRNP plan	Year 1	

Budget Allocation	**Development**	R 29,777
	Operational (Year 1)	R 29,777

4.6.3 Infrastructure programme

It is widely accepted that a proper infrastructure maintenance programme is needed to ensure that maintenance are carried out timeously. Infrastructure maintenance backlog can result in SANParks visitor experiences being negative and thus placing the reputation of SANParks at risk. Most management activities are also dependant on infrastructure being maintained (i.e. law enforcement; proper access provided for alien plant control; etc.).

For purposes of developing an infrastructure maintenance programme, distinctions are made between tourism infrastructure and management infrastructure. Tourism infrastructure is furthermore divided into existing facilities and new facilities.
The provision of new facilities will be discussed under the tourism development programme.

A considerable backlog to infrastructure maintenance currently exists for the forest areas of the GRNP. This includes maintenance to staff housing as well as general road maintenance. Provision is made in the business plan for a phased approach in order to address the backlog.

Tourism infrastructure

An overall 3 star grading for all tourism facilities in the GRNP is pursued. Some facilities are however maintained and equipped to cater for the four star market, like the Tsitsikamma guest houses and Harkerville treetop chalet.

The following tourist accommodation currently exists in the GRNP:

- Wilderness Section
  - 152 beds
  - 129 camping sites
- Knysna Section
  - 8 beds
  - 10 camping sites
- Tsitsikamma section
  - 242 beds
  - 112 camping sites

Management infrastructure

Management infrastructure includes offices and stores; staff housing; supporting infrastructure like reservoirs; and roads. A detailed inventory exists for all management infrastructures within the GRNP. This includes a total of 514 buildings; 233 km of gravel roads; and 19 km of paved and tarred roads.

A substantial backlog in terms of infrastructure maintenance exists within the GRNP. This backlog needs to be quantified and prioritised. A maintenance plan to systematically address the backlog should be compiled and budgeted for.

INFRASTRUCTURE PROGRAMME

Reconciling biodiversity with other park objectives:
To ensure that non-biodiversity management aspects of SANParks operations (revenue generation including tourism, 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 tourism and park management infrastructure, and ensure that such developments do not compromise biodiversity objectives.

Objective	Management / Monitoring Activities	Responsibility	Indicators / Measures	Timeframe	Reference to other documents
To manage and maintain appropriate management and tourism infrastructure	Prepare current state of infrastructure report for the GRNP, taking into cognisance corporate initiatives and previous infrastructure audits.	AM's	State of Infrastructure Report	Year 1	
	Prepare infrastructure maintenance and refurbishment plan for the GRNP.	AM's	Maintenance and refurb plan	Year 1	
	Secure adequate funding to implement infrastructure maintenance plan for the GRNP.	GM	Annual maintenance budgets	Ongoing	
	Plan and execute maintenance budget as per approved allocation	AM's	Financial reports	Ongoing	
	Prepare a maintenance plan to address the maintenance backlog. Prioritise the maintenance backlog in terms of available budget.	AMs	Maintenance backlog plan	Year 1 and ongoing	

Budget Allocation	**Development**	
	Operational (Year 1)	R 5,426,618

4.6.4 Human Capital Development Programme

Transformation and Wellness

The GRNP strive for the effective management of Human Capital this entails the recruitment and selection of highly qualified individuals to meet the strategic objectives of the organization, we seek to promote life long learning within the organisation by implementing a skills development programme informed by a skills audit The GRNP furthermore seeks to maintain a healthy workforce within a supportive environment, and specific objectives include to inculcate a sense of wellness, to maximise work performance and to develop an institutional culture that is sensitive to the needs of those in need of help, The GRNP also seeks to enhance transformation by implementing the GRNP Employment Equity Plan and ensure the attainment of the set EE targets.

Staff Capacity Building Programme

The GRNP has an establishment figure of 331. Each employee has set goals in terms of defined individual development plans. These development plans will are based on the individual's training needs as agreed upon by the employee and his/her supervisor. The use of the SETA's for funding the training will be explored both at head office and park level.

A Work Place skills Development Plan is also produced for the park every year as required by legislation. This is coordinated at head office level, with input from the park and the Employment Equity Forum. Most of the staff is involved and encouraged to make inputs into the plan.

HUMAN CAPITAL DEVELOPMENT PROGRAMME

Advance Strategic Human Resource Management
Ensure Best Practices in Managing and Understanding HIV and AIDS (& associated diseases

To ensure good human resource management and implement best practices in managing and understanding HIV and AIDS and associated diseases

Objective	Management / Monitoring Activities	Responsibility	Indicators / Measures	Timeframe	Reference to other documents
To ensure the GRNP attracts and retains the most suitable human capital	Implement the corporate selection and recruitment policy	HR Manager	Procedures followed for appointments	Ongoing	SANParks recruitment and selection policy
To implement the performance management system	Promote awareness Ensure category C and upper have signed balance score cards	HR Manager	Balance score card documents	Ongoing	
To implement plans and skills development strategies to meet the strategic goals of the organisation	Conduct skills audit Develop Skills Plan Conduct training interventions	HR Manager	Training plan in place % of employees trained %of budget spent on training	Ongoing	GRNP training plan
Promote the Employment Equity Act to attain the set organizational targets	Establish EE forum Design EE Plan Fill vacancies as per EE targets	HR Manager	Vacancies filled	Ongoing	EE report submitted to Dept of Labour
Implement workplace health care programmes which focus on preventative physical and mental health care	Conduct Aids awareness workshops	HR Manager	Workshops, attendance registers	ongoing	Corporate HIV policy
	Provide private facilities at all areas within the GRNP to enable employees access to Employee Assistance Programmes	HR Manager	Facilities, reports	ongoing	
	Invite professionals to the GRNP to promote awareness on Occupational Health and Safety and mental health issues	HR Manager	Attendance registers	ongoing	
	Commemorate all events related to Wellness (e.g. Aids day, World blood donor day, days of activism on non violence against Women)	HR Manager	Attendance registers, invitations	Calendar days	
Implement all HR policies and ensure compliance	Conduct educational training to staff on all HR policies	HR Manager		Ongoing	

Budget Allocation	**Development**	
	Operational (Year 1)	R 57,412

4.6.5 Information management

The GRNP will keep proper records of all aspects of its business activities, to meet the needs and protect the interest of the organization, its clients and others affected by its actions and decisions and capture and maintain its records in an approved record keeping system.

The main objective of proper information management is to establish corporate records management standards and requirements for all public records. Information management therefore should aim to enforce a consistent and systematic approach towards management of public records within the GRNP.

SANParks make use of the National Archives and Records Services of South Africa Act (no. 43 of 1996 as amended) and South African National Standards (SANS) 15489 as a model for its record keeping principles and practice and as a benchmark to measure the effectiveness of its records management systems and program.

INFORMATION MANAGEMENT PROGRAMME

To implement best practices in the field of records and information management within the GRNP

Objective	Management / Monitoring Activities	Responsibility	Indicators / Measures	Timeframe	Reference to other Documents
To develop and implement a records management and file plan for the GRNP in accordance with SANParks policies and procedures.	Review the existing records management and file plans within the various areas of the GRNP, and recommend a single file plan to be implemented, outlining the procedures for information to be filed both at area level as well as regional level.	Fin Man	Draft records management and file plan for GRNP	Year 1	National Archives and Records Services of South Africa (Act no. 43 of 1996 as amended)
	Implement the GRNP records management and file plan	Fin Man, AMs	Records and documents filed in accordance with GRNP file plan	Ongoing	SANParks corporate file plan and records management policy
	Ensure appropriate access to GRNP files and records in accordance to corporate records management policy and guidelines.	Fin Man, AMs	Access procedures recorded and implemented	Ongoing	SANParks corporate file plan and records management policy

Budget Allocation	**Development**	
	Operational (Year 1)	R 25,453

4.6.6 Financial Management and Administration Programme

SANParks' budget policy is that of a zero-base budget approach. Zero-base implies that every category must be critically assessed and evaluated and supported by an approved Business Plan per Park. Once the budget amounts have been determined for a category, it needs to be compared to previous years and any variance in excess of the budget guidelines must be motivated / explained.

The budget period for the GRNP is for one financial year starting on 01 April and ending on 31 March the following year. Annual budgets should be compiled in accordance to budget guidelines and instructions as issued annually by SANParks corporate finance division. NB See also the Business Plan prepared in conjunction with this Management Plan

Risk Management

Risk awareness and management within the GRNP is adhered to on an ongoing basis. This entails the implementation of corporate policies, procedures and protocol. The purpose of corporate risk management is to ensure that strategic, business and operational objectives are met and that continued, sustained growth and biodiversity management takes place. This is achieved by proactively identifying and understanding the factors and events that may impact the achievement of the set objectives, then managing, monitoring and reporting on these risks.

The process for the identification of risk is an objective driven process which assesses the impact that risks would have on the viability of the objectives. Senior executives and line management within divisions, down to each business unit are accountable for risk. Each individual Park Scorecard (Balanced Scorecard) reflects the goals, objectives, targets and performance indicators for all its operations. They need to meet all applicable laws and regulations as a minimum and, where appropriate, apply best practice.

Section 51 (1) (a) (i) of the PFMA requires of the Accounting Authority of a Public Entity to establish and maintain effective, efficient and transparent systems of financial and risk management and internal control. Reporting on Risk Management occurs monthly at EXCO. Currently the existing corporate risk registers (per division) are being aligned with the divisional scorecard objective-setting.

FINANCIAL MANAGEMENT AND ADMINISTRATION PROGRAMME

Effective Budget Management
Grow Revenue (Including Alternative Sources of Revenue)

RECONCILING BIODIVERSITY WITH OTHER INTERESTS:
To ensure that the other (i. e. non-biodiversity management) aspects of SANParks operations (revenue generation including tourism, resource use, management activities) and interactions with neighbours are informed and constrained by biodiversity, and particularly that the impacts of these activities are minimized.

Objective	Management / Monitoring Activities	Responsibility	Indicators / Measures	Timeframe	Reference to other documents
To attain effective Financial Management of the GRNP	Ensure less than 1% variance on cost of operations	GM and AMs	Monthly financial statements reflecting less than 1% variance	Ongoing	Financial management systems
	Ensure sound financial management of special projects; i.e. Working for Water; Working for coast; GRI and others	AMs, ISCU CA	Budget targets achieved	Ongoing	Project business plans
To grow Revenue (Including alternative sources of revenue)	Identify new and align existing business opportunities within the GRNP with the commercialisation programme of SANParks.	GM, AMs	Opportunities identified and in line with SANParks policy. New income streams generated	Ongoing	Commercialisation strategy
	Identify possible external funding to supplement current income streams	GM, AMs	Funding proposals submitted	Year 1 and ongoing	Partnership contracts signed
	Develop support mechanisms and procedures for the GRNP to receive grants and donations.	GM, Fin Man	Mechanisms and procedures in place	Year 1	
To ensure financial accountability and align financial management systems	Facilitate an annual independent audit of GRNP financial records	GM, Fin Man	Audit report	Ongoing	
	Facilitate access to audited statements by the public	GM, Fin Man	Audited statements of SANParks available to the public	Ongoing	
To improve the management of financial resources	Prepare accurate and realistic annual budgets in consultation with management team that are in line with the SMP objectives	Fin Man, GM, AMs	Annual budgets prepared	Ongoing	Annual budgets
	Provide monthly financial reports timeously by cost centre	Fin Man	Financial reports prepared	Ongoing	
To establish and maintain effective, efficient and transparent systems of financial and risk management and internal control	Develop a risk register for the GRNP as per corporate roll-out	GM, Fin Man,	Risk register developed	Year 1	
	Facilitate a risk management audit as per corporate roll-out	GM, Fin Man	Audit report	Year 2	

Budget Allocation	**Development**	
	Operational (Year 1)	R 1,503,978

5. COSTING OF THE GRNP MANAGEMENT PLAN

The Management Plan has been costed by making use of an activity based costing model. This entails that each activity contained in the programmes as described in point 4 is costed according to operational expenditure, which consist of annual operation cost and tourism expenditure. Additional to this, provision has also been made for once off development costs to be incurred for the five year period of the plan.

All infrastructure maintenance (roads; buildings; and other) has been scheduled using existing SANParks templates and costed accordingly. Overhead costs not dealt with in the programmes have been separately costed. These include municipal services; renting of buildings and equipment; professional fees and certain consumables.

Below is a summary of the costs calculated for the management of the GRNP:

Annual Operational Cost	Year 1 (2011/12)	Year 2 (2012/13)	Year 3 (2013/14)	Year 4 (2014/15)	Year 5 (2015/16)
Bioregional programme	R 1,702,845	R 1,805,016	R 1,913,317	R 2,028,116	R 2,149,803
Terrestrial vegetation	R 6,351,229	R 6,732,302	R 7,136,240	R 7,564,415	R 8,018,280
Aquatic	R 898,038	R 951,921	R 1,009,036	R 1,069,578	R 1,133,753
Marine and Coastal	R 13,304,585	R 14,102,860	R 14,949,031	R 15,845,973	R 16,796,732
Fire Management	R 6,245,375	R 6,620,098	R 7,017,304	R 7,438,342	R 7,884,642
Rehabilitation	R 51,652,206	R 54,751,338	R 58,036,418	R 61,518,603	R 65,209,720
Human Wildlife Conflict management	R 60,511	R 64,142	R 67,990	R 72,070	R 76,394
Species of Special Concern	R 741,679	R 786,180	R 833,351	R 883,352	R 936,353
Cultural Heritage Resource	R 578,042	R 612,725	R 649,488	R 688,457	R 729,765
Sustainable use of natural Resources	R 3,577,153	R 3,791,782	R 4,019,289	R 4,260,446	R 4,516,073
Marketing	R 96,332	R 102,112	R 108,239	R 114,733	R 121,617
Stakeholder engagement and communication programme	R 820,050	R 869,253	R 921,408	R 976,693	R 1,035,294
Socio economic Development Programme	R 38,467	R 40,775	R 43,222	R 45,815	R 48,564
Environmental Interpretation and Education	R 1,230,074	R 1,303,878	R 1,382,111	R 1,465,038	R 1,552,940
Environmental Impact Management	R 233,405	R 247,409	R 262,254	R 277,989	R 294,668
Safety and Security	R 29,777	R 31,564	R 33,457	R 35,465	R 37,593
Infrastructure and maintenance	R 5,426,618	R 5,752,215	R 6,097,348	R 6,463,189	R 6,850,980
Human Capital Development	R 57,412	R 60,857	R 64,509	R 68,379	R 72,482
Information Management	R 25,453	R 26,980	R 28,599	R 30,315	R 32,134
Financial Management and Administration	R 1,503,978	R 1,594,216	R 1,689,869	R 1,791,262	R 1,898,737
Tourism Development	R 232,789	R 246,756	R 261,562	R 277,255	R 293,891
Total Operations	**R 94,806,018**	**R 100,494,379**	**R 106,524,042**	**R 112,915,484**	**R 119,690,413**
Annual Tourism Cost	**Year 1 (2011/12)**	**Year 2 (2012/13)**	**Year 3 (2013/14)**	**Year 4 (2014/15)**	**Year 5 (2015/16)**
Roads Maintenance	R 430,500	R 456,330	R 483,710	R 512,732	R 543,496
Buildings Maintenance	R 793,278	R 840,875	R 891,327	R 944,807	R 1,001,495
Equipment maintenance	R 429,407	R 455,171	R 482,481	R 511,430	R 542,116
Tourism OPS expenditure	R 6,968,850	R 7,386,981	R 7,830,200	R 8,300,012	R 8,798,013
Marketing	R 670,533	R 710,765	R 753,411	R 798,616	R 846,532
Hospitality Management	R 13,898,578	R 14,732,492	R 15,616,442	R 16,553,429	R 17,546,634
Total annual tourism costs	**R 23,191,146**	**R 24,582,614**	**R 26,057,571**	**R 27,621,025**	**R 29,278,287**
Total Annual Costs	**R 117,997,164**	**R 125,076,993**	**R 132,581,613**	**R 140,536,510**	**R 148,968,700**
Once-off Development Costs	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Bioregional programme	R 312,009	R 115,770	R 175,597	R 5,784	R -
Terrestrial vegetation	R 396,743	R 37,391	R 147,945	R -	R -
Aquatic	R 213,998	R 83,448	R 12,327	R -	R -
Marine and Coastal	R 1,583,265	R 52,499	R -	R 1,127,290	R 19,375
Fire Management	R 244,694	R 141,109	R 91,934	R -	R -
Rehabilitation	R 659,504	R 273,668	R 347,395	R -	R -
Human Wildlife Conflict management	R 17,506	R 16,673	R -	R -	R -
Species of Special Concern	R 250,837	R 27,235	R 17,545	R 154,545	R 39,566
Cultural Heritage Resource	R 63,710	R 18,365	R 3,029	R 10,696	R 21,393
Sustainable use of natural Resources	R 314,201	R 218,331	R 20,763	R -	R -
Marketing	R 6,086	R -	R -	R -	R -
Stakeholder engagement and communication programme	R 31,607	R 30,102	R -	R -	R -
Socio economic Development Programme	R 38,467	R 36,635	R -	R -	R -
Environmental Interpretation and Education	R -	R -	R -	R -	R -
Environmental Impact Management	R 34,477	R 24,377	R -	R -	R -
Safety and Security	R 29,777	R -	R -	R -	R -
Infrastructure and maintenance	R -	R -	R -	R -	R -
Human Capital Development	R -	R -	R -	R -	R -
Information Management	R -	R -	R -	R -	R -
Financial Management and Administration	R -	R -	R -	R -	R -
Total Once off costs	**R 4,196,882**	**R 1,075,603**	**R 816,536**	**R 1,298,315**	**R 80,334**
TOTAL COST/YEAR	**R 122,194,045**	**R 126,152,596**	**R 133,398,149**	**R 141,834,825**	**R 149,049,034**

GRNP Budget

The expenditure budget for the GRNP for 2011/2012 is:

GRNP Budget	
Human Resources	R 42,937,185
Maintenance	R 7,308,235
Depreciation	R 2,633,616
Operating Costs	R 20,817,233
Conservation Services	R 5,271,265
Sub Total	**R 78,967,534**
EPWP	
Working for Water	R 10,200,000
Working for the Coast	R 10,000,000
Working on Fire	R 2,400,000
Sub Total	**R 22,600,000**
TOTAL	**R 101,567,534**

The projected income for the GRNP for 2011/2012 is:

GRNP projected income	
Conservation fees	R 7,413,013
Consessionaire fees	R 2,543,872
Tourism income	R 27,159,491
Other (resource use; publications; etc.)	R 2,327,000
TOTAL	**R 39,443,376**

Financial shortfall and implications

The costing for the first year of the Management Plan is calculated at **R 122,044,405**. The GRNP budget for 2011/2012 is **R 101,567,534** thus resulting in a shortfall of **R 20,476,871** for the first year.

The following activities will be affected due to the financial shortfall:

- Rehabilitation of Plantation Exit Areas: R 6,900,000

This will result in excessive alien plant infestation impacting on biodiversity and negatively influence water flow and supply to towns.

- Alien Plant Clearing in identified priority areas: R 8,100,000.

Certain priority areas within the GRNP have identified for alien plan clearing. These areas are not covered by the existing management unit clearing plan of the expanded public works programmes (Working for Water) and includes rivers and wetlands situated within the Park.

- Hydrological modelling of the Swartvlei and Touw river and estuarine systems: R 1,600,000.

Data informing the artificial breaching of the Swartvlei and Touw river mouths needs to be collected by conducting a hydrological study of the systems.

- Scientific and planning products identified for outsourcing: R 3,876,871.

Certain scientific and planning products scheduled for the first two years of the Management Plan should be re-prioritised.

Proposed actions to address the financial shortfall

The rehabilitation of the Plantation Exit Areas; the clearing of alien plants in identified priority areas; as well as the hydrological modelling of the Swartvlei and Touw river and estuarine systems will be regarded as three separate projects. Business Plan proposals for each of these projects will be developed to source funding.

6. ADAPTIVE AND INTEGRATED STRATEGIES TO SUSTAIN THE DESIRED STATE FOR GRNP

In order to achieve and maintain the desired states, the actions described in the Management Programmes in Section Four above will be implemented insofar as the budget allocation allows. Area Managers will operationalise these Programmes annually and will annually report on progress per Programme within the context of the Balanced Scorecard system implemented by SANParks, (this Management Plan was formulated with reference to current Key Performance Areas, objectives and actions articulated in the BSC for the GRNP.

Within each Management Programme, a set of Indicators will assist in measuring effectivity, success, or otherwise of the actions taken. Area Managers will use these to assist in the Monitoring and Evaluation Process

Key Ongoing Adaptive Management and Evaluation Interventions

Lack of informative and effective feedback, which should stimulate proper reflection by managers, is the commonest underlying cause of failure of adaptive management, and hence of reaching the desired outcomes set for the GRNP. The hallmark of adaptive management is ongoing learning, and this only results if users apply their minds to the adaptive cycle (Biggs & Rogers 2003). In line with other National Parks, the following procedures will be adopted to ensure effective monitoring and evaluation.

- Feedback on strategic planning actions
- Feedback that the management action as decided upon and specified, is carried out
- Feedback whenever a TPC specifying the endpoints of any biodiversity objective is violated, or is credibly predicted to be violated in the future
- Feedback that the predicted outcome of a management intervention, in response to the exceedance of a TPC, is achieved, or what materialised instead in its place
- Feedback to SANParks Head Office of the overall performance of GRNP relative to its stated objectives (Structured feedback will also happen through the performance reporting requirements of the Balanced Scorecard, which partitions responsibilities down to individual key performance areas)

- Feedback as to whether organisational or societal acceptance of the consequence of an intervention is still, as agreed on previously, acceptable
- Feedback as to whether the monitoring programme and list of TPCs is parsimonious and effective
- Feedback as to whether overall park objectives need adjustment in the longer-term
- Feedback regarding, or at least latent preparation for, surprises (by definition, these cannot be predicted, although it is an explicit obligation of park management to take responsibility to stimulate contingency and risk management assessments)

If these obligatory feedbacks continue to be effectively honoured into the future, the GRNP will continue practicing sophisticated adaptive management.

NB. For references please refer to Appendix O.