CapeNature

DYER ISLAND NATURE RESERVE COMPLEX MANAGEMENT PLAN 2013-2018

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DATE APPROVED:
DATE OF MOST RECENT UPDATE: 31 October 2012

The Dyer Island Nature Reserve Complex comprises the following:

Dyer Island Provincial Nature Reserve, established as a Provincial Nature Reserve in terms of Section 6 the Nature Conservation Ordinance, 1974, on 9 March 1988 and proclaimed in the Provincial Gazette of 18 March 1988 by Proclamation No. 23/1988.

Geyser Island Provincial Nature Reserve, established as a Provincial Nature Reserve in terms of Section 6 the Nature Conservation Ordinance, 1974, on 9 March 1988 and proclaimed in the Provincial Gazette of 18 March 1988 by Proclamation No. 23/1988.

Dyer and Geyser Island Provincial Nature Reserves, amendment of the boundaries by the extension of the area of jurisdiction in terms of Section 6 of the Nature Conservation Ordinance, 1974, on 14 November 1997 and proclaimed in the Provincial Gazette of 15 May 1998 by Proclamation No. 15/1998 (the amendment extended the Nature Reserve's restricted area and took effect on 1 June 1998).

Quoin Rock Provincial Nature Reserve, established as a Provincial Nature Reserve in terms of Section 6 the Nature Conservation Ordinance, 1974, on 9 March 1988 and proclaimed in the Provincial Gazette of 18 March 1988 by Proclamation No. 23/1988.

Sunset over Dyer Island with Danger Point Lighthouse in the background (Photo: D. Geldenhuys).

[Cover page photograph: Aerial photograph showing Dyer Island Nature Reserve on the West and Geyser Island on the East. The mainland can be seen in the North (Photo: R. Jacobs).]

AUTHORIZATION PAGE

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Name and Title	Signature and Date
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PREAMBLE

The Dyer Island Nature Reserve Complex (DINRC) consists of Dyer Island, Geyser Island and Quoin Rock. Dyer Island is the largest island in this complex, and is one of 14, and the most southern, of the islands off the South African coastline. Dyer Island is the easternmost of the chain of seabird islands of the Western Cape Province, and forms the link between islands in this province and the Eastern Cape Province. It is c. 600 km from the westernmost island in the Eastern Cape Province (Crawford *et al.* 2011). This island reserve complex is situated within the Benguela Upwelling Ecosystem (BUE), one of four major eastern boundary current systems located within the Southern Hemisphere (Hill *et al.* 1998), extending from southern Angola to Algoa Bay on South Africa's south coast (Schwartzlose *et al.* 1999). This ecosystem is one of the most productive areas of ocean in the world (Brown *et al.* 1991) and is characterised by coastal wind-induced upwelling which results in cold, nutrient rich-water being transported to the surface (Shannon 1985). This upwelled water is the basis for the high biological productivity of the coastal waters along the west coast of southern Africa and is a rich feeding ground of a number of marine species (Shannon 1989, van der Lingen *et al.* 2006), making it a system of considerable biodiversity value.

Dyer Island is considered by Birdlife International to be one of 103 Globally Important Bird Areas (IBAs) in South Africa (Barnes 1998, Retief 2011 pers. comm.). Fifteen species of seabird, one species of seal and one species of southern African endemic shorebird breed on coastal islands and mainland sites within the BUE (Kemper *et al.* 2007). Geyser Island and Quoin Rock are two of 48 Cape fur seal colonies within the BUE (Angola = 1, Namibia = 26 and South Africa = 21), while ten of the seabird species breed on Dyer Island, including 2 Endangered, 2 Vulnerable and 6 species of Least Concern according to the IUCN (BirdLife International 2010). The waters of the BUE are also home to a number of shark and other fish species as well as whales and dolphins.

The main threats to the bird species that breed within the DINRC include the decline in abundance and availability of prey as a result of competition with commercial fisheries and other predators, and shifting fish stock distribution (Crawford *et al.* 2007a, 2011, Underhill *et al.* 2006), oil pollution through both chronic and catastrophic events (Wolfaardt *et al.* 2009, CapeNature unpubl. Data), predation at sea by Cape fur seals (Marks *et al.* 1997, Makhado 2009) and of eggs and chicks by kelp gulls on land (Crawford *et al.* 2007b, CapeNature unpubl. Data), lack of suitable breeding habitat (Frost *et al.* 1976, Shannon & Crawford 1999) and disease (Waller *et al.* 2007). Nest flooding during storms and entanglement in fishing gear and other debris are additional sources of mortality recorded at Dyer Island (CapeNature unpubl. Data). For Cape fur seals, the threats include lack of prey as a result of environmental fluctuations and shifting distributions, predation at sea by great white sharks (Johnson *et al.* 2006) and mortality (incidental and intentional) related to fishing operations (Kemper *et al.* 2007).

A shift in the southern African region towards an ecosystem approach to fisheries management (EAF) (Cochrane *et al.* 2009) embraces the concept of the use of the biological characteristics of top predators to monitor the state of prey resources or ecosystem changes, and provide information otherwise useful to the management of resources (BCLME Top Predators Steering Committee 2007). The Benguela Current Large Marine Ecosystem (BCLME) project was established in order to investigate the suitability of using top predators as biological indicators of ecosystem change in the BCLME and to implement an appropriate, integrated, system-wide monitoring programme to support sustainable management of the BCLME (BCLME Top Predators Project

Steering Committee, 2007). It is within this context that the DINRC Management Plan is written. It takes into consideration the recommendations from the BCLME project, co-operative management agreements as well as the Biodiversity Management Plan for the African penguin in order to guide the management of the Dyer Island Nature Reserve Complex.

CapeNature has been active in engaging a number of stakeholders in order to obtain specialist advice into the ecological management of the island and the Dyer Island Nature Reserve Specialist Work Group was initiated in 2004. It consisted of personnel from the then, Marine and Coastal Management (then MCM, now Department of Environmental Affairs: Oceans and Coast – DEA: O&C) and tertiary institutions as well as scientific and operational staff of CapeNature. The aim of the working group was to discuss ecological issues on the island and get scientific input to guide management decisions. Specialist input has continued to be sought with relevant internal and external personnel.

In 2010, CapeNature met with personnel from DEA: O&C to review the legislative mandate and framework for island management and to discuss a way forward for the co-operative management of islands managed by CapeNature. In addition, research and monitoring issues such as permitting were discussed.

CapeNature participates in the Island Closure task team of the Small Pelagic Scientific Working Group (SPSWG) of the Department of Agricultural Affairs, Forestry and Fishing (DAFF). The Terms of reference for this Working Group are outlined in the following document: FISHERIES/2011/SWG-PEL/28 (DEA: Island Closure Task Team). In brief, this task team is to, through active research, advise the SPSWG on fishery management interventions around South Africa's coastal islands.

CapeNature has actively engaged the support and advice of NGO's. Southern African Foundation for the Conservation of Coastal Birds, (SANCCOB) has provided guidance and advice on the care of oiled and injured birds on Dyer Island while they await transport to their rehabilitation centre. The Chick Bolstering Project, which aims to capture, raise and release orphaned African penguin chicks has as its NGO partners: SANCCOB, Bristol Conservation and Science Foundation and IFAW. Other partners include the Department of Environmental Affairs: Oceans and Coasts, the Animal Demography Unit of the University of Cape Town (ADU) and Robben Island Museum.

The Dyer Island Conservation Trust (DICT) has to date supported CapeNature's conservation efforts for the African Penguin through financial and other contributions which include the following: the transport of African penguins off the island; the provision of artificial nest boxes; the purchasing of data and satellite loggers for the study of African penguin foraging behaviour; additional monitoring equipment such as cameras and binoculars and sponsorships for research and conference events.

Provisions are made within the National Environmental Management: Biodiversity Act, (Act No. 10 of 2004), for the compilation of Biodiversity Management Plan for species (BMP-s). CapeNature has played a leading role, together with DEA: O&C in the drafting of the Biodiversity Management Plan (BMP) for the African penguin. This has been a stakeholder driven process, with specialists from all fields of seabird and African penguin conservation participating. Actions identified in the African penguin BMP will be incorporated within this DINRC Integrated Management Plan, as well as the Integrated Management Plan for Dassen Island Nature Reserve, where CapeNature is also the

managing authority, as prescribed by the National Environmental Management: Protected Areas Act, (Act No. 57 of 2003).

THE PROCESS

The planning session, facilitated by the Regional Ecologist and guided by the Conservation Manager, defined the vision and purpose of the Dyer Island Nature Reserve Complex (DINRC) as an umbrella statement, indicating the direction of the management intent for DINRC to guide the formulation of the management objectives. The submitted objectives were evaluated against the definitions in "A Procedure for Defining Conservation Management Objectives and Goals" (Coombes & Mentis 1992) and sorted into categories: Objectives, Action Plans and Tasks.

The final objectives were prioritised through a pairwise comparison (Coombes & Mentis 1992) and the results were used to populate the section in the management plan referred to as the Strategic Implementation Framework. Action Plans were associated with Objectives, to which tasks (Activities) were allocated within each Action Plan.

Guiding Principles for defining Vision, Purpose, Objectives, Action Plans and Tasks:

VISION: Indicates the direction of management aspiration, describes the unit, reflects uniqueness of the unit and justifies the existence of the unit.

PURPOSE: The foundation on which all future actions are based and is in line with the overall management philosophy of the organisation.

OBJECTIVES: Derived from the vision and purpose, representing key areas in which achievement must be obtained to give direction to the management intention: not measurable or testable; aimed at Key Performance Areas; and prioritised with Action Plans developed.

ACTION PLANS (Operational Goals): Functional Performance Areas which describe expected results which will contribute to the realisation of the objectives: Achievable within capability, Measurable and Attainable. Performance indicators developed in description of outputs: Tasks, responsibilities, indicators, timeframes and references to existing procedures.

Approval Process

The Reserve Management Committee (RMC) compiled the draft Management Plan for review. The Dyer Island Nature Reserve Complex Management Plan was internally reviewed and recommended for stakeholder participation by all Executive Directors, Programme Managers, Catchment Managers, Senior Managers within each Support Service including Financial and Administration Services, Human Resource Management, Occupational Health and Safety, Risk Management and Marketing and Eco-tourism. A review was undertaken by Scientific Services on the ecological content of the Management Plan. Furthermore an internal review on the scientific and technical content was undertaken respectively, using the CapeNature Scientific and Technical PAMP review template (Waller 2011b).

The Management Plan was then recommended for stakeholder participation to the Executive Director: Conservation Management. Stakeholder comments were considered

and incorporated. The Dyer Island Nature Reserve Complex Management Plan was reviewed by an independent external reviewer on a voluntary basis, who commented and recommended that the Management Plan met the criteria as determined in the CapeNature Scientific and Technical PAMP review template.

The Executive Directors reviewed the Management Plan and the Executive Director: Conservation Management recommended the plan to the CEO. The Western Cape Nature Conservation Board (WCNCB) Conservation Committee recommended to the WCNCB that the management plan be adopted. The WCNCB adopted the DINRC management plan and submitted to the Department of Environmental Affairs and Development Planning (DEA&DP) for submission to the Provincial Minister for approval.

ACKNOWLEDGEMENTS

The authors would like to express their gratitude to all those who contributed to this Management Plan, including members of the public, community forums, as well as the following individuals:

Mr KA Shaw, Mr T Hoekstra, Ms Cher-lynn Petersen, Dr D Kirkwood, Mr J Visagie, Ms L Saul, Ms Natalie Hayward, Mr Johan Huisamen, Mr W Chivell, Dr RJM Crawford, Mr J 'Pyp' Fourie, Mr A Gildenhuys, Mr T Leiden, Dr Rod Randall, Ms V Strauss, Prof LG Underhill, Mr T Venter, Dr P Whittington, Dr Tony Williams. Mr Duncan Heard of Duncan Heard Environmental Consulting is thanked for facilitating the public participation process. Mr C Martens is thanked for conducting the CapeNature internal technical review, and Dr A Duffell-Canham for the CapeNature internal scientific review. Dr Marienne De Villiers from the University of Cape Town is thanked for her valuable comments as the external reviewer.

EXECUTIVE SUMMARY

In compliance with the National Environmental Management: Protected Areas Act, (Act No. 57 of 2003), CapeNature is required to develop management plans for each of its nature reserves. In developing the management plan for the Dyer Island Nature Reserve Complex (DINRC), CapeNature strives to establish biodiversity conservation as a foundation of a sustainable economy, creating access, benefits and opportunities for all.

The purpose of this Management Plan is to ensure that the DINRC has clearly defined objectives and activities to direct the protection and sustainable use of its natural, scenic and heritage resources over a five year period. The Management Plan indicates where reserve management intends to focus its efforts in the next five years (2013-2018). The Management Plan thus provides the medium-term operational framework for the prioritised allocation of resources and capacity in the management, use and development of the reserve.

It must be noted that the Management Plan focuses on strategic priorities rather than detailing all operational and potential reactive courses of action in the next five years. The timeframe referenced in the Strategic Implementation Framework follows financial years (1 April to 31 March), with Year 1 commencing from signing of the Management Plan by the Provincial Minister: Environmental Affairs and Development Planning. While planning for some emergencies is part of the Management Plan, it remains possible that unforeseen circumstances could disrupt the prioritisation established in this Management Plan. These should be addressed in the annual review and update of the Management Plan. The scope

of the Management Plan for the DINRC is constrained by the reserve's actual or potential performance capability - given available personnel, funding, and any other external factors - to ensure that the plan is achievable and sustainable.

An extensive stakeholder participation process was adopted in the development of this management plan. CapeNature has adapted the South African National Parks (SANParks), Stakeholder Participation in Developing Park Management Plans (Spies & Symonds 2011) for the stakeholder participation process. A Protected Area Advisory Committee was established during the prcocess of the compilation of this management plan, with representation from Municipalities, other Organs of State, NGOs, research institutions, tourism and a few other interested and affected parties.

The DINRC's vision and purpose was developed to guide reserve management in its daily operations and longer term planning. The Vision of the DINRC is the proclamation of the Dyer Island Nature Reserve Complex, excluding Quoin Rock, as a Special Nature Reserve (NEM: PAA, 2003) and the restoration and maintenance of island ecosystem processes to achieve its role in the conservation of biodiversity, especially of species endemic to the BCLME through research, monitoring and management activities. The Purpose of the DINRC is the conservation and protection of the unique, including endemic and sensitive biodiversity and ecological processes on and surrounding DINRC as well as the scenic, historical, archaeological, biological and geological features of these islands.

The objectives for the DINRC were developed in line with CapeNature's strategic goals, objectives and key measurable objectives. Furthermore, the DINRC's Vision, Purpose and values of the reserve, guided the development of these objectives. Ten objectives were compiled for the DINRC and are 1) to conserve, monitor and research the resident and non-resident breeding seabird species with special emphasis on the African penguin at the DINRC, 2) to maintain and restore natural ecosystem processes at DINRC, 3) to conserve, research and monitor marine mammals, at and within the DINRC, 4) to secure effective protection of biodiversity on the DINRC, 5) to ensure and secure sound governance and the implementation of policies, plans, systems, strategies, procedures and agreements for the management of the DINRC, 6) to enhance biodiversity conservation and establish research partnerships towards applied research on the DINRC and associated biodiversity, 7) to ensure effective law enforcement in the DINRC, 8) to promote biodiversity conservation awareness and communication on the DINRC, 9) to improve conservation management and transparency through engagement with communities and stakeholders, 10) to conserve natural and cultural heritage on the DINRC and protect the scenic value of the DINRC.

A number of national and provincial statutes relevant to the implementation of the mandate of nature conservation, as well as amendments to these acts and ordinances and regulations and norms and standards promulgated there under are documented in this Protected Area Management Plan. International Conventions, Protocols and Policies to which South Africa is signatory and which have an impact on the DINRC are also documented.

CapeNature has an MOU with DEA: Oceans & Coast specifically related to the management of Dyer and Dassen Islands as seabird breeding sites. An MOU between CapeNature and the Dyer Island Conservation Trust to promote collaboration and cooperation has also been concluded, although this will be revised to align with this updated Protected Area Management Plan. MOUs with additional partners such as SANCCOB and the University of Cape Town will be concluded within the lifespan of this management plan.

Dyer Island Nature Reserve lies off the south-western Cape coast. The closest access point for boats is at Kleinbaai; about 8 km northwest of the island. Dyer Island Nature Reserve is approximately 15.67 ha in size, and Geyser Island is a rocky outcrop of approximately 1.93 ha and lies about 150 m to the southwest of Dyer. These two islands are separated by a sandy bottom channel known as Shark Alley. This channel is on average 100 m wide and 5 m in depth. The rock island included in this nature reserve complex is Quoin Rock. It is located just off-shore of the Quoin Point Protected area between Die Dam holiday resort and Pearly Beach residential area. Quoin rock is approximately 0.37 ha in size.

The DINRC has Provincial Nature Reserve status, having been proclaimed as separate Nature Reserves in terms of the Nature Conservation Ordinance (19 of 1974) in 1993. Dyer Island, Geyser Island and Quoin Rock were proclaimed in the Provincial Gazette of 18 March 1988. Since the proclamation of Dyer and Geyser Island Nature Reserves, the boundaries of the reserve have been extended 500 m seawards from the high-water mark, as amended in terms of Section 6(1)(b) of the Nature Conservation Ordinance, 1974, read with Sections 2 and 5(1) of the Sea Shore Act, 1935, on 14 January 1999.

The DINRC falls within the Benguela Current Large Marine Ecosystem (BCLME), one of several recognised large marine ecosystems worldwide. This large marine ecosystem, extending from the south-western Cape through to neighbouring Namibia and Angola, is influenced by the cold, upwelling Benguela Current. Nutrient-rich upwelled waters fertilise microscopic floating phytoplankton and seaweeds of various species. The large schools of pelagic fish, especially Cape Anchovy and Pilchard/Sardine moving down from the west coast to spawn at the Agulhas Bank, are the primary food source for a large number of marine top predators such as seabirds and seals and also support a substantial pelagic purse-seine fishing industry.

The Benguela Current Commission (BCC) came into existence in 2008 and is represented by the three BCC countries: South Africa, Namibia and Angola. The BCC recognises the importance of land breeding marine top predators such as seabirds and seals as indicators to general ecosystem health. The focus of the BCC is on the management of shared fish stocks, biodiversity and ecosystem health, using an ecosystem approach. The DINRC will continue to assist the BCC through on-going top predator research and monitoring programs and the conservation of trans-boundary populations of threatened species. CapeNature, in collaboration with Department of Environmental Affairs: Oceans and Coasts (DEA: O&C), is drafting a Biodiversity Management Plan for the African penguin in terms of the National Environment: Biodiversity Act, (Act No. 10 of 2004). Actions identified in this Biodiversity Management Plan that have relevance to Dyer Island and it's management have also guided the management and monitoring activities in the DINRC management plan.

South Africa has an important global responsibility with regard to the management of its seabird populations. A high proportion of the seabirds are southern African endemics and many of the seabird populations have been decreasing rapidly in recent years. The DINRC supports important populations of several threatened species of seabird throughout the year. Several of the bird species that occur on the island are listed as threatened in terms of the IUCN Red Data criteria, are listed in Appendix II of the Bonn Convention on Migratory Species and/or listed under the African Eurasian Waterbird Agreement (AEWA). The African penguin, *Spheniscus demersus,* Cape cormorant, *Phalacrocorax capensis,* and bank cormorant, *Phalacrocorax neglectus,* are three species

of particular conservation management concern given their population declines and conservation status according to the IUCN Red List of Threatened Species. The DINRC is also recognised by BirdLife International as an Important Bird Area (IBA ZA099) of global significance due to high numbers of resident and migratory seabird and shorebird species occurring on the island.

The Cape fur seal, *Arctocephalus pusilus pusilus* is the most numerous mammal found within the DINRC. Geyser Island is considered one of the four largest South African colonies, together with Kleinsee, Seal island in False Bay and Elephant Rock (Kirkman 2010). Current research is focused on foraging and diets of the seal as well as their interaction with seabirds. Seal predation on seabirds at Dyer Island, specifically on African penguin and Cape cormorant is considered unsustainable (Makhado 2009). The removal of individual seals observed to be preying on seabirds is a management intervention that is supported in order to reduce the impact of seals on seabirds.

The history, present buildings and building remains on Dyer Island from part of the rich cultural history of all the islands along the South African and Namibian coastline and therefore the men and women who lived and worked on these islands were part of a unique group of island workers and headman. Steel and wooden wreckage seen along the coast bears testimony to marine disasters caused by the notorious reefs encircling the island.

At present public access to the DINRC is strictly controlled and restricted to researchers, film crews and volunteers, with restrictions enforced in areas that are allowed to be visited. Visitors to the island are accompanied by reserve management when entering highly sensitive areas. A specialised tourism industry has developed in Kleinbaai and Gansbaai around the presence of the whales and sharks as well as the scenic marine beauty of the island and its surrounds.

Abalone, *Haliotis midae*, is an abundant and valuable resource in and around the reserve, and despite the strict control and regulatory measures it is illegally harvested and over-utilised. The poaching of this resource is a regional problem with vast socio-economic consequences. The activity has lead to a "false" or inflated economy in the area and it is also allegedly linked to the drug trade (Brick *et al.* 2009).

Environmental education opportunities on site are limited. CapeNature endeavours to provide relevant offsite environmental education opportunities through their Community Conservation People and Parks Action Plan for the Overberg, primarily through activities on or around Environmental calendar days. The focus is on land based outreach events.

Recreation and tourism opportunities are limited to the marine section of DINRC. Boat based tourism, including Whale watching and Shark cage diving are popular in and around DINRC. These activities are regulated through DEA permits and do not generate revenue for CapeNature.

The biodiversity, ecological integrity and aesthetic beauty of the DINRC is at risk. A SWOT analysis was conducted for the DINRC as part of the compilation of this management plan. SWOT Analysis is a strategic planning method used to evaluate the Strengths, Weaknesses, Opportunities, and Threats involved and affecting the protected area in question. It involves specifying the internal and external factors that are favourable and unfavourable to achieving the reserve's objective. The management plan then

attempts to captilize on the strengths and opportunities, and deal/mitigate weaknesses and threats in activities identified in the plan.

Some of the strengths identified in this management plan included a functional organisation structure to support the management of the reserve (Manager and Field Rangers, Marine Programme, Scientific Services, Regional Ecological Support Team, Community Conservation); internal knowledge of seabirds and island ecosystems and ability to build capacity in others; fairly intact biodiversity, including rich seabird and marine mammal fauna including threatened and endemic species as well as threatened great white shark.

Opportunities included the existing partnerships (DEA: O&C, DICT, SANCCOB, DAFF, SANParks, Overstrand Municipality, Overberg District Council, Provincial Coastal Committee; new potential partnerships: Boat-based tourism industry, Pelagic fishery, WWF; development of Protected Area Advisory Committee; good ties with tertiary institutions such as the University of Cape Town; contribute to Agulhas Bioregional Conservation Planning and Management initiatives (SANBI).

The SWOT identified a number of weaknesses which included poor Infrastructure maintenance (buildings, sewage, generators, desalination plant, jetty, waste management) as a result of limited funds, access to suitable contractors and access to the islands; limited capacity and skills for compliance enforcement; lack of clear succession plan; Insufficient budget; inadequate resources (equipment, water, power); ineffective damage/nuisance-causing animal management (capacity to implement effective control measures).

Threats identified for the DINRC included loss of habitat and increased competition for natural resources between species and between humans and wild species; fragmentation of Islands (Dyer, Geyser Islands and Quoin Rock); fragmented management mandates, underdeveloped and poorly integrated legal protection measures; abalone poaching; negative impacts from tourist activities (boat based tourism); chronic oil and other pollution; catastrophic oil spills; marine entanglements of seabirds and other marine animals as well as ingestion of at-sea plastic pollution; climate change (rising sea level, possible increase in frequency and intensity of storms, shift in seasonal frequency); land based developments such as the proposed nuclear power plant; disease outbreaks (among birds); poor public awareness; poor land based waste management that may provide feeding sites for kelp gulls.

Sensitivity-value mapping of the reserve biodiversity, heritage and physical environment was conducted and is used as the primary decision support tool to guide spatial planning in the protected area. Biodiversity, heritage and physical features are rated on a standard scale of 1 to 5, where 1 represents no or minimal sensitivity and 5 indicates maximum sensitivity. The terrestrial components of the DINRC were scored at 4 (highest sensitivity) with the management footprint and 500m zone below the high water mark being identified 3 (high sensitivity).

A zonation analysis was also conducted for the PAMP. This zonation analysis provides a standard framework of formal guidelines for conservation, access and use for particular areas. Zonation goes beyond natural resource protection and must also provide for appropriate visitor experience; access and access control; environmental education; commercial activities where appropriate. CapeNature Zonation Categories were developed by an internal workshop process completed in September 2010. The outcome of the DINRC zonation found that DINRC is zoned for the protection of localised important

biodiversity features, namely important and sensitive species and habitats, with small Development – Management Zones to allow critical conservation management activities. The primary purpose of the entire nature reserve is conservation and research and any use must be compatible with conservation objectives. No tourism infrastructure development is planned for DINRC. Access is restricted to prevent disturbance and/or damage. Nature observation based on monitoring and research compatible with the conservation objectives is managed under strictly controlled conditions. Relatively low volume access by whale and shark viewing operators into the 500m marine buffer included in the reserve proclamation is currently not restricted, but it is noted that this should be considered a sensitive bird foraging and access area. Future restrictions on vessel numbers and type of access may be implemented by CapeNature if required to prevent any negative conservation impacts or to maintain visitor experience, and CapeNature may implement an access permitting process and fee if required.

The total Development Management Zone for DINRC primarily consists of the compound, where the operational buildings and structures are located. The buildings provide storage, workspace and accommodation to staff. Upgrades and maintenance to some of these buildings are likely to occur within the next five years subject to funding available from the Department of Public Works. A jetty and slipway exists in order to land on the island and launch from it by boat. Existing buildings are adequate for required management accommodation and activities. Management access via the existing jetty can be a problem in certain weather conditions, and an additional jetty to ensure that officials can safely reach or leave the island, particularly in the event of an emergency, is required. There are no developments on Geyser Island or Quoin Rock Nature Reserves.

In light of the historical nature of much of the existing infrastructure on the island, any heritage impacts and authorisation requirements of any significant infrastructure upgrades should be carefully assessed before proceeding. All upgrades to existing infrastructure will be required to go through an Environmental Management Plan process to be submitted to the Reserve Management Committee for approval. All work will be scheduled to fall outside of the seabird breeding season, keeping in mind that this season does not overlap for all breeding seabirds on Dyer Island

Future expansions will be largely focused on consolidating a larger marine protected area around Dyer and Geyser islands. This area will serve to protect the pelagic fish stock in the waters surrounding Dyer Island, thereby protecting the fish within the foraging range of breeding seabirds, especially the endangered African penguin whose numbers have severely declined between 2006 and 2011. Apart from the benefits to the seabird species breeding on Dyer Island, this could also substantially benefit the local subsistence and recreational fishing communities which rely heavily on the natural movements of the pelagic fish, because wherever schools of pelagic fish abound, there too will be the attendant predators, including humans.

The Strategic Implementation Framework (SIF) guides the implementation of the management plan over five years to ensure that it achieves its management objectives. The SIF is divided into a number of tables which detail the key deliverables and monitoring and management activities that the responsible CapeNature staff members will be required to pursue within the next 5 years. These tables cover the following aspects: Legal Status and Reserve Expansion; Regional Integrated Planning and cooperative Governance; Ecosystem and Biodiversity Management; Wildlife Management; Invasive and Non-invasive Alien Species Management; Cultural Heritage Resource Management;

Law Enforcement and Compliance; Infrastructure Management; Disaster Management; People and Conservation; Awareness, Youth Development and Volunteers; Management Effectiveness; Administration; Visitor Management and Services; Conservation Development Framework.

Finally, a reference list of all documents cited in the text is provided, together with a list of acronyms, abbreviations and a list of tables and figures cited in the text.

TABLE OF CONTENTS

Page

PART 1

SECTION 1: MANAGEMENT OBJECTIVES FRAMEWORK

1.1 Vision and Mission of CapeNature

VISION:
A quality driven public entity conserving the unique natural heritage resources of the Western Cape for the benefit of all.

MISSION:
The establishment of biodiversity conservation as a foundation of a sustainable economy creating access, benefits and opportunities for all.

1.2 CapeNature Strategic Goals, Objectives and Key Measurable Objectives

CapeNature has four strategic goals, underpinned by nine strategic objectives. Each strategic objective is further divided into key measurable objectives, as shown in Table 1.

Table 1.1: Summary of CapeNature Strategic Results and Programme Allocations

STRATEGIC GOAL STATEMENT	STRATEGIC OBJECTIVE STATEMENT	KEY MEASURABLE OBJECTIVES	CURRENT PROGRAMME
1. Securing priority biodiversity and ecosystem services through integrated biodiversity planning and management enabling appropriate climate change response.	1.1 Effective knowledge management informs development and conservation priorities.	1.1.1 To provide biodiversity input into Western Cape Provincial land use planning and decision making. 1.1.2 To manage biodiversity knowledge to ensure effective conservation management.	2: Biodiversity Support
	1.2 Implementation of the Western Cape Biodiversity Plan and Protected Area Expansion Strategy secure priority biodiversity.	1.2.1 To ensure rigorous conservation planning in the Western Cape within the national legislative framework. 1.2.2 To implement measures to ensure resilience and persistence of biodiversity of the Province in the light of anticipated climate changes. 1.2.3 A network of Protected Areas with appropriate status and effectively managed by CapeNature (incorporating terrestrial, freshwater and marine).	2: Biodiversity Support 3. Conservation Management
	1.3 Sustained conservation management in priority catchments maintains ecosystem services.	1.3.1 To ensure the implementation of effective conservation management interventions in the Western Cape.	3: Conservation Management
	1.4 Legal and wildlife support services and biodiversity crime prevention result in the protection and sustainable use of biodiversity.	1.4.1 To enhance biodiversity protection and conservation in areas outside the formal CapeNature Protected Area Network.	2: Biodiversity Support 3. Conservation Management
2. Contributing to the reconstruction and development of social capital.	2.1 Facilitate youth and community development through environmental awareness and assist in developing the knowledge, skills, values and commitment necessary to achieve sustainable development.	2.1.1 To provide learners with access to a quality environmental education programme. 2.1.2 To provide experiential service learning opportunities in the conservation sector.	3: Conservation Management

3. Sustaining and growing the conservation economy.	3.1 Develop and implement strategies to facilitate equitable access to and participation in the conservation economy through a People and Parks Programme.	3.1.1 To provide access to work opportunities through implementation of conservation and tourism management services. 3.1.2 To improve access to protected areas for sustainable traditional, cultural and spiritual uses. 3.1.3 To enhance opportunities for stakeholder participation in protected area management. 3.1.4 To grow and effectively deploy volunteer capacity.	3: Conservation Management
4. Ensuring an efficient and effective institution through cutting edge leadership.	4.1 Increased sustainable revenue is attained through enhanced tourism product development and the development of a system for payment of ecosystem services.	4.1.1 Create awareness/market the tourism products within our portfolio to domestic and international visitors, and contributing positively towards sustainable tourism. 4.1.2 To establish partnerships that will improve corporate and social investment into our reserves and by so doing positively impacting on visitor expectations and the livelihoods of local communities.	4: Marketing and Eco-tourism
		4.1.3 Develop sustainable tourism products while providing access to both the domestic and international market. 4.1.4 To establish a system for payment for ecosystem services management as a sustainable basis for income in the MTEF allocation.	2: Biodiversity Support
	4.2. Develop policies, systems and processes to support effective service delivery.	4.2.1 Support strategic decision making to ensure good corporate governance. 4.2.2 Ensure all CapeNature's activities are executed within a framework of sound controls and the highest standards of corporate governance.	1: Administration/ Corporate
		4.2.3 To develop and implement an effective and efficient communication strategy for all internal and external stakeholders and role-players. 4.2.4 To implement Information Technology and Systems that are compliant and support the core business of the organisation.	4: Marketing and Eco-tourism
	4.3. Institution building enables a supportive working environment.	4.3.1 To provide a professional human resource management support service.	1: Administration/ Corporate

1.3 Values of CapeNature

CapeNature strives to create a work environment that nurtures people and motivates a high level of performance in putting people first through implementing the *Batho Pele* principles. The following are our core values:

Honesty: We conduct our business with honesty, accuracy and without error.

Excellence: We espouse a deep sense of responsibility to our work and endeavour to constantly improve it, so that we may give our

stakeholders the highest quality of service. We believe that work done excellently gives us dignity, fulfilment, and self-worth.

Fitness of purpose: We strive to ensure that our mission remains relevant to the local, provincial, national and international context of transformation and modernisation of the biodiversity conservation sector.

Fitness for purpose: We strive to ensure that our strategic responses and resource allocations, including staff appointments, add optimal value in implementing our mandate.

Accountability: We ensure financial, performance and political accountability in the implementation of our mandate.

Equity and access: We strive to ensure that benefits and opportunities accruing from the conservation of biodiversity are equitably shared and that our resources and services are accessible to all; ensuring redress for historically disadvantaged individuals with specific emphasis on women, youth and the disabled; and enabling cultural, traditional and spiritual uses of natural resources on a sustainable basis.

Personal responsibility: We, as the custodians of the natural resources essential for human health and well-being; and growth and development in the Western Cape, undertake this responsibility with the highest possible level of personal responsibility. We are committed to measurable targets for individual performance which we pursue through strong professional work ethics, political neutrality and selfless service.

1.4 Reserve Vision, Purpose, Values and Objectives

VISION

The proclamation of the Dyer Island Nature Reserve Complex, excluding Quoin Rock, as a Special Nature Reserve (NEM: PAA, 2003) and the restoration and maintenance of island ecosystem processes to achieve its role in the conservation of biodiversity, especially of species endemic to the BCLME through research, monitoring and management activities.

PURPOSE

The conservation and protection of the unique, including endemic and sensitive biodiversity and ecological processes on and surrounding Dyer Island Nature Reserve Complex as well as the scenic, historical, archaeological, biological and geological features of these islands.

PURPOSE FOR DECLARATION OF DYER ISLAND NATURE RESERVE COMPLEX EXTRACTED FROM NEM: PAA (SECTION 17):

(c) to conserve biodiversity in those areas;

(d) to protect areas representative of all ecosystems, habitats and species naturally occurring in South Africa;
(e) to protect South Africa's threatened or rare species;
(f) to protect an area which is vulnerable or ecologically sensitive;
(l) to rehabilitate and restore degraded ecosystems and promote the recovery of endangered and vulnerable species.

VALUES

- The Dyer Island Nature Reserve Complex (DINRC) is unique in that it consists of coastal islands (most southern coastal Islands off South Africa) situated on the western boundary of the Agulhas Bank.
- The DINRC is situated in an internationally recognised area, primarily due to the occurrence of the great white shark (*Carcharodon carcharias*) in Shark Alley which lies between Dyer- and Geyser Islands.
- The DINRC is recognised as an Important Bird Area by Birdlife International - The selection of Important Bird Areas (IBAs) has been a particularly effective way of identifying conservation priorities. IBAs are key sites for bird conservation. They are usually small enough to be conserved in their entirety and often already part of a protected-area network. They do one (or more) of three things:
- Hold significant numbers of one or more globally threatened species;
- Are one of a set of sites that together hold a suite of restricted-range species or biome-restricted species;
- Have exceptionally large numbers of migratory or congregatory species.
- The DINRC provides habitat for an number of rare and threatened seabird species: The African penguin, bank cormorant, Cape cormorant, crowned cormorant, white-breasted cormorant, caspian tern, roseate tern, Leach's storm petrel and the African black oystercatcher.
- DINRC also accommodates whales, dolphins, Cape fur seals, abalone, reef fish, migratory game fish and pelagic fish.
- DINRC also includes an area specifically protected in terms of the MLRA, 1998, from abalone exploitation through diving restrictions.
- Dyer and Geyser Islands are buffered by a marine section proclaimed as nature reserve in terms of the Ordinance and measuring 500 m seaward from the high-water mark encircling the islands; as well as the no diving zone (in terms of the Marine Living Resources Act No.18 of 1998) of two nautical miles measured from the high water mark.
- The DINRC is important for ecological productivity – guano input into the nutrient cycle to sustain the kelp beds.
- Shipwrecks in and around the DINRC contribute to the rich cultural heritage of the area.
- The DINRC provides seabird, marine mammal and marine ecosystem specific research opportunities.
- The DINRC, through partnerships, provides environmental awareness and education information and opportunities.

OBJECTIVES

From the vision, a number of key objectives have been identified that further articulate the purpose of the reserve. The prioritised objectives are:

Objective 1: To conserve, monitor and research the resident and non-resident breeding seabird species with special emphasis on the African penguin at Dyer Island Nature Reserve Complex.
Objective 2: To maintain and restore natural ecosystem processes at Dyer Island Nature Reserve Complex.
Objective 3: To conserve, research and monitor marine mammals, at and within the Dyer Island Nature Reserve Complex.
Objective 4: To secure effective protection of biodiversity on Dyer Island Nature Reserve Complex.
Objective 5: To ensure and secure sound governance and the implementation of policies, plans, systems, strategies, procedures and agreements for the management of Dyer Island Nature Reserve Complex.
Objective 6: To enhance biodiversity conservation and establish research partnerships towards applied research on Dyer Island Nature Reserve Complex and associated biodiversity.
Objective 7: To ensure effective law enforcement in the Dyer Island Nature Reserve Complex.
Objective 8: To promote biodiversity conservation awareness and communication on Dyer Island Nature Reserve Complex.
Objective 9: To improve conservation management and transparency through engagement with communities and stakeholders.
Objective 10: To conserve natural and cultural heritage on Dyer Island Nature Reserve Complex and protect the scenic value of the DINRC.

1.5 Guiding Principles

The following guiding principles underpin the Management Plan for the Dyer Island Nature Reserve Complex. It is important to note that while these principles are intended to guide reserve management in its work, the reserve is also subject to the principles and provisions of relevant international treaties and conventions, national and provincial legislation and policy, and any local contractual agreements.

Custodianship - Reserve management will seek to respect, protect and promote the Dyer Island Nature Reserve Complex, and its environmental and heritage resources, as a common heritage and a national asset for all South Africans

Common Heritage - The management of the Dyer Island Nature Reserve Complex must serve the public interest by safeguarding the ecological, cultural and scenic resources as a common heritage, and national asset for all South Africans.

Duty of Care - The Dyer Island Nature Reserve Complex must ensure that all individuals, institutions and organisations act with due care and share the responsibility to conserve, and

avoid degradation of, the ecological, cultural and scenic resources, and to use the resources of the Dyer Island Nature Reserve Complex sustainably, equitably and efficiently.

Sustainability – Reserve management will seek to achieve a balance between ecological sustainability, social equity and economic efficiency without compromising the ecological integrity of the reserve.

Holism - The Reserve and its surrounds form an indivisible system. The management of the Reserve must adopt an integrated approach and recognise the interconnectedness and interdependence of social, ecological and economic components.

Intrinsic Value - All life forms and ecological systems have intrinsic value.

Cooperation and Partnerships - Reserve management will seek to work co-operatively and in partnership with public institutions, the private sector, non-governmental orgnisations (NGO) and local communities.

Equitable Access - Reserve management shall seek to ensure that stakeholders shall have equitable, sustainable, and managed access to the reserves and the benefits that are derived from the reserves.

Precaution - Where there may be a threat of significant negative impact but inadequate or inconclusive scientific evidence exists to prove this, action shall be taken to avoid, prevent or minimise the potential impact.

Empowerment and Transformation - The Dyer Island Nature Reserve Complex shall strive to empower stakeholders involved in the Reserve through capacity building and access to economic opportunities.

Co-operative Governance - All spheres and organs of government that are involved in management of the Reserve, or in making decisions affecting the Reserve, shall work together co-operatively to ensure the conservation of the Reserve.

Excellence in Management and Service - The Dyer Island Nature Reserve Complex shall strive to attain excellence in managing the Reserve and servicing the visitors that use it through accountable and informed decision-making and co-ordination, co-operation and integration with relevant government agencies and stakeholders. The Dyer Island Nature Reserve Complex shall strive for continual improvement through a creative and collaborative approach to problem solving and learning.

Capacity – Reserve management will seek to ensure that the management of the Dyer Island Nature Reserve Complex is adequately resourced to meet its mandated and ethical responsibilities in the effective management of the respective reserves.

Alignment and Integration - Reserve management will seek to align and integrate the reserve's management activities and priorities into, and with, the relevant local and regional conservation, institutional, socio-economic and developmental context.

Culture of learning – Reserve management will aim for continual improvement through both a scientific based approach that provides the basis for informed decision making, and a creative and collaborative approach to problem solving and learning.

Accountability and transparency - Reserve management will seek to ensure that management tasks in the Dyer Island Nature Reserve Complex are carried out efficiently and within stipulated time frames, productivity is increased, costs are controlled and impacts are managed, with integrity and in compliance with applicable laws.

In practical terms, the Management Plan needs to ensure that the following requirements for the effective management of the Dyer Island Nature Reserve Complex are adequately addressed:

- the necessary mandate, human capacity and financial resources to implement and achieve the objectives and activities described in the management plan;
- the delivery of socio-economic benefits to local communities where possible;
- flexibility of service delivery that encourages innovation and a wide range of government, community and non-government sector involvement; and
- performance indicators and accountability measures that provide for regular review of outcomes.

SECTION 2: LEGAL FRAMEWORK

2.1 Legal and Policy Framework

2.1.1 Legal Framework

The legal framework that directs planning and operational management activities in the reserve are addressed in detail within the Strategic Implementation Framework.

Constitutional and Legislative mandates

The Constitution of the Republic of South Africa Act, (Act No. 108 of 1996, Section 24) states that: *'Everyone has the right to an environment that is not detrimental to their health or well-being'*. The Constitution further states that: '*The environment must be protected for present and future generations through reasonable legislation and other measures that will prevent pollution and environmental degradation, promote conservation and will ensure ecologically sustainable development and sustainable use of natural resources while striving for justifiable economical and social development.*'

CapeNature is a public entity established in terms of and governed by the Western Cape Nature Conservation Board Act (Act No. 15 of 1998) and the Western Cape Nature Conservation Laws Act, (Act No. 3 of 2000). This is a public institution with the statutory responsibility for biodiversity conservation in the Western Cape. It is mandated to: promote and ensure nature conservation; render services and provide facilities for research and training; and generate income.

- Constitution of the Republic of South Africa Act, (Act No. 108 of 1996)
- Western Cape Nature Conservation Board Act, (Act No. 15 of 1998)
- Western Cape Nature Conservation Laws Act, (Act No. 3 of 2000)

The following are the key national and provincial statutes *relevant to the implementation of the mandate of nature conservation* and include all amendments to these acts and ordinances and any regulations and norms and standards promulgated there under. Note that the list below excludes all other relevant legislation to which public entities as employers, implementers of government mandate and managers of public finance are subject.

International Conventions, Protocols and Policies

- Bonn Convention on the Conversation of Migratory Species of Wild Animals (CMS)
- Convention on Biological Diversity (The) (CBD)
- Convention on International Trade in Endangered Species in Wild Fauna and Flora (The) (CITES)
- Convention on Wetlands of International Importance especially as Waterfowl Habitat (The) (RAMSAR)
- Secretariat of the Climate Change Convention and the Kyoto Protocol (Bonn)

- United Nations United Nations Convention on the Law of the Sea (UNCLOS)
- International Union for the Conservation of Nature (The) (IUCN)
- World Heritage Committee (WHC)
- Intergovernmental Oceanographic Commission
- International Whaling Commission (The) (IWC)

National Legislation

All National legislation applies to activities in the Dyer Island Nature Reserve Complex, but the following have direct reference to the reserves management activities:

- Constitution of the Republic of South Africa, (Act No. 108 of 1996)
- National Environmental Management Act,(Act No. 107 of 1998)
- National Environmental Management Biodiversity Act, (Act No. 10 of 2004)
- National Environmental Management: Protected Areas Act, (Act No. 57 of 2003)
- National Environmental Management: Protected Areas Act, (Act No. 57 of 2003) Regulations for the Proper Administration of Nature Reserves (Gov. Gazette No. 35021, 8 February 2012)
- Conservation of Agricultural Resources Act, (Act No. 43 of 1983)
- World Heritage Convention Act, (Act No. 49 0f 1999)
- Marine Living Resources Act, (Act No. 18 of 1998)
- Environment Conservation Act, (Act No. 73 of 1989)
- Sea-shore Act, (Act No. 21 of 1935)
- National Heritage Resources Act, (Act No. 25 of 1999)
- Sea Birds and Seals Protection Act, (Act No. 46 of 1973)
- Marine Living Resources Act, 1998 (Act No.18 of 1998), Publication of Policy on the Management of Seals, Seabirds and Shorebirds (Notice 1717 of 2007)
- Disaster Management Act, (Act No. 57 of 2002)
- Maritime Zones Act, (Act No. 15 of 1994)
- Occupational Health and Safety Act, (Act No. 85 of 1993)
- Labour Relations Act, (Act No. 66 of 1995)
- Public Finance Management Act, (Act No. 1 of 1999)

This Management Plan is further guided by the principles outlined in Section 2 of the National Environmental Management Act, (Act No. 107 of 1998) and Section 17 of the National Environmental Management: Protected Areas Act, (Act No. 57 of 2003). Within Section 17 the purposes of the declaration of areas as protected areas are described. These are:

a) To protect ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes in a system of protected areas;
b) To preserve the ecological integrity of those areas;
c) To conserve biodiversity in those areas;
d) To protect areas representative of all ecosystems, habitats and species naturally occurring in South Africa;
e) To protect South Africa's threatened or rare species;
f) To protect an area, which is vulnerable or ecologically sensitive;
g) To assist in ensuring the sustained supply of environmental goods and services;
h) To provide for the sustainable use of natural and biological resources;

i) To create or augment destinations for nature-based tourism;
j) To manage the interrelationship between natural environmental biodiversity, human settlement and economic development;
k) Generally, to contribute to human, social, cultural, spiritual and economic development; and
l) To rehabilitate and restore degraded ecosystems and promote the recovery of endangered and vulnerable species.

Provincial Legislation

Although all Provincial legislation applies to activities in the Dyer Island Nature Reserve Complex, the following have direct reference to the reserve management activities:

- Constitution of the Western Cape Act, (Act No. 1 of 1998)
- Western Cape Nature Conservation Board Act, (Act No. 15 of 1998)
- Western Cape Nature Conservation Laws Act, (Act No. 3 of 2000)
- Western Cape Planning and Development Act, (Act No. 7 of 1999)
- Land Use Planning Ordinance, (Ordinance No. 15 of 1985)
- Nature Conservation Ordinance, (Ordinance No. 19 of 1974)
- Provincial Notice 955 of 1975

New Legislation

The following legislation is either new or pending and it is envisaged that this legalisation will impact on CapeNature.

- CITES Regulations, 2009
- Threatened or Protected Species (ToPS) Regulations, 2007
- Draft Alien and Invasive Species (AIS) Regulations, 2009
- National Environmental Management: Integrated Coastal Management Act, (Act No. 24 of 2008)
- NEM:PAA, (Act No. 57 of 2003) Regulation 99: Proper administration of nature reserves (Government Gazette No. 35021 Vol. 560, No 6979, February 2012).
- Draft Norms and Standards for the Management of Protected Areas in South Africa, 2011
- Norms and standards for Biodiversity Management Plans for Species, 2009, (Gazette No. 214 March 2009)
- Marine Living Resources Act, 1998 (Act No. 18 of 1998): Regulations For The Protection of Wild Abalone (*Haliotis*), (Gazette No. 30716 February 2008)

2.1.2 Coordinated Policy Framework

The Dyer Island Nature Reserve Complex management is guided by a number of internal CapeNature policies, procedures and guidelines. The policies, procedures and guidelines applicable to this management plan are referenced in the Strategic Implementation Framework.

2.2 Management Agreements

CapeNature has an MOU with DEA: Oceans & Coast specifically related to the management of Dyer and Dassen Islands as seabird breeding sites. An MOU between CapeNature and the Dyer Island Conservation Trust to promote collaboration and cooperation has also been concluded, although this will be revised to align with this updated Protected Area Management Plan. MOUs with additional partners such as SANCCOB and the Iniversity of Cape Town will be concluded within the lifespan of this management plan.

2.3 Regional and Provincial Planning

In terms of the Municipal Systems Act, (Act No.32 of 2000), local municipalities in South Africa are required use integrated development planning to plot future development in their area. An Integrated Development Plan (IDP) is a 5-year strategic plan in which the municipal strategic and budget priorities are set.

An IDP is intended to be the principal strategic instrument to inform planning and development within a municipality. It should co-ordinate the work of local and other spheres of government and must take into account the existing conditions, constraints and resources available. Among other things, the IDP should address how the environment will be managed and protected. Among the key components of an IDP are disaster management plans and a Spatial Development Framework (SDF). SDF's are essentially the spatial reflection of a municipality's IDP.

A SDF is updated every five years and must indicate the desired patterns of land-use for the municipality and provide strategic guidance regarding the location and form of development, as well as conservation, within the municipality. A SDF must include basic guidelines for a land use management system for the municipality and should be used to guide changes in land-use rights and public investment in infrastructure.

The local municipalities are responsible for producing and co-coordinating IDP and SDF's, but they must consult other stakeholders in the area who can impact on and/or be impacted on by development and other changes in the area. All government departments working in the area should refer to the IDP to ensure their work is aligned.

In essence SDF's and IDP's are tools for integrating social-, economic- and environmental issues and development within a municipality. As biodiversity is a fundamental component of sustainable development, SDF's and IDP's offer an opportunity to ensure that biodiversity priorities are incorporated into planning processes. In turn, the identification of biodiversity-related projects for the IDP can support local economic development and poverty alleviation.

As an important management authority in the area, CapeNature needs to ensure that the nature reserves, estuary zonation plan, biodiversity sectoral plans and management guidelines are included in these documents and processes.

2.4 Institutional Framework

The Western Cape Nature Conservation Board is trading as CapeNature and the organogram is shown in Figure 1:

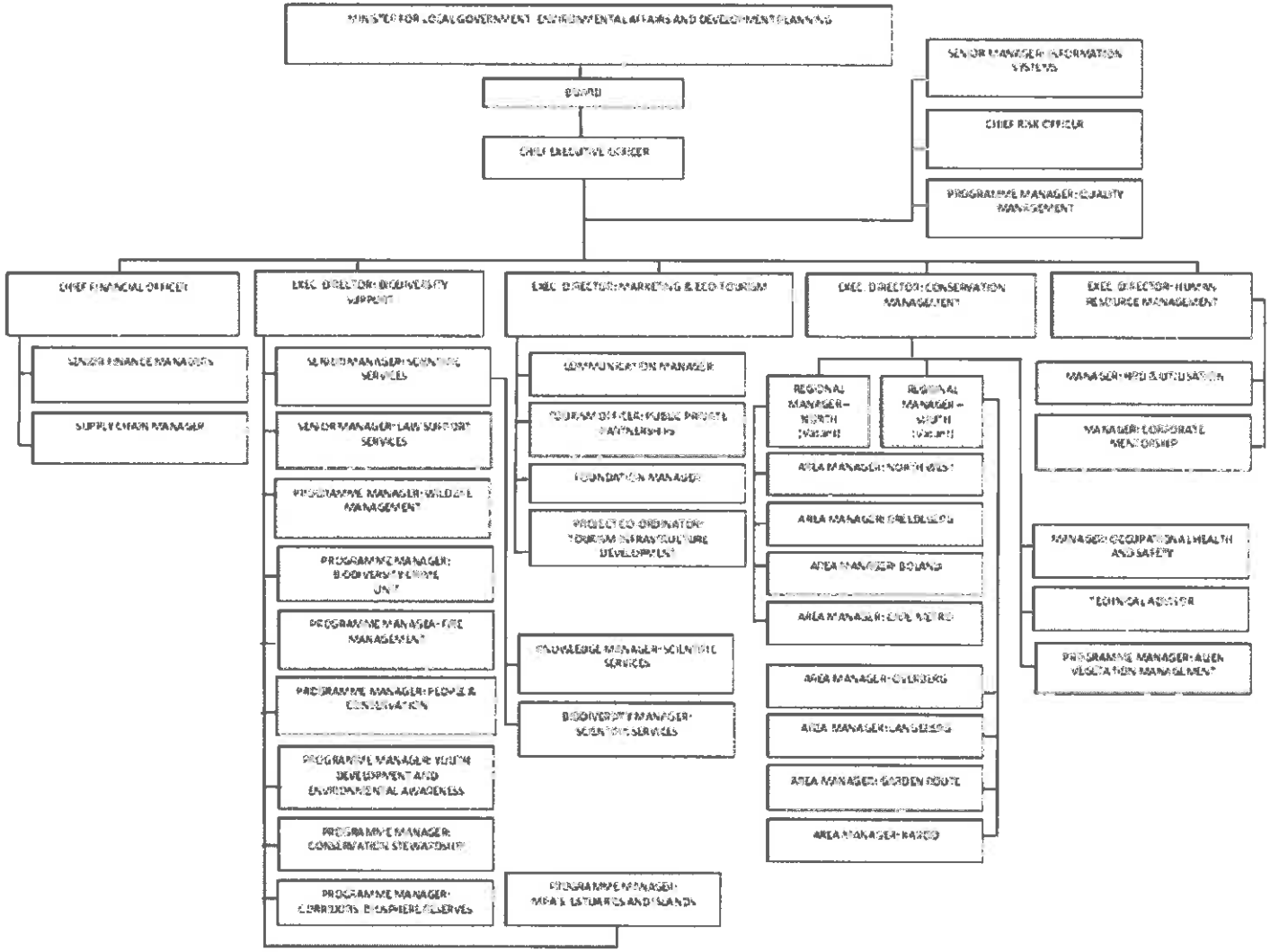

Figure 1: CapeNature Organogram (dated 18 October 2012).

2.5 Strategic Management Plan

2.5.1 Purpose of this Management Plan

The major elements of the reserve planning process for the DINRC are: (i) the CapeNature corporate Strategic Plan and Annual Performance Plans (APP); (ii) detailed subsidiary plans (as required) and; iii) an Annual Plan of Operations (APO). The management plan for the DINRC is also informed by a number of strategic plans and operational guidelines to ensure on-going implementation and review of the reserve management activities (see Figure 2).

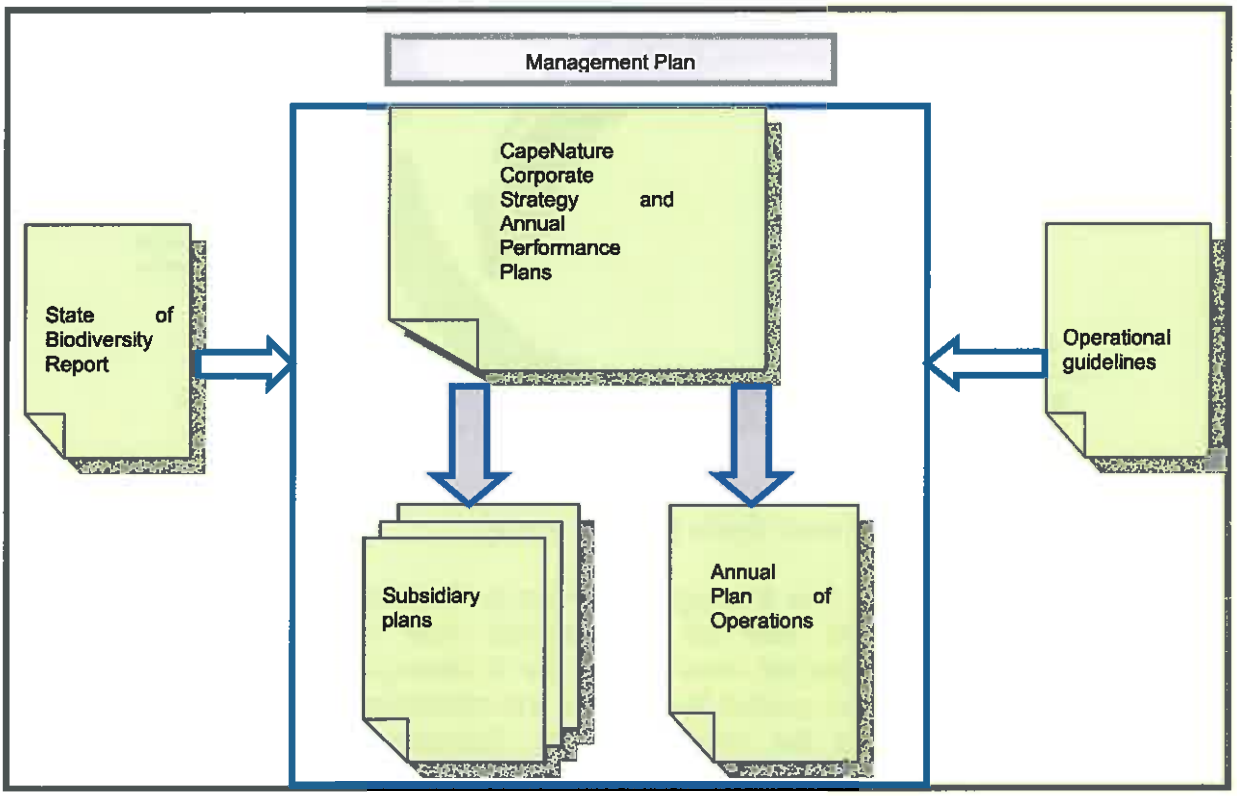

Figure 2: The elements of CapeNature management plans.

The management plan for the DINRC is determined based on policies, legislation and related planning documents at the sectorial, institutional, agency and local levels. The organisation adopts the adaptive management cycle, see Figure 3, whereby the management plan is developed and implemented and after annual evaluation the management plan can be adapted, to ensure key objectives are being achieved.

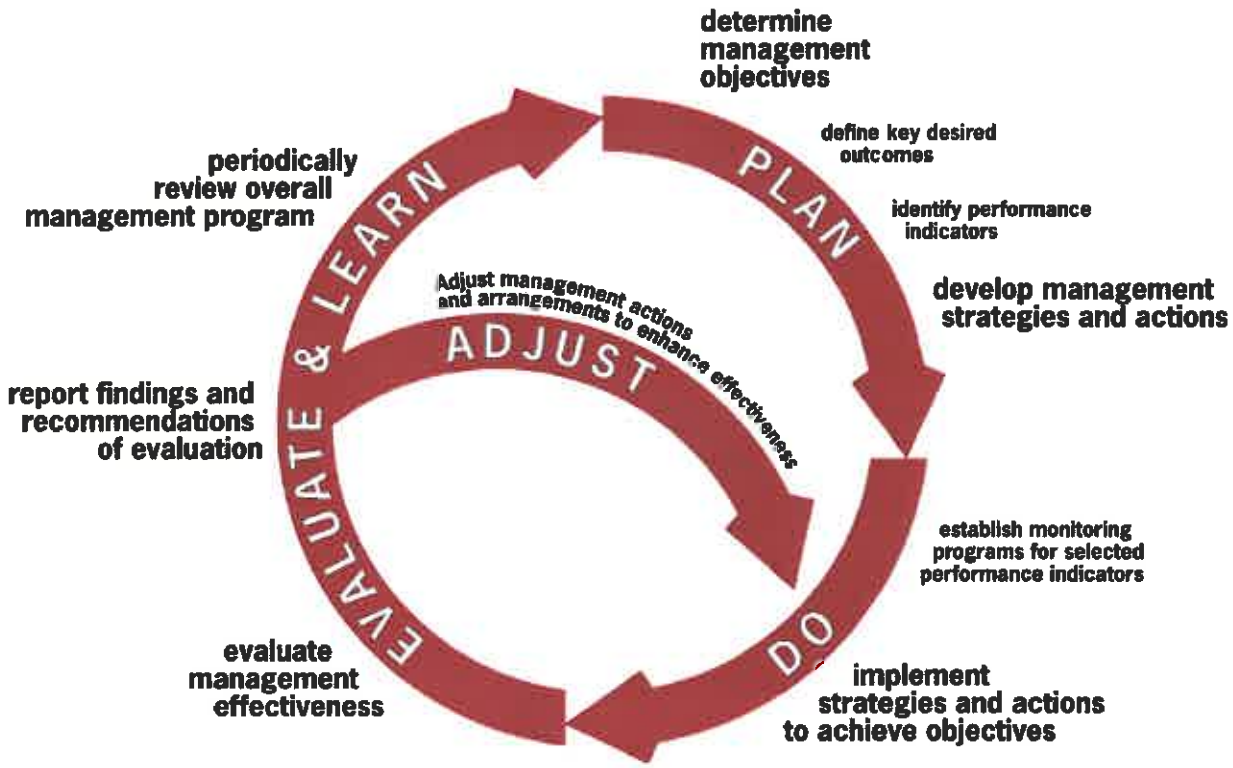

Figure 3: Adaptive management cycle (CSIRO 2012).

The approach to, and format of, this Management Plan is directed by the Guidelines for the development of a management plan for a protected area in terms of the National Environmental Management: Protected Area Act (Cowan & Mpongoma 2010). The drafting of this Management Plan has been guided by a small interdisciplinary Reserve Management Committee (RMC) comprising the Area Manager, Conservation Manager, Ecological Coordinator, Regional Ecologist, Community Conservation Manager, Conservation Services Manager and Tourism Officer. Iterative drafts of the Management Plan were presented to, and discussed by, the RMC before broader circulation for inputs from the public.

The purpose of this Management Plan is to ensure that the Dyer Island Nature Reserve Complex has clearly defined objectives and activities to direct the protection and sustainable use of its natural, scenic and heritage resources over a five year period. The Management Plan indicates where reserve management intends to focus its efforts in the next five years (2013-2018). The Management Plan thus provides the medium-term operational framework for the prioritised allocation of resources and capacity in the management, use and development of the reserve.

It must be noted that the Management Plan focuses on strategic priorities rather than detailing all operational and potential reactive courses of action in the next five years. The timeframe referenced in the Strategic Implementation Framework follows financial years (1 April to 31 March), with Year 1 commencing from signing of the Management Plan by the Provincial Minister: Environmental Affairs and Development Planning. While planning for some emergencies is part of the Management Plan, it remains possible that unforeseen

circumstances could disrupt the prioritisation established in this Management Plan. These should be addressed in the annual review and update of the Management Plan. The scope of the Management Plan for the Dyer Island Nature Reserve Complex is constrained by the reserve's actual or potential performance capability - given available personnel, funding, and any other external factors - to ensure that the plan is achievable and sustainable.

The Dyer Island Nature Reserve Complex Management Plan has been compiled on the basis of current available resources (funding and human capital). The five year budget has been calculated at a 5% budget increase per annum and therefore actions as determined in the Strategic Management Framework are based the assumption that these resources will be forthcoming.

Legislation listed in the Strategic Implementation Framework is non-exhaustive.

2.5.2 Stakeholder Participation Process

CapeNature has adapted the South African National Parks (SANParks), Stakeholder Participation in Developing Park Management Plans (Spies & Symonds 2011) for the stakeholder participation process.

Section 39(3) of the National Environmental Management: Protected Areas Act, (Act No. 57 of 2003) states that *when preparing a management plan for a protected area, the management authority concerned must consult municipalities, other organs of state, local communities and other affected parties which have an interest in the area. Section 41(2) (e) requires that the Management Plan contains procedures for public participation, including participation by the owner (if applicable), any local community or other interested party.*

All stakeholders must register and a stakeholder register, as well as attendance registers for workshops and meetings, must be kept. Additional individuals, wishing to participate in the process, must register as stakeholders and should be accommodated to ensure that the process is inclusive. Figure 4 shows the stakeholder participation strategy for CapeNature management plans. Any persons having direct or indirect interests or rights in a nature reserve may be considered a stakeholder.

The stakeholder process will facilitate the establishment of a comprehensive Protected Area Advisory Committee (PAAC). In CapeNature's efforts to comply with the deadlines for this process, certain of these steps had to be combined for this Management Plan. Stakeholder meeting 1 and 2 shown in Figure 4, will be combined with stakeholder meeting 3. At this meeting opportunity will be provided to stakeholders to comment on the desired state and objectives for DINRC.

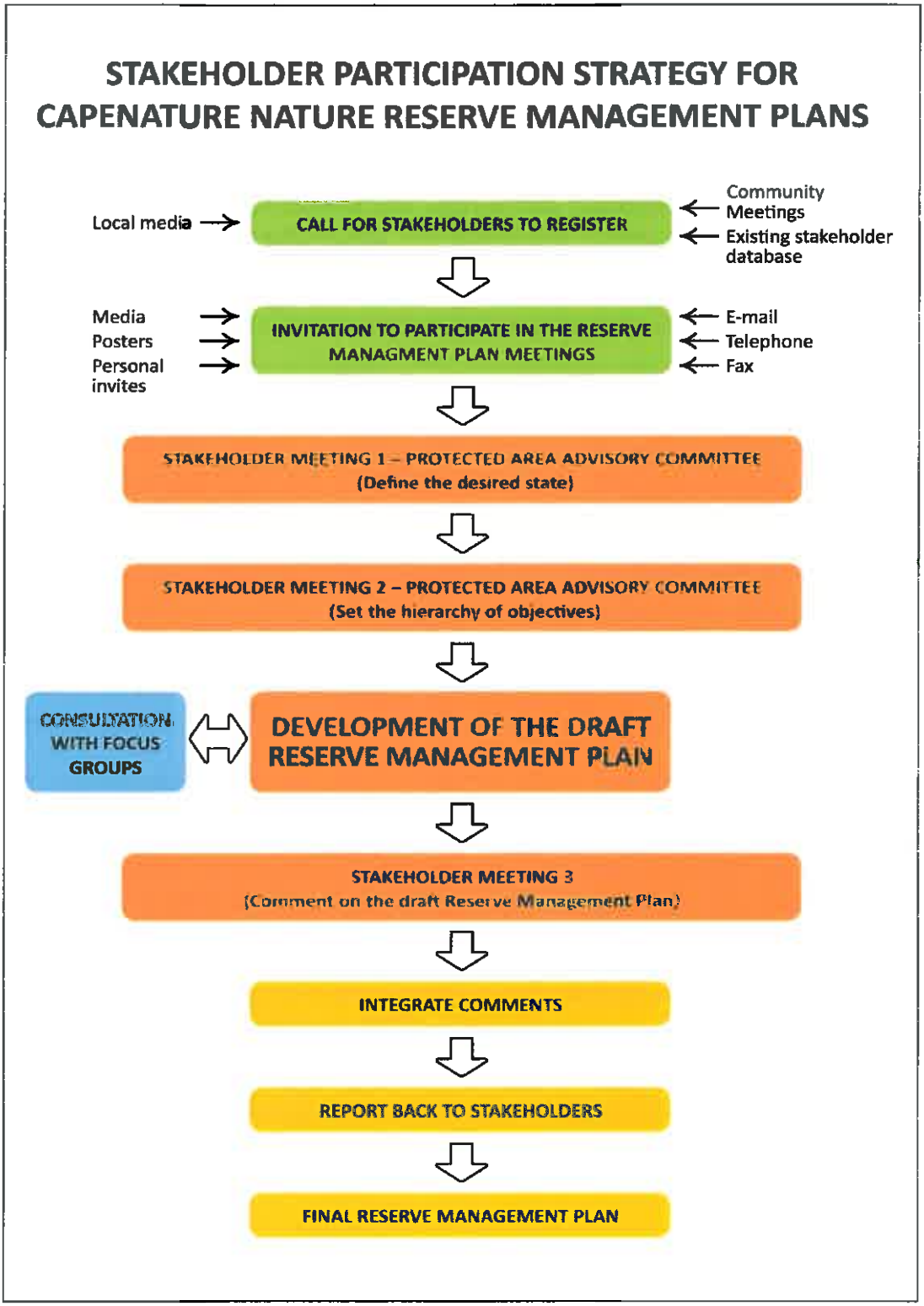

Figure 4: Stakeholder Participation Strategy for CapeNature Nature Reserve Management Plans.

2.5.3 Establishment of a CapeNature Protected Area Advisory Committee

In terms of the NEM:PAA, (Act No. 57 of 2003) Regulation 99: Proper administration of nature reserves (Government Gazette No. 35021 February 2012), a management authority may establish one or more advisory committees in respect of a nature reserve. These advisory committees will be called Protected Area Advisory Committee's (PAAC).

Procedure

CapeNature will invite community organisations, NGO's, residents of and neighbouring community, through direct invitation or through advertisements in at least two local newspapers and any other agreed upon manner by the reserve planning committee in order to reach the greatest number of residents of and, neighbouring communities to the nature reserve. The invitation will specify the method of submission and a date by which the nominations contemplated must reach CapeNature. Interested and affected parties will be required to complete the CapeNature PAAC application forms.

Minimum requirements and other criteria

Any membership of the PAAC must be based on a real interest demonstrated by the member in respect of the relevant nature reserve. The member must be the nominated delegate from the organisation whom the member is representing and is expected to provide feedback to his/her organisation in terms of meetings and progress.

Composition

CapeNature, after considering any nominations submitted, will appoint members in writing to the PAAC. At least one employee of CapeNature, nominated by CapeNature will be an ex officio member of the PAAC.

The advisory committee should reflect the interest of the following groups:

- Municipalities
- Local Municipality Ward Councillors
- Local communities
- Organs of state (National and Provincial)
- Neighbours
- Owner/s
- Other affected/interested parties such as:
- NGOs and Community Based Organisations (CBO)
- Tourism
- Cultural/Natural heritage e.g. Rastafarian, traditional leaders and traditional healers
- Botanical and/or zoological
- Water quality/aquatic environment
- Nature-based recreation
- Educational institutions
- Research institutions
- Any other interested and affected party

Term of office

- Each member is expected to serve for a fixed two year period as determined by CapeNature management but the respective organisation's rights and procedures with respect to member representation will be allowed as long as it is in the interest of conservation and good governance.
- Nominees representing organisations and formally constituted groups must be nominated by their organisation/group on official letter heads, signed by an executive authority, and be duly appointed to act in the interest of their organisation. Organisations must also nominate a second member to attend and represent the organisation when the primary nominee is not available. The nomination letters from the organisations must be accompanied by the application forms.
- Membership is voluntary and no remuneration will be provided to PAAC members.
- As part of good governance, all PAAC members will be required to adhere to the PAAC code of conduct and if any member does not adhere to the code of conduct stipulations, the organisation that the member is representing will be expected to deal with their member accordingly.

Terms of Reference for PAACs

The committee will be expected to:

1. Provide input into management decisions relating to protected area management;
2. Act as a forum to provide advice on reserve issues;
3. Play a role in educating the community and various interest groups about the importance of preservation, protection and management of natural resources and the objectives of the reserve management plan that are intended to pursue these goals;
4. Monitor and evaluate progress on implementation of programmes in the reserve management plan;
5. Make recommendations on how CapeNature can improve programmes and policies;
6. Promote involvement in decision-making around the management of natural and cultural heritage resources within the scope of the reserve management plan;
7. Promote the integration of conservation activities within the nature reserve with those of surrounding areas;
8. Establish and maintain links between CapeNature and other stakeholders.

Functioning of the Advisory Committee

The committee will meet a minimum of once a year. At the first meeting a chairperson and a secretary who will be required to take minutes of all matters discussed, will be elected. The committee will be expected to submit a copy of the minutes for each meeting and a full report, to the management authority (the Area Manager for submission to the Executive Director: Conservation Management), highlighting issues and making recommendations on matters arising from the implementation of the Dyer Island Nature Reserve Complex Management Plan. The Chairperson may at his/her discretion form working groups when required. Minutes of all working groups meetings must be kept and submitted through the Chairperson to reserve management.

Decision Making

The reserve management committee's acceptance and or rejection of advice offered will follow the process as outline below:

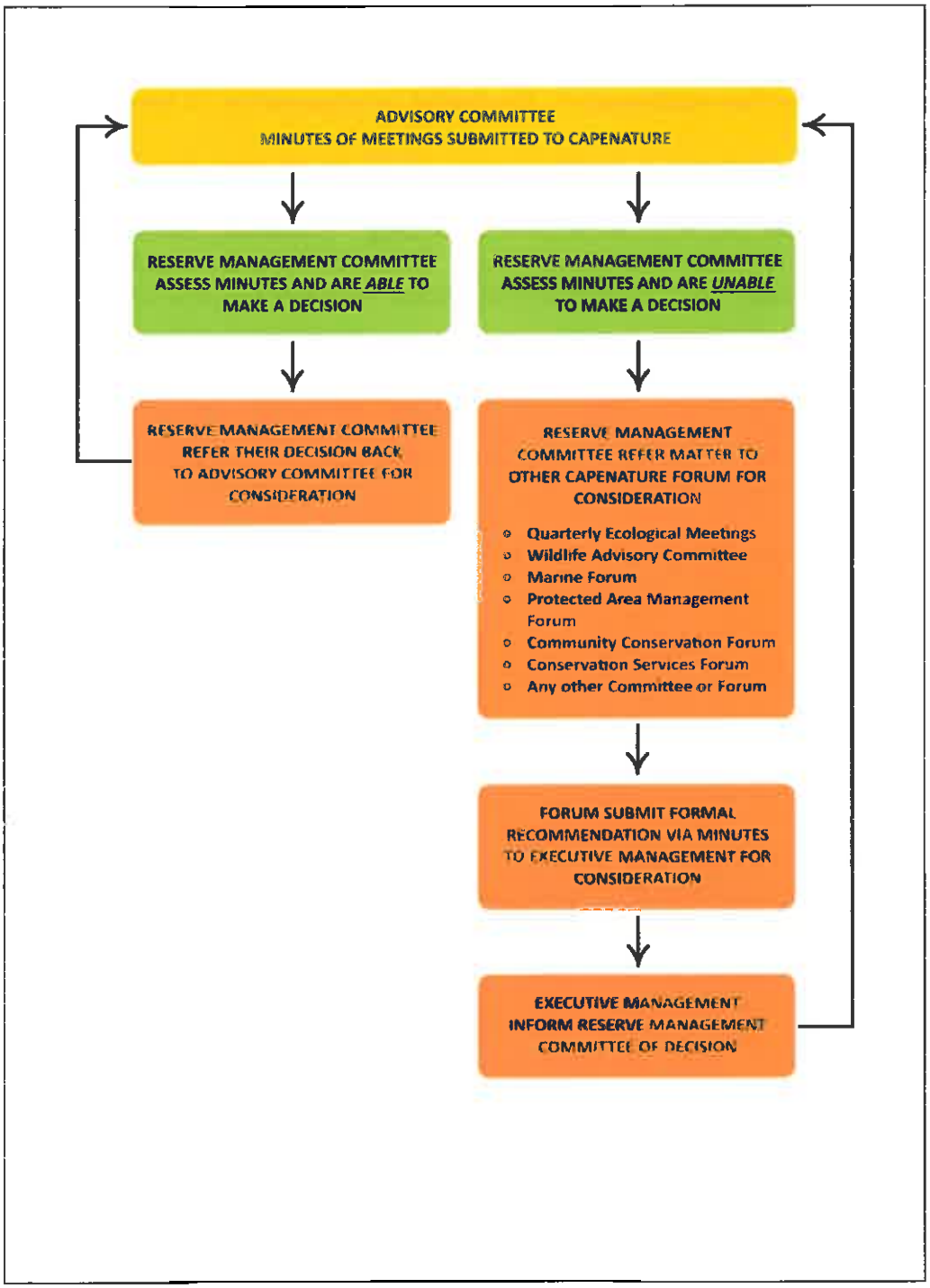

Figure 5: Decision Tree for the acceptance and rejection of advice from the PAAC.

SECTION 3: OVERVIEW AND BACKGROUND OF THE RESERVE

3.1 Location and Extent

Dyer Island Nature Reserve lies at 34°41'S 19°25'E off the south-western Cape coast. The closest access point for boats is at Kleinbaai; about 8 km northwest from the island. Danger Point Lighthouse also lies northwest of the island, approximately 13 km away.

Dyer Island Nature Reserve is approximately 20.77 ha in size, is approximately 1 km in length, and 200 m across its widest point. Geyser Island is a rocky outcrop of approximately 3.89 ha and lies about 150 m to the southwest of Dyer. These two islands are separated by a sandy bottom channel known as Shark Alley. This channel is on average100 m wide and 5 m in depth. Dyer Island and Geyser Island Nature Reserves extend 500m seawards below the high water mark.

The rock island included in this nature reserve complex is Quoin Rock at 34° 47.5" S and 19° 40.05" E. It is predominantly inaccessible, located just off-shore of the Quoin Point Nature Reserve between Die Dam holiday resort and Pearly Beach residential area. Quoin rock is approximately 0.37 ha in size.

See Figure 6 for a map of the location and extent of the DINRC.

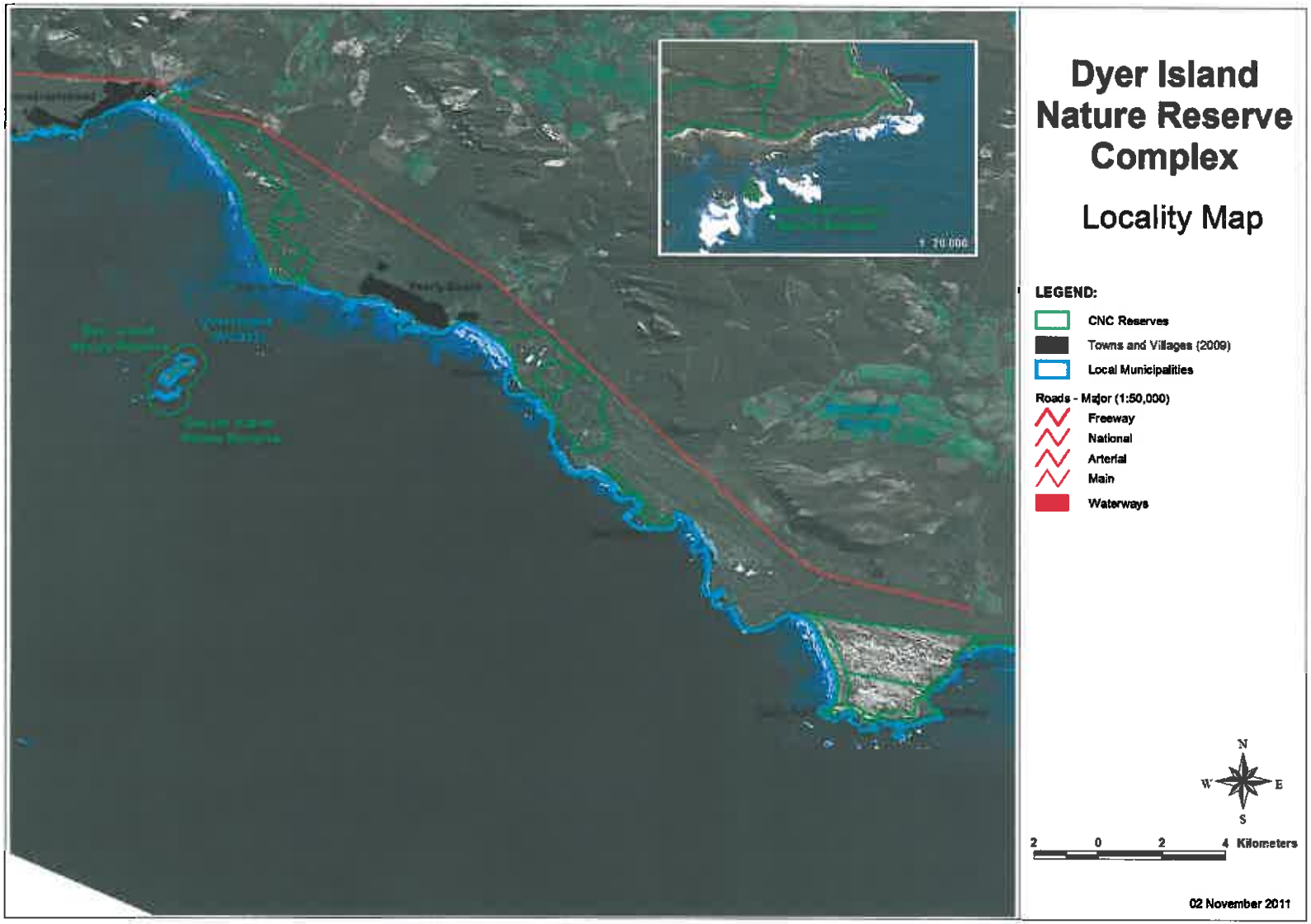

Figure 6: Location and extent of the Dyer Island Nature Reserve Complex.

3.2 Legal Status

The Dyer Island Nature Reserve Complex has Provincial Nature Reserve status, having been proclaimed as separate Nature Reserves in terms of the Nature Conservation Ordinance (19 of 1974) in 1993. Dyer Island, Geyser Island and Quoin Rock were proclaimed in the Provincial Gazette of 18 March 1988. The boundary extensions of Dyer and Geyser Islands were proclaimed in the Provincial Gazette of 1 June1998.

The DINRC comprises the following:

Dyer Island Provincial Nature Reserve, established as a Provincial Nature Reserve in terms of Section 6 the Nature Conservation Ordinance, 1974, on 9 March 1998 and proclaimed in the Provincial Gazette of 18 March 1988 by Proclamation No. 23/1988.

Geyser Island Provincial Nature Reserve, established as a Provincial Nature Reserve in terms of Section 6 the Nature Conservation Ordinance, 1974, on 9 March 1998 and proclaimed in the Provincial Gazette of 18 March 1988 by Proclamation No. 23/1988.

Dyer and Geyser Island Provincial Nature Reserves, amendment of the boundaries by the extension of the area of jurisdiction in terms of Section 6 of the Nature Conservation Ordinance, 1974, on 14 November 1997 and proclaimed in the Provincial Gazette of 15 May 1998 by Proclamation No. 15/1998 (the amendment extended the Nature Reserve's restricted area and took effect on 1 June 1998).

Quoin Rock Provincial Nature Reserve, established as a Provincial Nature Reserve in terms of Section 6 the Nature Conservation Ordinance, 1974, on 9 March 1988 and proclaimed in the Provincial Gazette of 18 March 1988 by Proclamation No. 23/1988.

3.3 History

Dyer Island's or Isla da Fera, as named by Portuguese sailors in the early 1500's, first resident was Sampson Dyers. He was an African American working as a harpoonist for Cloete, Reitz and Andersen Company. He arrived at Dyer Island in 1806 and his main task was to harvest seals from Geyser Island for their skins and oil (Fourie 2002). The harvesting of Cape fur seals in South Africa began in the 17th century and eventually ceased in 1990. The species is now protected in terms of the Seabirds and Seals Protection Act, (Act No. 46 of 1973). The intense harvesting of the species led to population declines throughout the distribution range. The current population growth can be attributed to the control of harvesting from the late 1800's and the eventual prohibiting of seal harvesting from 1990. It is unclear how much of an impact the harvesting had on the socio-economics of inhabitants close to the seal colonies, as most of the products during the height of the harvesting period were taken to the Cape where the oil and meat were used locally and the skins exported overseas (David & van Sittert 2008).

In the 1700s, penguin eggs became a popular delicacy among the public (Frost *et al.* 1976), and penguin egg collection continued until the 1960s. Egg collection on Dyer Island occurred from 1875 till 1968, with the largest annual harvest recoded in 1905 when 62 500 eggs were collected (Shelton *et al.* 1984). The collection of penguin eggs had substantial impacts on the

penguin population. Egg harvesters would destroy the first clutch of eggs the penguins were incubating to ensure the penguins relayed and fresh eggs could be harvested. It was only the third cluth of eggs that penguins were left to incubate and hatch.

In 1832 the guano deposits on the coastal islands around South Africa were discovered by an American sailor Benjamin Morrel, and in the mid 1800s, the British ships sailed to the southern African coastline to harvest this valuable source of fertilizer (Fourie 2002). Guano harvesting continued on Dyer Island until 1983 (Fourie 2002) and egg collection, guano harvesting as well as the associated disturbance would undoubtedly have had an impact on the number of birds that would have recruited into the breeding population (Shannon & Crawford 1999). Eastern white pelicans, *Pelicanus onocrotalis,* are known to have bred on the island, but it was reported that island keepers destroyed all pelican nests and eggs due to their fondness for the eggs and the young of the guano producing birds.

Two ruins of crude stone buildings, possibly used as shelters during the early guano collecting days, stand adjacent to the channel and along the north-western coast of Dyer Island. Two graves with illegible inscriptions can be found about 50m above the high water mark along the northern coastline of the island. The thick walled stone buildings near the living area were also used for guano related purposes. The main house on the island was built in 1930, and the slipway was constructed in 1991.

Under the authority of the Cape Provincial Administration, South Africa, all offshore islands were declared Provincial Nature Reserves in 1988 and were placed under the control of the then Department of Nature Conservation of the Cape Province. Dyer Island is now managed by the Western Cape provincial conservation body, the Western Cape Nature Conservation Board (CapeNature).

3.4 Climate

Dyer Island experiences a temperate, Mediterranean-type climate, with warm, dry summers and cool, relatively wet winter seasons. The warmest mean monthly temperatures are recorded from November until March, while the lowest are recorded in July (Figure 7). Dyer Island has an average rainfall of 40 to 60 mm between March and July (Figure 7).

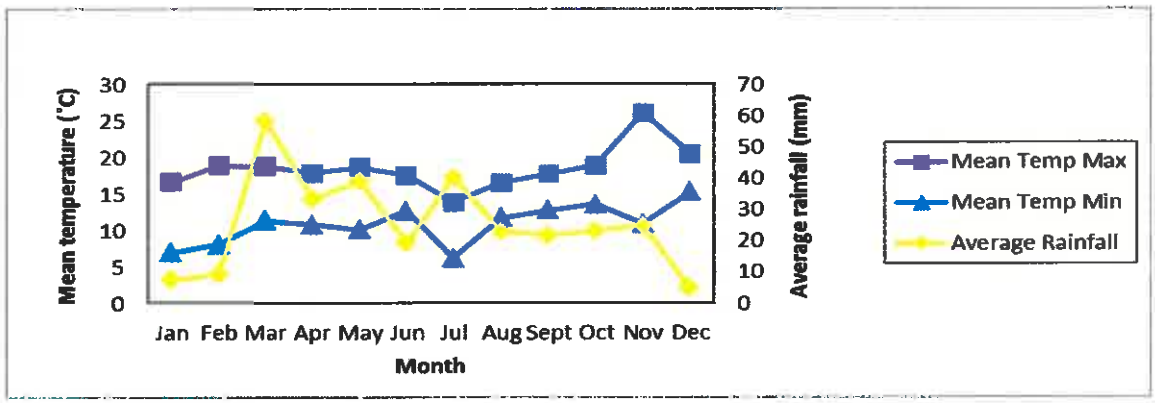

Figure 7: Climate for the Dyer Island Nature Reserve (For the period 2006-2010).

The prevailing winds are south-easterlies during the summer and south-westerly's during winter, with the highest speeds being recorded between July and October, with speed above 45km/h (Figure 8).

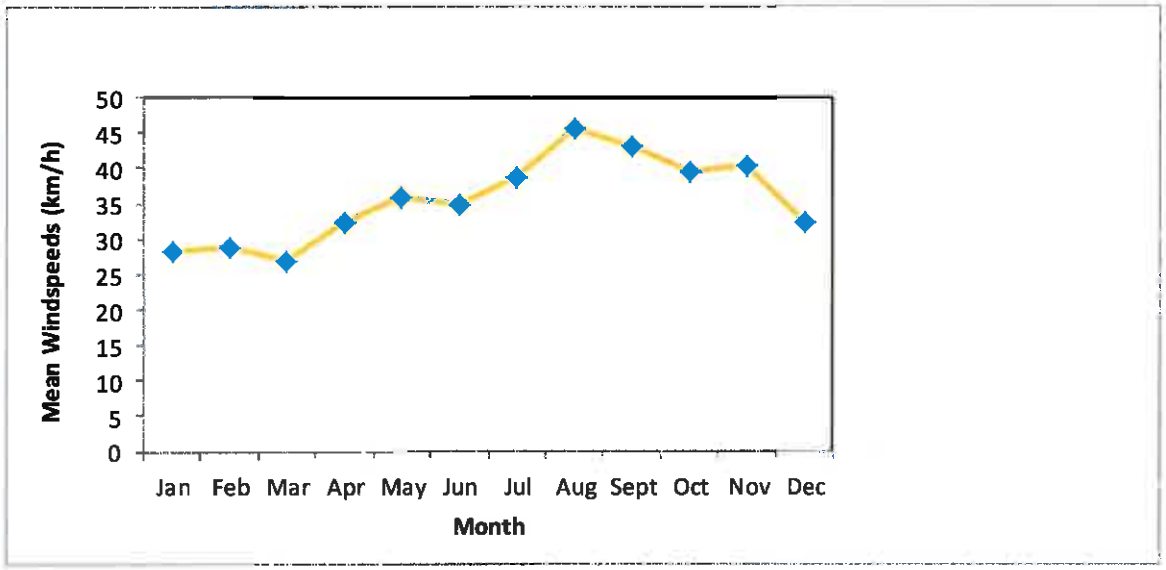

Figure 8: Mean Wind Speed for the Dyer Island Nature Reserve (For the period 2006-2010).

3.5 Topography

Dyer Island is flat and low-lying and the only island in the DINRC with soil on the surface. The highest point above sea level for all islands in the DINRC is about 7 m.

3.6 Geology

The rock on Dyer Island consists of table mountain sandstone formations surrounded by a granite coastline with a few shingle stone beaches. Geyser Island and Quoin Rock consist primarily of granite rocks, with Geyser Rock having a small sandy beach on the North facing side.

3.7 Hydrology

3.7.1 Marine system

Dyer Island Nature Reserve Complex is located within the Benguela Upwelling Ecosystem, which is one of four major eastern boundary current systems in the southern hemisphere (Hill *et al.* 1998), extending from Algoa Bay on South Africa's south coast to the Angola Front on the west coast of Namibia (Schwartzlose *et al.* 1999). This ecosystem is one of the most productive areas of ocean in the world (Brown *et al.* 1991). It is characterised by coastal wind-induced upwelling which results in cold, nutrient rich-water being transported to the surface (Shannon 1985). This upwelled water is the basis for the high biological productivity of the coastal waters along the west coast of southern Africa and a rich feeding ground of a number of marine species (Shannon 1989, van der Lingen *et al.* 2006). In addition to its

productivity, it is also extremely dynamic, showing great variability across a range of temporal scales (Field & Shillington 2004, van der Lingen *et al.* 2006).

Dyer Island Nature Reserve Complex lies within the counter inshore current that forms part of the greater Agulhas current. This cooler close inshore current runs parallel with the coast but in an opposite direction of the Agulhas current. The Agulhas current is approximately 169 km wide and follows a speed of 2.6 m per second, transporting 80 million tonnes of water per second and has a strong influence on the sediments. Inshore, where the current is weak, the sediments are fine and muddy and consist mainly of particles swept down by rivers or from the coastline. This muddy sediment which is rich in organic material hosts high species diversity (Branch 1981). The inshore marine environment of Dyer Island includes intertidal zones, kelp forests, and semi exposed reefs. Each of these different zones has its own unique species diversity.

The Uilkraalsmond estuary lies in a north-north westerly direction approximately 8 km from Dyer Island.

3.8 Flora

Full species lists are not provided in the management plan. If required species lists are available on request from Scientific Services, Assegaaibosch Nature Reserve, Jonkershoek Road, Stellenbosch.

3.8.1 Terrestrial vegetation

The vegetation of the DINRC is classified as 'Cape Seashore Vegetation' (Mucina & Rutherford 2006), with features of this vegetation type including beaches, herbacious and dwarf-shrubby vegetation which is often dominated by a single species. Species of the genus *Mesembryanthemum* can be found on Dyer Island.

3.8.2 Aquatic (Marine)

The marine vegetation is largely dominated by kelp forest and consists of 3 main species: sea bamboo *Ecklonia maxima*, split fan kelp *Laminaria pallida* and spined kelp *Ecklonia radiata*. These kelp forests create the environment for other marine plant groups to flourish, namely *Sargassum* - like algae, bladders and strings, flat red algae, membranous algae, balloon - and tongue like red algae, fork branched red algae, gelatinous red algae, spike and iridescent red algae, branching red algae, epiphytic and fine algae, upright coralline algae and encrusting algae.

3.8.3 Invasive Alien Plants

The only known invasive plant species is the Manatoka, *Myoporum serratum*, which occur on Dyer Island and are not actively eradicated. The entire island is transformed during and after the bird breeding seasons and all standing plant material is used and transformed for nesting.

3.9 Fauna

Full species lists are not provided in the management plan. If required species lists are available on request from Scientific Services, Assegaaibosch Nature Reserve, Jonkershoek Road, Stellenbosch.

3.9.1 Mammals

Mammal species that have been recorded within the DINRC include those found on the terrestrial and in the marine components of the reserve complex.

On land, the lesser dwarf shrew, *Suncus varilla* has been primarily observed within the living area on Dyer Island, and likely came to the island as a result of an accidental introduction. It is listed as Globally Least Concern (IUCN 2012) and is widely distributed in southern Africa. Unlike Dassen Island, there are no European rabbits (*Oryctolaguscuniculis)* on the DINRC and no rats or mice have been observed during the period 1994-2012 (D Geldenhuys 2 February 2012 pers. comm.).

The Cape fur seal, *Arctocephalus pusilus pusilus* is the most numerous mammal found within the DINRC. The conservation status of the species is listed as "Least Concern" (Friedman & Daly 2004), and it is the only large marine mammal within the Benguela Upwelling Ecosystem that breeds on land.

The following extract describing changes in the Cape fur seal population has been taken out of Huisamen *et al.* (2011). The Cape fur seal population as a whole was probably at its lowest level around the beginning of the 20th century, when numbers had been reduced to <100 000 (Shaughnessy & Butterworth 1981). However, following the introduction of protective legislation in 1893 (Best 1973), the population increased during the 20th century, even though it was still subjected to controlled harvests (Wickens *et al.* 1991). Since the commencement of aerial photographic surveys of the population in 1971, considerable increases in the size of the breeding population and its geographical extent have been documented (Butterworth *et al.* 1995, Kirkman *et al.* 2007, Kirkman 2010). These changes predominantly took place on the west coast of southern Africa, where the growth of several mainland colonies accounted for most of the increase in total numbers (Butterworth *et al.* 1995). The establishment of several new breeding colonies also saw the northernmost extent of the breeding population extend from central Namibia to northern Namibia, and recently to southern Angola. In contrast, the number of extant breeding colonies on the south coast of South Africa, and their population sizes, has remained relatively constant since 1971 (Kirkman 2010). Approximately 60% of the population occurs within Namibia (Kirkman *et al.* 2011).

Aerial censuses of Cape fur seal colonies have been the primary method of population surveys for the Cape fur seal since the early 1970s with a focus on counting the pups, since they are the only age class that is constrained to land (Kirkman 2010). In a study the census data from the early 1970s until 2003, the pup counts were assessed at 40 breeding colonies (Kirkman 2010). As a result of this study, Geyser Island is considered one of the four largest South African colonies, together with Kleinsee, Seal island in False Bay and Elephant Rock (Kirkman 2010) (See Figure 9).

Current research is focused on foraging and diets of the seal as well as their interaction with seabirds. Seal predation on seabirds at Dyer Island has been recorded by Marks *et al.* (1997), David *et al.* (2003) and Makhado (2009). The African penguin and Cape cormorant are the two species most heavily impacted by seal predation on Dyer Island, at a rate that is considered unsustainable (Makhado 2009). The removal of individual seals observed to be preying on seabirds is a management intervention that is supported in order to reduce the impact of seals on seabirds. DEA:O&C conduct diet sampling of Cape fur seals at Geyser Island and Quion Rock, and aerial censuses of the pups also continue.

Figure 9: Cape fur seals *Arctocephalus pusilus pusilus* on Geyser Island (Photo: L. Waller).

A number of whale and dolphin species occur in the marine area around DINRC. The Southern right whale *Eubalena australis* (Least Concern in South Africa), utilizes the shallow coastal areas to calf and mate during June and December after which they return to the arctic region. A few mother and calf pairs are often seen until the beginning of January and these are thought to be late born calves. Single animals start to arrive each year in May. The Humpback whale *Megaptera novaengliae* (Near Threatened), is observed primarily during winter. Both species are showing increases in their populations (Best *et al.* 2001, Findlay *et al.* 2011). The Bryde's whale *Balaenoptera brydei* is also frequently observed in the area, and there have also been sightings of killer whales, *Orcinus orca*, (DICT 2012, pers. comm). Major threats are entanglements in fishing gear and collisions with shipping (Meÿer *et al.* 2011). The bay areas at Pearly Beach and Franskraal as well as the nearby Walker Bay Whale Sanctuary (Marine Protected Area) provides protection and sanctuary during the breeding season. Monitoring of whales in this area includes (not an all inclusive list) southern right whale photo-identification surveys, satellite telemetry studies, theodolite tracking,

passive acoustic monitoring and recording and identification of strandings and genetic studies. A full review of cetacean previous studies and current knowledge is available from Elwen *et al.* (2011).

A few dolphin species are found in the coastal waters surrounding the DINRC, including a resident pod of Indo-Pacific hump-backed dolphins, *Sousa chinensis plombea form.* They are usually found along the coast where they inhabit the shallows or inshore waters. They tend to prefer areas with open river mouths and have mainly been observed feeding in the area. They are rarely found in waters deeper than 20 m, placing them in frequent contact with human activities. Incidental mortality in fishing gear and habitat degradation and loss are the greatest threats to this species throughout its range. This species is listed as "Near Threatened" (IUCN 2012).

The Bottlenose dolphin, *Tursiops truncatus,* "Least Concern" (IUCN 2012) and the Indo-Pacific / Indian Ocean bottlenose dolphin, *Tursiops aduncus,* 'Data Deficient' (IUCN 2012) are usually found in coastal waters and are rarely found in waters deeper than 30 m which results in frequent contact with human activities. This makes them particularly vulnerable to the alteration or loss of their habitat and to direct injury by vessels.

The common bottlenose dolphin is larger than the Indo-pacific bottlenose dolphin and it occurs generally off shore except in Namibia where it is inshore. *Tursiops aduncus* are distinguished from common bottlenose dolphins by their longer beak and more uniform coloration on the dorsal and some adults possess freckled dark spots on the abdomen. *Tursiops aduncus*, which is recognized as a separate species, is found inshore on the east of Cape Town and throughout the Indian Ocean as well as into the South West Pacific (Best 2007).

Another dolphin species that is often spotted around the DINRC is the long-beaked common dolphin, *Delphinus delphis.* With an IUCN listing as "Data Deficient" (IUCN 2012) it is not possible to determine their population trend. A major threat to this species is mortality through by-catches of pelagic purse-seine, driftnet and trawl fisheries.

3.9.2 Avifauna

Dyer Island is considered by Birdlife International to be one of 103 Globally Important Bird Areas (IBAs) in South Africa (Barnes 1998, E. Retief 2011, pers. Comm), and birds dominate the vertebrate fauna on Dyer Island, in terms of both diversity and numbers. There are 12 species of seabirds and five terrestrial birds that have been recorded breeding on Dyer Island (Table 3.1). The African penguin, *Spheniscus demersus,* Cape cormorant, *Phalacrocorax capensis,* and bank cormorant, *Phalacrocorax neglectus,* are three species of particular conservation management concern given their population declines and conservation status according to the IUCN Red List of Threatened Species. Areas occupied by the most important breeding birds on Dyer Island are illustrated in Figure 10.

Population trends, conservation status and threats are discussed below for the breeding seabirds on Dyer Island. Further details on avifauna monitoring activities and management actions are provided in Section 7, the Strategic Implementation Framework for the DINRC. Given the presence of a number of threatened breeding seabirds, Dyer Isand and Geyser are

zoned the highest sensitivity in the sensitivity analyses (See Section 5). All activities on the island are managed in a way to minimise disturbance to breeding birds. This includes dealing with disturbance associated with people living on the island, conducting research and monitoring, during disasters such as oil spills and disease outbreaks and catching birds for rehabilitation. Specific management actions are dealt with in the relevant disaster management plans and island code of conduct.

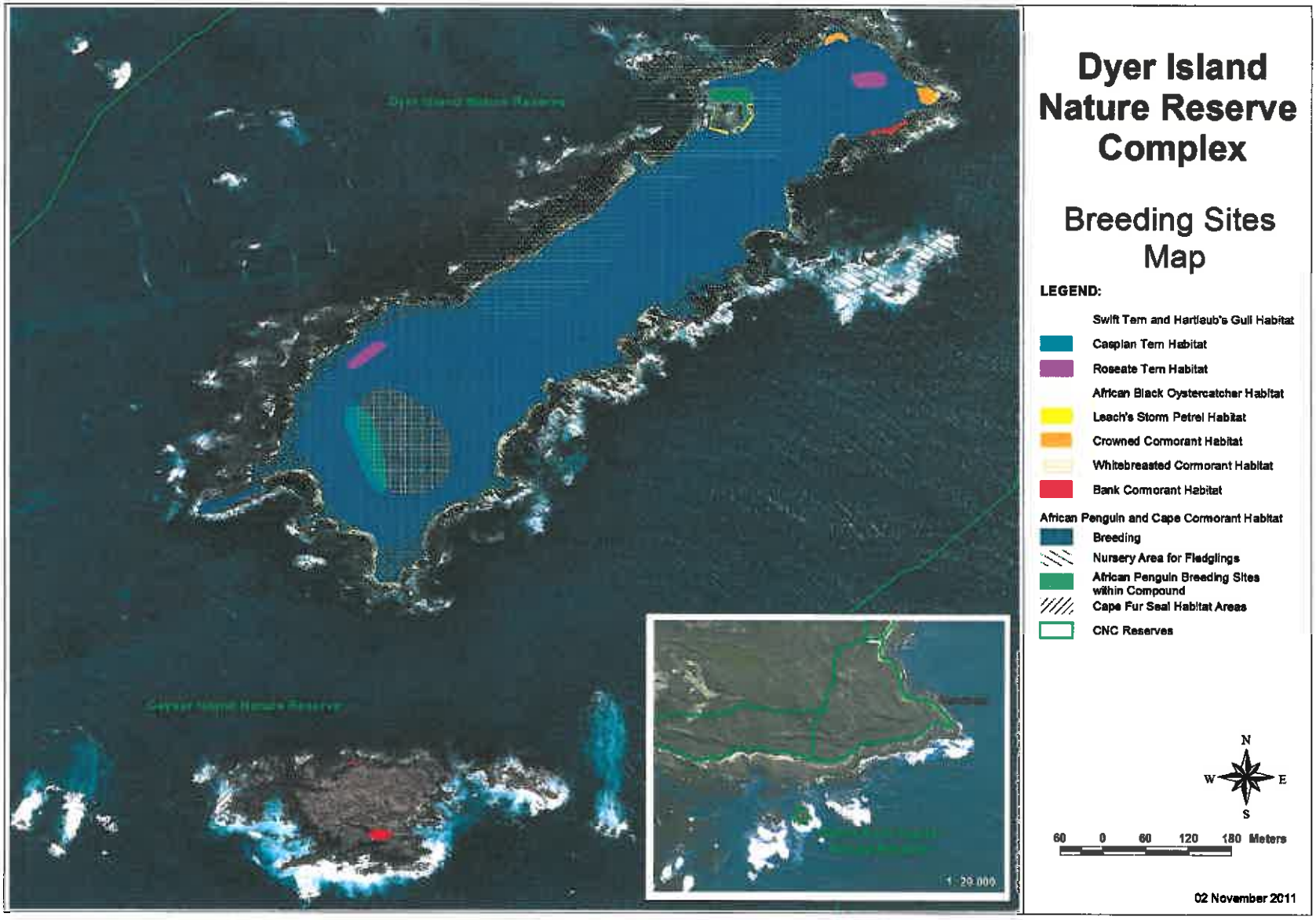

Figure 10: Breeding sites of most populous seabird and wader species on Dyer Island and Geyser Island Nature Reserves.

African penguin

African penguins, *Spheniscus demersus*, breed at 25 islands and four mainland localities in Namibia and South Africa, indicating the significance of these offshore islands in southern Africa (Kemper *et al.* 2007) (Figure 11). It is estimated that globally there were between 1.5 and 3 million African penguins in the early 20th century (Shannon & Crawford 1999) and by 1956, the population had declined to approximately 0.3 million penguins (Rand 1963a, b). In the 1978/79 season, 70 000 breeding pairs (Shelton *et al.* 1984), equivalent to about 224 000 individuals, were recorded. During the 1990s, further declines were observed and 44 000 breeding pairs were estimated in 1993 (Crawford and Dyer 1995). A recovery was observed in the late 1990s and early 2000s; 63 000 pairs were counted in 2001 (Kemper *et al.* 2007). Despite this promising increasing trend in the 1990s, the reverse occurred in the 2000s. In South Africa, the number of breeding pairs collapsed from an estimated 56 000 breeding pairs in 2001 to 21 000 pairs in 2009, and the global population in 2009 was estimated at 26 000 (Crawford *et al.* 2011). It is this rapid decline from 2001 to 2009 that led to the re-classification (IUCN Red List) of the species from "Vulnerable' to "Endangered" (IUCN 2011).

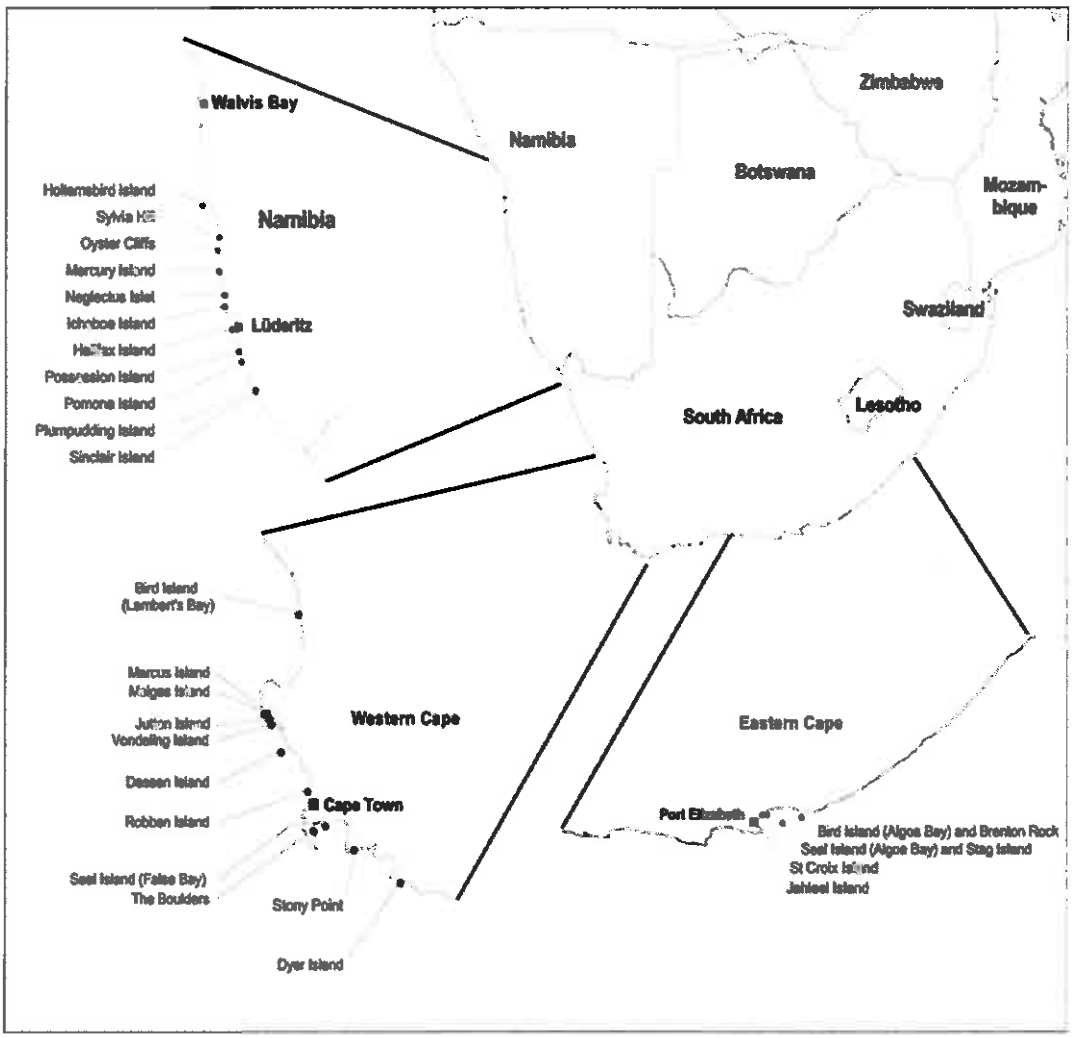

Figure 11: African penguin breeding localities in Namibia and South Africa. Map courtesy of René Navarro (Animal Demography Unit, University of Cape Town 2011).

On Dyer Island, the African penguin population has decreased by more than 95% in the past 30 years. Approximately 22 000 breeding pairs were recorded in the late 1970s. Since then, however, the population has declined steadily with the 2011 census showing a population of less than 1000 penguin breeding pairs in (Waller 2011a, CapeNature unpubl. data).

Historical factors implicated in the overall population decline include egg exploitation and habitat alteration and disturbance associated with commercial exploitation of guano (Frost *et al.* 1976). More recently, reduced availability of pelagic fish due to competition with commercial fisheries is thought to be responsible for persistent declines as well as reduced availability of prey altered distribution of fish stocks (Crawford *et al.* 2007a, 2011). Other factors include mortality in oil spills (Wolfaardt *et al.* 2009), predation by seals (Johnson *et al.* 2006, Makhado 2009) and entanglement in fishing gear and other marine debris (CapeNature unpubl. data).

CapeNature carries out a number of management interventions in order to prevent adult mortality and declines in breeding success of African penguins on Dyer Island. African penguins are prone to disturbance at all stages of the breeding and moult cycles, and management activities take this into consideration. Oiling is a constant threat to birds as a result of wrecks and containers that leak oil and through illegal bilge-dumping. Wolfaardt *et al.* (2008), document the long-term impact of oiling events on African penguins as evidenced through reduced breeding success and reduced participation in breeding. Evidence is given to support the capture and rehabilitation of oiled birds, while caution is raised about the long-term physiological costs to adult birds. In order to reduce the impact of oiling, and reduce the time that a bird is contaminated with oil, CapeNature staff monitor the island regularly for oiled penguins, particularly during the winter months where rough seas are thought to cause sunken containers and wrecks, to shift and release oil. CapeNature works closely with SANCCOB and all oiled and injured birds from Dyer Island are sent to SANCCOB for rehabilitation.

Makhado (2009), states that the predation of African penguins by Cape fur seals on Dyer Island is unsustainable and recommends the removal of individual seals observed to prey on birds. Monitoring of seal-seabird interactions is a priority activity on the island, and the selective shooting of individual seals seen preying on seabirds occurs during the summer months.

On Dyer Island, most breeding African penguins breed on the surface (Figure 12). This exposes African penguin eggs and chicks to predation by kelp gulls as well as increasing exposure to extreme weather conditions; both factors causing a reduction in African penguin breeding success. In order to mitigate against these impacts and improve breeding success CapeNature has embarked on a programme to supply artificial penguin nests. This project started in 2007 and is done in collaboration with the DICT. On-going monitoring assesses the breeding success of penguins utilising these nests.

CapeNature supports the African Penguin Chick Bolstering Project. This is a project run with multiple stakeholders in removing abandoned African penguin chicks from Dyer Island, transporting them to SANCCOB for raising, and then releasing them back onto the island when old enough to fledge.

The scientific and monitoring work that CapeNature undertakes on the African penguin contributes to a larger study that is assessing the foraging behaviour of predators within the Benguela Upwelling Ecosystem, providing indicators for ecosystem health as well as changes in the ecosystem. This contribution is further enhanced by allowing tertiary institutions to carry out research on a number of species inhabiting the DINRC.

Studies of African penguin foraging behaviour on Dyer Island found that adult penguins generally had a larger foraging range, travelled further and had more overnight trips than breeding adults at other breeding colonies (Waller 2011a). It was also found that chick condition at Dyer Island was consistently poorer than at the other African penguin colonies at Robben Island, Dassen Island, St Croix and Bird Island (Waller 2011a). Furthermore, Sherley (2010) found that chick growth was slower at Dyer Island than at other colonies. Both these studies suggest that access to food is a further limiting factor for African penguins at Dyer Island. CapeNature participates in the ongoing island closure feasibility study being conducted by the Small Pelagic Scientific Working Group (SPSWG) of the Department of Agriculture, Forestry and Fisheries. The aim of this study is to assist with the design of an experiment which could potentially confirm the effects of closure (to pelagic fishing in areas near colonies) on African penguins. Data analyses so far performed have not shed light on the hypothesis that suspending fishing around penguin breeding colonies would enhance local penguin reproductive success (J. Coetzee 2011, pers. comm).

Figure 12: African penguin *Spheniscus demersus* pair at nest on Dyer Island (Photo: L. Waller).

Cape cormorant

The Cape cormorant, *Phalacrocorax capensis*, is endemic to southern Africa, breeding along the coast between southern Angola and the Eastern Cape, South Africa (Crawford 1997a). It is the most numerous of all the cormorant species breeding on Dyer Island (Figure 13). The species roosts in large flocks and forages on pelagic shoaling fish up to 10-20 km offshore and up to 40 km from breeding colonies (Hockey *et al.* 2005).

There has been a general decline in the Cape cormorant population in the last three decades (Crawford *et al.* 2007b). The population was estimated at 250 000 pairs in 1978/79 and 100 000 pairs in 2005/06, with South Africa hosting c. 35% of the population (Kemper *et al.* 2007). The decline of this species has caused the Cape cormorant to be classified as "Vulnerable" category of the IUCN's Red List of Threatened Species (IUCN 2011). There were approximately 24 000 breeding pairs on Dyer Island in 2011 (CapeNature unpubl. Data).

Threats to this species at Dyer Island include a lack of food (Crawford & Dyer 2005); avian cholera (Waller & Underhill 2007); human disturbance leading to nest desertion and, in severe cases, mass-abandonment of breeding colonies (Cooper *et al.* 1982); oil pollution (Crawford *et al.* 2000); plastic pollution (particularly entanglement in nesting material consisting of fishing gear); predation by Cape fur seals (David *et al.* 2003, Makhado 2009); nest flooding during storms (du Toit *et al.* 2003); and chick mortality due to extreme weather conditions (CapeNature unpubl. Data).

The combination of seal predation and avian cholera outbreaks on Dyer Island is considered unsustainable for this species (Waller & Underhill 2007, Makhado 2009). Consequently CapeNature increases disease surveillance during the Cape cormorant breeding season, and removes individual seals observed to be predating on seabirds. On-going monitoring of seal-seabird interactions is a priority monitoring activity.

Given the population decline of this species, studies of its foraging behaviour and habitat have been undertaken by the Percy FitzPatrick Institute of African Ornithology since 2008. The aim of these studies is to understand the factors influencing the cormorant populations and their decline in order to guide decision-makers in DEA and DAFF in the overall management of the southern Benguela ecosystem.

Figure 13: Cape cormorant *Phalacrocorax capensis* breeding on Dyer Island (Photo: L. Waller).

Crowned cormorant

The crowned cormorant, *Phalacrocorax coronatus,* is endemic to Namibia and South Africa (du Toit *et al.* 2003). The combined numbers of crowned cormorants that breed at ten regularly monitored localities showed no long-term trend over the 20 years from 1991/92-2010/11, with an average number of 1 100 breeding pairs (Crawford *et al.* 2012). From the mid-1990s to the late 2000s there was a steady increase in numbers of crowned cormorants breeding at Dyer Island (Crawford *et al.* 2012). From 2007-2011, the maximum count of crowned cormorant breeding pairs was 266, which represents approximately 15% of the South African total (Crawford *et al.* 2012).

At Dyer Island the crowned cormorant breeds on the walls surrounding the living area. Breeding occurs throughout the year, with peaks in breeding activity occurring in January (Crawford *et al.* 2012) The crowned cormorant is listed as "Near Threatened" in the IUCN Red List of Threatened Species (IUCN 2011). Crowned cormorants feed mainly on bottom dwelling fish in the infra-tidal and intertidal regions, and are not threatened by competition with fisheries (Crawford 1997b). The crowned cormorant is susceptible to human disturbance at breeding colonies. Fishing debris, such as pieces of net and nylon line, is often incorporated into nests and has resulted in entanglement, suffocation and starvation of birds (Crawford 1997b).

Bank cormorant

The bank cormorant, *Phalacrocorax neglectus,* is another southern African endemic with 80-90% of the population breeding on Mercury and Ichaboe Island in Namibia (Kemper *et al.* 2007). The global population of bank cormorants is estimated at approximately 2 800 breeding pairs, with the South African populating accounting for about 10% of the global population (Kemper *et al.* 2007). The bank cormorant population on Dyer Island contains approximately 5% of the South African total (CapeNature unpubl. Data).

Breeding occurs throughout the year with a peak between June and October. Bank cormorants prey on bottom- and reef-dwelling organisms occurring in inshore kelp beds, such as clinids, crustaceans (including rock lobster), octopuses and cuttlefish. The consumption of rock lobster results in a potential conflict with commercial and recreational rock lobster fisheries. Other threats to bank cormorant breeding colonies include human disturbance, especially since Kelp Gulls prey upon unattended eggs and chicks. Stochastic tidal events often destroy many of the population's nests, as was the case on Dyer Island in 2009. Predation of adults and fledglings by Cape fur seals (David *et al.* 2003), oil pollution and drowning in lobster traps (Cooper 1985), also threatens the survival of this species. Diseases such as avian cholera, which have affected other cormorants in South Africa (Waller & Underhill 2007), could have catastrophic consequences for the species (Crawford *et al.* 1992, Williams & Ward 2002).

The highest number of breeding pairs was recorded in 1981, with 56 and 34 breeding on Dyer and Geyser Island respectively. There has been a steady decline on Dyer Island since then with 2 and 11 breeding pairs on Dyer and Geyser Island respectively recorded in 2011, while 13 breeding pairs were confirmed on Quoin Rock in August 2011 (CapeNature & DEA: O&C unpubl. Data). This mirrors a steady decline of this species in South Africa, and the species is listed as "Endangered" by the IUCN (IUCN 2012).

Whitebreasted cormorant

The whitebreasted or great cormorant, *Phalacrocorax carbo lucidus,* is a widespread species, which breeds both along the coast and inland. The South African coastal population is approximately 2 500 pairs (Brooke *et al.* 1982), with the Dyer Island population supporting approximately 40 pairs (CapeNature unpubl. data), and Quoin Rock approximately 32 pairs (DEA: O&C unpubl. data). At Dyer Island, there is a peak in breeding activity from August until November. The major threat to this species is considered to be human disturbance at breeding colonies (du Toit *et al.* 2003), and as such, CapeNature monitoring activity is restricted in the area in which this species breeds during the breeding season.

Swift tern

Three species of tern have been recorded breeding at Dyer Island, of which the most numerous is the swift tern, *Sterna bergii bergii* (Figure 14). *Sterna bergii* is widespread globally, with numbers of more than 1 million individuals having been recorded (Crawford 1997c). This subspecies of *bergii* is a southern African endemic, breeding in Angola, Namibia and South Africa. It nests on the ground in colonies, and, as is the case on Dyer Island, often in association with Hartlaub's Gulls (Crawford *et al.* 2002). This species has not yet been assessed for the IUCN Red List (IUCN 2012).

Swift terns exhibit a high degree of nomadism, and can alter their breeding sites from one year to the next (Crawford *et al.* 1994). Dyer Island for example had > 5000 breeding pairs of swift terns between 2008 – 2010, but this has declined to approximately 500 pairs in 2011. At Dyer Island, the peak breeding activity normally occurs in February/March. Breeding may not occur if conditions are not suitable (Crawford 2003), and disturbance of breeding colonies by humans and development activities will impact the number of birds breeding and their breeding success (du Toit *et al.* 2003). Predation by domestic cats has been known to be a significant cause of mortality of seabirds on some South African coastal islands (du Toit *et al.* 2003) but does not occur on Dyer Island. Swift tern egg and chick predation by Kelp gulls on

Dyer Island does however occur. Competition with commercial fisheries for food has been identified as a potential threat (du Toit *et al.* 2003). Swift terns are also at risk from entanglement with fishing equipment and debris.

Figure 14: Swift terns *Sterna bergii bergii* breeding on Dyer Island (Photo: L. Waller).

Roseate tern

The roseate tern, *Sterna dougallii* is the second most numerous tern breeding on Dyer Island. It is widely dispersed, with the majority of the population breeding in Australia (Hockey *et al.* 2005). Small colonies of this species are found in only 3 locations in South Africa: Dyer and Bird Islands and St Croix Island in the Eastern Cape (Crawford 1997d).

The numbers breeding on Dyer have remained relatively stable - between 15-30 pairs (CapeNature unpubl. Data) - and the total South African population (estimated between 150 and 250 pairs) has remained stable since 1977. This species is listed as "Least Concern" in the IUCN's Red List of Threatened Species (IUCN 2011) and as "Endangered" in the southern African Red List (Barnes 2000). The predominant threats are human disturbance at breeding colonies (Crawford 1997d) and egg predation by Kelp gulls (du Toit *et al.* 2003). As a result, access and staff patrols are restricted on Dyer Island during the periods when the roseate terns are breeding. Chick mortality can also occur from hypothermia during wet weather (Randall and Randall 1978), and this species is highly susceptible to oil pollution (du Toit *et al.* 2003).

Caspian Tern

The caspian tern, *Hydroprogne caspia*, is the third tern species found on Dyer Island and apart from Antarctica and South America, has a world-wide distribution (Hockey *et al.* 2005). In South Africa, it is found along the entire coastline and most of the breeding pairs in this country are found at Lake St Lucia (Kemper *et al.* 2007). On the west coast of South Africa, the species breeds mainly on the offshore islands, but is also found breeding along sandy beaches, pans, rivers and dams. The caspian tern is a rare visitor to Dyer Island and after an absence for a number of years, 4 pairs were observed breeding on Dyer Island in 2010.

The main threats to this species include human disturbance during breeding activities, including egg collecting at mainland colonies, predation by domestic dogs and flooding of breeding habitat (du Toit *et al.* 2003). The species is listed as "Least Concern" in the IUCN's Red List of Threatened Species (IUCN 2011) and as "Near-Threatened" in the southern African Red list (Barnes 2000).

Leach's storm petrel

Leach's Storm Petrel, *Oceanodroma leucorhoa,* is a common summer visitor to the west and south coasts of southern Africa, breeding at islands in the northern Pacific and the northern and southern Atlantic Oceans (Ryan and Whittington 1997). This species is considered of "Least Concern" globally (IUCN 2011).

Breeding at Dyer Island by this species was confirmed in 1997 in the stone walls surrounding the buildings (Whittington *et al.* 1999). Threats to this species relevant to Dyer Island include predation by Kelp Gulls (Underhill *et al.* 2002), potential human disturbance at breeding sites, lack of protected breeding sites, occupation of favoured breeding sites (dry stone walls) by cormorants (du Toit *et al.* 2003) and the Argentine Ant *Linepithema humile* (B. Dyer 2007, pers. comm).

African black oystercatcher

The African black oystercatcher, *Haematopus moquini*, is endemic to the coast of southern Africa. The total world population is now over 6000 birds (Hockey *et al.* 2005). Population counts of this bird vary between 30 and 121 individuals at Dyer Island with an estimated 21 breeding pairs (CapeNature unpubl. Data). The main threats to Oystercatchers on the island are the predation of chicks and eggs by Kelp gulls. Oystercatchers are subject to significant disturbance on the mainland during the breeding season as a result of human activity, collection of eggs, and disturbance by dogs. Coastal islands such as Dyer Island and protected mainland sites such as MPAs provide a relatively safe breeding refuge for this species, and generally have a higher breeding productivity compared to unprotected mainland sites (Parsons 2006) (Figure 15). It is listed as "near threatened" in the IUCN's Red List of Threatened Species (IUCN 2011).

Figure 15: African black oystercatcher on Dyer Island (Photo: L Underhill).

Kelp gull

The kelp gull, *Larus dominicanus*, is the most widespread and abundant species of gull in the Southern Hemisphere. The southern African kelp gull is a distinct subspecies, *Larus dominicanus vetula* and is endemic to southern Africa (Wetlands International 2002), where it breeds along the coasts of southern Angola, Namibia and South Africa (Crawford 1997e).

The coastal population of this subspecies of the kelp gull was estimated at 11 200 breeding pairs between 1976 and 1981 (Altwegg *et al.* 2006). with numbers increased substantially in the 1980s at localities off the south-western Cape (Crawford *et al.* 1994). The breeding population had nearly doubled to 20 500 pairs in 2006 (Kemper *et al.* 2007). This increase was largely attributable to improved post-fledging survival, attributed to the supplementary food that included fish discarded by factories and fishing vessels and food at rubbish tips (Steele & Hockey 1990, Crawford 1997e) and the cessation of population control measures (mainly the destruction of eggs and chicks) at most breeding localities (Hockey *et al.* 2005).

On Dyer island, numbers of breeding kelp gulls have increased from an estimated 88 pairs in 1978 to more than 500 in 2011 (CapeNature & DEA: O&C unpubl. Data). The extent to which the shark cage diving industry and fishing industry discards have contributed to the increase in numbers of kelp gulls at the colony is unknown, as is the impact of rubbish dumps in the surrounding terrestrial area.

Kelp gulls, as the only resident terrestrial predator on Dyer Island, are having an impact on the breeding success of the other breeding seabirds. The species has been observed to prey

on eggs and chicks of Cape and white-breasted cormorants, African penguins and caspian terns (Voorbergen 2011, Geldenhuys 2011, pers. comm). Kelp gull predation caused the breeding attempts of caspian terns to fail on Dyer Island in 2010. This was the first known attempt of the species to breed on the island since 2004. They also seize unguarded eggs and chicks from the nests and territories of other Kelp gulls (Hockey *et al.* 2005).

The southern African kelp gull is listed as least concern in the IUCN Red List of Threatened Species (IUCN 2011). In consultation with DEA: O&C, CapeNature will manage the number of kelp gulls on Dyer Island to minimise their impact on "Endangered" and "Threatened" breeding seabirds on Dyer Island.

Hartlaub's gull

Hartlaub's gull, *Larus hartlaubii,* is endemic to South Africa and Namibia. It is one of the rarest gulls and has an overall breeding population of about 12 000 breeding pairs (Williams *et al.* 1990). Dyer Island has an average of approximately 160 breeding pairs in a time series from 1990 to 2011 (CapeNature unpubl. Data). Nesting at Dyer Island occurs mainly around the compound living area, and usually in mixed colonies with swift terns. Breeding activity peaks between March and May. The largest breeding colonies of breeding Harlaub's gulls usually occur on Dassen and Robben islands, although they are a nomadic species and can alter their breeding location from year to year (Crawford *et al.* 1994). The Hartlaub's gull is listed as "Least Concern" by IUCN (IUCN 2011).

Other Waders and Shorebirds

Other waders that breed on the island include the whitefronted plover, *Charadrius marginatus* and Kittlitz's plover, *Charadrius pecuarius*. Curlew sandpipers, *Calidris ferruginea,* and ruddy turnstones, *Arenaria interpres,* are regularly observed on the island during monthly wader counts.

Terrestrial Birds

There are six resident, breeding terrestrial birds on the island. These are the Egyptian goose, *Alopochen aegyptiaca*, the speckled pigeon, *Columba guinea*, the European starling, *Sturnus vulgaris*, the Cape wagtail, *Motacilla capensis,* and the house sparrow, *Passer domesticus*, of which are listed by IUCN as "Least Concern" (IUCN 2011). The European starling and house sparrow are alien species.

Several other terrestrial birds have been recorded as either vagrants or regular visitors to Dyer Island (see Table 3.1).

Table 3.1: All birds recorded at Dyer Island and their breeding status.

Species	IUCN Category	South African Red Data Book Category	Endemicity	Breed on Dyer Island (as at 2011): Y-yes, N-no
Resident Breeders				
Spheniscus demersus African penguin	Endangered	Vulnerable	Southern African endemic	Y
Oceanodroma leucorhoa Leach's storm petrel	Least Concern		Widespread isolated	Unconfirmed
Phalacrocorax lucidus whitebreasted cormorant			Endemic to sub-Saharan Africa	Y

Species	IUCN Category	South African Red Data Book Category	Endemicity	Breed on Dyer Island (as at 2011): Y-yes, N-no
Phalacrocorax capensis Cape cormorant	Near Threatened	Near Threatened	Endemic to Southern Africa	Y
Phalacrocorax neglectus bank cormorant	Endangered	Vulnerable	Endemic to Southern Africa	Y
Phalacrocorax coronatus crowned cormorant	Near Threatened	Near Threatened	Endemic to Southern Africa	Y
Egretta garzetta little egret	Least Concern			Y
Alopochen aegyptiacus Egyptian goose	Least Concern			Y
Haematopus moquini African black oystercatcher	Near Threatened	Near Threatened	Endemic to Southern Africa	Y
Charadrius marginatus white-fronted plover	Least Concern		Widespread	Y
Charadrius pecuarius Kittlitz's plover	Least Concern		Widespread	Y
Larus dominicanus vetula southern African kelp gull	Least Concern (subspp global)		Endemic subspecies to Southern Africa	Y
Larus hartlaubii Hartlaub's gull	Least Concern (global)		Endemic to Southern Africa	Y
Sterna bergii bergii swift tern	Least Concern (subspp global)		Endemic subspecies to Southern Africa	Y
Columba guinea speckled pigeon	Least Concern		Endemic to sub-Saharan Africa	Y
Motacilla capensis Cape wagtail	Least Concern		Endemic to sub-Saharan Africa	Y
Sturnus vulgaris European starling	Least Concern		Widespread	Y
Passer domesticus house sparrow	Least Concern		Widespread	Y
Passer melanurus Cape sparrow	Least Concern		Endemic to sub-Saharan Africa	Y
Resident Non-Breeders				
Pluvialis squatarola grey plover	Least Concern		Widespread	N
Arenaria interpres ruddy turnstone	Least Concern		Widespread	N
Calidris alba sanderling	Least Concern		Widespread	N
Numenius phaeopus common whimbrel	Least Concern		Widespread	N
Sterna hirundo common tern	Least Concern		Widespread	N
Sterna paradisaea Arctic tern	Least Concern		Widespread	N
Sterna vittata AntarcticTern	Least Concern		Widespread	N
Visiting Breeders				
Larus cirrocephalus	Least Concern		Widespread	Y

Species	IUCN Category	South African Red Data Book Category	Endemicity	Breed on Dyer Island (as at 2011): Y-yes, N-no
grey-headed gull	(subspp global)			
Sterna dougallii roseate tern		Endangered	Widespread isolated population in Southern Africa	Y
Hydroprogne caspia caspian tern	Least Concern	Near Threatened	Widespread	Y
	Visiting Non-Breeders			
Morus capensis Cape gannet	Vulnerable (global)		Endemic to Southern Africa	N
Pelecanus onocrotalus Eastern white pelican	Near-threatened (SA)		Widespread	N
Ardea cinerea grey heron	Least Concern		Widespread	N
Ardea melanocephala black-headed heron	Least Concern		Endemic to sub-Saharan Africa	N
Nycticorax nycticorax black-crowned night heron	Least Concern		Widespread	N
Threskiornis aethiopicus sacred ibis	Least Concern		Widespread	N
Charadrius tricollaris three-banded plover	Least Concern		Endemic to sub-Saharan Africa	N
Vanellus crassirostris blacksmith plover	Least Concern		Endemic to sub-Saharan Africa	N
Calidris ferruginea curlew sandpiper	Least Concern		Widespread	N
Sterna sandvicensis sandwich tern	Least Concern		Widespread	N
	Vagrant			
Macronectus giganteus southern giant petrel	Least Concern		Widespread	
Procellaria aequinoctialis white-chinned petrel	Vulnerable (global)		Widespread	N
Puffinus griseus sooty shearwater	Near-threatened (global)		Widespread	N
Stercorarius parasiticus Arctic skua	Least Concern		Widespread	N
Sterna fuscata sooty tern	Least Concern		Widespread	N
Columba livia rock pigeon	Least Concern		Widespread	N
Ceryle rudis pied kingfisher	Least Concern		Widespread	N
Cisticola juncidis fantailed cisticola	Least Concern		Widespread	N
Sigelus silens fiscal flycatcher	Least Concern		Endemic to Southern Africa	N

3.9.3 Reptiles

It has not yet been established when precisely angulate tortoises were introduced to the island, probably as pets or for food, sometime before 1981 (Dyer, *in litt.*). Tortoises were not mentioned in a two hour egg-collecting visit in 1926 (Symons 1926), nor by Rand (1963b). Tortoises were

present on 9 October 1981 including juveniles and 23 tortoises were counted and carapaces measured a month later on 17 November 1981 (BM. Dyer 1981, pers.obs.). Fifty seven tortoises of all ages (including some newly hatched) were counted on 17 March 1995, when all tortoises had a large number painted on their carapace (M. Marks 1995, Iziko Museum, pers. comm.). This method killed several of the smaller tortoises. The observation of similar sized mature tortoises in 1981 and few juvenile tortoises suggest a fairly recent introduction. The scarcity of small tortoises and no intermediate sized tortoises, further suggests that those born on the island were first generation and thus present at least in 1980 and perhaps introduced or 1979 at the earliest. They were confined to the area within the settlement walls up until 2008 (young tortoises were not predated by gulls as gulls occurred in low numbers and were culled when there were headman on the island). There are fewer tortoises seen on the island since sections of the stone wall around the housing area collapsed and several have died in the interim.

In April 1993, a live unidentified marine turtle of about 60 cm was found ashore on stony ground near the island's settlement and was immediately returned to sea, (E. Johnstone 1993, Cape Nature, pers. comm.)

The marbled leaf-toed gecko *Afrogecko porphyreus,* are common the island. The dehydrated remains of silvery dwarf burrowing skink *Scelotes bipes,* were found on the island on 1 August 1991 (B. Dyer, *in litt.*). The substrate over large parts of the island is unsuitable for fossorial reptiles. No live lizards have been found.

Cape Skink *Trachylepis capensis,* were present "in small numbers" on the island on 9 October 1981 (B. Dyer 1981, pers. obs.). They occur throughout the island but are more frequently seen in the stone walls surrounding the buildings (CapeNature unpubl.data). Both unmarked and typically marked lizards occur, the latter being more common (B. Dyer, *in litt.*).

A short-legged seps *Tetradactylus seps,* was observed amongst a pile of bricks at the settlement on 2 October 1992 (B. Dyer, *in litt*). It was not captured and has not been seen since.

3.9.4 Amphibians

No amphibians have been recorded on DINRC to date.

3.9.5 Fish

The area around Dyer Island and Geyser Island is well known for the great white shark, *Carcharodon carcharias*. This species occurs world-wide, inhabiting temperate offshore and coastal areas, often in proximity to islands with seals and in South Africa is known to range widely between the Cape Province and Kwa-Zulu Natal (Branch *et al.* 2007). Shark cage diving is very popular in the area, and it is primarily the great white shark that tourists from all over the world come to see. During the summer months, shark cage diving permit holders operate close to Uilkraal Nature Reserve and in the winter months, operate within Shark Alley and the area around Dyer Island. Shark Cage Diving Permits are issued by DEA: O&C.

Other fish species found in this area are listed in Table 3.2, below.

The Sardine and Cape Anchovy are two other important fish species found in this area. These small pelagic fish are the dominant prey of most of the seabird species that breed on Dyer Island, and are an important component of the diet of the Cape fur seal. The waters surrounding the DINRC are important for the South African sardine fishery.

The DINRC is a popular angling area for snoek, geelbek and a variety of reef fish.

Figure 16: Great white shark *Carcharodon carcharias* in the waters surrounding Dyer Island (Photo: A. Fry).

Table 3.2: Fish species of the DINRC,their IUCN Status and SASSI Category:

Name	IUCN Status	**Southern African Sustainable Seafood Initiative Category:** **Red** = Unsustainable species, very important recreational species that cannot handle commercial fishing pressures, and may therefore only be caught for your own enjoyment and use. **Orange** = Species that have associated reasons for concern, either because of their poor stock status, worrying population trends, or because of other negative environmental issues associated with the fishery that the species is caught in. **Green** = Species that are from relatively healthy and well-managed populations that can sustain current fishing pressure.
Carcharodon carcharias great white shark	Vulnerable	
Poroderma patherinum leopard catshark	Not listed	
Poroderma africanum pyjama catshark	Near Threatened	
Eptatretus hexatrema six-gill hagfish	Least Concern	
Sardinops sagax Sardine	Not listed	
Engraulis encrasicolis Cape anchovy	Not listed	
Syngnathus acus longsnout pipefish	Not listed	
Chrysoblephus laticeps red roman	Not listed	Orange
Cymatoceps nasutus poenskop	Not listed	
Diplodus carvinus hottentotus Zebra	Not listed	
Diplodus sargus capensis blacktail	Not listed	Red
Pachymetopon aeneum blue hottentot	Not listed	Orange
Sparodon durbanensis musselcracker	Not listed	Red
Sarpa salpa Strepie	Not listed	
Dichistius capensis galjoen	Not listed	Red
Atractoscion aequidens geelbek	Not listed	Red
Thyrsites atum Snoek	Not listed	Green
Liza richardsonii southern mullet	Not listed	
Clinus agilis agile klipfish	Not listed	
Clinus cottoides bluntnose klipfish	Not listed	
Clinus superciliosus super		

Name	IUCN Status	**Southern African Sustainable Seafood Initiative Category:** **Red** = Unsustainable species, very important recreational species that cannot handle commercial fishing pressures, and may therefore only be caught for your own enjoyment and use. **Orange** = Species that have associated reasons for concern, either because of their poor stock status, worrying population trends, or because of other negative environmental issues associated with the fishery that the species is caught in. **Green** = Species that are from relatively healthy and well-managed populations that can sustain current fishing pressure.
klipfish	Not listed	
Clinus venustris speckled klipfish	Not listed	
Muraenoclinus dorsalis nosestripe klipfish	Not listed	
Pavoclinus graminis grass klipfish	Not listed	
Lithognathus lithognathus white steenbras	Lower Risk/conservation dependent	Red

3.9.6 Invertebrates

Terrestrial Invertebrates

Very little is known about the terrestrial invertebrates of Dyer Island and no surveys have been undertaken to determine the species diversity. This, however is a low priority and no surveys are envisaged during the period of this management plan.

Aquatic Invertebrates

The inter-tidal zones and kelp forest create suitable habitats for a diversity of invertebrates. These includes, sponges, sea anemones, zoanthids, soft corals, sea fans and sea pens, hard coral, sea firs, flat worms, bristle worms, sea spiders, barnacles, isopods, amphipods, rock lobster, rock crabs, various mollusc species, sea hares, nudibranchs, and octopus (Branch *et al.* 2007). This area is the key foraging area for the African black oystercatcher.

The kelp forest areas create a habitat for commercially exploited marine species such as the Perlemoen (abalone), *Haliotis midae*, the Alikreukel, *Turbo sarmaticus* ,and the West Coast rock lobster, *Jasus lalandii* (Branch *et al.* 2007). Although not listed on the IUCN Red data list, *Haliotis midae* is listed under Appendix III of the CITES convention. The waters around the DINRC are targeted by poachers for the illegal harvesting of this species. In an attempt to enable the implementation of the emergency suspension of the abalone fishery, to establish measures for the protection of wild abalone and to promote the recovery and rebuilding of the wild abalone resource, DEA published regulations to prohibit diving in some areas in 2008. These areas include DINRC: From Dyer Island extending 1 nautical mile from the high water mark and from Quoin Point to Danger Point, extending 2 nautical miles seaward from the high water mark. All poaching activities are captured in a database and reported to DAFF operations in Hermanus. Poaching however continues to occur within this area.

3.9.7 Invasive/alien fauna

The only known and identified terrestrial invasive alien fauna at DINRC is the Argentine Ant, *Linepithema humile.* It has been suggested that the Argentine Ant may be a threat to the breeding success of Leach's Storm Petrel which breeds in and on the stone walls within the compound area of Dyer Island (B. Dyer 2007, pers. comm). A survey of this ant species has been identified as an action in this plan.

While no formal surveys have been conducted on the island, it is expected that the Mediterranean mussel, *Mytilus galloprovincialis*, is present in the intertidal zone of the island. Robinson *et al.* (2005) stated that the the Mediterranean mussel had spread extensively along the coast, and at the time of the study was observed along the entire West Coast, South Coast, and 20 km west of East London. While ecologically negative impacts were observed, with this species out-competing some limpet species, the study reported that the African black oystercatcher had benefitted, shifting its diet almost exclusively to this species in some areas, and as a result had showed improved breeding success.

3.10 Cultural Heritage Resources

Jan Fourie (2002) states that according to reports and studies by Iziko Museum staff, earlier occupants along the coast used seafood extensively and that a "Boesmanklip" (stone with a hole in the middle that was used by the Khoi-San to make digging sticks stronger and heavier) was found on Dyer Island by one of the earlier workers when sifting through guano. This may suggest that the Khoi-San were able to reach the island, but no strong evidence exists.

A two meter high concrete spire only known as "Powell's Grave" stands near the centre of Dyer Island, and two other large graves near the buildings (One with a headstone) are thought to be the graves of domestic dogs (Fourie 2002).

The history, present buildings and building remains on Dyer Island from part of the rich cultural history of all the islands along the South African and Namibian coastline and therefore the men and women who lived and worked on these islands were part of a unique group of island workers and headman. Fourie (2002) gives a good description of the life on the islands as well as some songs and poems that were written and developed by the people living on and from the island.

Steel and wooden wreckage seen along the coast bears testimony to marine disasters caused by the notorious reefs encircling the island. The oldest wreck with a known location is George, from British origin, who sank in 1834 off Whaler Rock with an unknown cargo (SA Shipwrecks 2010). Other wrecks around Dyer Island include a British boat called Hannington Court which sank in 1941, 16km south of Dyer Island with a copper cargo (SA Shipwrecks 2010); the fishing trawler *South West Seabird*, which ran aground in 1989 without loss of life (Fourie 2002) and in January 1997, eleven survivors were found on the island after the master of the vessel in which they had been discovered as stowaways had set them adrift on a small raft (Fourie 2002). Table 3.3 below list wrecks found around the DINRC.

Table 3.3: Wrecks around Dyer Island Nature Reserve Complex (SA Shipwrecks 2010)

Name	Origin	Cargo	Date of Origin	Area sank
Clyde	British	Soldiers, weapons	2 April 1879	Clyde Rock
George	unknown	Unknown	1831	unknown
Linneus	British	Unknown	1834	Whaler Rock
Charmer	British	Teak wood	24 August 1877	NW of island
Kolstrup	German	Unknown	11 May 1883	Reefs NW of island
Prince Port	British	Unknown	10 March 1885	Geyser Island
Imerina	British	Unknown	12 November 1885	Geyser Island
Adela	unknown	Unknown	25 May 1888	Unknown
Tasmania	British	Unknown	11 October 1912	Whaler Rock
Hektor	Norwegian	Unknown	23 March 1913	Unknown
Hannington Court	British	Copper	14 July 1941	16 km South of Dyer

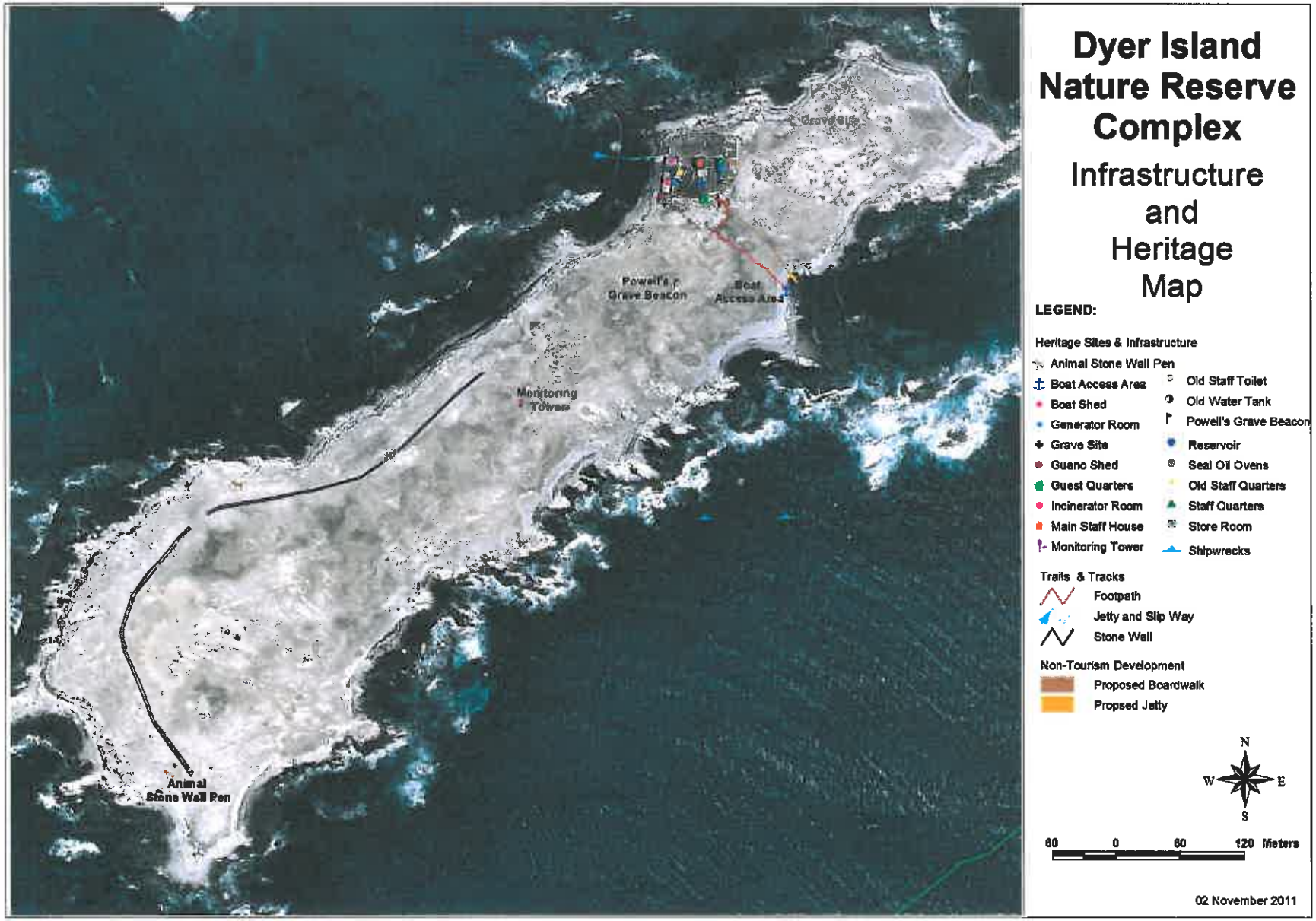

Figure 17: Map of Infrastructure and Heritage on Dyer Island Nature Reserve.

3.11 People and Conservation

At present public access to the DINRC is strictly controlled and restricted to researchers, film crews and volunteers, with restrictions enforced in areas that are allowed to be visited. Visitors to the island are accompanied by reserve management when entering highly sensitive areas.

Abalone, *Haliotis midae*, is an abundant and valuable resource in and around the reserve, and despite the strict control and regulatory measures it is illegally harvested and over-utilised. The poaching of this resource is a regional problem with vast socio-economic consequences. The activity has lead to a "false" or inflated economy in the area and it is also allegedly linked to the drug trade (Brick *et al.* 2009).

A specialised tourism industry has developed in Kleinbaai and Gansbaai around the presence of the whales and sharks as well as the scenic marine beauty of the island and its surrounds.

3.12 Youth Development, Awareness and Volunteers

Environmental education opportunities on site are limited. CapeNature endeavours to provide relevant offsite environmental education opportunities through their Community Conservation People and Parks Action Plan for the Overberg, primarily through activities on or around Environmental calendar days. The focus is on land based outreach events.

Conservation Trainees (previously from the Youth Service Programme) accompany field rangers and nature conservators manning Dyer Island for periods of time e.g. three to four weeks as part of their practical experience.

Volunteers assisting with disasters, i.e. oil spills and chronic oiling, are primarily facilitated via a partnership with SANCCOB. Researchers are occasionally recruited to assist with general island management tasks while they are collecting research data, in place of a CapeNature employee.

3.13 Infrastructure

Figure 18 shows the infrastructure on Dyer Island. There is no infrastructure on the other islands. See also Figure 17 for infrastructure and Heritage on Dyer Island Nature Reserve and Figure 18 for Access and facilities for the DINRC. A stone wall surrounds the compound area as well as a section of the western and southern side of the island.

Figure 18: Photograph of Dyer Island Nature Reserve Compound (Photo: DICT).

3.14 Recreational and tourism services

Recreation and tourism opportunities are limited to the marine section of DINRC. Boat based tourism, including Whale watching and Shark cage diving are popular in and around DINRC. These activities are regulated through DEA permits and do not generate revenue for CapeNature.

PART 2

SECTION 4: SWOT ANALYSIS

4.1 SWOT Analysis

SWOT Analysis is a strategic planning method used to evaluate the Strengths, Weaknesses, Opportunities, and Threats involved. It involves specifying the objectives and identifying the internal and external factors that are favourable and unfavourable to achieving that objective.

4.1.1 Strengths, Weaknesses, Opportunities and Threats

The biodiversity, ecological integrity and aesthetic beauty of the Dyer Island Nature Reserve Complex is at risk. The following analysis identifies the Nature Reserve Complex's Strengths, Weaknesses, Opportunities and Threats.

Table 4.1: Dyer Island Nature Reserve Complex SWOT

Strengths	**Weaknesses**
• Functional organisation structure to support the management of the reserve (Manager and Field Rangers, Marine Programme, Scientific Services, Regional Ecological Support Team, Community Conservation) • Internal knowledge of seabirds and island ecosystems and ability to build capacity in others • Secure budget allocation • Infrastructure on island, equipment • Dyer Island is accessible in fair weather • Committed staff • Fairly intact biodiversity, including rich seabird and marine mammal fauna including threatened and endemic species as well as threatened great white shark • Reserve includes a marine section that extends 500m seawards from the high water mark	• Poor Infrastructure maintenance (buildings, sewage, generators, desalination plant, jetty, waste management) as a result of limited funds, access to suitable contractors and access to the islands • Limited capacity and skills for compliance enforcement • Requires specialised skill to manage • Lack of clear succession plan • Insufficient budget • Area not always accessible to CN staff due to weather and tide conditions • Inadequate resources (equipment, water, power) • Ineffective damage/nuisance-causing animal management (capacity to implement effective control measures) • Paucity of/lack of adequate CapeNature policy and guidelines for staff, researchers, contractors and others on the island
Opportunities	**Threats**
• Existing Partnerships (DEA: O&C, DICT, SANCCOB, DAFF, SANParks, Overstrand Municipality, Overberg District Council, Provincial Coastal Committee • New potential partnerships: Boat-based tourism industry, Pelagic fishery, WWF • Interaction with the Protected Area Advisory Committee • Good ties with tertiary institutions such as the University of Cape Town • Involvement in Benguela Current Commission • Contribute to Agulhas Bioregional Conservation Planning and Management initiatives (SANBI)	• Loss of habitat and increased competition for natural resources between species and between humans and wild species • Fragmentation of Islands (Dyer, Geyser Islands and Quoin Rock) • Fragmented management mandates, underdeveloped and poorly integrated legal protection measures • Abalone poaching • Negative impacts from tourist activities (boat based tourism) • Chronic oil and other pollution • Catastrophic oil spills • Marine entanglements of seabirds and other marine animals as well as ingestion of at-sea

	plastic pollution • Climate change (rising sea level, possible increase in frequency and intensity of storms, shift in seasonal frequency) • Land based developments such as the proposed nuclear power plant • Disease outbreaks (among birds) • Poor public awareness • Poor land based waste management that could provide additional feeding sites for kelp gulls

SECTION 5: CONSERVATION DEVELOPMENT FRAMEWORK

5.1.1 5.1. Sensitivity-value mapping

Sensitivity-value mapping of reserve biodiversity, heritage and physical environment provides a consistent approach, intended to be the main decision support tool guiding spatial planning in protected areas:

- for all planned and ad-hoc infrastructure development e.g. location of management and tourism buildings and precincts, roads, trails, firebreaks;
- for whole-reserve planning and formalisation of use and access as a Reserve Zonation Scheme;
- to support conservation management decisions and prioritisation.

Outputs allow direct comparison of sites both within and between reserves to support CapeNature planning at local and regional scales. The process maps:

- sites with highest regional conservation value;
- areas where human access or disturbance will have a negative impact on biodiversity or heritage, and specific environmental protection is required
- areas where physical disturbance or infrastructure development will cause higher environmental impacts, and/or higher construction and on-going maintenance costs;
- areas where there is significant environmental risk to infrastructure.

The method ensures that the location, nature and required mitigation for access, activities, and infrastructure development within protected areas can be guided by the best possible landscape-level biodiversity informants.

The process accommodates both expert-derived information and more objective scientific data. Decisions are defensible and based on a transparent process.

Biodiversity, heritage and physical features are rated on a standard scale of 1 to 5, where 1 represents no or minimal sensitivity and 5 indicates maximum sensitivity (See Figure 19). Additional features such as visual sensitivity, fire risk and transport costs can also be included. Higher scores represent areas that should be avoided for conventional access and infrastructure, or where specific mitigation would be required in order to address identified environmental sensitivity. A score of 5 typically represents areas where mitigation for conventional access or infrastructure development would be extensive, costly or impractical enough to be avoided at all costs, or features so sensitive that they represent a 'no go' area. For biodiversity features highest scores represent high priority sites where conservation management cannot be compromised (See Figure 20 for Dyer Island Sensitivity Map).

Sensitivity maps cannot replace all site-scale investigation, but they are ideal for rapidly reviewing known environmental risks, and guiding whole-reserve planning to minimise overall negative environmental impact.

Figure 19: Sensitivity-Value Mapping

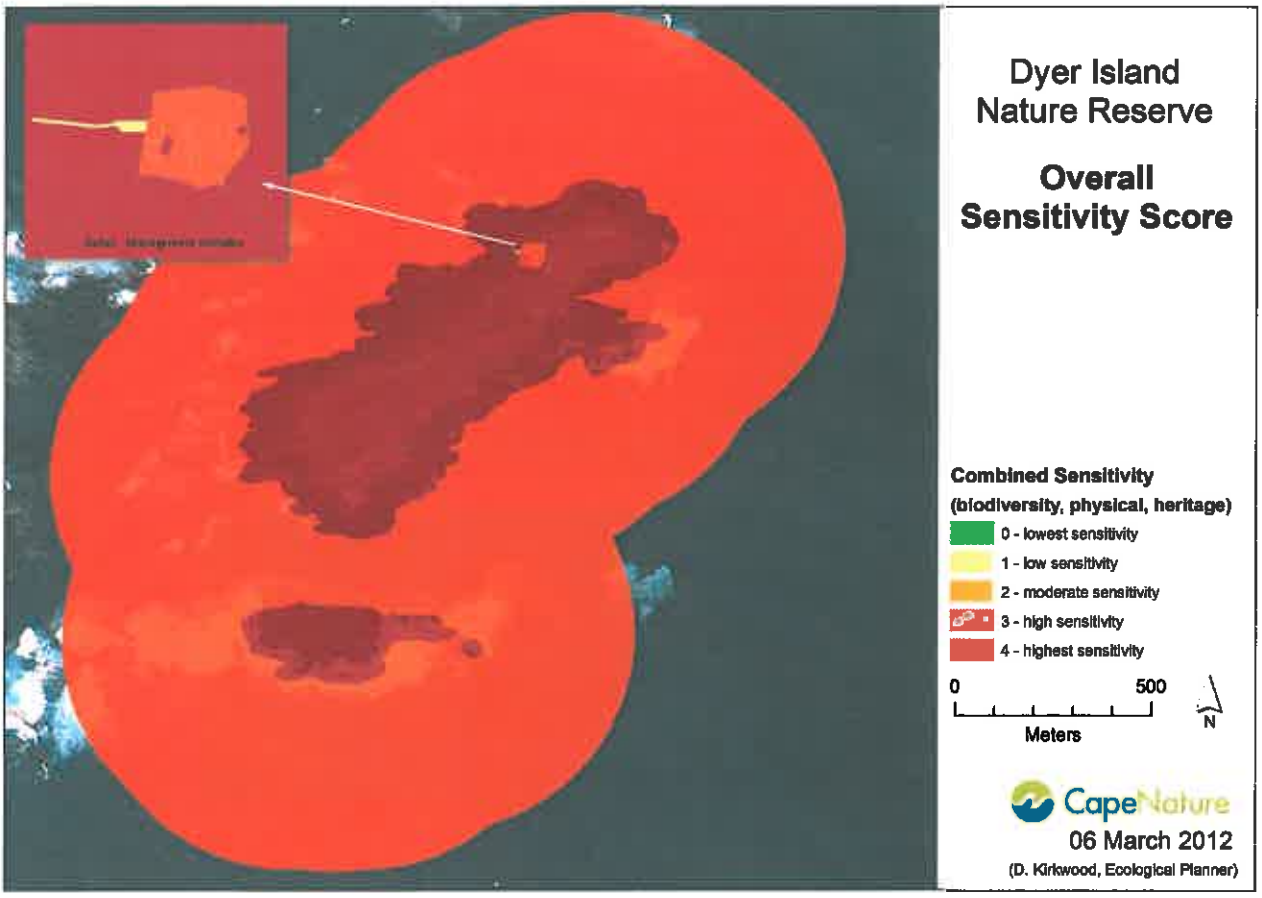

Figure 20: Sensitivity of the Dyer Island Nature Reserve (A3 FOLD OUT).

5.2 Protected Area Zonation

Protected Area Zonation provides a standard framework of formal guidelines for conservation, access and use for particular areas.
Zonation goes beyond natural resource protection and must also provide for:

- appropriate visitor experience;
- access and access control;
- environmental education;
- commercial activities;

Ideally Zonation development should be done at the same time as Infrastructure Development Planning. Good planning must aim to reduce cumulative environmental impacts and the long term operating costs of all activities. Zonation and Infrastructure Development Planning must be guided by:

- existing infrastructure and use;
- potential future infrastructure and access requirements;
- careful evaluation of overall impact, construction costs and operating costs vs. likely benefits; for alternatives for every component.

Zonation requires input from all appropriate internal CapeNature stakeholders, and is a key component to be evaluated during Public Participation evaluation of Management Plans.

5.3 Zonation Categories

CapeNature Zonation Categories were developed by an internal workshop process completed in September 2010. Existing protected area zoning schemes worldwide were examined to develop a simple and powerful scheme that provides for the required range of visitor experience, access and conservation management. Particular effort was made to maintain consistency with the best developed South African zonation schemes, in particular those of SANParks and Ezemvelo KZN Wildlife (EKZNW). CapeNature Zonation Categories have fewer tourism-access categories, but provide more detailed and explicit guidelines with regard to zone objectives and characteristics. Further, CapeNature Zonation includes additional new zones specifically required in the context of highly sensitive biodiversity sites and zoning of privately owned Contract Nature Reserves. For a guide to the zones as used by CapeNature, see Table 5.1.

Table 5.1: Guide to CapeNature Zones.

Zone	Zone Objective	Characteristics	Visitor Activities	Facilities / Infrastructure	Visitor Access	Management Guidelines
Wilderness / Wilderness (declared)	***Users:*** To provide an experience of solitude in pristine landscapes with minimal evidence of human presence or use. ***Conservation:*** To limit visitor numbers and use to minimise impact. Minimal management intervention for visitor or biodiversity management. Include sensitive or threatened habitats & species in this low use zone when contiguous sites meet the criteria for wilderness.	Completely wild and rugged landscapes (or being restored to this). Areas where users have little chance of encountering any other human presence or group. Sight or sound of human activities outside zone barely discernible and at far distance; Preferably no human impact or infrastructure inside the zone other than trails. Natural burning regimes, with no active fire management and road/firebreak infrastructure. Areas with minimal Invasive Alien Plant infestations, where IAP control can be done without vehicle access. Area must meet the definition and requirements of the National Environmental Management: Protected Areas Act 57 of 2003. If formally declared in terms of the act, zone = "Wilderness (declared)"; if not = "Wilderness".	"Leave-no-trace" activities: Overnight hiking, without any sleeping facilities, formal campsites, or with only basic, un-serviced shelters. "Carry in, Carry out" principle for all food and waste. Guided or unguided nature observation. --- No fires	No infrastructure of any type if possible. No roads or vehicle tracks. No structures except small existing buildings of cultural, historic or aesthetic value. These can be used as un-serviced sleeping shelters for hikers & provided with composting toilets. Narrow permanent walking trails. No signage except small, unobtrusive markers for closed routes, or at trail junctions. **NB** – in the mountainous, slow-growing fynbos of the Western Cape, the traditional wilderness concept of access without defined trails is unsafe and rapidly results in undesirable user-created trails and erosion.	Unguided visitor access only on foot. Visitors have freedom to use various trails. Use of donkeys, horses or other animals with an official guide only on designated historical routes and trails, or existing roads, and only where this will not cause trampling, erosion or any degradation. Limits on visitor numbers and/or control of routes and access so that zone objectives are met. Use of non-motorised canoe or flotation device on rivers can be acceptable where entry is by foot or by river from outside the zone. --- No fires No vehicle access No access without zone permit	***Visitor Management:*** Manage to conserve natural and cultural resources, ecological processes and wilderness integrity. Leave no trace ethic. Restrict numbers of visitors and allow for no-use rest periods if required. Limited management interventions. Management measures may be carried out in extreme conditions, but tread lightly principles must apply. Since visitor use cannot be intensively managed, re-route trails away from any areas with sensitive local habitats or plant and animal species. Trail layout, design and construction must reduce maintenance requirements. ***Conservation Management:*** Habitats with minimal management requirements, typically natural burning zones. Prevent or restore visible trampling or any other impact. Rehabilitate non-essential roads to natural vegetation. Re-zone essential roads out of Wilderness Zoning. ***Consumptive Use:*** Not compatible

Zone	Zone Objective	Characteristics	Visitor Activities	Facilities / Infrastructure	Visitor Access	Management Guidelines
Primitive	***Users:*** To provide an experience of solitude in natural landscapes with little nearby evidence of human presence. Can provide access to and buffer Wilderness Zones. ***Conservation:*** To limit visitor use, numbers and infrastructure to minimise impact in sensitive environments. To reduce need for management of users and visitor impacts. Allows for minimal or more intensive biodiversity management intervention. *Include extensive areas of sensitive or threatened habitats & species in this low use zone when sites do not meet the criteria for wilderness.*	Intrinsically wild appearance & character. Areas where users will seldom encounter other human groups or presence. Any visible human impact or infrastructure inside the zone is unobtrusive. Human activities outside zone may be audible or visible in places. Areas remote from management centres, or otherwise difficult or expensive to access for management. Areas that might not meet the criteria for Wilderness but can serve as undeveloped visual buffers for Wilderness. Areas that may have natural burning regimes, with no active fire management and road/firebreak infrastructure OR areas that require active fire management to stay within thresholds of concern.	Guided or unguided nature observation Primarily intended for hiking or walking access. Only allows for 4x4 routes or vehicle access if specifically considered and noted. Only allows for non-hiking accommodation node if specifically considered and noted.	Deviation from natural state to be minimised. Infrastructure should not be visible from Wilderness Zones. May provide isolated, small, unobtrusive accommodation facilities for up to 16 guests on restricted footprints, particularly for overnight hiking trails. May have defined or beaconed hiking routes, management access roads, tracks and firebreaks. All roads, tracks or trails to be located and constructed to reduce maintenance, visibility and erosion. Where un-surfaced tracks will result in erosion, use concrete strip or interlocking pavers to stabilise. Re-route unstable or erosion-prone road sections if this will lower long-term visual and environmental impact. New roads for visitor access only justified if also required for management access. Avoid wide surfaced roads or roads and tracks wider than required for a single vehicle.	Visitor access only by permit. Control of visitor numbers, frequency and group sizes to meet zone objectives. Only users of facilities/activities will access to this zone. Defined or non-defined hiking and day trail routes. On foot always. Bicycle, 2x4 or 4x4 vehicle, or horseback on designated routes only. --- No access without zone permit	***Visitor Management:*** Manage to conserve natural and cultural resources, ecological processes and wild appearance & character. Restrict numbers of visitors and allow for no-use rest periods if required. All facilities will be small, very basic, self-catering and distributed to avoid contact between users. There should be limited if any interaction between groups. Since visitor use usually cannot be intensively managed, re-route trails away from any areas with sensitive local habitats or plant and animal species. Trail layout, design and construction must reduce maintenance requirements. Visible & audible human impacts from adjacent zones should be mitigated. ***Conservation Management:*** Habitats with lower or higher management requirements. May be natural burning zones. Usually remote areas so roads and trails should be planned and constructed assuming infrequent maintenance. Prevent or restore visible trampling or any other visitor impact. Rehabilitate non-useful roads to natural vegetation. ***Consumptive Use:*** Sustainable use can be appropriate under controlled circumstances subject to a formal assessment and application in accordance with CapeNature policies.

Zone	Zone Objective	Characteristics	Visitor Activities	Facilities / Infrastructure	Visitor Access	Management Guidelines
Nature Access	***Users:*** To provide easy access to natural landscapes with low expectation of solitude at all times. Can buffer between development and wilderness or Primitive Zones. ***Conservation:*** To manage and direct visitor use, and plan infrastructure to minimise impact on sensitive environments. To actively manage users and visitor impacts. Allows for minimal or more intensive biodiversity management intervention. *Provide additional protection to localised sensitive or threatened habitats, species or other features by Special Management Overlays*	Areas with extensive lower sensitivity habitats: Areas able to accommodate higher numbers of visitors regularly, with no identified sensitive or regionally rare biodiversity. Popular view or access sites. Extensive areas able to accommodate roads, trails and tracks without high risk of erosion and degradation. Areas accessible for regular management of roads and trails. Areas where roads and trail infrastructure can be located with low visibility from the surrounding landscape, particularly from adjacent Primitive or Wilderness Zones. Usually areas that require active fire management with firebreaks to stay within thresholds of concern, but may also include natural burning regimes.	Guided or unguided nature observation. Day hiking trails and/or short trails. Bird hides, canoeing, mountain biking & rock-climbing where appropriate. Other activities if specifically considered and approved as part of specific reserve zoning scheme. Motorised 2x4 self-drive access on designated routes. No accommodation or camping. Frequent interaction with other users.	Some deviation from natural/pristine state allowed particularly on less sensitive or already disturbed/transformed sites. No accommodation; but ablution facilities may be provided. May have defined or beaconed hiking routes, tourism and management access roads, and management tracks and firebreaks. Infrastructure should be designed to reduce impacts of higher visitor numbers. Roads open to the public should be accessible by 2x4 sedan. Full width tarred or surfaced roads or roads and tracks to accommodate two vehicles are appropriate. Un-surfaced roads may be surfaced if a road planning exercise has confirmed that the location is suitable.	No special access control or permits required for this zone. Will cater for larger number of visitors than primitive zone. Vehicle access on dedicated routes, with pedestrian access from parking areas or adjacent Development Zones. On water – only non-motorised crafts allowed unless specifically noted.	***Visitor Management:*** More frequent monitoring of these areas is necessary to prevent damage or degradation. More frequent footpath maintenance must be scheduled for busy routes, with particular attention paid to use of railings or other access control to prevent damage to sensitive areas. Unless visitor access can definitely be intensively guided and managed, re-route trails away from any sensitive local habitats or plant and animal species. Trail layout, design and construction must be specified to reduce maintenance requirements under higher use. Visible & audible human impacts to adjacent Primitive or Wilderness Zones should be mitigated. ***Conservation Management:*** Habitats with lower or higher management requirements. May be natural burning zones. Prevent or restore visible trampling or any other visitor impact. Rehabilitate non-useful roads to natural vegetation. ***Consumptive Use:*** Sustainable use may be appropriate subject to a formal assessment and application in accordance with CapeNature policies.

Zone	Zone Objective	Characteristics	Visitor Activities	Facilities / Infrastructure	Visitor Access	Management Guidelines
Development – Low Intensity	***Users:*** To provide access to adjacent natural landscapes with no expectation of solitude. To provide primarily self-catering accommodation or camping. Can provide for Environmental Education accommodation and access into surrounding landscapes. ***Conservation:*** To locate the zone and infrastructure to minimise impact on sensitive environments. To actively manage users and visitor impacts on adjacent sensitive areas. *Provide additional protection to sensitive or threatened habitats, species or other features by Special Management Overlays*	Areas with existing degraded or transformed footprints. Natural or semi-natural habitats only where essential to minimise impacts over whole reserve. Areas able to accommodate high numbers of visitors regularly, with no identified sensitive or regionally rare biodiversity. Areas able to accommodate roads, trails and accommodation infrastructure without risk of erosion or degradation. Areas easily accessible from reserve management centre. Areas where risk of fire damage to infrastructure is low or can be mitigated without unacceptable impacts on surrounding environment. Areas where new infrastructure can be located with low visibility from the surrounding landscape. Areas not visible from Primitive or Wilderness Zones. Areas with available potable water, and not sensitive to disposal of treated wastewater via soak away.	Picnicking. Walking or bicycle access into adjacent areas. Self-catering accommodation and camping. Meeting, workshops or mini-conference activities for no more than the number of people that can be accommodated overnight in the zone. Can provide for Environmental Education accommodation and access into surrounding landscapes, but this must be carefully planned not to conflict with visitor use.	Reception offices. Self-catering accommodation and camping for up to 100 guests in total at any time[1] Single small lodges for up to 30 guests are permissible if all facilities are contained in a compact footprint, this represents the total accommodation for the zone, and any restaurant or catering facilities are for overnight guests only. If possible roads should be narrow with separate incoming and outgoing routes; otherwise double vehicle width roads are strongly advisable for safety and usability. Roads in this zone should be surfaced to reduce management cost and environmental impacts. Development and infrastructure may take up a significant proportion of the zone, but planning should ensure that area still provides relatively natural outdoor experience.	Motorised self-drive 2x4 sedan car access. Tour bus access. Parking areas. This zone should be used to provide parking and walk-in access for day visitors to adjacent Nature Access zone if possible.	***Visitor Management:*** Use infrastructure solutions such as railings, hard surfacing and boardwalks to manage undesirable visitor impacts. Accept negative impacts on natural habitats in this zone unless these are specifically addressed in a Special Management Overlay. Frequent footpath and road maintenance must be scheduled for high impact routes. Visible impacts to adjacent Zones should be considered and mitigated. ***Conservation Management:*** Provide access and generate revenue. Management should aim to mitigate the impacts of the high number of visitors. Largely transformed habitats with lower management requirements. Usually fire exclusion areas. Prevent or rehabilitate visible trampling or any other visitor impact. Plan for a compact overall development footprint, avoiding dispersed infrastructure that will increase fire risk and/or environmental footprint. This is most critical in fire-prone environments. ***Consumptive Use:*** Sustainable use may be appropriate subject to a formal assessment and application in accordance with CapeNature policies.

[1] Although 100 guests seem high this is in line with CapeNature sites that would fall within this zone definition, e.g. configured as 10 x 4-sleeper self-catering units and 15 campsites.

Zone	Zone Objective	Characteristics	Visitor Activities	Facilities / Infrastructure	Visitor Access	Management Guidelines
Development – High Intensity	***Users:*** To provide access to adjacent natural landscapes with no expectation of solitude. To provide low and/or higher density accommodation. May provide some conveniences such as restaurants and shops. ***Conservation:*** To locate the zone and infrastructure to minimise impact on sensitive environments. To actively manage users and visitor impacts on adjacent sensitive areas. *Provide additional protection to sensitive or threatened habitats, species or other features by Special Management Overlays*	Areas with extensive degraded or transformed footprints. Natural or semi-natural habitats only where benefits outweigh impacts. Areas able to accommodate very high numbers of visitors regularly, with no identified sensitive biodiversity. Areas able to accommodate roads, trails and accommodation infrastructure without risk. Areas easily accessible from reserve management centre. Areas where risk of fire damage to infrastructure is low or can be mitigated without unacceptable impacts on surrounding environment. Areas where new infrastructure can be located with low visibility from the surrounding landscape. Areas not visible from Primitive or Wilderness Zones. Areas with available potable water, and not sensitive to disposal of larger amounts of treated wastewater.	Restaurants and small shops. Picnicking. Walking or bicycle access into adjacent areas. Accommodation in small hotels, lodges and higher density self-catering accommodation and/or camping. Meetings, workshop or mini-conference activities for no more than the number of people that can be accommodated overnight in the zone.	High density tourism development nodes`. Modern amenities including restaurants & shops. Self-catering accommodation and camping for over 100 guests in total at any time. Lodges or small hotels. Roads in this zone must be surfaced to reduce management cost and environmental impacts. Development and infrastructure may take up a significant proportion of the zone, but planning should ensure that area still provides relatively natural outdoor experience.	Tour bus access. Motorised self-drive sedan car access. Parking areas. Air access only permitted if considered and approved as part of zoning scheme and there is no possibility of faunal disturbance.	***Visitor Management:*** Management action will focus mostly on maintenance of facilities & providing high quality experiences. Use infrastructure solutions such as railings, hard surfacing and boardwalks to manage undesirable visitor impacts. Accept substantial impact on natural habitats in this zone unless these are specifically addressed in a Special Management Overlay. Frequent landscape, footpath and road maintenance must be scheduled for high impact areas. Visible impacts to adjacent Zones should be mitigated. ***Conservation Management:*** Provide access and generate maximum revenue. Management should aim to mitigate the biodiversity impacts of the high number of visitors only in sensitive areas (if any) identified by Special Management Overlay. These are highly transformed habitats with lower management requirements. Natural fire exclusion areas. Prevent or rehabilitate visible trampling or any other visitor impact. Plan for a compact overall development footprint, avoiding dispersed infrastructure that will increase fire risk and/or environmental footprint. This is most critical in fire-prone environments. ***Consumptive Use:*** Sustainable use unlikely to be compatible.

Zone	Zone Objective	Characteristics	Visitor Activities	Facilities / Infrastructure	Visitor Access	Management Guidelines
Development - Management	Location of infrastructure and facilities for Reserve Administration & especially conservation management facilities Not compatible with tourism and tourism access.	Areas with extensive degraded or transformed footprints. Natural or semi-natural habitats only where benefits at reserve scale outweigh local impacts. Areas able to accommodate high disturbance, with no identified sensitive biodiversity. Areas providing easy access to reserve and infrastructure. Areas very close to zones requiring highest management intervention, especially Low/High Intensity Zones. Areas where risk of fire damage to infrastructure is low or can be mitigated without unacceptable impacts on surrounding environment. Areas where new infrastructure can be located with low visibility from the surrounding landscape. Areas not visible from Primitive or Wilderness Zones. Areas with available potable water, and not sensitive to disposal of treated wastewater.	n/a	Any reserve management infrastructure including offices, sheds, garages, stores, etc. Roads required to access these should be surfaced to reduce long-term maintenance costs and environmental impact. *NOTE* *Reserve administrative offices may also be located within visitor reception facilities in Development - Low/High Intensity Zones*	none	***Visitor Management:*** n/a ***Conservation Management:*** Frequent footpath and road maintenance must be scheduled for high impact routes. Accept some impact on natural habitats in this zone unless these are specifically addressed in a Special Management Overlay. Visible impacts to adjacent Zones should be mitigated. Management should aim to contain all activities within the smallest possible footprint. Largely transformed habitats with lower management requirements. Usually fire exclusion areas. Prevent or restore trampling or any other management impact. Plan for a compact overall development footprint, avoiding dispersed infrastructure that will increase fire risk and/or environmental footprint. This is most critical in fire-prone environments. ***Consumptive Use:*** Sustainable use unlikely to be possible in small zone.

Species / Habitat / Cultural Protection Zones: The remainder of the reserve is a Species / Habitat Protection Zone reflecting the critically sensitive nature of the reserve. No public access is permitted onto Dyer Island and Geyser Island, with access only permitted to CapeNature officials or duly authorised persons to conduct essential monitoring, research or management activities. Only research certain or very highly likely to contribute to the conservation of Threatened Species on the island will be permitted.

Relatively low volume access by whale and shark viewing operators into the 500m marine buffer included in the reserve proclamation is currently not restricted, but it is noted that this should be considered a sensitive bird foraging and access area. Future restrictions on vessel numbers and type of access may be implemented by CapeNature if required to prevent any negative conservation impacts or to maintain visitor experience, and CapeNature may implement an access permitting process and fee if required.

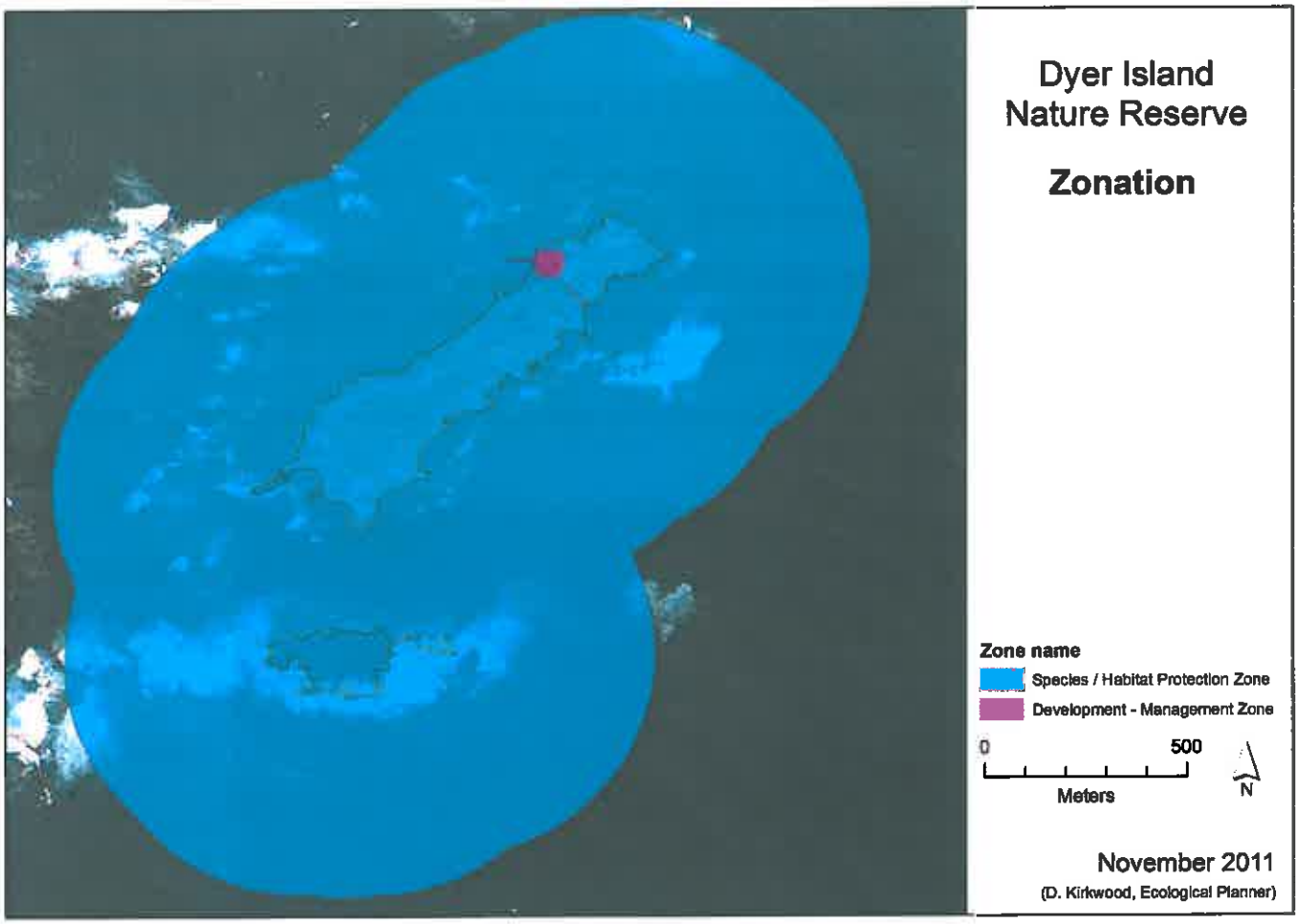

Figure 21: Zonation of the Dyer Island Nature Reserve Complex

5.4 Access

Access to the islands is strictly controlled due to the sensitivity of the populations of breeding birds; however, the marine section of the nature reserve is regularly accessed for boat based tourism and kelp harvesters. Access is granted to researchers who have followed the research application protocol and are in possession of a valid permit.

Two areas (one existing and one proposed) have been identified on DINR for boat access and one site for aerial access by helicopter in emergencies only (Figure 22). No access points are identified for Geyser Island and Quoin Rock nature reserves.

Access protocols and a code of conduct for personnel and researchers on the island are dealt with in Section 7.

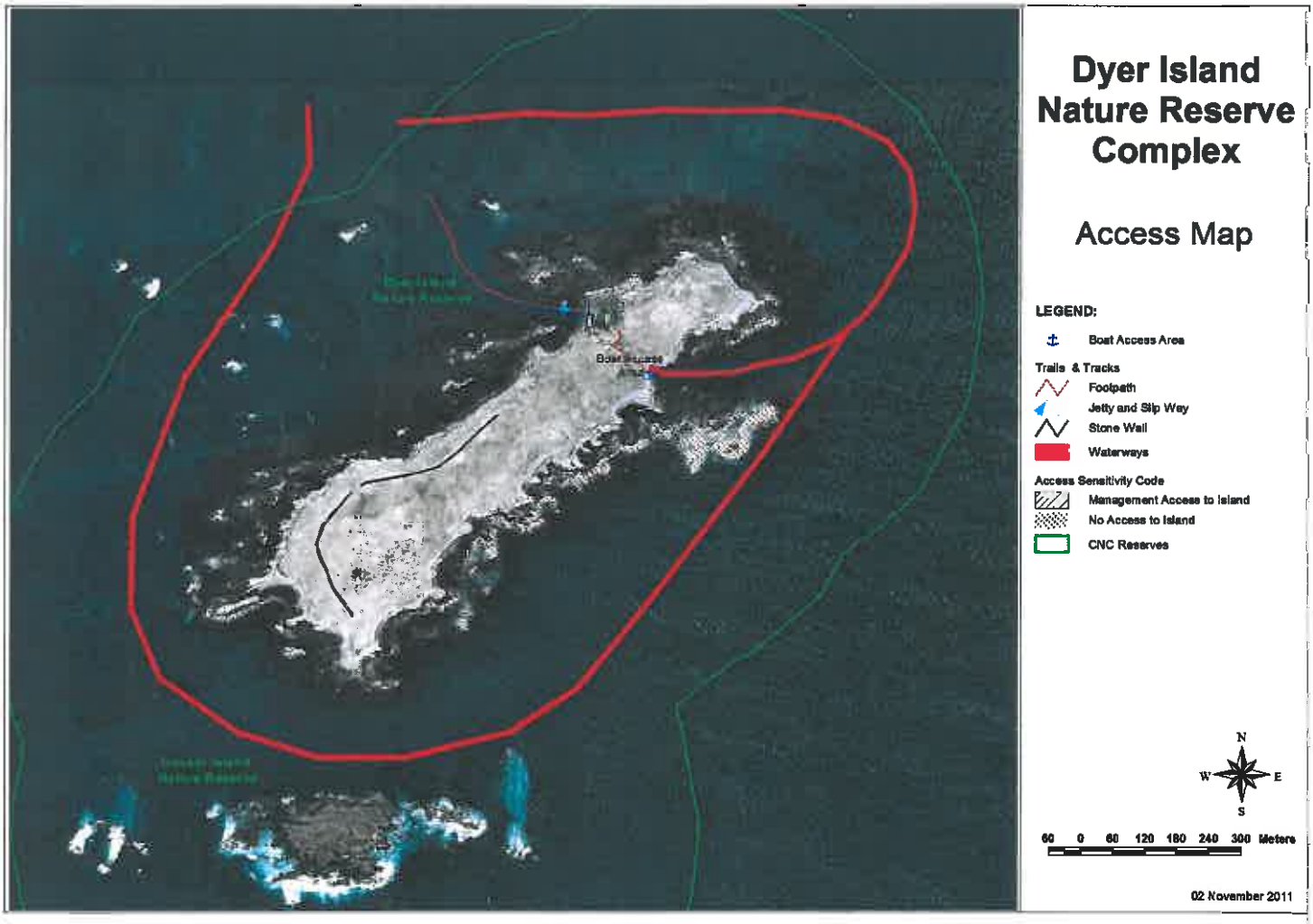

Figure 22: Access and facilities for the Dyer Island Nature Reserve Complex.

5.5 Concept Development Plan

The total Development Management Zone for DINRC is illustrated in Figure 21, and primarily consists of the compound, where the operational buildings and structures are located, illustrated in Figure 18. The buildings provide storage, workspace and accommodation to staff. Upgrades and maintenance to some of these buildings are likely to occur within the next five years subject to funding available from the Department of Public Works. A jetty and slipway exists in order to land on the island and launch from it by boat.

Existing buildings are adequate for required management accommodation and activities, and no trails are required. Management access via the existing jetty can be a problem in certain weather conditions, and an additional jetty to ensure that officials can safely reach or leave the island, particularly in the event of an emergency, is required. The proposed location at 34° 40' 53.08" S 19° 25' 13.85" E on the opposite side of the island is currently considered the most suitable in terms of sheltered access when access to the existing jetty is impossible, while also being close to the management centre to minimise any disturbance during access.

Figure 23 provides a detailed illustration of the existing and proposed infrastructure development on Dyer Island Nature Reserve. There are no developments on Geyser Island or Quoin Rock Nature Reserves.

There are no roads or vehicular access on DINRC.
There are no trails needing maintenance on DINRC.
There are no fences on DINRC.
There are no High Sites containing radio transmitters on DINRC.

No tourism infrastructure development is planned for DINRC.

In light of the historical nature of much of the existing infrastructure on the island, any heritage impacts and authorisation requirements of any significant infrastructure upgrades should be carefully assessed before proceeding. All upgrades to existing infrastructure will be required to go through an Environmental Management Plan process to be submitted to the Reserve Management Committee for approval. All work will be scheduled to fall outside of the seabird breeding season, keeping in mind that this season does not overlap for all breeding seabirds on Dyer Island.

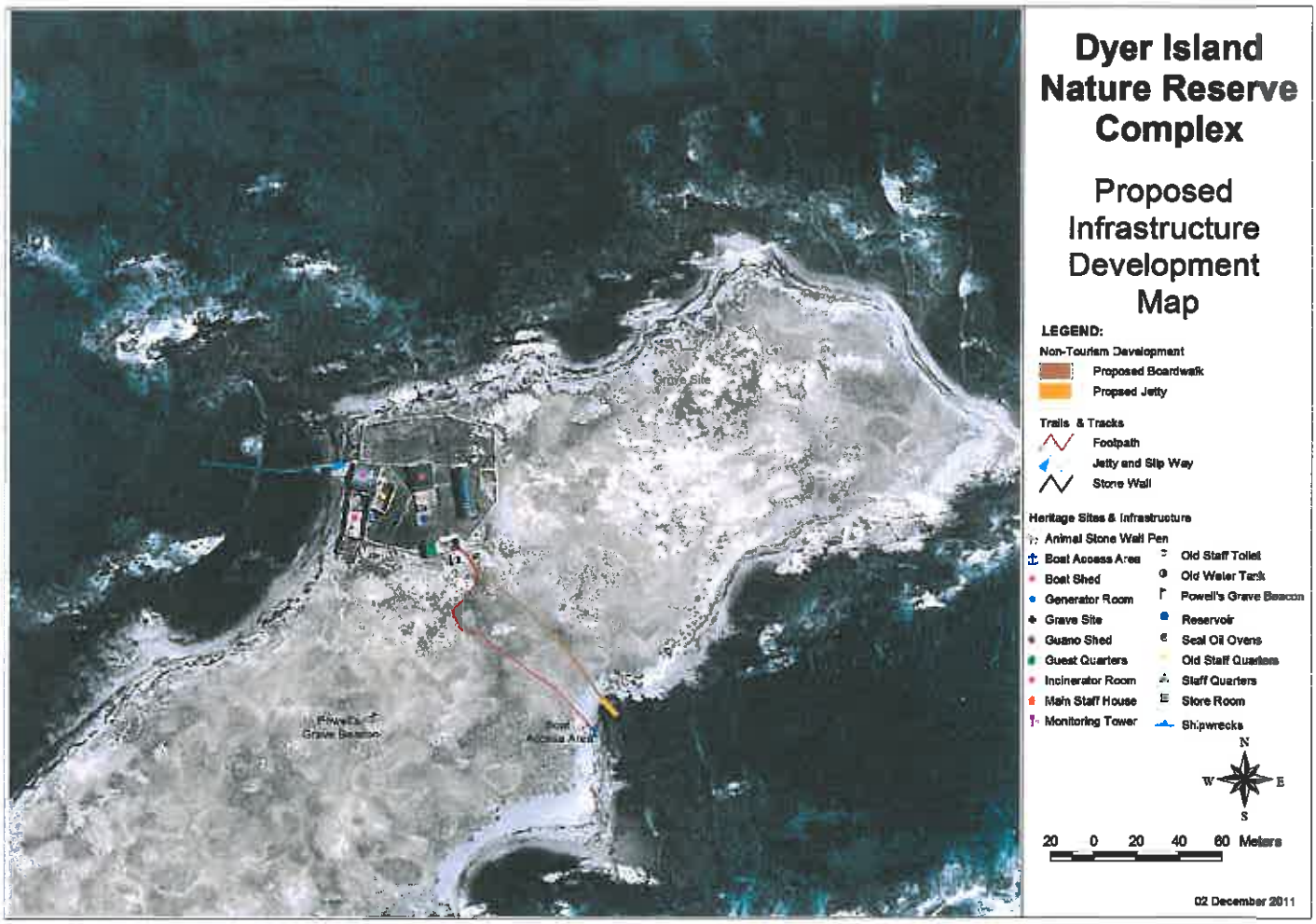

Figure 23: Proposed Infrastructure Development Plan for the Dyer Island Nature Reserve Complex

SECTION 6: RESERVE EXPANSION STRATEGY

6.1 Protected Area Expansion

6.1.1 Introduction

The establishment and management of a provincial protected area system which is aligned with the National Protected Area Expansion Policy (South African National Biodiversity Institute and Department of Environmental Affairs 2010), is a key strategic approach to the conservation of the globally significant biodiversity of the Western Cape. Several conservation planning initiatives, have been, and will in future be used to inform a consolidated Provincial Protected Area Expansion Strategy.

The strategy aims to guide expansion priorities which:

- Contribute towards meeting national and provincial biodiversity targets [2]
- National and provincial protected area targets[3]

Several mechanisms are available for the expansion of protected areas in order to meet both biodiversity and protected area targets. A further requirement in order to adequately manage these protected areas is the establishment and management, co-management or management guidance of buffer areas. Protected area expansion and buffer areas, although closely linked, will be dealt with as two distinct activities.

6.1.2 Spatial Focus

The National and Provincial Protected Area network was assessed at a broad scale by the National Spatial Biodiversity Assessment (NSBA, now NBA) and the National Biodiversity Framework (NBF). The NBA (Driver *et al.* in prep) identified crucial freshwater, estuarine and marine conservation priorities to inform the Protected Area Expansion strategy for the Western Cape.

CapeNature employs several conservation planning products which may inform the CapeNature Protected Area Expansion Strategy and Implementation Plan 2010-2015 (Purnell *et al.* 2010) in order to meet national and provincial biodiversity targets as well as protected area targets. These include the Conservation Action Plan (CAP) map, Important Biodiversity Layers (IBL) and the various regional Fine Scale Plans (e.g. Matzikama, Saldanha Peninsula).

6.2 Marine Protected Area Expansion

The historical context of fragmentation in legislation and strategies regarding marine and terrestrial conservation planning has particular reference to implementation of protected area expansion. Prior to the National Spatial Biodiversity Assessment (NSBA) (Driver *et al.* 2005), marine habitats had never been mapped for all of South Africa's waters. There was no consensus on an approach for mapping marine habitats or even agreement that this was possible, with little spatial assessment ever having been done in the marine environment. The NSBA marine team led a series of workshops to agree on an approach and then gathered the data required to do the mapping which resulted in the

[2] Biodiversity targets refer to how much of a biodiversity feature should be protected in order for it to persist.
[3] Protected Area targets refer to the area of land which should be represented in Protected Areas by a certain date

mapping of 34 marine biozones. These biozones extend from the coastal zone to the end of the Exclusive Economic Zone (EEZ), which marks the end of South African waters. The status of marine ecosystems, using the marine biozones and the level of impact on those biozones, was assessed: 65 % of marine biozones are threatened with 12 % critically endangered, 15 % endangered, 38 % vulnerable and 35 % least threatened.

MPA targets are based on underlying targets for marine bioregions. South Africa's mainland EEZ is divided into five inshore marine bioregions and four offshore marine bioregions. The most important areas for protected area expansion have been identified as the Namaqua inshore and offshore areas, the Agulhas Bank and the Prince Edwards Islands EEZ.

The NSBA Technical Report for the Marine Environment (Lombard *et al.* 2004) is a spatial assessment of the conservation status of selected marine biodiversity patterns in South Africa's marine environment. The scale is national and the results can be interpreted at a national scale only. It is not intended to provide fine-scale spatial solutions and it does not cover all marine biodiversity patterns nor does it address biodiversity processes. The biodiversity patterns addressed include the intertidal (both species and habitats) and the sub-tidal (abiotic sediments). Notable exceptions are fish, birds, reefs and the water column. Owing to data availability and time constraints, the study was confined to that component of marine biodiversity that can currently be mapped at a national scale and is not mobile. It acknowledges that one of the most threatened components of marine biodiversity is the fish fauna and that a separate assessment of fish conservation status is required when appropriate data have been collated in a usable format. The report is, therefore, not useful for fisheries management and does not provide information on sustainable use. It is, however, useful for improving biodiversity management in the marine environment.

An intergovernmental task team (still to be formalized) will be looking at integrating the systems and species for future MPA and MPA expansion planning and aims to develop clear objectives for each MPA and then plan expansion processes accordingly.

The CapeNature PAES will be updated to accommodate national strategy with regard to Marine Protected Area expansion and will interact with other organs of state towards contributing to the National Biodiversity Assessment (NBA, previously NSBA) to inform MPA Expansion. South Africa's MPAs are declared in terms of the Marine Living Resources Act, 1998, which is administered by the DEA: O&C. This will be the primary informant to any MPA expansion pertaining to DINRC. Furthermore, research undertaken by the relevant government departments and academic institutions will be used to inform MPA planning and expansion and further stakeholder engagement will take place.

Future expansions will be largely focused on consolidating a larger marine protected area around Dyer and Geyser islands. This area will serve to protect the pelagic fish stock in the waters surrounding Dyer Island, thereby protecting the fish within the foraging range of breeding seabirds, especially the endangered African penguin whose numbers have severely declined between 2006 and 2011. Apart from the benefits to the seabird species breeding on Dyer Island, this could also substantially benefit the local subsistence and recreational fishing communities which rely heavily on the natural movements of the pelagic fish.

PART 3

SECTION 7: STRATEGIC IMPLEMENTATION FRAMEWORK

7.1 Management Programmes

This section summarises the DINRC's Strategic Implementation Framework which guides the implementation of the management plan over five years to ensure that it achieves its management objectives.

7.1.1 Legal Status and Reserve Expansion

Dyer Island Provincial Nature Reserve, established as a provincial nature reserve in terms of section 6 the Nature Conservation Ordinance, 1974, on 9 March 1998 and proclaimed in the Provincial Gazette of 18 March 1988 by Proclamation No. 23/1988;

Geyser Island Provincial Nature Reserve, established as a provincial nature reserve in terms of section 6 the Nature Conservation Ordinance, 1974, on 9 March 1998 and proclaimed in the Provincial Gazette of 18 March 1988 by Proclamation No. 23/1988;

Quoin Rock Provincial Nature Reserve, established as a provincial nature reserve in terms of section 6 the Nature Conservation Ordinance, 1974, on 9 March 1988 and proclaimed in the Provincial Gazette of 18 March 1988 by Proclamation No. 23/1988;

Dyer and Geyser Island Provincial Nature Reserves, amendment of the boundaries by the extension of the area of jurisdiction in terms of section 6 of the Nature Conservation Ordinance, 1974, on 14 November 1997 and proclaimed in the Provincial Gazette of 15 May 1998 by Proclamation No. 15/1998 (the amendment extended the Nature Reserve's restricted area and took effect on 1 June 1998).

7.1.2 Legislation

- National Environmental Management: Protected Areas Act, (Act No. 57 of 2003) (NEM: PAA)
- National Forest Act, (Act No. 84 of 1998)
- Marine Living Resources Act, (Act No. 18 of 1998)
- Nature Conservation Ordinance, (Ordinance No. 19 of 1974)

All parcels of land of the Dyer Island Nature Reserve Complex need to be consolidated and awarded secure conservation status in terms of the NEM: PAA.

Section 9 of the NEM: PAA recognises the following kinds of protected areas:

- Special Nature Reserves, National Parks, Nature Reserves (including Wilderness Areas) and Protected Environments
- World Heritage Sites

- Specially protected Forest Areas, Forest Nature Reserves and Forest Wilderness Areas declared in terms of the National Forests Act, (Act No. 84 of 1998)
- Mountain Catchment Areas declared in terms of the Mountain Catchment Areas Act, (Act No. 63 of 1970).

Section 12 of the NEM: PAA, recognises a protected area which immediately before this section took effect was reserved or protected in terms of provincial legislation for any purpose for which an area could in terms of this Act be declared as a nature reserve or protected environment, must be regarded to be a nature reserve or protected environment for the purpose of this Act, including:
Provincial Nature Reserves (including islands) established in terms of the Nature Conservation Ordinance, 1974; and

Section 38(4) of the NEM: PAA requires marine and terrestrial protected areas with common boundaries to be managed as an integrated protected area by a single management authority including:

- Any Marine Protected Areas declared in terms of the Marine Living Resources Act, (Act No. 18 of 1998) sharing a common boundary with the terrestrial protected area.

7.1.3 Guiding Principles

- Reserve management will ensure the nature reserve is awarded secure legal status as a Special Nature Reserve according to the Protected Areas Act.
- Reserve management will ensure that the nature reserve boundaries are clearly demarcated and known to local residents.
- Reserve management shall identify and prioritise marine areas, to be incorporated into the reserve through an on-going systematic, defensible and socially acceptable procedure in accordance with the National Spatial Biodiversity Assessment (NSBA) (Driver *et al*. 2005).
- Reserve management shall, with the co-operation of stakeholders, strive to prevent any fragmentation of the nature reserve and of areas that have been identified for inclusion into the nature reserve.

7.1.4 Management Actions

Refer to Table 7.1

7.1	LEGAL STATUS AND RESERVE EXPANSION				
Objective 4	**To secure effective protection of biodiversity on Dyer Island Nature Reserve Complex.**				
Key Deliverables	**Management/Monitoring Activities**	**Responsibility**	**Indicators**	**Timeframe**	**Reference to Existing Procedures**
1. The DINRC has secure permanent legal conservation status in terms of NEM: PAA.	• Submit proclamation motivation for the DINRC (excluding Quoin Rock Nature Reserve) in terms of NEM: PAA as a special nature reserve. • Proclaim Quoin Rock Nature Reserve in terms of NEM: PAA as a nature reserve.	Area Manager, Conservation Manager; CapeNature Executive; Law Administration.	The DINRC is legally secure.	Year 1-2	DEA Management Plan Guidelines, National Norms and Standards for Management of Protected Areas, METT-SA, copies of title deeds, diagrams, noting sheets and proclamations
2. The DINRC boundary is known and appropriately demarcated and secure (Subject to funding availablity)	• Survey boundaries for inclusion in the gazetted proclamations. • Procure the services of a Land Surveyor to survey the High Water Mark on Dyer and Geyser Island; • Compile an accurate map, inclusive of the proclaimed marine section of the nature reserve with appropriate demarcations; • Amend the CapeNature corporate GIS information database. • Ensure the public are aware of location of gazetted surveyed boundaries.	Conservation Manager, Area Manager, GIS Technician; Law Administration.		Year 1-2	Nature Reserve Proclamations, Legal opinions re. Proclamation of marine nature reserve, CapeNature Corporate GIS database
3. The DINRC design (size and shape) are adequate to achieve the conservation objectives in the SMP.	• Investigate the establishment of a Marine Protected Area around Dyer and Geyser Islands in consultation with stakeholders.	MEC, CapeNature Executive, Program Manager: Marine, Islands & Estuaries, Conservation Manager, Area Manager, Regional Ecologist.		Year 1 – 5	DEA: MPA Expansion, Agulhas MPA Expansion, SANBI Marine Protected Areas Priorities
4. To consolidate all possible land within the DINRC, as well as other identified conservation-worthy areas adjacent to and contiguous with the reserve as identified.	• Investigate the inclusion of the DINRC in the Benguela World Heritage Nomination.	Scientific Manager: Biodiversity.	Hectares added to the conservation estate (TBD).	Year 1-5	CapeNature Protected Area Expansion Strategy and Implementation Plan 2010-2015; Extension nomination for the Cape Floral Region Protected Areas World Heritage Site

Budget allocation	**Development**	
	Operation (5 Year Forecast)	R 84 417.83

7.2 Regional Integrated Planning and cooperative Governance

7.2.1 Legislation

When South Africa implemented the new Constitution [Constitution of the Republic of South Africa Act, (Act No. 108 of 1996)], adopted in 1996, it included a South African innovation: a chapter on 'cooperative government', which aims to ensure good relations between South Africa's three spheres of government.

- Intergovernmental Relations Framework Act, (Act No. 13 of 2005).

It is therefore essential that co-operative relationships are maintained and improved with all spheres of government and stakeholders and that all directly or indirectly contribute to the attainment of the vision and objectives of the Dyer Island Nature Reserve Complex. The same applies to regional planning and initiatives within the Province.

7.2.2 Guiding Principles

- Reserve management shall co-operate with national, provincial and local government and stakeholders in strategic conservation initiatives aimed at conserving conservation-worthy areas adjacent, or related, to the nature reserve.
- Reserve management, together with relevant authorities, shall strive to integrate planning and development in areas of their respective control.
- Reserve management shall, in co-operation with the local and provincial authorities, strive to avoid further fragmentation of contiguous natural areas within and adjacent to the nature reserve.
- Reserve management shall co-operate with other conservation initiatives adjacent to the nature reserve, especially where these are contiguous with the nature reserve.

7.2.3 Management Actions

Refer to Table 7.2.

7.2	REGIONAL INTEGRATED PLANNING AND COOPERATIVE GOVERNANCE				
Objective 5 **Objective 9**	**To ensure and secure sound governance and the implementation of policies, plans, systems, strategies, procedures and agreements for the management of Dyer Island Nature Reserve Complex.** **To improve conservation management and transparency and engaging with communities and stakeholders.**				
Key Deliverables	**Management/Monitoring Activities**	**Responsibility**	**Indicators**	**Timeframe**	**Reference to Existing Procedures**
1. The DINRC is integrated into land-use planning outside of the nature reserve.	• Establish and maintain an inter-governmental task team with DEA: Oceans & Coast, SANParks and Robben Island management. • Participate in and liaise with the Pelagic Working Groups. • Maintain and implement an MOU with DEA: Oceans & Coast. • Develop, integrate and implement a Biodiversity Management Plan (BMP-s) for the African penguin in collaboration with DEA: Oceans & Coast and DEA: Biodiversity & Conservation. • Develop and implement an MOU with the Overstrand Municipality with regard to the management and monitoring of the Stony Point African penguin population. • Inform and integrate the management objectives for the DINRC into the SDF's and IDP's of the Overberg District and Overstrand local municipalities. • Inform and integrate the management objectives for the DINRC into provincial conservation plan and the SANBI marine conservation plans. • Implement CapeNature MOU with SANCCOB. • Implement CapeNature MOU with the Dyer Island Conservation Trust. • Represent DINRC on the Regional Coastal Committee.	Conservation Manager, Program Manager: MPA, Islands & Estuaries, Scientist: Ornithologist, Regional Ecologist, Ecological Coordinator, Community Conservation Manager, Scientist: Conservation Planner	The protected area is integrated into land-use planning outside of the protected area	Year 1 -5	ToR for Dyer & Dassen Island Working Group, MOUs (DEA: Oceans & Coast, Overstrand Municipality, SANCCOB, DICT, SANP), NEM: BA, National Norms & Standards for compiling BMP's, IDP
2. Establish a functioning Advisory committee for the DINRC.	• Identify Stakeholders and initiate stakeholder participation processes in line with the CapeNature Stakeholder Participation Process; • Appoint an independent facilitator to manage the stakeholder participation process; • Establish a Protected Area Advisory	Conservation Manager, Community Conservation Manager.	Advisory committee for the DINRC has been established, is functioning and effective.	Year 1, on-going	Ref Section 10.1.3; Draft regulations for proper the administration of nature reserve (2009). CapeNature Stakeholder

	Committee (PAAC) for the DINRC; • Develop and apply a Terms of Reference for involvement of stakeholders in strategic decision-making; • Attend and participate in PAAC meetings				Process, ToRs (facilitator, PAAC), DINRC Integrated Management Plan

Budget allocation	**Development**	
	Operation (5 Year Forecast)	R 33 767.13

7.3 Ecosystem and biodiversity management

Conserving biodiversity is vital, not only in terms of its intrinsic values but because many economic activities are based on healthy and functioning natural ecosystems. Any use of natural resources must be sustainable and the conservation and management of biodiversity is essential for the maintenance of natural ecosystems.

7.3.1 Legislation

Although all legislation mentioned in Part 1 can be applied, the following is specific to the conservation of biodiversity:

- National Environmental Management Act, (Act No. 107 of 1998)
- National Environmental Management Biodiversity Act, (Act No. 10 of 2004)
- National Environmental Management: Protected Areas Act, (Act No. 57 of 2003)
- Conservation of Agricultural Resources Act, (Act No. 43 of 1983)
- Sea Birds and Seals Protection Act, (Act No. 46 of 1973)
- Western Cape Nature Conservation Board Act, (Act No. 15 of 1998)
- Nature Conservation Ordinance, (Ordinance No. 19 of 1974)
- Threatened or Protected Species Regulations, 2007
- Alien and Invasive Species Regulations, 2009 (still in draft form)
- CITES Regulations, 2009
- NEM:PAA, (Act No. 57 of 2003) Regulation 99: Proper administration of nature reserves (Government Gazette No. 35021 Vol. 560, No. 6979, February 2012).
- Norms and Standards for the compilation of Biodiversity Management Plans for Species (BMP-s) in terms of. NEM: BA
- Norms and Standards for the management of protected areas in South Africa (still in draft)) in terms of NEM: PAA

7.3.2 Guiding Principles

- Biodiversity resources must be conserved at community and species levels in the long term and the reduction of population levels of individual species, or the extinction of any species, as a result of human activity, must be prevented.
- Adequate management attention must be given to maintaining and improving, where relevant, the status of endemic, rare or threatened species (species of conservation concern).
- The unintentional and intentional introduction into the reserve of all non-native plants or plant materials will be controlled.
- To the best of the reserve management's ability, the unintentional and intentional introduction into the reserve of all non-native invertebrates and pathogens will be controlled.
- An active adaptive management, minimum intervention approach, based on scientific evidence will be followed.
- Water resource development and supply activities shall be managed in a manner which is consistent with the broader national approaches to environmental management.
- The knowledge base available to the reserve will be promoted and developed to support applied and other research.
- Research cooperation and collaborative partnerships will be established and maintained.

- Research that will assist in informing management decisions will be supported.
- All research carried out on CapeNature reserves requires permits.

7.3.3 Threats to Biodiversity and Ecosystems

- Loss of suitable breeding habitat for breeding seabirds.
- Increased competition for food resources between species and between humans and wild species
- Fragmented management mandates, underdeveloped and poorly integrated legal protection measures
- Poaching of marine resources.
- Negative impacts from uncontrolled tourist activities (boat based tourism)
- Chronic oil and other pollution
- Oil spills
- Marine entanglements and plastic ingestion by seabirds and other marine animals
- Climate change
- Land based developments
- Disease outbreaks (among birds)
- Poor public awareness
- Inadequate land based waste management
- Negative impacts from uncontrolled research and monitoring activities

7.3.4 Management Actions

Refer to Table 7.3.

7.3	ECOSYSTEM AND BIODIVERSITY MANAGEMENT
Objective 1	**To conserve, monitor and research the resident and non-resident breeding seabird species with special emphasis on the African penguin at Dyer Island Nature Reserve Complex.**
Objective 2	**To maintain and restore natural ecosystem processes on Dyer Island Nature Reserve Complex.**
Objective 3	**To conserve, research and monitor mammals, in the Dyer Island Nature Reserve Complex.**
Objective 5	**To ensure and secure sound governance and the implementation of policies, plans, systems, strategies, procedures and agreements for the management of Dyer Island Nature Reserve Complex.**
Objective 6	**To ensure and enhance biodiversity conservation and establish research partnerships towards applied research on Dyer Island Nature Reserve Complex and associated biodiversity.**
Objective 8	**To promote biodiversity conservation awareness and communication on Dyer Island Nature Reserve Complex.**

Key Deliverables	**Management/Monitoring Activities**	**Responsibility**	**Indicators**	**Timeframe**	**Reference to Existing Procedures**
1. Compile an Ecological Plan of Operation and Ecological Matrix for DINRC.	• Develop and implement an approved Ecological Matrix for the DINRC. • Compile an Ecological Plan of Operations to support the Ecological Matrix. • Collate all relevant monitoring and research protocols and data sheets to inform the Ecological Plan of Operations.	Conservation Manager, Ecological Coordinator, Regional Ecologist.	The DINRC will annually indicate an upward trend in METT-SA score. 100% of actions identified in the integrated auditing system will be implemented.	Year 1, on-going	Island Closure Task Team ToR, African penguin BMP-s (draft), Ecological Matrix, Ecological Plan of Operations, BCLME Report
2. A biodiversity resource inventory for the DINRC is in place.	• Collect specimens (where relevant) and submit to Scientific Services. • Analyse data, re-assess and implement adaptive management strategies. • Map and survey abalone distribution; • Map and survey kelp forest distribution. • Map and survey reefs. • Conduct an inter-tidal diversity assessment.	Conservation Manager, Ecological Coordinator, Regional Ecologist.		Year 1, on-going	Baseline data collection and monitoring manual (2010)
3. A biodiversity monitoring programme for the DINRC is being implemented.	• Prioritisation of species for inclusion in the Ecological Matrix. • Implement the Ecological Matrix. • Record all entanglements and strandings of cetaceans, whales, seals (excluding Cape Fur seal) and seabirds and document relevant morphometric measurements. • Review monitoring protocols. • Identify monitoring needs of the reserve in consultation with Scientific Services. • Establish indicators for monitoring. • Implement monitoring activities as per the Ecological Matrix. • Report on monitoring activities as per the Ecological Matrix to the Island	Conservation Manager, Ecological Coordinator, Regional Ecologist, Scientist: Ornithologist.		Year 1, on-going	Baseline data collection and monitoring manual (2010)

Key Deliverables	Management/Monitoring Activities	Responsibility	Indicators	Timeframe	Reference to Existing Procedures
	Closure Task Team, The Ecosystem Approach to Fisheries Working Group and the African penguin BMP-s Steering Committee. • Analyse data, re-assess and implement adaptive management strategies. • Implement the monitoring programme as per the Island Closure Task Team ToR; EAF requirements; African penguin BMP-s, DEA O&C and other relevant national monitoring projects/programmes. • Collection of climatic data on the DINRC including sea temperature.				
4. A research programme for the DINRC is being implemented.	• Identify research needs for the reserve. • Develop and implement an applied research programme for the reserve in consultation with Scientific Services and relevant tertiary and research institutions. • Evaluate and comment on research permit applications • Maintain a Research Register for DINRC • Results of research projects are fed back to the management of the reserve. • Results are used to adapt management of the nature reserve where relevant. • Assist with access, data collection and supervision for approved research projects.	Conservation Manager, Ecological Coordinator, Regional Ecologist.		Year 1, on-going	African penguin BMP-s, CapeNature Research Permit Application Protocol, IUCN Guidelines
5. The DINRC contributes to the maintenance of ecosystem services.	• Design and implement appropriate alien invasive management (Refer to Table 7.6) programme.	Conservation Manager, Ecological Coordinator, Regional Ecologist.		Year 1, on-going	
6. Conserve, protect and manage Marine Protected Areas (MPA).	• Conduct side scanning mapping of DINRC, subject to funding. • Conduct spatial analyses on the priority biodiversity attributes of the area to inform planning of an appropriately zoned MPA; • Evaluate and adopt appropriate mechanism to support recommendations made in the NSBA Technical Report: Marine and the	Conservation Manager, Ecological Coordinator, Regional Ecologist, Programme Manager: MPA, Islands & Estuaries.		Year 1, on-going	NSBA Technical Report: Marine, SANBI OMPA Draft Report,

Key Deliverables	Management/Monitoring Activities	Responsibility	Indicators	Timeframe	Reference to Existing Procedures
	SANBI OMPA report.				
7. Conservation of Threatened and Endemic Fauna	• African penguin: improve breeding habitat through artificial nests; maintain role as partner in African penguin chick bolstering project; expand duration and extent of island closure • Marine mammals: assist with entanglements; contribute where possible towards identification database of marine mammals	Conservation Manager, Ecological Coordinator, Regional Ecologist.		Year 1, on-going	Island Closure Task Team ToR, African Penguin BMP-s (draft), Ecological Matrix, Ecological Plan of Operations, BCLME Report
8. Manage consumptive utilisation of biological resources.	• Database established indicating all utilised species and the extent of their use within the reserve.	Conservation Manager.		Year 5	CapeNature Policy on consumptive utilisation (2007).

Budget allocation	Development	
	Operation (5 Year Forecast)	R 928 596.15

7.4 Wildlife Management

7.4.1 Legislation

- Western Cape Nature Conservation Ordinance, (Ordinance 19 of 1974)
- Regulations proclaimed in terms of the Ordinance, Provincial Notice 955 of 1975.
- Sea Birds and Seals Protection Act, (Act No. 46 of 1973)

7.4.2 Guiding Principles

- Lethal control may be used as a management tool in certain instances. This should be professionally done through a tender process. Species must be selected only through extensive research and knowledge of population dynamics.
- Damage causing wildlife/nuisance fauna shall be managed in a humane manner, through recommendation from CapeNature's Wildlife Advisory Committee and authorisation from CapeNature Executive.

7.4.3 Management Actions

Refer to Table 7.4.

7.4	WILDLIFE MANAGEMENT				
Objective 2	**To maintain and restore natural ecosystem processes on Dyer Island Nature Reserve Complex.**				
Key Deliverables	**Management/Monitoring Activities**	**Responsibility**	**Indicators**	**Timeframe**	**Reference to Existing Procedures**
1. Manage damage causing/ nuisance fauna.	• Monitor Kelp Gull Predation. • Monitor Seal Predation. • Compile Damage Causing/Nuisance Animal Management Protocol for Seals, Pelicans, Kelp Gulls and other species where relevant. • Provide DEA: Oceans and Coast with data on losses and culls. • Motivate for recommendation from the Wildlife Advisory Committee. • Motivate for adaptive management permitting for the removal of damage causing individuals by DEA: Oceans & Coast. • Report on monitoring and research to the African Penguin BMP-s Steering Committee.	Conservation Manager, Ecological Coordinator, Regional Ecologist, Scientist: Ornithologist, Scientist: Mammalogist, Program Manager: Wildlife Management	Decrease in recorded predation on seabirds, eggs and chicks by Kelp Gulls and Cape Fur Seals.	Year 1, on-going	CapeNature Wildlife Advisory Committee, Permits: DEA: Oceans & Coast, African Penguin BMP-s

Budget allocation	**Development**	
	Operation (5 Year Forecast)	R 16 883.57

7.5 Fire Management

Fire Management is not relevant to the conservation and management of DINRC.

7.6 Invasive and Non-invasive Alien Species Management

7.6.1 Legislation

Although most legislation mentioned in Section 2.1 can be applied, the following is specific to the eradication of alien and invasive species:

- Section 64 to 77 of the National Environmental Management: Biodiversity Act, (Act No. 10 of 2004).

It must be noted that Section 77 of the National Environmental Management: Biodiversity Act, (Act No. 10 of 2004) states the following: The management authority of a protected area must at regular intervals prepare and submit to the Minister or the MEC for Environmental Affairs in the Province a report on the status of any listed invasive species that occurs in that area.

The status report must include -

a. a detailed list and description of all listed invasive species that occur in the protected area
b. a detailed description of the parts of the area that are infested with listed invasive species;
c. an assessment of the extent of such infestation; and
d. a report on the efficacy of previous control and eradication measures.

- Conservation of Agricultural Resources Act, (Act No. 43 of 1983): Amendments published in the Government Gazette Vol. 429, No 22166 of 30 March 2001.

7.6.2 Guiding Principles

- Maintain the integrity of local species biodiversity by prohibiting and, as far as possible, preventing the introduction of alien and invasive species.
- Discourage the keeping of domestic animals within and from entering the nature reserve from surrounding areas.
- Removal of alien and invasive species must be performed in a cost-effective manner and in a manner that does not negatively impact native species or disrupt natural ecological processes.

7.6.3 Management Actions

Refer to Table 7.6.

7.6	INVASIVE AND NON-INVASIVE ALIEN SPECIES MANAGEMENT				
Objective 2	**To maintain and restore natural ecosystem processes on Dyer Island Nature Reserve Complex.**				
Key Deliverables	**Management/Monitoring Activities**	**Responsibility**	**Indicators**	**Timeframe**	**Reference to Existing Procedures**
Invasive Alien Flora					
1. Eradicate alien and invasive species within the DINRC on an on-going basis.	• Eradicate alien or extra-limital flora species considered to pose an ecological threat to the island environment.	Conservation Manager, Regional Ecologist, Ecological Coordinator	Since the alien vegetation is used by breeding seabirds and annually cleared by their breeding behaviour, alien plant clearing will occur only if deemed ecologically threatening to the island.	Year 1, on-going	Ecological Plan of Operations, Ecological Matrix
2. Monitoring of alien vegetation on the DINRC informs adaptive management strategies.	• Monitor the reserve for alien or extra-limital flora and identify species.	Conservation Manager, Regional Ecologist, Ecological Coordinator		Year 1, on-going	Ecological Plan of Operations, Ecological Matrix
3. Prevent the introduction of alien and invasive species from neighbouring landowners.	• Compile a Standard Operating Procedure for preventing the introduction of alien and invasive species to the DINRC. • Ensure all persons accessing the DINRC are aware of the SOP regarding alien and invasive species.	Conservation Manager, Regional Ecologist, Ecological Coordinator		Year 1, on-going	Ecological Plan of Operations, Ecological Matrix
Invasive Alien Fauna					
4. Prevent the introduction of alien and invasive species	• No domestic animals and livestock will be permitted in the reserve and will be removed. • Prevent the introduction of any alien or extra-limital fauna onto the island by controlling what visitors and staff bring onto the island. • Develop and Implement Standard Operating Procedures and Research Permit Conditions.	Conservation Manager	*Species specific*	Year 1, on-going	CNC Policy on domestic animals on nature reserves
5. Control alien and invasive species within the DINRC on an on-going basis	• Identify alien fauna occurring on the reserve. • Monitor populations of alien or extra-limital fauna on the reserve. • Implement control measures where appropriate. • Measure success of control methods utilised. • Eradicate alien fauna species considered to pose an ecological threat to the island environment. • External stakeholder involvement. • Assess potential threat, extent of threat and mitigation measures for Argentine ants.	Conservation Manager		Year 1, on-going	CNC Policy on domestic animals on nature reserves

Budget allocation	**Development**	
	Operation (5 Year Forecast)	R 8 441.78

7.7 Cultural Heritage Resource Management

7.7.1 Legislation

- National Heritage Resources Act, (Act No. 25 of 1999) which has repealed the National Monuments Act, (Act No. 28 of 1969)
- World Heritage Convention Act, (Act No. 49 of 1999)
- South African Wreck and Salvage Act, (Act 94 of 1996)

7.7.2 Guiding Principles

- Reserve management will seek to respect, protect and promote the natural and cultural heritage resources of the nature reserve.
- Cultural Heritage referred to in the Management Plan includes cultural, historical, archaeological and paleontological resources.

7.7.3 Management Actions

Refer to Table 7.7.

7.7	CULTURAL HERITAGE RESOURCE MANAGEMENT				
Objective 10	**To conserve natural and historical heritage on Dyer Island Nature Reserve Complex.**				
Key Deliverable	**Management/Monitoring Activities**	**Responsibility**	**Indicators**	**Timeframe**	**Reference to Existing Procedures**
1. To protect cultural heritage resources.	• Establish and maintain a Cultural Heritage Resource database and map all sites.	Conservation Manager	The DINRC will annually indicate an upward trend in METT-SA score.	Year 5	Heritage Resource Policy

Budget allocation	**Development**	
	Operation (5 Year Forecast)	R 5000.00

7.8 Law Enforcement and Compliance

7.8.1 Legislation

- National Environmental Management Act, (Act No. 107 of 1998)
- National Environmental Management: Protected Areas Act, (Act No. 57 of 2003)
- National Environmental Management: Biodiversity Act, (Act No. 10 of 2004)
- Threatened or Protected Species (ToPS) Regulations, 2007
- Marine Living Resources Act, (Act No. 18 of 1998)
- Government Notice R1111 of 1998 - Marine Living Resource Regulations
- National Environmental Management: Integrated Coastal Management Act, (Act No 24 of 2008).
- Seashore Act, (Act No. 21 of 1935).
- Western Cape Nature Conservation Ordinance, (Ordinance 19 of 1974)
- Regulations proclaimed in terms of the Ordinance, Provincial Notice 955 of 1975.

Also the provisions of the Bill of Rights detailed in Chapter 2 in the Constitution, No. 108 of 1996, as well as the provisions of the Criminal Procedure Act, (Act No. 51 of 1977), are also important when performing law enforcement actions.

7.8.2 Guiding Principals

- Biodiversity resources of the reserve must be protected from illegal harvesting and unsustainable use.
- Reserve management and personnel will ensure that all law enforcement actions are executed in a fair, reasonable and objective manner, with due respect for human rights and in accordance with applicable Law.
- Reserve management and personnel will identify and prioritise sensitive areas and species and prioritise law enforcement patrols accordingly, in order to ensure that resources are allocated in the most efficient and effective manner.
- Reserve management and personnel will partner with local law enforcement role-players, such as SAPS, local authorities and DEA: O&C, in order to effectively utilise resources to combat biodiversity crime within the protected area.
- Reserve management will liaise with adjacent communities, in conjunction with relevant components, in order to identify and prioritise areas of natural and cultural heritage significance, in order to effectively manage impacts and to prevent illegal activities in these areas.

7.8.3 Management Actions

Refer to Table 7.8.

7.8	LAW ENFORCEMENT AND COMPLIANCE				
Objective 5	**To ensure and secure sound governance and the implementation of policies, plans, systems, strategies, procedures and agreements for the management of Dyer Island Nature Reserve Complex.**				
Key Deliverables	**Management/Monitoring Activities**	**Responsibility**	**Indicators**	**Timeframe**	**Reference to Existing Procedures**
1. Law enforcement for the DINRC is effective.	• All staff must have a working knowledge of all legislation applicable to their function and mandate. • Appoint sufficient capacity to enforce the Acts, regulations and internal rules. • Ensure the DINRC staff is adequately capacitated to enforce legislation within the organisation's mandate and does so effectively. • Ensure staff is formally designated to enforce the relevant legislation. • Appropriate staff has been designated as environmental management inspectors/fishery control officers. • Ensure staff has the necessary equipment to enable them to do law enforcement effectively. • Ensure specific relevant training has been identified and staff has received relevant training. • Ensure adequate law enforcement support from other sections of the organization • Local policing forum meetings are attended in priority areas in order to build partnerships with local law enforcement. • All relevant cases are reported via BMS and documents submitted as verification. • Enforce regulations, policies and standard operating procedures with regard to access	Conservation Manager, Area Manager, Program Manager: MPA, Islands & Estuaries, Human Resource Manager: Capacity Development; Programme Manager: Biodiversity Crime	Number of peace officers trained and appointed Number of EMI's trained and appointed. Number of sea fisheries officers trained and appointed.	Year 1-5	Criminal Procedure Act 51 of 1977; Bill of Rights; Constitution
2. Protection systems are in place and operating effectively.	• Enforce regulations, policies and standard operating procedures with regard to access. • Set up and implement combined compliance operations (CapeNature Biodiversity Crime Unit, DAFF) • Report on the Law Enforcement Indicators as stipulated in the MOU with DEA: Oceans & Coast (Report to DEA: Oceans & Coast and DEA &	Conservation Manager, Area Manager, Program Manager: MPA, Islands & Estuaries, Human Resource Manager: Capacity Development; Programme Manager: Biodiversity Crime		Year 1-5	Criminal Procedure Act 51 of 1977; Bill of Rights; Constitution

Key Deliverables	Management/Monitoring Activities	Responsibility	Indicators	Timeframe	Reference to Existing Procedures
	DP) and in collaboration with DAFF. • Adjacent communities are engaged in order to promote the reserve, to build relationships and to identify priority areas. • Awareness raising activities are held with adjacent communities in order to raise awareness concerning reserve and biodiversity conservation. • Areas in the nature reserve have been identified and prioritised in terms of conservation value or type of utilisation, etc. • Regular routine patrols are performed in all identified priority areas. • All compliance documentation is properly completed and retained as Means of verification.				

Budget allocation	Development	
	Operation (5 Year Forecast)	R 113 184.96

7.9 Infrastructure Management

7.9.1 Legislation

- Occupational Health and Safety Act, (Act No 85 of 1993)
- National Water Act, (Act No. 36 of 1998)
- Constitution of the Republic of South Africa (1996)
- According to the Constitution of the Republic of South Africa (1996), responsibility for waste management functions is to be devolved to the lowest possible level of government.
- Water Services Act, (Act No.108 of 1997)
- The management of sewage sludge is currently regulated by this Act.
- National Environmental Management Act, (Act No. 107 of 1998) (NEMA)
- National Environmental Management: Waste Act (Act No. 59 of 2008)
- National Environmental Management: Air Quality Act (Act No. 39 of 2004)
- NEMA increases the ambit of people who can be held responsible for pollution damage from not only any person, company or government department causing pollution, to any person, company or department owning, using or controlling the land on which the problem exists - even if the pollution causing activity was authorised by law.
- White Paper on Integrated Pollution and Waste Management, 1998
- White Paper on the Energy Policy of the Republic of South Africa (approved by Cabinet on 2 December 1998)

7.9.2 Guiding Principles

- Infrastructure management includes the planning, construction, maintenance, replacement, control and monitoring of all fixed structures, equipment and other moveable assets.
- Reserve management will strive to improve systems so as to reduce costs and negative impacts on the physical environment.
- Ensure that future developments within the nature reserve are socially, environmentally and economically sustainable.
- Reserve management will strive to phase out all French drains, pit latrines and other similar sewerage disposal systems on the reserve.
- Environmental management includes waste, dumping sites, potable water, water systems, sewage systems and herbicide and fuel stores.
- To be energy efficient on DIRNC, i.e. to improve the performance of the DINRC's own energy systems, so as to reduce costs and negative impacts on the physical environment.
- Ensure that future developments in energy, within the nature reserve are socially, environmentally and economically sustainable.

7.9.3 Infrastructure Maintenance

7.9.3.1 Roads/Jeep Tracks

There are no roads or vehicular access on DINRC.

7.9.3.2 Trails

There are no trails needing maintenance on DINRC.

7.9.3.3 Buildings

The only infrastructure within the DINRC is on Dyer Island where the operational buildings and structures are located. The buildings provide storage, workspace and accommodation to staff. A jetty and slipway exists in order to land on and launch from the island using a small inflatable boat. A new jetty to ease access will be investigated. Given the extreme nature of the environmental conditions experienced on dyer Island, and the fact that infrastructure is permanently exposed to the salt air, rain and high winds, there is substantial maintenance that is required on an ongoing basis. Furthermore, given the isolation of the island, maintenance materials and contractors need to be transported by boat. This increases the cost associated with maintenance on the island.
Maintenance can only be carried out in periods outside of the peak breeding seasons of the seabirds on Dyer Island.

7.9.3.4 Fences

There are no fences on DINRC.

7.9.3.5 High Sites

There are no High Sites on DINRC.

7.9.3.6 Signage

"No access" signs are posted at the two access points at DINRC. Off-site signage at Kleinbaai Harbour, Buffeljags launch site and on DINRC at the jetties in respect of access control measures will be evaluated and maintained. Some of these signs offsite eg Buffeljags are vandalised and need to be replaced frequently. The signs on Dyer Island, given the exposure to the elements, need to be replaced annually.

7.9.3.7 Environmental Management

No waste disposal sites are available within the DINRC. Waste is separated for recycling and waste disposal is done at registered dumping sites at Gansbaai.

Rainwater was used for domestic purposes and the infrastructure still exists to gather the water. However due to avian faecal pollution, this water gets contaminated and is not suitable for human use. A desalination plant was installed and provides all the domestic water required by staff. Potential use of grey water will be evaluated.

7.9.3.8 Sewage systems

The sewage system on DINRC consists of a septic tanks system. The system is inefficient and will be upgraded to an appropriate and environmentally friendly system

7.9.3.9 Herbicide and fuel stores

No herbicide stores are necessary on DINRC. Diesel fuel for the generators is transported in 20 – 25 litre drums by boat and stored in the generators fuel tanks.

7.9.4 Management Actions

Refer to Table 7.9.

7.9	INFRASTRUCTURE MANAGEMENT				
Objective 5	**To ensure and secure sound governance and the implementation of policies, plans, systems, strategies, procedures and agreements for the management of Dyer Island Nature Reserve Complex.**				
Key Deliverables	**Management/Monitoring Activities**	**Responsibility**	**Indicators**	**Timeframe**	**Reference to Existing Procedures**
1. Ensure maintenance of infrastructure and equipment.	• Map all infrastructure and compile infrastructure register. • The infrastructure necessary to manage the nature reserve effectively is in place (U-AMP). • Assess if staff facilities are adequate to perform critical management activities. • Ensure that there is adequate operational equipment as required for operational management purposes. • Maintenance of infrastructure as scheduled in registers to ensure upkeep and prevent degradation in a hostile marine environment. • Equipment is maintained in good working condition. • Liaise with Public Works where required.	Conservation Manager	Infrastructure registers	Year 1	Department of Public Works Policies and Guidelines, Standard Operating Procedures
2. Align all infrastructures to the conservation development framework and zonation.	• Assess infrastructure development appropriateness to the CDF. • Compile a re-alignment plan. • Implement the re-alignment plan.	Conservation Manager, Regional Ecologist		Year 2	Department of Public Works Policies and Guidelines, Standard Operating Procedures
3. Buildings are effectively maintained.	• Compile and maintain a building register. • Provide Department of Public Works with works list to reflect maintenance requirements. • Maintenance or new infrastructure is appropriately planned, with the use of appropriate materials (EMP), approved by the QEM and if required the Appropriate EIA completed. • Ensure energy saving and environmentally sound options are being implemented by Department of Public Works (Green Building principals).	Conservation Manager	Building register	Year 1 - 5	Department of Public Works Policies and Guidelines, Standard Operating Procedures
4. Environmental Management: Waste Disposal	• Compile and implement a Standard Operating Guideline for Waste Management (staff and research personnel). • Maintenance of storage bins as scheduled in registers to ensure upkeep and prevent pollution. • Maintain the current waste recycling	Conservation Manager		Year 3	Standard Operating Procedures

Key Deliverables	Management/Monitoring Activities	Responsibility	Indicators	Timeframe	Reference to Existing Procedures
	protocol. • Remove all waste during staff change overs, by boat. • Collect and remove litter and other material posing a threat to breeding species during routine patrols.				
5. Environmental Management: Water	• Maintenance of water works as scheduled in registers to ensure upkeep and prevent degradation. • Schedule regular inspections.	Conservation Manager		Year 1 -5	
6. Environmental Management: Sewage	• Install effective environmentally friendly sewage facilities.	Conservation Manager		Year 1	
7. Environmental Management: Energy	• Investigate alternative appropriate environmentally friendly forms of energy. • Secure adequate funding for appropriate environmentally friendly energy.	Conservation Manager		Year 1 -3	Department of Public Works Policies and Guidelines, Standard Operating Procedures and Agreements
8. Environmental Management: Herbicide and Fuel Stores	• Ensure safe and proper transport of fuel to prevent pollution. • Conduct regular inspections of fuel stores to ensure upkeep and prevention of onshore spills.	Conservation Manager		Year 1 -5	
9. Signage is appropriate and effective to support management.	• Conduct a signage audit. • Compile a signage (including off-site signage) register with maintenance plan.	Conservation Manager		Year 2	

Budget allocation	Development	
	Operation (5 Year Forecast)	R 135 068.53

7.10 Disaster Management

7.10.1 Legislation

- Disaster Management Act, (Act No. 57 of 2002)
- Occupational Health and Safety Act, (Act No. 85 of 1993)
- Seabirds and Seals Protection Act, (Act No. 46 of 1973)
- South African Maritime Safety Act, (Act No. 5 of 1998)

7.10.2 Guiding Principles

- The first priority of disaster management is the protection of the people who are most at risk. The second priority is the protection of the critical resources and systems on which communities depend. The third priority is mitigating the threats to wildlife.
- Disaster prevention and preparedness should be an integral part of every development policy.
- Disaster assistance must be provided in an equitable, consistent and predictable manner in association with the Local and Provincial authorities.
- Communities, with the assistance from the Local and Provincial tiers of government and reserve management, must know what disaster management and risk reduction stand for, what their own responsibilities are, how they can help prevent disasters, how they must react during a disaster (and why) and what they can do to support themselves and relief workers, when necessary.
- Disasters on the DINRC would include events such as oiling events, disease outbreaks and fuel spills.

7.10.3 Management Actions

Refer to Table 7.10.

7.10	DISASTER MANAGEMENT				
Objective 5	**To ensure and secure sound governance and the implementation of policies, plans, systems, strategies, procedures and agreements for the management of Dyer Island Nature Reserve Complex.**				
Key Deliverables	**Management/Monitoring Activities**	**Responsibility**	**Indicators**	**Timeframe**	**Reference to Existing Procedures**
1. Disaster prevention and preparedness	• Conduct a risk assessment and identify areas of potential concern • Compile and implement disaster management plan for DINRC which would include oil spill, on site fuel spill, and disease outbreaks. • Engage and assist with disaster management units from municipalities. • Conduct an annual audit of disaster management plans and mitigation measure readiness. • Annual review and exercise of contingency and evacuation plans.	Conservation Manager, Programme Manager: MPA, Islands & Estuaries, Community Conservation Manager	Disasters are mitigated as quickly and efficiently as possible, to minimise impacts.	Year 1, on-going	Regional Oil Spill Plan, Dyer Island Disaster Management Plan, Ecological Matrix, Ecological Plan of Operations, African Penguin BMP-s
2. Disaster response.	• Train staff and NGOs to ensure capacity to manage and mitigate the effects of disasters. • Procure equipment for disaster response and mitigation. • Participate and assist district municipality disaster management structure. • Activate evacuation and contingency plans.	Conservation Manager, Programme Manager: MPA, Islands & Estuaries, Community Conservation Manager		Year 1, on-going	Regional Oil Spill Plan, Dyer Island Disaster Management Plan, Ecological Matrix, Ecological Plan of Operations, African Penguin BMP-s

Budget allocation	**Development**	
	Operation (5 Year Forecast)	R 67 534.27

7.11 People and Conservation

7.11.1 Community Partnerships

The long term success of the DINRC is dependent on developing a constructive, mutually beneficial relationship between the Reserve and communities resident adjacent to the Reserve.

Various projects and programmes that enhance the relationship between the Reserve and the neighbouring communities are currently in progress. Expansion in partnerships with the surrounding communities of the DINRC is essential for the success of the Reserve.

7.11.2 Guiding Principles

- The Dyer Island Nature Reserve's contribution to the local and regional economy must be recognised and therefore will be seen as an important vehicle through which rural development and transformation is achieved. This is primarily provided through boat-based tourism in the marine environment surrounding the DINRC.
- The right to equality, a healthy environment and the right to information are to be guaranteed.
- Co-operative governance should take place between citizens and between different government departments.
- Benefits from biodiversity are to be fairly shared and the benefit flows to people in and around protected areas improved.
- The capacity of neighbouring communities should be developed in order to participate in protected area management.
- Community based initiatives and partnerships shall promote and support economic and employment opportunities, particularly for local disadvantaged persons and communities.

7.11.3 Management Actions

Refer to Table 7.11.

7.11	PEOPLE AND CONSERVATION				
Objective 9	**To improve conservation management and transparency through engagement with communities and stakeholders.**				
Key Deliverables	**Management/Monitoring Activities**	**Responsibility**	**Indicators**	**Timeframe**	**Reference to Existing Procedures**
1. Create access to the conservation economy through the implementation and management of appropriate initiatives and projects.	• Once design confirmed, CN will, through partnerships, create jobs with the construction of artificial African penguin nests	Conservation Manager	Number of people directly benefitting from Sustainable Livelihood Programmes (n)	Year 5	African penguin Biodiversity Management Plan.

Budget allocation	**Development**	
	Operation (5 Year Forecast)	R 8 441.78

7.12 Awareness, Youth Development and Volunteers

Environmental education should be actively encouraged especially in the context of developing knowledge in protected area management, especially for school children from the area. Where possible, partnerships should be established with role players and interested parties to ensure that this takes place. This will not take place on Dyer Island itself, but will be land-based.

Facilitate youth and community development through environmental awareness and assist in developing the knowledge, skills, values and commitment necessary to achieve sustainable development. These initiatives will not take place on Dyer Island, but will be land-based.

7.12.1 Guiding Principles

- Focus awareness on the protection of the natural environment and sustainable use of natural resources;
- The image of CapeNature to be promoted among local communities, provincial and national politicians and the public.
- Reserve management shall provide off-site interpretive presentations and media, which facilitate a connection between the interests of the visitor and the meanings of the Reserve.
- Educational Programmes must align with the National School Curriculum.
- Opportunities to participate in National Environmental Initiatives such as Marine Week, International Penguin Day, should be taken where appropriate.
- Volunteers will be used on the reserve where appropriate. No formal, volunteer programme will be developed, and volunteers will only be used when the need arises. These volunteers would need to be able to demonstrate sound bird handling experience if the activity on the island requires such, preferably have completed SANCCOB's Bird Handing course. Numbers of volunteers used on Dyer Island and will be kept to a minimum given the sensitivity of the island.

7.12.2 Management Actions

Refer to Table 7.12.

7.12	AWARENESS, YOUTH DEVELOPMENT AND VOLUNTEERS				
Objective 8	**To promote biodiversity conservation awareness and communication on Dyer Island Nature Reserve Complex.**				
Key Deliverables	**Management/Monitoring Activities**	**Responsibility**	**Indicators**	**Timeframe**	**Reference to Existing Procedures**
1. Ensure awareness raising initiatives elevate awareness of the DINRC.	• Compile information and material on DINRC for dissemination and presentation on Environmental Awareness calendar days (e.g. Heritage day, National Marine Week and Marine Protected Area Awareness,). • Collaborate with partners to arrange events on Environmental Awareness events and scheduled school activities. • Facilitate production of media releases. • Present talks, presentations when requested. • Submit an article on the DINRC for publication to a popular conservation themed magazine, annually.	Conservation Manager, Community Conservation Manager, Communications Manager	Number of learners provided with environmental education opportunities (n).	Year 1 -5	Overberg People and Parks Action Plan, CapeNature Communications Policy
2. Environmental education is provided to promote an understanding of biodiversity and the use of the natural environment as a vehicle for learning and development.	• Develop and implement an education and awareness plan linked to the objectives of DINRC. • Management will strive to raise the profile of DINRC through linked awareness and education programmes.	Conservation Manager, Community Conservation Manager		Year 1 -5	
3. Effective use of volunteers	• This will be undertaken on an adhoc basis depending on the needs of the Reserve and experience of the volunteer.	Conservation Manager		Year 5	

Budget allocation	**Development**	
	Operation (5 Year Forecast)	R 16 883.57

7.13 Management Effectiveness

7.13.1 Legislation

- The Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996)
- Public Finance Management Act, (Act No.1 of 1999).
- National Environmental Management: Protected Areas Act, (Act No. 57 of 2003)

Management effectiveness is further guided by the following documents:

- The White Paper on Transforming Public Service Delivery (Batho Pele White Paper) 1997
- Green Paper on National Performance Management (2009)
- Policy Framework for a Government-wide Monitoring and Evaluation System (2007)
- National Treasury Framework for Managing Programme Performance Information (2007)

7.13.2 Guiding Principals

As a listed provincial public entity, CapeNature must comply with all the provisions of the PFMA, with particular reference to Chapter 6 thereof which deals with the responsibilities of public entities. CapeNature is subject to, and guided by, the provincial budget and strategic planning processes. In-year reporting from CapeNature comprises quarterly expenditure and revenue, earmarked funding, non-financial performance, financial normative and other reports as requested by either the Department and/or Provincial Treasury.

As Protected Area management in the Western Cape is a mandate of CapeNature, all activities in this regard are embedded into the organisation's planning and review mechanisms. CapeNature vision and value statements articulate the organisations aspirations as a quality driven public entity with of high levels of performance being a core value.

To monitor and evaluate non-financial performance of the organisation, CapeNature conforms to the following protocols: a strategic five-year Plan; annual performance plan; quarterly reporting and the production of an annual report.

In addition to the above required protocols, CapeNature also implements a Performance Management System which ensures that organisational targets are embedded in individual performance contracts. This is essential as targets in the reserve management plan become specific measurable targets for individual staff members who are evaluated on them, ensuring accountability.

All monitoring and evaluation regarding Protected Area management is imbedded in CapeNature's current systems.

7.13.3 Management Actions

Refer to Table 7.13.

7.14.2 Human Resource Management

7.14.2.1 Legislation

CapeNature's Human Resources and Labour Relations Practices are primarily based on the following legislation:

- The Constitution of the RSA, (1996)
- The Western Cape Nature Conservation Board Act, (Act No.15 of 1998)
- Labour Relations Act, (Act No. 66 of 1995)
- Basic Condition of Employment Act, (Act No. 75 of 1997)
- Employment Equity Act, (Act No 55 of 1998).
- Occupational Health and Safety Act, (Act No. 85 of 1993)
- Skills Development Act, (Act No. 97 of 1998)
- The Protected Disclosures Act, (Act No. 26 of 2000)
- The Promotion of Access to Information Act, (Act No. 2 of 2000)
- The Promotion of Administrative Justice Act, (Act No. 3 of 2000)
- Our policies are further shaped by the Public Service Act, (Act No 38 of 2008) and the Regulations thereto, the collective agreements entered into in the public service bargaining chambers as well as the Public Finance Management Act, (Act No. 1 of 1999) and Treasury Regulations issued in terms thereof.

7.14.2.2 Guiding Principals

(1) CapeNature commits itself to the principles enshrined in the Labour Relations Act (Act No. 66 of 1995), these being:
   (a) to give effect to the right to fair labour practices and those further rights enshrined in section 23 of the Constitution of the Republic of South Africa;
   (b) to give effect to obligations incurred by the Republic as a member state of the International Labour Organisation;
   (c) to provide a framework within which employees and their trade unions, employers and employers' organisations can-
      (i) collectively bargain to determine wages, terms and conditions of employment and other matters of mutual interest; and
      (ii) formulate industrial policy.
   (d) to promote-
      (i) orderly collective bargaining;
      (ii) collective bargaining at sectorial level;
      (iii) employee participation in decision-making in the workplace; and
      (iv) the effective resolution of labour disputes.

(2) CapeNature will interact with its employees or its representatives in a manner which fosters transparent, respectful and harmonious working relationships between management and employees and between employees and employees.

(3) CapeNature is an equal opportunities employer that is committed to using its recruitment and selection processes to address, in a fair manner, all workplace injustices caused by Apartheid policies.

(4) We are committed to growing our human capital by providing appropriate training and development initiatives for our employees.

(5) We are further committed to maximising career-pathing to ensure that employees are constantly growing and that the workplace remains challenging and stimulating.

7.14.2.3 Management Actions

See Table 7.14.2.

7.14.2	HUMAN RESOURCE MANAGEMENT				
Objective 5	**To ensure and secure sound governance and the implementation of policies, plans, systems, strategies, procedures and agreements for the management of Dyer Island Nature Reserve Complex.**				
Key Deliverables	**Management/Monitoring Activities**	**Responsibility**	**Indicators**	**Timeframe**	**Reference to Existing Procedures**
1. Ensure an adequately resourced staff complement on the reserve.	• Ensure current posts are filled and appointment of additional staff (subject to funding). • Ensure resourced (tools and skills) staff in line with approved budget to manage the nature reserve effectively (subject to funding). • Prioritise all critical posts for filling and develop a phased implementation plan in line with approved personnel budget. • Ensure on-going assessment of workloads (volumetric analysis) through interventions in consultation with the Organisational Development Unit of the Department of the Premier. • Employment relationship is in line with employment contract commitments. • Implement an Employment Well-being Programme	Conservation Manager Area Manager Executive Director Operations and HR	Human resource capacity is adequate to manage the protected area effectively subject to funding	On-going	Recruitment and Selection Policy; Standard Operating Procedures for Recruitment and Selection SA Constitution Labour Relations Act Basic Conditions of Employment Act Employment Equity Act Occupational Health & Safety Act Overtime Policy Equate System for Job Evaluation Leave Policy
2. Integrate and align organisational and employee performance.	• There is an effective Performance Management System in place. • Ensure compliance with Code of Conduct.	Conservation Manager; Area Manager; Executive Director Operations HR and CEO	Performance agreements completed and signed for all employees. Performance appraisals completed for all employees.	Annually	Performance Management Handbook Annual Plan of Operations Rewards Foundation Policy Disciplinary Code and Procedures (Managing poor performance) Code of Conduct
3. Skilled employees on the reserve	• All staff are skilled to perform according to job specification in the roles they occupy in line with mandatory legislative requirements. • Develop personal development plan for all staff on the reserve. • Roll out of personal development plan for all staff on the reserve. • Reflect capacity development interventions which are supported by mentorship and coaching agreements. • Conduct annual Skills audit.	Conservation Manager; Area Manager; HR and Employment Equity and Training Committees	Develop personal development plan for all staff on the reserve. Mentorship and coaching agreements. Implement Skills Plan according to priorities and budget availability	Annually	Individual PDPs Mentorship strategy and toolbox Skills Development Act Training Policy Bursary Policy Internship Policy

Budget allocation	**Development**	
	Operation (5 Year Forecast)	R 168 835.66

7.14.3 Occupational Health and Safety Management

7.14.3.1 Legislation

- The Occupational Health and Safety Act, (Act No. 85 of 1993), as amended, with reference to:
  1. The Regulations which fall within the ambit of the Act;
  2. Standards and Approved Codes of Practice under the Act.
- Compensation for Occupational Injuries and Diseases Act (Act No. 130 of 1993)

7.14.3.2 Guiding Principals

- Reserve management must bring about and maintain, as far as reasonably practicable, the safety of workers, contractors, volunteers, students and the public.
- Reserve management must bring about and maintain, as far as reasonably practicable, a work environment that is safe and without risk to the health of the staff members.
- Where this is not possible, reserve management must inform staff of these dangers, how they may be prevented, and how to work safely, and provide other protective measures for a safe workplace.
- The staff member must also take care of his or her own health and safety, as well as that of other persons who may be affected by his or her actions or negligence to act.
- Appropriate training, awareness, education on the use of universal infection control measures so as to identify, deal with and reduce the risk of HIV transmission in the workplace will be provided.

7.14.3.3 Management Actions

Refer to Table 7.14.3.

7.14.3	OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT				
Objective 5	**To ensure and secure sound governance and the implementation of policies, plans, systems, strategies, procedures and agreements for the management of Dyer Island Nature Reserve Complex.**				
Key Deliverables	**Management/Monitoring Activities**	**Responsibility**	**Indicators**	**Timeframe**	**Reference to Existing Procedures**
1. To implement policies, procedures and systems to ensure compliance to the Occupational Health and Safety Act. (OS4909H Act).	• Implement Occupational Health and Safety System.	Conservation Manager, OHS Manager	No disabling injuries occur.	Year 1-5	OHS Act, Internal Health and Safety System
2. To inform the workers, **contractors, volunteers,** students and the public of these dangers, how exposure could be prevented, and how to work safely.	• Attend Accredited OHS Training: **(HIRA)** • Attend Accredited OHS Training to renew certificates (OHS Reps & First Aid Officers). • Attend in-house OHS Training Workshops. • Provide monthly Toolbox Talks.	**Conservation Manager,** OHS Representative, First Aid Officers, Designated OHS risk specific appointments, OHS Officer OHS Manager		Year 1 on-going	**OHS Training Needs Analysis (conducted** annually and aligned with available legislative requirements and available resources)
3. Hazard Identification, Risk Assessment and Risk Management and Risk Control are implemented on the DINRC.	• Conduct regular HIRA processes to determine key risks with highest impact potential. • Recommend remedial action plans to address key risks. • Follow-up to ensure effective implementation.	Conservation Manager, OHS Officer		Year 1 on-going	HIRA Report Safe Operating Procedure
4. Monitor and review to ensure adaptive management strategies **are applied to improve health and safety on the** DINRC.	• Assist in conducting of internal Audit Process to determine effectiveness and level of compliance of implementation of OHS Management Control System.	Conservation Manager, OHS Officer, OHS Manager		Year 5	Worksite Audit Report

Budget allocation	**Development**	
	Operation (5 Year Forecast)	R 33 767.13

7.14.4 Risk Management

7.14.4.1 Legislation

Risk Management is based on the requirements of the Public Finance Management Act, (Act No. 1 of 1999) which requires the Accounting Authority to implement systems of financial management, risk management and internal control.

7.14.4.2 Guiding Principals

- To promote the highest standards of corporate governance in providing assurance to stakeholders that organisational goals and objectives are achieved in an effective and efficient manner and within an ethical environment.
- Ensure the implementation of risk management systems and procedures for the identification, assessment and monitoring of risks. All risks are to be documented and controls identified to mitigate these risks.
- Ensure the development and implementation of standard operating procedures for all relevant business processes.

7.14.4.3 Management Actions

Refer to Table 7.14.4.

7.14.4	RISK MANAGEMENT				
Objective 5	**To ensure and secure sound governance and the implementation of policies, plans, systems, strategies, procedures and agreements for the management of Dyer Island Nature Reserve Complex**				
Key Deliverables	**Management/Monitoring Activities**	**Responsibility**	**Indicators**	**Timeframe**	**Reference to Existing Procedures**
1. Ensure effective and integrated risk management within a framework of sound corporate governance.	• Documenting of business processes. • On site risk identification and analysis. • On site identification of controls/ mitigations. • Monitoring of risks.	Conservation Manager, Chief Risk Officer	Risks in the Risk Register mitigated in a cost effective manner and to an acceptable level.	Year 1-5	PFMA Section 38. Risk Management Policy and Strategy.

Budget allocation	**Development**	
	Operation (5 Year Forecast)	R 8 441.78

7.15 Visitor Management and Services

7.15.1 Legislation

- National Environmental Management: Protected Areas Act (Act No. 57 of 2003)
- Tourism Act, (Act No. 72 of 1993)

7.15.2 Guiding Principles

- To minimise disturbance of onshore environment and biota.
- Acknowledgement of the areas diverse natural heritage and a commitment to ensuring the safeguarding thereof for future generations.

All access to the DINRC will only be for the purposes as stated in the purpose and objectives of the reserves. All activities on the DINRC will be strictly controlled and subject to permitting and special conditions.

7.15.3 Visitor management and services

Onshore access to the DINRC will be granted by permit only. There will be no onshore tourism allowed on DINRC.

Access to Dyer Island may only be via boat and the approved jetty. Any other access or landing point may only be used with special permission from the Conservation Manager. Aerial access will only be considered in the event of an emergency and upon evaluation by the RMC.

Tour operators which bring members of the public into the protected area must record the numbers of tourists to be made available to the management authority if and when necessary.

7.15.4 Management Actions

Refer to Table 7.15.

7.15	VISITOR MANAGEMENT AND SERVICES				
Objective 5	**To ensure and secure sound governance and the implementation of policies, plans, systems, strategies, procedures and agreements for the management of Dyer Island Nature Reserve Complex**				
Key Deliverables	**Management/Monitoring Activities**	**Responsibility**	**Indicators**	**Timeframe**	**Reference to Existing Procedures**
1. To strive to ensure visitor safety.	• Compile safety regulations for visitors to DINRC • Ensure the safety of visitors	Conservation Manager		Year 1 - 5	
2. To promote and manage access to the Reserve.	• Implement a visitor and staff access register; • Implement a register for boat based activities in the DINRC; • Control access through permitting (boat based tourism, research, filming, etc.); • Erect appropriate signage at Kleinbaai Harbour, Buffeljags launch site and on DINRC at the jetties in respect of access control measures. • Erect interpretive signs on proclamation, species sensitivity and access.	Conservation Manager		Year 5	

Budget allocation	**Development**	
	Operation (5 Year Forecast)	R 16 883.57

7.16 Conservation Development Framework

7.16.1 Legislation

Key areas of legislation relevant to infrastructure use and development on Nature Reserves and conservation management. Please refer to the CapeNature guidelines.

- National Environmental Management Act, (Act No. 107 of 1998) - provides a framework for environmental governance and decision making.
- National Environmental Management: Protected Areas Act, (Act No. 57 of 2003) as amended 2009 – regulates development, use and management of all protected areas.
- National Environmental Management Act, (Act No. 107 of 1998) NEMA Environmental Impact Assessment Regulations (Government Notice No. R. 543 of June 2010 as corrected by Correction Notices 1 (Government Notice No. R. 660 of July 2010) and 2 (Government Notice R. 1159 of December 2010) - stipulates environmental authorisation process for a wide range of activities.
- National Water Act (Act 36 of 1998, as amended by Act 45 of 1999) – controls use of ground and surface water, and sets standards for wastewater quality.
- National Heritage Resources Act, (Act No. 25 of 1999) – protects and provides for authorisation relating to heritage features including buildings, archaeological and paleontological sites, and landscape character.
- The National Waste Act, (Act No. 59 of 2008) – controls disposal of waste.
- Tourism Act, (Act No. 72 of 1993) – provides a grading and classification scheme for tourism accommodation.
- Occupational Health and Safety Act, (Act No 85 of 1993) – specifies requirements for a safe and healthy working environment for all employees.

7.16.2 Guiding Principles for infrastructure planning and development

- Before any significant infrastructure development, reserves must have:
  - a zoning scheme based on a defensible environmental analysis of sensitivity and opportunities, proper internal consultation, and CapeNature regional strategy; and
  - an infrastructure development plan that specifies the type and location of all new infrastructure.
- Any infrastructure or activity, including change of use, must comply with all legislated licencing and authorisation requirements.
- Layout of existing infrastructure and operations should be re-evaluated.
- Development Zones and Access Zones should be peripheral to nature reserve, and easily accessible to staff and visitors.
- Development Zones should be as tightly clustered as possible.
- Development Zones should utilise existing degraded or transformed habitat.
- All new development or expansion must be informed by a financial feasibility study, reserve sensitivity analysis, and if appropriate specialist assessment of impact.
- New building infrastructure, especially in remote or sensitive locations, must consider total lifespan impact including decommissioning and removal.

- Green building techniques must be implemented to reduce carbon emissions, energy and water use, and waste contamination associated with construction and operation, although the primary consideration must be reducing local impact.

7.16.3 Management Actions

Refer to Table 7.16.

7.16	CONSERVATION DEVELOPMENT FRAMEWORK				
Objective 5	**To ensure and secure sound governance and the implementation of policies, plans, systems, strategies, procedures and agreements for the management of Dyer Island Nature Reserve Complex**				
Action plans	**Management/Monitoring Activities**	**Responsibility**	**Indicators**	**Timeframe**	**Reference to Existing Procedures**
1. To provide nature and cultural tourism and recreational opportunities within the Reserve without affecting the ecological processes negatively.	• Establish and implement boat based concessionaire process. • Monitor concessionaire compliance with national and international standards. • Consult with Stakeholders and facilitate involvement in the planning and management of boat based tourism activities. • Conduct a tourism risk assessment. • Monitor tourism activities.	Conservation Manager, Area Manager, Standards Committee, Concessionaires	Concession of selected tourism opportunities Standards are set in specified and approved schedules (including hospitality standards based on those by the South African Grading Council). Development priorities in place and implemented in the correct Zones within the Reserve Recommendations within these plans implemented Concessionaire compliance audited	Year 5	Reserve Zonation
2. Ensure tourism contributes to conservation through the DINRC	• Monitor Tourist use and interest within the Reserve, including negative impacts, adapt where necessary. • Establish a Financial Management System for the DINRC. • Ensure proper control of the DINRC's assets. • Identify the potential for negative consequences and their adverse effects on tourism (Risk assessment).	Conservation Manager	Tourist Use Monitoring Programme in place Management systems (financial, risk and asset register) are in place and implemented	Year 5	

Budget allocation	**Development**	
	Operation (5 Year Forecast)	R 8 441.78

PART 4

SECTION 8: REFERENCES

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8.2 List of Acronyms and Abbreviations

°C	Degrees Celsius
ABI	Agulhas Biodiversity Initiative
ADU	Animal Demography Unit at University of Cape Town
AEWA	African Eurasian Waterbird Agreement
APP	Annual Performance Plan
APO	Annual Plan of Operations
ARC	Agricultural Research Council
BCLME	Benguela Current Large Marine Ecosystem
BMP	Biodiversity Management Plan
BMP-s	Biodiversity Management Plan for Species
BUE	Benguela Upwelling Ecosystem
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
CMS	Convention on the Conservation of Migratory Species of Wild Animals
CRM	Cultural Resource Management policy
DEA	Department of Environmental Affairs
DEA: O&C	Department of Environmental Affairs: Oceans and Coast
DEA and DP	Department of Environmental Affairs and Development Planning
DICT	Dyer Island Conservation Trust
DINRC	Dyer Island Nature Reserve Complex
DLA	Department of Land Affairs
DPLG	Department of Provincial and Local Government
DWAF	Department of Water Affairs and Tourism
EAP	Employee Assistance Program
EIA	Environmental Impact Assessment
EIP	Environmental Integrated Plan
EMP	Environmental Management Plans/ Programme
EMS	Environmental Management System
EWT	Endangered Wildlife Trust
EXCO	Executive Committee
GIS	Geographical Information System
ha	Hectares
hℓ	hectolitre
IDP	Integrated Development Plan
IEM	Integrated Environmental Management
IFAW	International Fund for Animal Welfare
ISO	International Organisation for Standardization
IUCN	International Union for Conservation of Nature and Natural Resources
IRMP	Integrated Reserve Management Plan (IRMP)
km	Kilometres
m.a.s.l.	Meters above sea level
MCM	Marine and Coastal Management (now DEA: O&C)

MEC	Member of Executive Councils
METT-SA	Management Effectiveness Tracking Tool for South Africa
mm	Millimetres
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MPA	Marine Protected Area
MTEF	Medium Term Expenditure Framework
NBF	National Biodiversity Framework
NBSAP	National Biodiversity Strategy and Action Plan
NCA	National Conservation Assessment
NEMA	National Environmental Management Act
NEM: BA	National Environmental Management: Biodiversity Act
NEM: PAA	National Environmental Management: Protected Areas Act
NGO	Non-Governmental Organisation
NHP	National Heritage Programme
NLC	National Land Cover
NSBA(NBA)	National Spatial Biodiversity Assessment
NSDS	National Sustainable Development Strategy
NSIF	National Spatial Infrastructure Forum
NR	Nature Reserve
NSSD	National Strategy for Sustainable Development
OMPA	Off-shore Marine Protected Area
PA	Protected Area
PAAC	Protected Area Advisory Committee
PAMP	Protected Area Management Plan
PFMA	Public Finance Management Act
PGDF	Provincial Spatial Development Framework
PGDS	Provincial Growth and Development Strategy
PSC	Project Steering Committee
QDS	Quarter Degree Squares
RMC	Reserve Management Committee
RPC	Reserve Planning Committee
RSMP	Reserve Strategic Management Plan
SABIF	South African Biodiversity Information Facility
SADC	Southern African Developing Communities
SAHRA	South African Heritage Resources Agency
SANBI	South Africa National Biodiversity Institute
SANCCOB	Southern African Foundation for the Conservation of Coastal Birds
SANParks	South African National Parks
SASSI	Southern African Sustainable Seafood Initiative
SBR	State of Biodiversity Report
SDF	Spatial Development Framework
SDIs	Spatial Development Initiative
SEA	Strategic Environmental Assessment
SEDA	Small Economic Development Association
SMME	Small, medium and macro enterprises
SOB	State of Biodiversity
SOBR	State of Biodiversity Report
SOE	State of Environment

SOER	State of Environment Reports
SSA	Statistics South Africa
SWOT	Strengths, Weaknesses, Opportunities and Threats
ToR	Terms of Reference
TPC	Threshold of Potential Concern
UCT	University of Cape Town
UNESCO	United Nations Educational, Scientific and Cultural Organisation
WfW	Working for Water
WoF	Working on Fire
WG1	Working Group on Biodiversity and Conservation
WWF	World Wildlife Fund

8.3 List of Tables

8.4 List of Figures