

APPENDIX D: OTHER DOCUMENTS

APPENDIX D1: SECURITY AUDIT

CITY OF CAPE TOWN
BIODIVERSITY MANAGEMENT BRANCH

Executive Brief

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

MARCH 2010



Project Order No.: 4501377564

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1. INTRODUCTION

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

The need was based on the following assumptions:

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

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

The following outcomes were proposed and accepted:

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

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

2. APPROACH

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

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

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

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

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

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

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

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

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

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

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

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

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

3. EXECUTIVE SUMMARY

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

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

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

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

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

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

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

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

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

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

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

The results were as follow:

Reserve	Threat Level	Threat	Primary Cause
Witzands ACA	Medium	Illegal Access / Trespassing	Lack of fencing
Blaauwberg CA	Medium	Illegal Access / Trespassing	Lack of coverage
Rietvlei WR	Low	Illegal Access / Trespassing	Lack of coverage
Durbanville NR	Low	Theft	Lack of presence
Bracken NR	Low	Trespassing	Lack of coverage
Tygerberg NR	High	Trespassing / poaching	Lack coverage
Zandvlei NR	Low	Illegal Access / Trespassing	State of infrastructure
Falls Bay EP	High	Violent crime	Lack of fencing /coverage
Edith Stephens WP	Low	Theft	Lack of fencing
Wolfgat & Macassar NR	Severe	Violent crime	Location & Social
Kogelberg NR	Medium	Illegal Access / Trespassing	Extent / coverage
Helderberg NR	Low	Illegal Access / Trespassing	Lack coverage

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

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

Infrastructure requirements were predominantly in respect of fencing.

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

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

The aforesaid institutional matters included:

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

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

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

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

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

Consultation with public interest groups and reserve managers highlighted the benefits of "friend" groups. Some stations financial ability and conservation maintenance activities were greatly enhanced by such "friends" groups. Further to which, the social role that urban reserves play as

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

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

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

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

The City Law Enforcement Services and structures were generally viewed as not being able to respond to conservation related incidents. Only a few Reserves reported adequate responses to call-outs or incidents with most Reserves saying they rely on the local SAPS for assistance. Reserves which have installed alarm systems linked to the City Law Enforcement Control Rooms, reported that in the event of alarm activation the Reserve manager is phoned to investigate. No direct service benefit could be found in respect City Law Enforcement.

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

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

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

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4. CONCLUSION AND GENERIC RECOMENDATIONS

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

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

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

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

The results were as follow:

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

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

Infrastructure requirements were predominantly in respect of fencing.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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objectives for each Board is viewed as imperative to contributing to the achievement of the Reserve objectives whilst providing a formal link to neighbouring communities and local government.

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

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

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

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

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

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

Due to several reserves having a coastal boundary and the ever present activities of highly organised and dangerous Abalone poaching gangs, the involvement of staff in curbing these activities need to be clearly defined and coordinated. It is the opinion of this team that this should be the preserve of a highly trained and well equipped District based Law Enforcement Component conducting their duties in collaboration with other authorities and with the necessary jurisdiction. It is the opinion of this investigation team that the establishment of a District based Law Enforcement Component will greatly contribute in addressing some of the security shortcomings highlighted. In addition, such a component will also alleviate some of the external enforcement requirements placed on Reserve staff thus allowing them to focus on reserve management and security. The current practice of Law enforcement staff working a daily night shift is questioned as no evidence could be found on its effectiveness. It is suggested that through information gathering, coordination with other authorities and planning, such nightly activities could take place on a sporadic basis with much greater successes.

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

5. SUMMARY OF RECOMMENDATIONS

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

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

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	Off's 8. Officers appointed as Peace Officers 9. Station District Law Enforcement Component	expanded to cover "hot spots" in district. 6. Daily night shifts limited to conduct patrols across district and do ad hoc night time	camera to cover main resort area. 3. Active Monitor to monitor activities during peak periods. 4. Erect signage 5. Basic staff equipment
Rietvlei	1. 2 x Bushrangers 2. Officers appointed as Peace Officers	1. Regular perimeter patrols 2. Co-ordinate with MCM	1. Fence along R27 road. 2. Alarm systems at new facilities 3. Peak Inversion camera with recording facility for main gate 4. Fence open residential property boundaries 5. Patrol boat 6. Basic staff equipment
CENTRAL			
Bracken	1. 1x EE Officer/Community Officer. 2. 1x Labourer	1. Visible patrols 2. Liaison with Everite Hostel.	1. Ablutions at gate 2. Day-night camera for main access area. 3. Removal of derelict buildings 4. Guard monitoring 5. Clear alien vegetation along fences 6. Basic staff equipment
Durbanville	1. 2x Visitor Controller Officers 2. Officers appointed as Peace Officers	1. Boundary fence cleared of vegetation 2. Erect signage iro handling of unwanted pets	1. Steel gate at offices to be kept locked, and fitted with buzzer and solenoid access control 2. Video monitor for door 3. Service counter inside front door 4. Alarm system to include response 5. Long-range mobile panic buttons 6. Lighting at offices and main gate 7. Peak Inversion camera for main gate 8. Guard Monitoring system 9. Basic staff equipment
Tygerberg	1. Employ current 3 Contract Bushrangers 2. 2x Bushrangers 3. 1x Site Manager 4. 1x Foreman 5. 5x Labourers 6. 1x Additional EE Officer/Community Liaison	1. Attend Community Police Forum and Crime Watch meetings. 2. Bushrangers obtain drivers licenses 3. Staff presence over week-ends and after hours 4. All gate remotes	1. Replace existing camera at main entrance gate with a Peak Inversion camera with recording facility 2. Present cameras be replaced with Day-Night cameras. 3. Platteklouf and Quarry

	7. 2x Visitor Controller Officers 8. Officers appointed as Peace Officers 9. Station District Law Enforcement Component	currently issued be recovered immediately and re-issued under a new access signal code 5. Keys handed out should be retrieved and locks changed. 6. Kanonberg be afforded controlled access in the event of a fire.	area be re-fenced with electric fence 4. Perimeter road should be constructed where feasible 5. Flatrap razer coils installed on top of all fences and along bottom of select fences 6. Accommodation for Bushranger teams 7. Installation of trigger operated floodlight in darker area of parking 8. Additional mountain bike 9. Basic staff equipment
SOUTH			
Zandvlei	1. 3x Visitor Controller Officers 2. 3x Bushrangers 3. 4x Labourers 4. Officers appointed as Peace Officers	1. Cease involvement in public amenity facilities on eastern side 2. Formal gate control required during open hours 3. Formalise relationship with Mountain Men Security Services 4. Evening security at offices by private security service provider 5. Introduce ad hoc evening patrols 6. Formalise co-operation with Marine and Coastal Management regarding control at the estuary.	1. Northern access well designated and controlled access point 2. Signage at the entrance, parking areas & along the water 3. Re-fence office area with Diamond Razor Mesh 4. Provide appropriate security lighting 5. Replaced northern and western fence with Diamond Razor Mesh fence 6. New offices need to be completed & fitted with monitored alarm system and BX Outdoor Beams 7. Guard Monitoring system 8. Motorized boat 9. Basic staff equipment
False Bay	1. 9x Bushrangers 2. 4x Static Guards 3. Officers appointed as Peace Officers 4. Station District Law Enforcement Component	1. Regular patrols supported 2. Bushrangers and Visitor Control officers should be circulated & deployed to cover peak periods of public use within the Park. 3. Change permanent night shift to a planned basis during periods of specific risk or in response to	1. Establish two or three Bushranger bases 2. Re-fence southern and eastern boundary electric fence 3. Motorised patrol 4. 2x Quad 5. Install Guard Patrol Monitoring system 6. Fence Rondevlei offices and EE Centre with Diamond Razor

		specific incidents 4. Co-ordinate night activities with other law enforcement bodies 5. Visitor Controller Officers patrol Zeekoevlei picnic area during peak periods.	Mesh Install additional trigger 7. Install flood lights at all facilities 8. Day-Night camera to Rondevlei Viewing Tower for office and entrance area 9. Upgrade all existing cameras to Day-Night cameras with recording 10. Additional cameras for Zeekoevlei entrance gate and new office complex 11. Buildings should be alarmed with a siren and linked to a security service provider 12. Buildings which do not have security staff at night should be fitted with BX80 13. Erect signage 14. Basic staff equipment
Edith Stephens	1. Replace "small plant operator" with a fence maintenance post.	1. The reserve fence needs to be patrolled daily or at least twice a week 2. Walk-in access should be controlled and documented at the gate 3. Office gate should remain locked	1. Northern and southern fences must be replaced with Razor Diamond Mesh be considered or electric fence using spring steel wire 2. Management track should be created along the fence 3. Basic staff equipment
EAST			
Wolfgat & Macassar	1. 8 x Bushrangers. 2. 3x District Law Enforcement Officers 3. 2 x Community Liaison Officers 5. Officers appointed as Peace Officers 6. Station District Law Enforcement Component	1. Weltevreden office security system should include a response system 2. City employed private security with mobile support to patrol coastal road esp. parking areas 3. Investigate sand mining permits	1. Demarcate reserve using cement poles 2. Erect signage 3. Move Macassar Gate 4. Basic staff equipment
Kogelberg	1. 1x Visitor Controller Officer 2. 3x Bushrangers 3. Officers appointed as Peace Officers	1. Improve communication services	1. Construct Bushranger camp 2. Erect signage 3. Fence Erf 19 and north-west boundary using

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			electric fence 4. Install alarm at all buildings 5. Install trigger lighting 6. Install depot fence at rear 7. Install Reed Switches for solar panels 8. Peak Inversion Camera for entrance gate to depot 9. Basic staff equipment
Helderberg	1. 6 existing Labourers trained to level of Bushrangers 2. Officers appointed as Peace Officers	1. Develop system for evening monies 2. Regular perimeter patrols	1. Erect signage 2. Electric fence be retained 3. Peak Inversion camera at main gate 4. Day –Night camera to cover parking area 5. Basic staff equipment

6. COSTING

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

Fencing:

Diamond Razor mesh fencing installed per 100m	R 440,00/meter
1,8m, 12 strand electric fencing installed at 100m (Au Alloy wire)	R 55,00/meter
12 Joule Nemtek energizer with built in fence monitor	R 3400,00 excl

Alarm Equipment:

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

	R 3600,00 excl.
To supply and install one outdoor BX80 beam	R 1500,00 excl.

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

Long Range remote panic – one long range remote	R 250,00 excl.
Long Range receiver – installed	R 1100,00 excl.

Cameras:

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

R 11 900,00 excl.

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

R 12 900,00 excl.

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APPENDIX D2: MANAGEMENT EFFECTIVENESS TRACKING TOOL (METT)

APPENDIX D2-1: METT REPORT FOR RIETVLEI WETLAND RESERVE (PNE)

REPORTING PROGRESS IN URBAN PROTECTED AREAS

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

Rietvlei Wetland
Reserve

Prepared for the
City of CapeTown
by
Howard Langley & Paul Britton
22 May 2007

REPORTING PROGRESS AT PROTECTED AREA SITES: DATA SHEET

Name of protected area	RIETVLEI WETLAND RESERVE (PNE)			
Location of protected area (country and if possible, map reference)	MILNERTON, CAPE TOWN, SOUTH AFRICA			
Date of establishment (distinguish between agreed and gazetted)	Agreed	N/A	Gazetted	1989
Ownership details (i.e. owner, tenure rights etc.)	CITY OF CAPE TOWN & W/WF-SA			
Management Authority	CITY OF CAPE TOWN			
Protected area size (ha)	650 HA			
Staff numbers	Permanent	6	Temporary	5
Budget	RELIANT ON NORTH AREA BUDGET			
Designation (ICUN category), World Heritage, Ramsar etc	PROTECTED NATURAL ENVIRONMENT			
Reason for designation	TO PROTECT URBAN WETLAND VALUES			
Brief detail of World Bank funded project or projects in PA	NONE			
Brief detail of W/WF funded project or projects in PA	NONE			
Brief detail of other relevant projects in PA	WORKING FOR WETLANDS SITE			
List two of the primary protected area objectives				
Objective 1	PROTECTING DYNAMIC WETLAND HABITATS AND ASSOCIATED BIODIVERSITY			
Objective 2	MAINTAINING STORMWATER AND RIVER DRAINAGE			
List the top two most important threat to the PA (and indicate reasons why they are selected)				
Threat 1	WATER POLLUTION AND CATCHMENT PRACTICES			
Threat 2	INVASIVE VEGETATION			
List top two critical management activities				
Activity 1	WATER QUALITY MONITORING			
Activity 2	INVASIVE VEGETATION CLEARING AND FOLLOW-UP			
Date assesement carried out:		13th June 2007		
Name of assessor:		Koos Retief		

1: Context : Where are we now?	Criteria	Value	Score	Comments	Next steps
1.1 Legal status Does the PA have secure permanent conservation legal status?	The PA's permanent legal conservation status is not secured by its current legal status eg Public Open Space.	0	0	Protected Natural Environment (PNE). This status may have been superseded by the Protected Areas Act. It has also been challenged by the Langebaan judgment.	1. Review current legal status and determine the most appropriate status to provide the most secure tenure.
	There is a formal agreement that the PA should be afforded the highest possible legal protection, but the process has not yet begun.	1			
	The PA is in the process of being afforded the highest possible legal protection.	2			
	The PA has Local Authority Nature Reserve status, or a higher level of legal protection.	3			
1.2. Protected Area regulations	There are no legal mechanisms for controlling inappropriate land use and activities in the PA	0		A MULTI-DISCIPLINARY ADVISORY BOARD MONITORS INAPPROPRIATE LAND USES, BUT DEVELOPMENT PRESSURE MAKES THIS DIFFICULT	1. RECONSTITUTE THE ADVISORY BOARD IN TERMS OF NEMA: BIODIVERSITY ACT OR WESTERN CAPE CONSERVATION ORDINANCE
	Legal mechanisms for controlling inappropriate land use activities in the PA exist but are not being implemented.	1			
	Legal mechanisms for controlling inappropriate land use and activities in the PA exist but there are some problems in effectively implementing them	2	2		
	Legal mechanisms for controlling inappropriate land use and activities in the PA exist and are being effectively implemented	3			
1.3. Law enforcement PA has capacity/resources to enforce regulations & bylaws well enough?	PA has no effective capacity/resources to enforce regulations & bylaws	0		1. RESERVE STAFF AND ADVISORY BOARD MONITOR COMPLIANCE WITH VLEI BY-LAW 2. AREA BASED LAW ENFORCEMENT STAFF MONITOR COMPLIANCE WITH LAWS 3. NO STAFF HAVE FORMAL PEACE OFFICER APPOINTMENTS	1. GET SHIFT ALLOWANCES APPROVED 2. APPOINT PEACE OFFICERS
	There are major deficiencies in capacity/resources to enforce regulations & bylaws (e.g. lack of skills, no patrol budget)	1			
	PA has acceptable capacity/resources to enforce regulations & bylaws but some deficiencies remain	2	2		
	PA has excellent capacity/resources to enforce regulations & bylaws	3			
1.4. Protected Area boundary demarcation Is the boundary known and demarcated?	The boundary of the PA is not known by the management authority or local residents/neighbouring land users	0		ONLY ABOUT 15% OF BOUNDARY IS FENCED	EXTEND FENCING
	The boundary of the PA is known by the management authority but is not known by local residents/neighbouring land users	1			
	The boundary of the PA is known by both the management authority and local residents but is not appropriately demarcated	2	2		
	The boundary of the PA is known by the management authority and local residents and is appropriately demarcated	3			
1.5. Resource inventory Do you have enough information to manage the area?	There is little or no information available on critical habitats, species and cultural values of the PA	0		MANY REPORTS EXIST, BUT THE INFORMATION IS NOT CONSOLIDATED	CONSOLIDATE THE INFORMATION
	Information on critical habitats, species and cultural values of the PA is not sufficient to support planning and decision making	1			
	Information on critical habitats, species and cultural values of the PA is sufficient for key areas of planning/decision making but the necessary survey work is not being maintained	2	2		
	Information concerning critical habitats, species and cultural values of the PA is sufficient to support planning and decision making and is being maintained	3			
Subtotal: Context		15	8		

2: Planning: Where do we want to be?	Criteria	Value	Score	Comments	Next steps
2.1. Protected area design Does the protected area need enlarging, corridors etc to meet its objectives?	Inadequacies in design mean achieving the PA's major management objectives is impossible	0	1	Large portions of public open space could be included into the Protected Area boundaries. Water quality is severely effected by activities in catchments outside of the control of the PA.	1. REVIEW THE BOUNDARY DESIGN 2. SUBMIT NEW BOUNDARIES FOR APPROVAL WITH AN APPLICATION FOR UPGRADE OF THE PNE DESIGNATION
	Inadequacies in design mean that achievement of major objectives are constrained to some extent	1			
	Design is not significantly constraining achievement of major objectives, but could be improved	2			
	Reserve design features are particularly aiding achievement of major objectives of the PA	3			
2.2 Management plan Is there a management plan (compliant with Protected Areas Act) and is it being implemented?	There is no standard Management Plan for the PA	0	2	"THE RIETVLEI WETLAND RESERVE: MANAGEMENT PLAN REPORT: FIRST EDITION - JANUARY 1994." CSIR REPORT EMAS-C93072(B)	1. MANAGEMENT PLAN MUST BE REVISED AND UPDATED
	A standard Management Plan is being prepared or has been prepared, but is not yet approved.	1			
	An approved Management Plan exists and is being implemented, but has not been updated/reviewed during the past five years.	2			
	An approved Management Plan exists, is being implemented and has been updated/reviewed during the past three years	3			
2.3. Conservation Development Framework (CDF) Is there a visitor use zoning system indicating position and nature of operation & visitor infrastructure?	There is no CDF for the PA	0	0	There is no CDF. However RietMei has been zoned for water based recreation.	1. A CDF NEEDS TO BE DEVELOPED
	A CDF is being prepared or has been prepared but is not being implemented	1			
	An approved CDF exists but it is only being partially implemented because of funding constraints or other problems	2			
	An approved CDF exists and is being implemented	3			
Supplementary items	The planning process allows adequate opportunity for key stakeholders to influence the management plan	1	1		
	There is an established schedule and process for periodic review and updating of the management plan	1			
	The results of monitoring, research and evaluation are routinely incorporated into planning	1			
Subtotal Score: Planning		12	4		

Criteria	Value	Score	Comments	Next steps
Research needs have not been identified nor is any research work taking place in the PA	0		RESEARCH IN THE FORM OF A "REHABILITATION STUDY" PRESENTLY UNDERWAY	1. GIVE INPUT INTO THE "REHABILITATION STUDY"
Research needs have been identified, but other than for ad hoc research, no management orientated research is being done.	1			
There is considerable research work but only limited "management" orientated research is being done.	2	2		
There is considerable research work being undertaken, which is relevant to management needs	3			
The PA has no HR capacity	0		STAFF PLACEMENT NOT COMPLETE AND NO FORMAL PEACE OFFICER APPOINTMENTS	1. PLACE OFFICIAL RESPONSIBLE FOR RESERVE MANAGEMENT IN A MANAGER'S POSITION 2. APPOINT PEACE OFFICERS 3. CHANGE TEMPORARY GATEKEEPER POSTS TO PERMANENT
HR capacity is inadequate for critical management activities	1			
HR capacity is sufficient, but there are deficiencies in necessary skills for critical management activities	2	2		
HR capacity and expertise is adequate for management needs	3			
There is no dedicated budget for the PA	0	0	PA'S budget has been amalgated into the area budget and is used to fund unfunded PA's.	1. SPLIT THE AREA-BASED BUDGET BACK TO RESERVE BUDGETS
The available budget is inadequate for basic management needs and presents a serious constraint to the capacity to manage	1			
The available budget is acceptable, but could be further improved to fully achieve effective management	2			
The available budget is sufficient and meets the full management needs of the PA	3			
The budget is secure/guaranteed for the PA on an annual cycle	1			
The budget is secure/guaranteed on a three year cycle	2			
The PA is not reliant on external funding	2			
	14	4		

4. Process: How do we go about it?	Criteria	Value	Score	Comments	Next steps
4.1. Annual Plan of Operation (APO) Is there an annual work plan/APO that is approved by the organisation?	No approved/standardised APO exists	0		MUCH OF THE WORK PERFORMED IS "REACTIVE" IN NATURE	1. COORDINATE DAILY ACTIVITIES ACCORDING TO THE APO
	An approved APO exists but activities are not monitored against the plan's targets	1	1		
	An approved APO exists and actions are monitored against the plan's targets, but many activities are not completed	2			
	Actions are monitored against the approved APO's targets and most or all prescribed activities are completed	3			
4.2. Resource management Is the protected area adequately managed (e.g. for fire, invasive species, poaching)?	Requirements for active management of critical ecosystems, species and cultural values have not been assessed	0		DEVELOPMENT PRESSURE AFFECTS MANAGEMENT EFFICIENCY	1. UPDATE MANAGEMENT PLAN
	Requirements for active management of critical ecosystems, species and cultural values are known but are not being addressed	1			
	Requirements for active management of critical ecosystems, species and cultural values are only being partially addressed	2	2		
	Requirements for active management of critical ecosystems, species and cultural values are substantially or fully addressed.	3			
4.3. Staff training Is there enough training for staff?	Staff are untrained	0		NO FIRE-BOSS QUALIFICATIONS	1. ATTEND SHORT COURSES FOR FIRE FIGHTING AND FIRE-BOSS, ETC
	Staff training and skills are low relative to the needs of the PA	1			
	Staff training and skills are adequate, but could be further improved to fully achieve the objectives of management	2	2		
	Staff training and skills are in tune with the management needs of the PA, and with anticipated future needs	3			
4.4. Budget management Is the budget managed to meet critical management needs?	Budget management is poor and significantly undermines effectiveness	0		AREA-BASED BUDGET NEGATES INSIGHT INTO THE BUDGET	1. SPLIT THE AREA-BASED BUDGET BACK TO RESERVE BUDGET
	Budget management is poor and constrains effectiveness	1	1		
	Budget management is adequate but could be improved	2			
	Budget management is excellent and aids effectiveness	3			
4.5. Operational equipment & infrastructure (as required for operational management purposes, but excluding tourism/visitor facilities)	There is little or no operational equipment & infrastructure	0		LAWN MOWING AND FIRE BREAK MAINTENANCE EQUIPMENT REQUIRED	1. PURCHASE LAWN MOWERS, WEED-EATERS AND BRUSHCUTTERS
	There is some equipment & infrastructure but these are wholly inadequate	1			
	There is equipment and infrastructure, but still some major gaps that constrain management	2	2		
	There is adequate operational equipment and infrastructure	3			
4.6 Maintenance of equipment & infrastructure Is equipment & infrastructure (including tourism/visitor facilities) adequately maintained?	There is no approved Maintenance Plan and no maintenance is taking place	0		LIMITED ON-SITE WORKSHOP AND STORAGE FACILITIES	1. COMPILE A MAINTENANCE PLAN 2. DEVELOP ON SITE WORKSHOP AND STORAGE FACILITIES
	There is no Maintenance Plan and maintenance is taking place to an unsatisfactory standard.	1	1		
	There is no Maintenance Plan, but maintenance is taking place to a satisfactory standard.	2			
	There is an approved Maintenance Plan that is being fully implemented to a high standard.	3			

4.7. Education and awareness programme Is there a planned education programme?	There is no education and awareness programme	0		EDUCATION PROGRAMME IS RELIANT ON ANNUAL STUDENTS FOR IMPLEMENTATION	1. APPOINT A FULL-TIME EDUCATION OFFICER
	There is a limited and <i>ad hoc</i> education and awareness programme, but no overall planning for this	1			
	There is a planned education and awareness programme but there are still serious gaps	2	2		
	There is a planned & effective education & awareness programme fully linked to the objectives and needs of the PA	3			
4.8. Government & commercial neighbours Is there co-operation with adjacent land users?	There is no contact between managers and neighbouring official or corporate land users	0		INDUSTRIAL WATER POLLUTERS DO NOT COMPLY WITH NATIONAL STANDARDS	1. IMPROVED COMPLIANCE WITH WATER QUALITY STANDARDS REQUIRED
	There is limited contact between managers and neighbouring official or corporate land users	1			
	There is regular contact between managers and neighbouring official or corporate land users, but only limited co-operation	2	2		
	There is regular contact between managers and neighbouring official or corporate land users, & substantial co-operative management	3			
4.9. Advisory committee/forum An Advisory Committee of local representatives and specialists advises on PA management & development issues.	There is no Advisory Committee/forum	0		Rietvlei Management Working Group	1. RECONSTITUTE THE ADVISORY BOARD IN TERMS OF NEMA: BIODIVERSITY ACT OR WESTERN CAPE CONSERVATION ORDINANCE
	An Advisory Committee/forum is in the process of being established communities	1			
	An Advisory Committee/forum exists, but does not contribute significantly to the management/development of the PA.	2			
	A well represented Advisory Committee/forum contributes significantly to the proper management/development of the PA.	3	3		
4.10. Community partners Do community partners have input to management decisions via the Advisory Committee?	Community partners have no input into decisions relating to the management of the PA	0		Rietvlei Management Working Group	1. RECONSTITUTE THE ADVISORY BOARD IN TERMS OF NEMA: BIODIVERSITY ACT OR WESTERN CAPE CONSERVATION ORDINANCE
	Community partners have limited input into the PA's management decisions via local governance structures	1			
	Community partners contribute to some decisions relating to management via the PA's Advisory Committee	2			
	Community partners are fully representative on the PA's Advisory Committee and directly participate decisions making.	3	3		
4.11. Commercial tourism Do commercial tour operators contribute to protected area management?	There is little or no contact between managers and tourism operators using the PA	0		N/A	N/A
	There is contact between managers and tourism operators but this is largely confined to administrative or regulatory matters	1			
	There is limited co-operation between managers and tourism operators to enhance visitor experiences and maintain conservation values	2			
	There is excellent co-operation between managers and tourism operators to enhance visitor experiences, protect values and resolve conflicts	3			
4.12. Monitoring & evaluation	There is no monitoring and evaluation in the PA	0		WATER QUALITY MONITORING AND AVIFAUNA CENSUSES ARE WELL STRUCTURED, BUT OTHER BIODIVERSITY ASPECTS ARE MONITORED ON AN AD HOC BASIS	1. DRAFT A COMPREHENSIVE MONITORING PROGRAMME
	There is some <i>ad hoc</i> monitoring & evaluation, but no overall strategy and/ or no regular collection of results	1			
	There is an agreed and implemented monitoring & evaluation system but results are not systematically used for management	2	2		
	A good monitoring & evaluation system exists, is well implemented and used in adaptive management	3			

Criteria	Value	Score	Comments	Next steps
There are no visitor facilities and services	0	2	NOT ENOUGH BIRD WATCHING FACILITIES	1. CONSTRUCT ADDITIONAL BOARDWALKS AND BIRD HIDES
Visitor facilities and services are inappropriate for current levels of visitation or are under construction	1			
Visitor facilities and services are adequate for current levels of visitation but could be improved	2			
Visitor facilities and services are excellent for current levels of visitation	3			
There are active programmes for restoration of degraded areas within the PA and/or in associated buffer zone	1	1	ALIEN CLEARING AND PLANTING OF PROPAGATED MATERIAL	1. MONITOR REHABILITATION
Important biodiversity, ecological and cultural values are being severely degraded in the PA	0	2	POOR WATER QUALITY AFFECTS WETLAND VALUES	1. IMPLEMENT RECOMMENDATIONS FROM "REHABILITATION STUDY"
Some biodiversity, ecological and cultural values are being severely degraded	1			
Some biodiversity, ecological and cultural values are being partially degraded but the most important values have not been significantly impacted	2			
Biodiversity, ecological and cultural values are predominantly intact	3			
Protection systems (patrols, permits etc) are ineffective in controlling access or use of the PA in accordance with designated objectives	0	2	ADDITIONAL FENCING IS UNDERWAY	1. COMPLETE BOUNDARY MEASURES ARE REQUIRED
Protection systems are only partially effective in controlling access or use of the PA in accordance with designated objectives	1			
Protection systems are moderately effective in controlling access or use of the PA in accordance with designated objectives	2			
Protection systems are largely or wholly effective in controlling access or use of the PA in accordance with designated objectives	3			
The existence of the PA has reduced the options for economic development of the local communities	0	2	MILNERTON AQUATIC CLUB AND CAPE RADIO FLYERS CLUB OPERATIVE IN PA	
The existence of the PA has neither damaged nor benefited the economy of the local economy	1			
There is some flow of economic benefits to local communities from the existence of the PA but this is of minor significance to the regional economy	2			
There is a significant or major flow of economic benefits to local communities from activities in and around the PA (e.g. employment of locals, locally operated commercial tours etc)	3			
The existence of the PA has not delivered any direct or indirect community benefits	0	2	RECREATIONAL POTENTIAL IS UTILIZED AND FRIENDS OF RIETVLEI OPERATES FROM THE RIETVLEI EDUCATION CENTRE	
The existence of the PA has delivered some minor short term community benefits	1			
The PA delivers some quantifiable long term community benefits that make a difference to the lives of local communities	2			
The PA delivers considerable quantifiable long term community benefits that make a real difference to the lives of local	3			

1: CONTEXT	VALUE	SCORE			
1.1. Legal status	3	0			
1.2. Protected Area regulations	3	2			
1.3. Law enforcement	3	2			
1.4. Protected area demarcation	3	2			
1.5. Resource Inventory	3	2			
Subtotal	15	8			
2: PLANNING					
2.1. Protected area design	3	1			
2.2. Management plan	3	2			
2.3. Conservation Development Framework	3	0			
Additional Points	3	1			
Subtotal	12	4			
3: INPUTS					
3.1. Research	3	2			
3.2. Staff numbers	3	2			
3.3. Current budget	3	0			
Supplementary items	5	0			
Subtotal	14	4			
4: PROCESS					
4.1. Annual Plan of Operation	3	1			
4.2. Resource management	3	2			
4.3. Staff training	3	2			
4.4. Budget management	3	1			
4.5. Operational equipment & infrastructure	3	2			
4.6. Maintenance of equipment & infrastructure	3	1			
4.7. Education & awareness	3	2			
4.8. Government & commercial neighbours	3	2			
4.9. Advisory committee	3	3			
4.10. Community partners	3	3			
4.11. Commercial Tourism	3	0			
4.12. Monitoring & Evaluation	3	2			
Supplementary items	1	1			
Subtotal	37	22			
5: OUTPUTS/OUTCOMES					
5.1. Visitor facilities	3	2			
5.2. Condition assessment	3	2			
5.3. Access assessment	3	2			
5.4. Economic benefit assessment	3	2			
5.5. Community benefit assessment	3	2			
Supplementary items	1	1			
Subtotal	16	11			
TOTAL SCORE	94	49	52%		
Summary and comment of score. The score reflects the long standing establishment of the PA. The legal status needs urgent review in terms of the Protected Areas Act and the "Langebaan" judgment. The management plan is needs urgent review to provide objectives to be able to manage towards a desired state. A research and monitoring plan is essential to be able to understand changes in the natural systems to ensure that objectives are being met. .					

REPORTING PROGRESS IN URBAN PROTECTED AREAS

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

**Diep Rivier
Fynbos Corridor**

Prepared for the
City of Cape Town
by
Howard Langley & Paul Britton
May 2007

REPORTING PROGRESS AT PROTECTED AREA SITES: DATA SHEET				
Name of protected area	DIEP RIVER FLOODPLAIN			
Location of protected area (country and if possible, map references)	PARKLANDS, CAPE TOWN, SOUTH AFRICA			
Date of establishment (distinguish between agreed and gazetted)	Agreed	N/A	Gazetted	N/A
Ownership details (i.e. owner, tenure rights etc.)	CITY OF CAPE TOWN			
Management Authority	CITY OF CAPE TOWN			
Protected area size (ha)	UNKNOWN			
Staff numbers	Permanent	0	Temporary	1
Budget	NONE			
Designation (ICUN category), World Heritage, Ramsar etc	NONE			
Reason for designation	N/A			
Brief detail of World Bank funded project or projects in PA	NONE			
Brief detail of WWF funded project or projects in PA	FIRST SITE MANAGER APPOINTED FOR 2 YEARS (TMF)			
Brief detail of other relevant projects in PA	WORKING FOR WETLANDS SITE			
List two of the primary protected area objectives				
Objective 1	Promote connectivity between BCA, Rietvlei Wetlands Reserve and Tygerberg N			
Objective 2	PROTECTING ECOLOGICAL FUNCTION OF DIEP RIVER FLOODPLAIN			
List the top two most important threat to the PA (and indicate reasons why they are selected)				
Threat 1	PROPOSED HOUSING DEVELOPMENT INSIDE BOUNDARY			
Threat 2	ILLEGAL ACCESS INTO THE SITE (DUMPING, 4X4, CATTLE GRAZING, POACHING)			
List top two critical management activities				
Activity 1	VEGETATION RESTORATION AND REHABILITATION			
Activity 2	ACCESS CONTROL, BOUNDARY MEASURES AND PUBLIC AWARENESS			
Date assesement carried out:		13th June 2007		
Name of assessor:		Sandiso Kraai		

1. Context: Where are we now?	Criteria	Value	Score	Comments	Next steps
1.1 Legal status Does the PA have secure permanent conservation legal status?	The PA's permanent legal conservation status is not secured by its current legal status eg Public Open Space.	0	0	NO FORMAL COUNCIL DECISION TO PROTECT THE SITE	1. DECIDE ON APPROPRIATE LEGAL DESIGNATION. 2. FINALIZE PROPOSED BOUNDARY 3. SUBMIT REPORT TO COUNCIL
	There is a formal agreement that the PA should be afforded the highest possible legal protection, but the process has not yet begun.	1			
	The PA is in the process of being afforded the highest possible legal protection.	2			
	The PA has Local Authority Nature Reserve status, or a higher level of legal protection.	3			
1.2. Protected Area regulations	There are no legal mechanisms for controlling inappropriate land use and activities in the PA	0		THERE'S NO ADVISORY BOARD	INCORPORATE INTO RIETVLEI MANAGEMENT WORKING GROUP
	Legal mechanisms for controlling inappropriate land use activities in the PA exist but are not being implemented.	1	1		
	Legal mechanisms for controlling inappropriate land use and activities in the PA exist but there are some problems in effectively implementing them	2			
	Legal mechanisms for controlling inappropriate land use and activities in the PA exist and are being effectively implemented	3			
1.3. Law enforcement PA has capacity/resources to enforce regulations & bylaws well enough?	PA has no effective capacity/resources to enforce regulations & bylaws	0		VERY FEW STAFF; NO FORMAL APPOINTMENTS; NO SHIFT ALLOWANCE FOR AFTER-HOUR WORK	1. GET SHIFT ALLOWANCES APPROVED; 2. APPOINT PEACE OFFICERS
	There are major deficiencies in capacity/resources to enforce regulations & bylaws (e.g. lack of skills, no patrol budget)	1	1		
	PA has acceptable capacity/resources to enforce regulations & bylaws but some deficiencies remain	2			
	PA has excellent capacity/resources to enforce regulations & bylaws	3			
1.4. Protected Area boundary demarcation Is the boundary known and demarcated?	The boundary of the PA is not known by the management authority or local residents/neighbouring land users	0		PROPOSED BOUNDARIES ARE NOT FINALISED; ONLY ABOUT 1KM IS FENCED	FINALIZE BOUNDARIES AND EXTEND FENCING
	The boundary of the PA is known by the management authority but is not known by local residents/neighbouring land users	1	1		
	The boundary of the PA is known by both the management authority and local residents but is not appropriately demarcated	2			
	The boundary of the PA is known by the management authority and local residents and is appropriately demarcated	3			
1.5. Resource inventory Do you have enough information to manage the area?	There is little or no information available on critical habitats, species and cultural values of the PA	0		MANAGEMENT OF THE SITE ONLY STARTED 2 MONTHS AGO	1. CONSOLIDATE THE INFORMATION; 2. REVIEW THE MANAGEMENT PLAN
	Information on critical habitats, species and cultural values of the PA is not sufficient to support planning and decision making	1			
	Information on critical habitats, species and cultural values of the PA is sufficient for key areas of planning/decision making but the necessary survey work is not being maintained	2	2		
	Information concerning critical habitats, species and cultural values of the PA is sufficient to support planning and decision making and is being maintained	3			

Criteria	Value	Score	Comments	Next steps
Inadequacies in design mean achieving the PA's major management objectives is impossible	0		THE FLOODPLAIN SERVES AS A CORRIDOR, BUT THE DESIGN IS NOT YET FINALIZED	FINALIZE AND APPROVE THE DESIGN
Inadequacies in design mean that achievement of major objectives are constrained to some extent	1			
Design is not significantly constraining achievement of major objectives, but could be improved	2	2		
Reserve design features are particularly aiding achievement of major objectives of the PA	3			
There is no standard Management Plan for the PA	0		"THE DIEP RIVER CORRIDOR BETWEEN BLAAUWBERG ROAD BRIDGE AND THE N7 FREEWAY: MANAGEMENT PLAN" (1999). NINHAM SHAND REPORT NO 3005/8766	MANAGEMENT PLAN MUST BE REVISED AND UPDATED
A standard Management Plan is being prepared or has been prepared, but is not yet approved.	1			
An approved Management Plan exists and is being implemented, but has not been updated/reviewed during the past five years.	2	2		
An approved Management Plan exists, is being implemented and has been updated/reviewed during the past three years	3			
There is no CDF for the PA	0	0		
A CDF is being prepared or has been prepared but is not being implemented	1			
An approved CDF exists but it is only being partially implemented because of funding constraints or other problems	2			
An approved CDF exists and is being implemented	3			
The planning process allows adequate opportunity for key stakeholders to influence the management plan	1			
There is an established schedule and process for periodic review and updating of the management plan	1			
The results of monitoring, research and evaluation are routinely incorporated into planning	1			
	12	4		

Criteria	Value	Score	Comments	Next steps
Research needs have not been identified nor is any research work taking place in the PA	0	0	MANAGEMENT OF THE SITE ONLY STARTED 2 MONTHS AGO	IDENTIFY RESEARCH NEEDS
Research needs have been identified, but other than for ad hoc research, no management orientated research is being done.	1			
There is considerable research work but only limited "management" orientated research is being done.	2			
There is considerable research work being undertaken, which is relevant to management needs	3			
The PA has no HR capacity	0		ONLY 1 SITE MANAGE APPOINTED FOR 2 YEARS	1. CHANGE POST TO PERMANENT; 2. IDENTIFY AND FILL VACANCIES
HR capacity is inadequate for critical management activities	1	1		
HR capacity is sufficient, but there are deficiencies in necessary skills for critical management activities	2			
HR capacity and expertise is adequate for management needs	3			
There is no dedicated budget for the PA	0	0	ONLY 1 AREA BASED BUDGET FOR THE NORTH	CREATE SEPARATE BUDGET
The available budget is inadequate for basic management needs and presents a serious constraint to the capacity to manage	1			
The available budget is acceptable, but could be further improved to fully achieve effective management	2			
The available budget is sufficient and meets the full management needs of the PA	3			
The budget is secure/guaranteed for the PA on an annual cycle	1			
The budget is secure/guaranteed on a three year cycle	2			
The PA is not reliant on external funding	2			
	14	1		

4: Process : How do we go about it?	Criteria	Value	Score	Comments	Next steps
4.1. Annual Plan of Operation (APO) Is there an annual work plan/APO that is approved by the organisation?	No approved/standardised APO exists	0		LIMITED RESOURCES AND STAFF CAPACITY	1. SET UP A BUDGET; 2. APPOINT STAFF
	An approved APO exists but activities are not monitored against the plan's targets	1			
	An approved APO exists and actions are monitored against the plan's targets, but many activities are not completed	2	2		
	Actions are monitored against the approved APO's targets and most or all prescribed activities are completed	3			
4.2. Resource management Is the protected area adequately managed (e.g. for fire, invasive species, poaching)?	Requirements for active management of critical ecosystems, species and cultural values have not been assessed	0		LIMITED RESOURCES AND STAFF CAPACITY	1. SET UP A BUDGET; 2. APPOINT STAFF
	Requirements for active management of critical ecosystems, species and cultural values are known but are not being addressed	1			
	Requirements for active management of critical ecosystems, species and cultural values are only being partially addressed	2	2		
	Requirements for active management of critical ecosystems, species and cultural values are substantially or fully addressed.	3			
4.3. Staff training Is there enough training for staff?	Staff are untrained	0		1 STAFF MEMBER WITH NATIONAL DIPLOMA	SHORT COURSES FOR FIRE FIGHTING, ETC
	Staff training and skills are low relative to the needs of the PA	1			
	Staff training and skills are adequate, but could be further improved to fully achieve the objectives of management	2	2		
	Staff training and skills are in tune with the management needs of the PA, and with anticipated future needs	3			
4.4. Budget management Is the budget managed to meet critical management needs?	Budget management is poor and significantly undermines effectiveness	0		N/A	N/A
	Budget management is poor and constrains effectiveness	1			
	Budget management is adequate but could be improved	2			
	Budget management is excellent and aids effectiveness	3			
4.5. Operational equipment & infrastructure (as required for operational management purposes, but excluding tourism/visitor facilities)	There is little or no operational equipment & infrastructure	0		MANAGEMENT OF THE SITE ONLY STARTED 2 MONTHS AGO	COMPILE A DEVELOPMENT PLAN
	There is some equipment & infrastructure but these are wholly inadequate	1			
	There is equipment and infrastructure, but still some major gaps that constrain management	2			
	There is adequate operational equipment and infrastructure	3			
4.6 Maintenance of equipment & infrastructure Is equipment & infrastructure (including tourism/visitor facilities) adequately maintained?	There is no approved Maintenance Plan and no maintenance is taking place	0			COMPILE A MAINTENANCE PLAN
	There is no Maintenance Plan and maintenance is taking place to an unsatisfactory standard.	1			
	There is no Maintenance Plan, but maintenance is taking place to a satisfactory standard.	2	2		
	There is an approved Maintenance Plan that is being fully implemented to a high standard.	3			

4.7. Education and awareness programme Is there a planned education programme?	There is no education and awareness programme	0			COMPILE AN EDUCATION AND AWARENESS PLAN
	There is a limited and <i>ad hoc</i> education and awareness programme, but no overall planning for this	1	1		
	There is a planned education and awareness programme but there are still serious gaps	2			
	There is a planned & effective education & awareness programme fully linked to the objectives and needs of the PA	3			
4.8. Government & commercial neighbours Is there co-operation with adjacent land users? Fix note	There is no contact between managers and neighbouring official or corporate land users	0			SIGNAGE REQUIRED
	There is limited contact between managers and neighbouring official or corporate land users	1			
	There is regular contact between managers and neighbouring official or corporate land users, but only limited co-operation	2	2		
	There is regular contact between managers and neighbouring official or corporate land users, & substantial co-operative management	3			
4.9. Advisory committee/forum An Advisory Committee of local representatives and specialists advises on PA management & development issues.	There is no Advisory Committee/forum	0	0	NO ADVISORY BOARD	INCORPORATE INTO RIETVLEI MANAGEMENT PLAN
	An Advisory Committee/forum is in the process of being established communities	1			
	An Advisory Committee/forum exists, but does not contribute significantly to the management/development of the PA.	2			
	A well represented Advisory Committee/forum contributes significantly to the proper management/development of the PA.	3			
4.10. Community partners Do community partners have input to management decisions via the Advisory Committee?	Community partners have no input into decisions relating to the management of the PA	0		NO ADVISORY BOARD	INCORPORATE INTO RIETVLEI MANAGEMENT PLAN
	Community partners have limited input into the PA's management decisions via local governance structures	1	1		
	Community partners contribute to some decisions relating to management via the PA's Advisory Committee	2			
	Community partners are fully representative on the PA's Advisory Committee and directly participate decisions making.	3			
4.11. Commercial Tourism Do commercial tour operators contribute to protected area management?	There is little or no contact between managers and tourism operators using the PA	0		N/A	N/A
	There is contact between managers and tourism operators but this is largely confined to administrative or regulatory matters	1			
	There is limited co-operation between managers and tourism operators to enhance visitor experiences and maintain conservation values	2			
	There is excellent co-operation between managers and tourism operators to enhance visitor experiences, protect values and resolve conflicts	3			
4.12. Monitoring & evaluation	There is no monitoring and evaluation in the PA	0		MANAGEMENT OF THE SITE ONLY STARTED 2 MONTHS AGO	NEED TO DRAFT A MONITORING PROGRAMME
	There is some <i>ad hoc</i> monitoring & evaluation, but no overall strategy and/ or no regular collection of results	1	1		
	There is an agreed and implemented monitoring & evaluation system but results are not systematically used for management	2			
	A good monitoring & evaluation system exists, is well implemented and used in adaptive management	3			

5. Outputs/Outcomes: What were the results/achievements?	Criteria	Value	Score	Comments	Next steps
5.1. Visitor facilities	There are no visitor facilities and services	0		PATHS AND TRACKS ARE INAPPROPRIATE	CLOSE AND REHABILITATE SOME TRACKS, MAINTAIN OR RE-DIRECT OTHER TRACKS, CONSTRUCT BOARDWALKS ETC
Are visitor/tourism facilities good enough and sufficient to prevent damage to the PA?	Visitor facilities and services are inappropriate for current levels of visitation or are under construction	1	1		
	Visitor facilities and services are adequate for current levels of visitation but could be improved	2			
	Visitor facilities and services are excellent for current levels of visitation	3			
Additional points	There are active programmes for restoration of degraded areas within the PA and/or in associated buffer zone	1	1	ALIEN CLEARING	REHABILITATION
5.2. Ecological & Cultural condition assessment	Important biodiversity, ecological and cultural values are being severely degraded in the PA	0		VEGETATION IS BEING DESTROYED BY 4X4 AND OFFROAD VEHICLES; CATTLE GRAZE IN THE FLOODPLAIN; HISTORICAL UNCONTROLLED ACCESS RESULTED IN DUMPING AND LITTERING; PEDESTRIANS CAN CAUSE WILDFIRES	1. DEFINE BOUNDARIES; 2. EXTEND FENCING; 3. CONSTRUCT SIGNAGE
Is the protected area being managed consistent to its objectives?	Some biodiversity, ecological and cultural values are being severely degraded	1			
	Some biodiversity, ecological and cultural values are being partially degraded but the most important values have not been significantly impacted	2	2		
	Biodiversity, ecological and cultural values are predominantly intact	3			
5.3. Access assessment	Protection systems (patrols, permits etc) are ineffective in controlling access or use of the PA in accordance with designated objectives	0	0	ONLY 1 KM OF FENCING WAS CONSTRUCTED THIS MONTH	ADDITIONAL BOUNDARY MEASURES NEED TO BE IMPLEMENTED
Are the available management mechanisms working to control access or use?	Protection systems are only partially effective in controlling access or use of the PA in accordance with designated objectives	1			
	Protection systems are moderately effective in controlling access or use of the PA in accordance with designated objectives	2			
	Protection systems are largely or wholly effective in controlling access or use of the PA in accordance with designated objectives	3			
5.4. Economic benefit assessment	The existence of the PA has reduced the options for economic development of the local communities	0			
Is the Protected Area providing economic benefits to local communities?	The existence of the PA has neither damaged nor benefited the economy of the local economy	1	1		
	There is some flow of economic benefits to local communities from the existence of the PA but this is of minor significance to the regional economy	2			
	There is a significant or major flow of economic benefits to local communities from activities in and around the PA (e.g. employment of locals, locally operated commercial tours etc)	3			
5.5. Community benefit assessment (other than economic) e.g. recreation & education facilities, community hall, sport facilities etc.	The existence of the PA has not delivered any direct or indirect community benefits	0		OPEN SPACE IS A VALUABLE ASSET IN A BUILT-UP ENVIRONMENT	
	The existence of the PA has delivered some minor short term community benefits	1			
	The PA delivers some quantifiable long term community benefits that make a difference to the lives of local communities	2	2		
	The PA delivers considerable quantifiable long term community benefits that make a real difference to the lives of local	3			

1: CONTEXT	VALUE	SCORE	
1.1. Legal status	3	0	
1.2. Protected Area regulations	3	1	
1.3. Law enforcement	3	1	
1.4. Protected area demarcation	3	1	
1.5. Resource Inventory	3	2	
Subtotal	15	5	
2: PLANNING			
2.1. Protected area design	3	2	
2.2. Management plan	3	2	
2.3. Conservation Development Framework	3	0	
Supplementary items	3	0	
Subtotal	12	4	
3: INPUTS			
3.1. Research	3	0	
3.2. Staff numbers	3	1	
3.3. Current budget	3	0	
Supplementary items	5	0	
Subtotal	14	1	
4: PROCESS			
4.1. Annual Plan of Operation	3	2	
4.2. Resource management	3	2	
4.3. Staff training	3	2	
4.4. Budget management	3	0	
4.5. Operational equipment & infrastructure	3	0	
4.6. Maintenance of equipment & infrastructure	3	2	
4.7. Education & awareness	3	1	
4.8. Government & commercial neighbours	3	2	
4.9. Advisory committee	3	0	
4.10. Community partners	3	1	
4.11. Commercial Tourism	3	0	
4.12. Monitoring & Evaluation	3	1	
Supplementary items	1	1	
Subtotal	37	14	
5: OUTPUTS/OUTCOMES			
5.1. Visitor facilities	3	1	
5.2. Condition assessment	3	2	
5.3. Access assessment	3	0	
5.4. Economic benefit assessment	3	1	
5.5. Community benefit assessment	3	2	
Supplementary items	1	1	
Subtotal	16	7	
TOTAL SCORE	94	31	33%
Summary and comment on score. The score reflects the very new nature of the PA. Priorities should be: 1.The formal declaration (pending the outcome of the recommended legal review) and 2. The compilation of a management plan setting objectives. 3. Improvement of law enforcement after hours			

APPENDIX D3-1: ADMINISTRATION OFFICE DEVELOPMENT



for a living planet®

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28 September 2010

Attention: Koos Retief
Functional/Operational Manager: Milnerton Area
Biodiversity Management Branch
City of Cape Town
CAPE TOWN
E-mail: JacobusJ.Retief@capetown.gov.za

Dear Sirs

Re: Permission to construct offices on the Rietvlei Nature Reserve

Regarding correspondence received from the City of Cape Town who wishes to erect structures on properties owned by WWF-SA namely:

REM. ERF 8611 MILNERTON, DIV.. CAPE and
REM. ERF 10085 MILNERTON, DIV.. CAPE

The following comments apply:

We wish to record that the property in question is subject to the terms and conditions of the current notarial lease agreement concluded between us and registered against the title of the property at the Cape Town deeds office under number K622/1999.

While we have no objection to the erection of structures for offices for the conservation staff of CCT and hereby grant our consent in terms of clause 8 of the said lease agreement, we wish to record that the provisions of clause 8.2 applies. A copy of the lease agreement is attached hereto for your ease of reference.

Please note therefore, that

1. Any improvements erected on the property will therefore be subject to the terms and conditions of the lease agreement;
 - a. WWF-SA gives the right to the City to occupy the premises without payment of rental;
 - b. That the property can be sold/donated to a third party without the consent of the contributor (CCT), subject to terms and conditions of the current lease agreement;
 - c. WWF-SA will not be liable to pay for electricity, water consumption or rates on this or other land it may own in the CCT which is to be used for biodiversity conservation purposes;
 - d. The CCT will be solely responsible for upkeep and maintaining the buildings.



2. In addition, please note that neither WWF nor our conveyance lawyers have any record of WWF's consent being requested by CCT to sub-lease a portion of the property to the Milnerton Aquatic Club. We do however now include this retrospective consent.

Other issues to be considered:

3. WWF requires clarification of the amount donated to CCT (then Milnerton Municipality) for Rietvlei land purchase in 1992 and would like any proof on which properties were finally purchase with this amount.
4. WWF requests an exemption from property Rates on all other WWF-SA land held in the CCT – details of such land will be provided on request.
5. Future potential for land swap for conservation-worthy land for the above-mentioned WWF-SA owned properties.

We suggest that a meeting with the relevant City of Cape Town and WWF officials will most effectively take the latter points 3-5 further. Please revert to Nwilson@wwf.org.za at your convenience in this matter.

Yours sincerely

A handwritten signature in black ink, appearing to read "Morné du Plessis".

Dr Morné du Plessis
CHIEF EXECUTIVE OFFICER

APPENDIX D4: SENSITIVITY-VALUE ANALYSIS: RIETVLEI WETLANDS

Rietvlei Sensitivity value and zonation report_FINAL_REPORT.doc

SENSITIVITY- VALUE ANALYSIS AND ZONATION PROCESS:

Rietvlei Wetlands Conservation Area



Prepared for the Biodiversity Branch and Environmental Management Systems Branch
NOVEMBER 2010

Arne Purves
Natural Resource Specialist
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1. Introduction

Rietvlei The reserve forms part of the City's Biodiversity Network and was established as a formally protected area in 2006.

The represented vegetation types are Cape Flats Dune Strandveld: West Coast type (EN) and Cape Flats Sand Fynbos (CE) (Rebello *et al*, 2006). These vegetation types are all listed as threatened ecosystems under National Environmental Management: Biodiversity Act (Act 10 of 2004), DEAT (in press).

1.1 Scope of Report

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

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

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

- The Sensitivity-Value analysis, the CDF and the associated zonation plan should form part of an adaptive management system. They will grow and change over time as the understanding of the landscapes and ecosystems improve; and

- *It does not replace the need for detailed site and precinct planning and EIA compliance at site level.*

2. Background and Brief

The Sensitivity-Value analysis was undertaken by the EMS Branch's natural resource specialist. The methodology used for both the Sensitivity-Value analysis and the zonation process was adapted from Holness (2008) and SRK Consulting (2008).

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

The brief for the project was to compile a Sensitivity-Value analysis and zonation plan for the Rietvlei Wetlands Conservation Area

3. Sensitivity-Value Analysis

Sensitivity-Value Analysis and Zoning Process methodology

Stage 1: Data synthesis and compilation

Compilation of required data for the analysis

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

Stage 2: Layer interpretation

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

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

Stage 3: Sensitivity-Value Analysis

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

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

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

Stage 4: Development of a draft zonation plan

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

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

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

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

Stage 6: Final Zonation and Conservation Development Framework.

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

3.1 Input Layers

The study area for the sensitivity analysis was defined as the current management boundary of the Rietvlei Wetlands Conservation Area. This boundary was also buffered by 500m for use in the topographic and visual sensitivity analysis.

3.1.1 Biodiversity

3.1.1a Habitat Value

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

The South African National Vegetation Map (Rebello et al, 2006) was used to broadly define the habitat units. The NSBA (Driver *et al*, 2005) values were used to inform current ecosystem status and level of protection of vegetation types within the study area.

The following factors were also incorporated in the habitat value calculation

- A refined vegetation map was compiled using aerial imagery and expert knowledge. The broader national vegetation units were still used to delineate the habitat units for the reserve.
- The value assigned to a habitat unit should reflect the contribution that vegetation type makes to the local, provincial and national conservation estate.
- This value should reflect the rarity of the habitat, the level of transformation that occurred within the habitat type, species richness and diversity, habitat heterogeneity, and contribution to local conservation targets as identified in the City's Biodiversity Network (Benn, 2008).
- The habitat value also takes into account a gap analysis (how much is in reserves), whereby habitat types that exists largely outside of protected areas receive a higher value.

Broad habitat value is a poor indication of the value of a particular site if a reserve has a history of significant transformation or degradation. Where a reserve includes transformed and/or degraded areas these need to inform the adjustment of the broad habitat value to reflect:

- The level and type of transformation that has occurred at a particular site.
- The rehabilitation/restoration potential of a site. Areas that are likely to revert, with a minimum of management intervention, to a natural or near natural state should be allocated a higher value than areas where extensive management intervention is required.
- Degraded or developed areas were considered to have lower habitat values. The habitat values were adjusted downwards according to the level and type of degradation or habitat loss that has occurred.

Data Inputs (GIS methods and sources)

Base habitat map:

The Rietvlei vegetation map was used to delineate habitat units according to their national vegetation type. This was compiled using the Cape Town Vegetation map and recent aerial photography to correct the vegetation unit boundaries and add missing areas. The broader vegetation types as listed in the South African Vegetation Map (Rebello *et al*, 2006) were used as the smallest vegetation unit (see Figure 1). The values used to adjust the base habitat scores are the listed in Table 2.

For Rietvlei it was necessary to separate out the wetlands and water bodies, and these were included as a special habitats layer. The final combined base habitat value layer is a combination of these two layers (see Figure 3c).

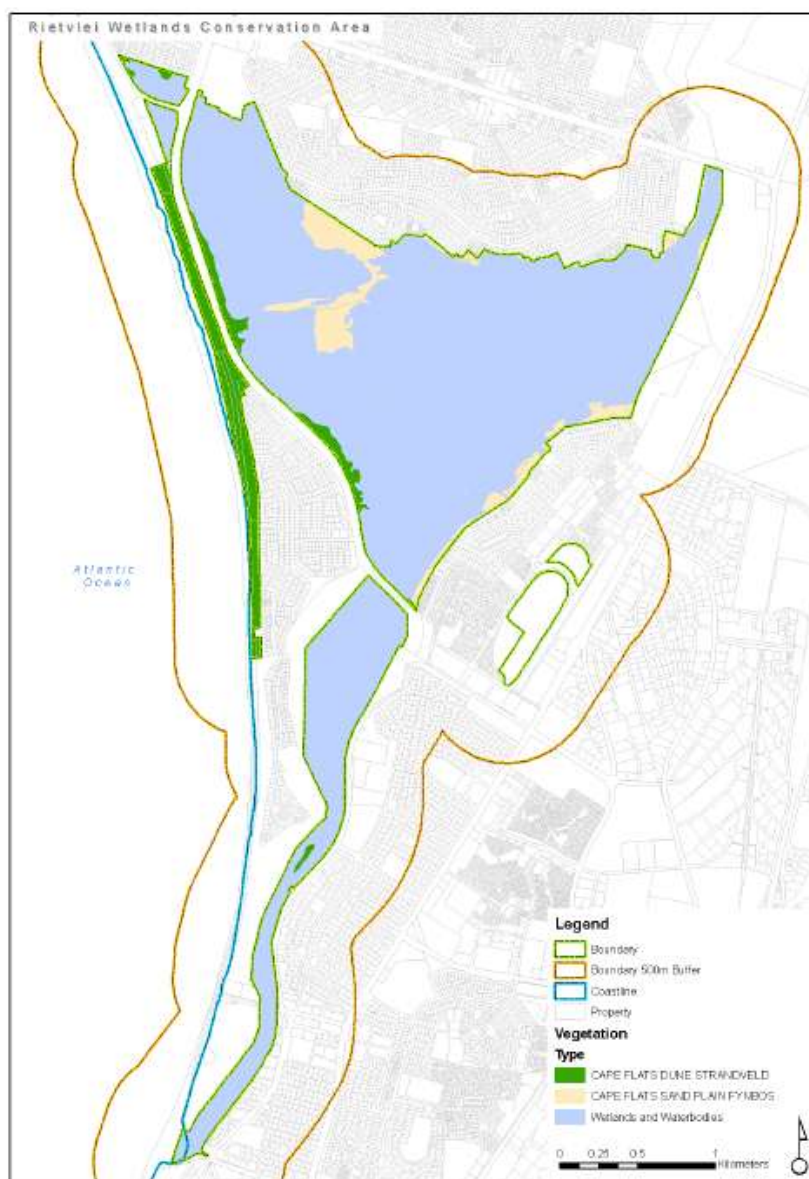


Figure 1: Rietvlei Wetlands Conservation Area: Study Area and Vegetation Types

3.1.1b: Transformation # Degradation Map:

Habitat transformation and degradation was mapped from recent aerial photography (2005, 2007 and 2008). Habitat modifiers are listed in Table 1 and Figure 2 shows their types and spatial extent.

Table 1: Habitat Modifiers

Type	Category	Description
Transformed	Facilities	Facilities for use by public within the reserve (Ablutions, displays, benches, bird hides etc.)
	Housing and hard surfaces	Formal and informal housing, incl. old sites that still have hard surfaces, paved parking areas etc.
	Quarries	Open excavation or burrow pits – can be current or historic
	Road & paths	The road (management and access roads), trail and boardwalk network
	Dams	Artificial water impoundments and Bulk water infrastructure
	Recreational Open Space	Primarily areas where lawns are maintained for public recreation. Often associated with non-indigenous tree planting for shade etc.
Degraded Severe, Heavy, moderate or Low	Firebreaks/fencing	Strips of cleared land maintained for fire management. Including the boundary fencing which usually incorporates a firebreak.
	Invasive Alien vegetation	These areas include sites that have an Invasive Alien Plant infestation density of more than 75%. Sites need to be assessed in terms of their restoration potential. This would also include plantation (Forestry) sites.
	Disturbed	Areas where the natural habitat is not in a near-natural state, but is also not irreversibly transformed. These areas still perform important habitat and ecosystem functions.

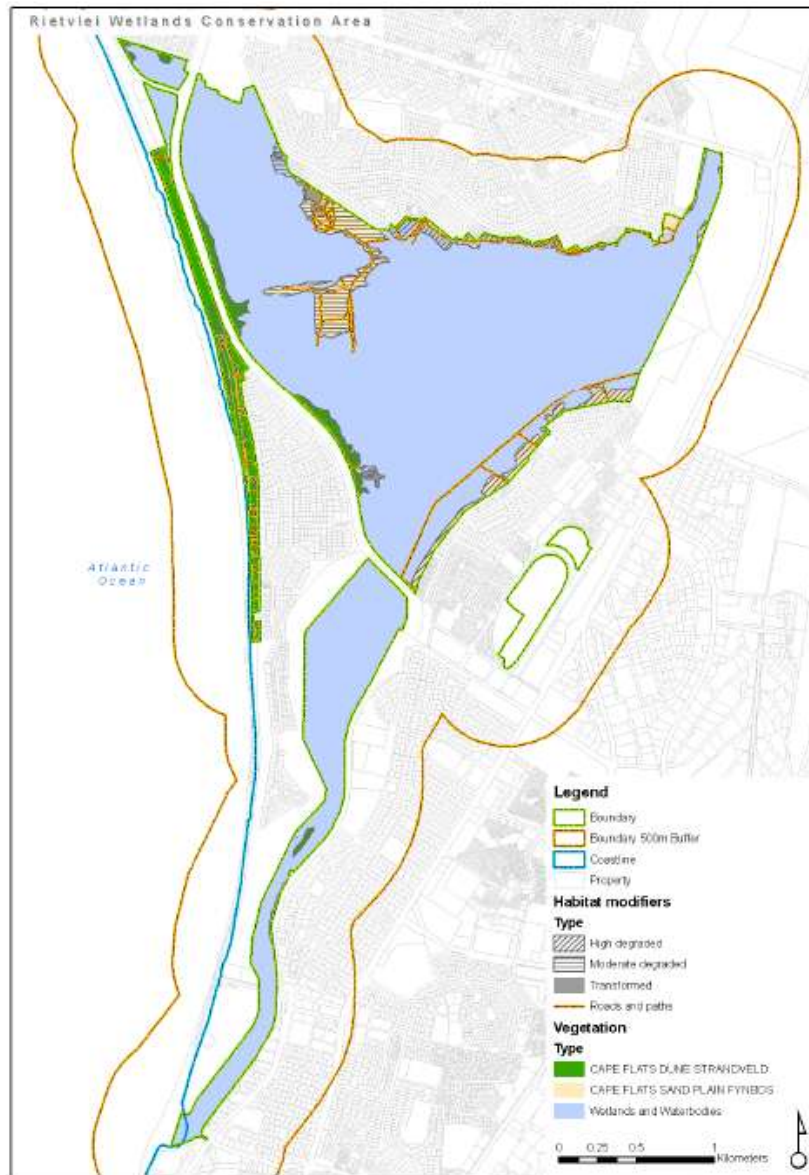


Figure 2: Rietvlei Wetlands Conservation Area: Habitat Modifiers

Scoring, Logic and rationale

The scoring method derived was as follows:

1. Base values were assigned to the study area according to the ecosystem status of the vegetation types (Table 2).
2. The Base values were adjusted on the basis of habitats that are likely to receive an adjusted conservation status under the "Criterion D" listing of threatened ecosystems in terms of NEMBA (2004). This reflects vegetation types with high numbers of rare and endangered plant species. This value replaced the NSBA Conservation Status where higher and was not used in addition to them (Table 2).
3. Base values were adjusted according to the protection status of the vegetation type (Gap Analysis) as determined in the fine scale conservation plan for the City (see Appendices, Table 9).
4. Base values were adjusted according to the % Transformation that has occurred within each vegetation type within the City. (See Appendices, Table 10).
5. The values of all degraded sites were reduced according to the type of habitat degradation (Table 3); and
6. The values of all transformed areas were reduced to zero
7. Once these values were determined, the values were converted to a 0-10 range using a linear conversion method in ArcGIS.

Table 2: Habitat Value summary for each vegetation type before local adjustment for transformation/degradation

Vegetation Type	NSBA Conservation Status Score	Criterion D Score*	SANBI Conservation Status	% Transformed Score	Unmodified Score
Atlantis Sand Fynbos	6	10	5	3	18
Boland Granite Fynbos	8	6	3	3	14
Cape Estuarine Salt Marshes	4	0	-1	3	6
Cape Flats Dune Strandveld: False bay	8	8	3	10	21
Cape Flats Dune Strandveld: West Coast	4	8	3	2	13
Cape Flats Sand Fynbos	10	10	4	10	24
Cape Lowland Freshwater Wetlands	4	0	-1	2	5
Cape Winelands Shale Fynbos	8	0	3	3	14
Elgin Shale Fynbos	10	0	4	6	20
Hangklip Sand Fynbos	6	6	-1	4	9
Kogelberg Sandstone Fynbos	4	10	2	0	12
Lourensford Alluvium Fynbos	10	10	3	10	23
North Peninsula Granite Fynbos	4	0	-1	2	5
Peninsula Sandstone Fynbos	4	8	-1	0	7
Peninsula Shale Fynbos	6	0	-1	4	9
Peninsula Shale Renosterveld	10	0	3	10	23
South Peninsula Granite Fynbos ⁸	8	0	2	6	16
Southern Afrotropical Forest	4	0	-1	0	3
Swartland Alluvium Fynbos	10	0	5	10	25
Swartland Granite Renosterveld	10	10	4	10	24
Swartland Shale Renosterveld	10	10	4	10	24
Swartland Silcrete Renosterveld	10	0	-1	10	19
Western Shaleband Vegetation	4	0	3	0	7

*This value only replaces NSBA Conservation Status Value when it's a higher value

Table 3: Habitat Value Summary table

Type	Source	Category	Value	Notes
Base Values	NSBA Conservation Status	Critically Endangered	10	
		Endangered	8	
		Vulnerable	6	
		Least Threatened	4	
	Criterion D Status	Critically Endangered	10	Criterion D Status overrides NSBA where the value is higher
		Endangered	8	
		Vulnerable	6	
		Least Threatened	4	
Broad adjustors	Vegetation remnants % Transformed	0-14%	0	This criterion highlights the critically endangered vegetation types within the City without considering protection status.
		15-29%	2	
		30-39%	3	
		40-49%	4	
		50-59%	5	
		60-69%	6	
		70-99%	10	
	Ecosystem protection Status (Gap Analysis)	Not Protected	5	Currently not represented in formal reserves >5% of target in reserves 5->50% of target in reserves 50->100% of target in reserves 100% + of target conserved in formal protected areas
		Hardly Protected	4	
		Poorly Protected	3	
		Moderately Protected	2	
		Well Protected	-1	
Modifiers				
Local adjustors	Overriding values for transformed sites	Artificial water bodies	0	Value reduced to 0
		Quarries/roads	0	Value reduced to 0
		Developed	0	Value reduced to 0
		Recreational Open Space (ROS)	0	Value reduced to 0
	Adjusting values for degraded sites	Severely degraded	-9	Areas are bordering on transformed, but long-term potential for restoration does exist
		Heavily degraded	-6	High density aliens – depleted seed bank with low restoration potential
		Moderately degraded	-2	Previously ploughed old fields High density aliens – intact seed bank with high restoration potential Forestry (Pine, Gum) plantations
		Low degraded	-1	High density non-locally indigenous species Area is recovering from historic disturbance, to a near natural state. Cleared fire belt areas Modified wetlands with NB habitat value

GIS Procedure:

Habitat Value Unmodified Score

1. Export vegetation data to separate shapefile
2. Delete all fields except the "NATVEGMAP" field
3. Dissolve on field "NATVEGMAP"
4. Add fields, NSBA Conservation Status Score (NSBA_SCR), Criterion D Score (Crit_D), SANBI Conservation Status (SANBI_Cons), % Transformed (PERC_TRANS), Unmodified Score (UNMod_SCR). Use Short Integer field type.
5. Populate the attribute table with the relevant scores
6. Calculate the Unmodified Habitat Value Score. Note: The Criterion D score will override the NSBA score if the latter is a higher value.

Habitat Transformation

1. All roads were buffered by 1.5m (3m width), trails and boardwalks are buffered by 1 meter (2m width).
2. All transformation types were digitised from aerial photography at a scale of 1:700.
3. All transformation layers were unioned.
4. Values were assigned as per the table. Type in field "TRANSCLASS" and the score in the field "VALUE"

Habitat Value Modified Score

1. Union the above two layers
2. Clip the union layer to the study area
3. Delete all unnecessary fields.
4. Add field "MOD_SCR"
5. Calculate the value for "MOD_SCR". Remember to reduce the over-riding transformation values to 0
6. Covert to a 1-10 range using equal intervals and label 1-10. Ensure sampling uses all records (set to 25000).
7. Export to shapefile and label RIET_HabitatValue.shp
8. Create map for report and export

Outputs

See Figure 3

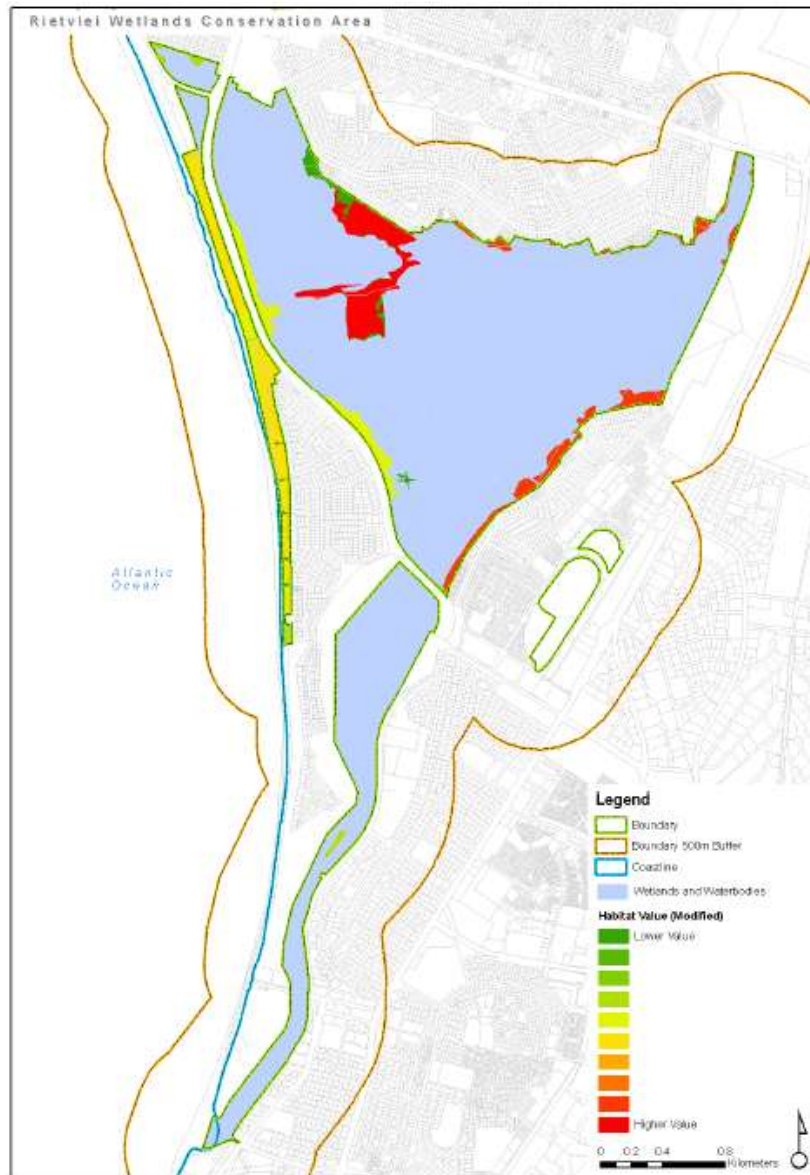


Figure 3: Rietvlei Wetlands Conservation Area: Habitat Value Modified (excluding wetlands& waterbodies)

Interpretation in a local context

Critically endangered and endangered vegetation types occur in the reserve. These are heavily transformed lowland vegetation types which include, Cape Flats Sand Fynbos and Cape Flats Dune Strandveld. These vegetation types are all poorly represented in nature reserves in the City.

Showstoppers#fatal flaws and special management area informants

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

3.1.1c Special Habitat Value

The value of some areas of a reserve to the biodiversity estate may not be fully reflected by the habitat proxy (vegetation units). It is critical that these areas are identified and included. However, care must be taken not to allow flawed data, selective data availability, perceptions and species/taxa bias to skew the biodiversity value of one site over another.

Key aspects that should be taken into account in this layer:

- Habitats important for supporting populations of special species.
 - Care must be taken to ensure that this input fairly reflects the distribution of special species across the reserve.
 - Where detailed and comprehensive data are available this can be based on actual distributions, but in all likelihood this will be based on expert assessment of likely habitat requirements for identified species.
- Areas containing significant biodiversity assets such as Leopard, Black eagles, Leopard toads etc. that are not specifically linked to entire habitats.
- Other habitats that have significant biodiversity value that have been omitted from the broad conservation value layer as a result of scale issues.

Scoring, Logic and rationale

The Rietvlei wetlands and water bodies, including the Diep River estuary mouth are included here as a special habitat layer. These areas have seen significant modification and degradation in the past and are considered as a modified, semi-natural system. The expanses of reed beds do not contribute to vegetation targets, but their habitat value and ecosystem functioning value is significant in terms of ecosystem goods and services that they provide. The values have been assigned accordingly. The estuary has seen significant disturbance, but its value is still extremely high and its ecosystem functioning is very important.

Table 3b: Special Habitat Values

Type	Source	Category	Value	Notes
Estuary	Wetland and water bodies		8	
Semi Natural Wetlands: • Reed marsh • Sedge marsh	NATVEG.SHP	Modified Waterbodies	7	
Open Pan	NATVEG.SHP	Semi Natural	6	
Major Waterbodies	Wetland and water bodies	Semi Natural	4	
Canals	Wetland and water bodies	Modified Rivers	3	

Data Inputs (GIS methods and sources)

The water bodies, reed beds and wetland areas were extracted from the wetlands layer and the original vegetation mapping that was completed for the Rietvlei PNE management plan. Corrections were digitised from November 2009 aerial photographs and a new wetlands and water body's layer was created (See Figure 3b).

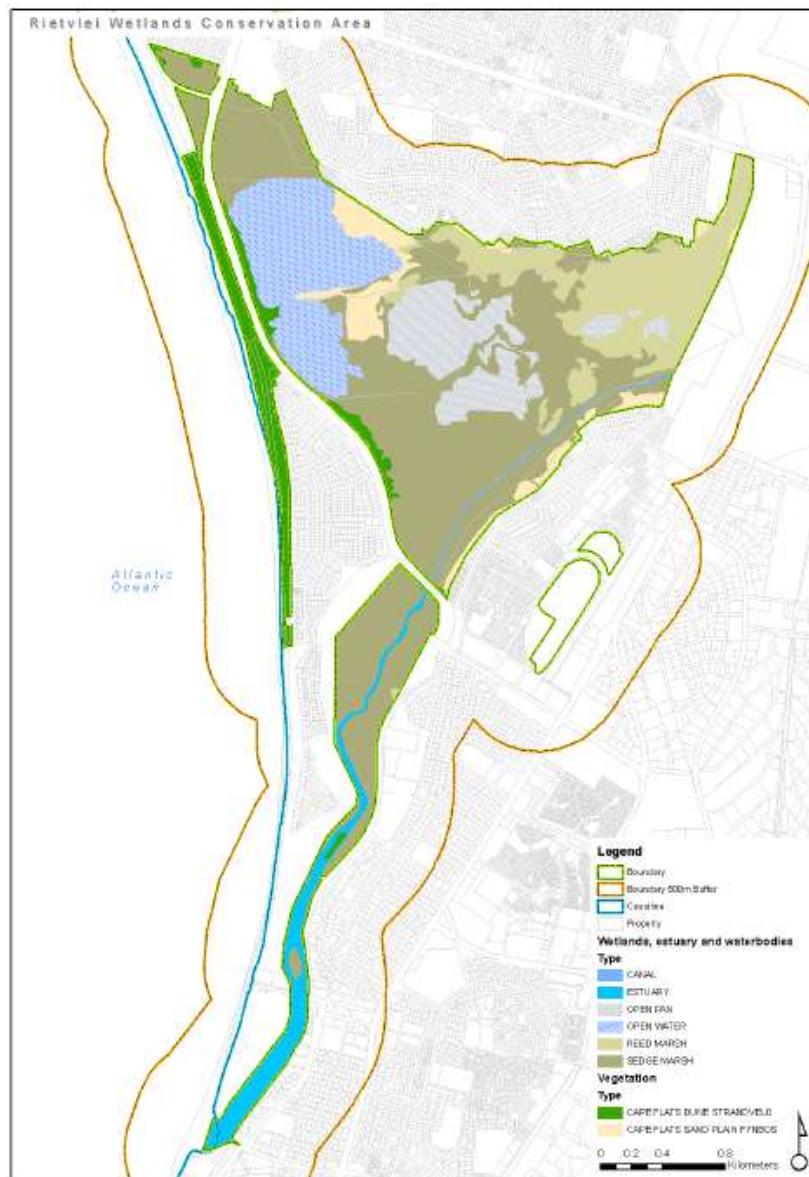


Figure 3b: Rietvlei Wetlands Conservation Area: Wetlands, Water bodies and Estuary

Values were assigned according to Table 3b.

Special Habitat Value Score

1. Add field "UNMOD_SCR"
2. Calculate the value for "UNMOD_SCR".
3. Covert to a 1-10 range using equal intervals and label 1-10.
4. Export to shapefile and label RIET_SpecialHabitatValue.shp
5. Create map for report and export

Outputs – See figure 3(c)

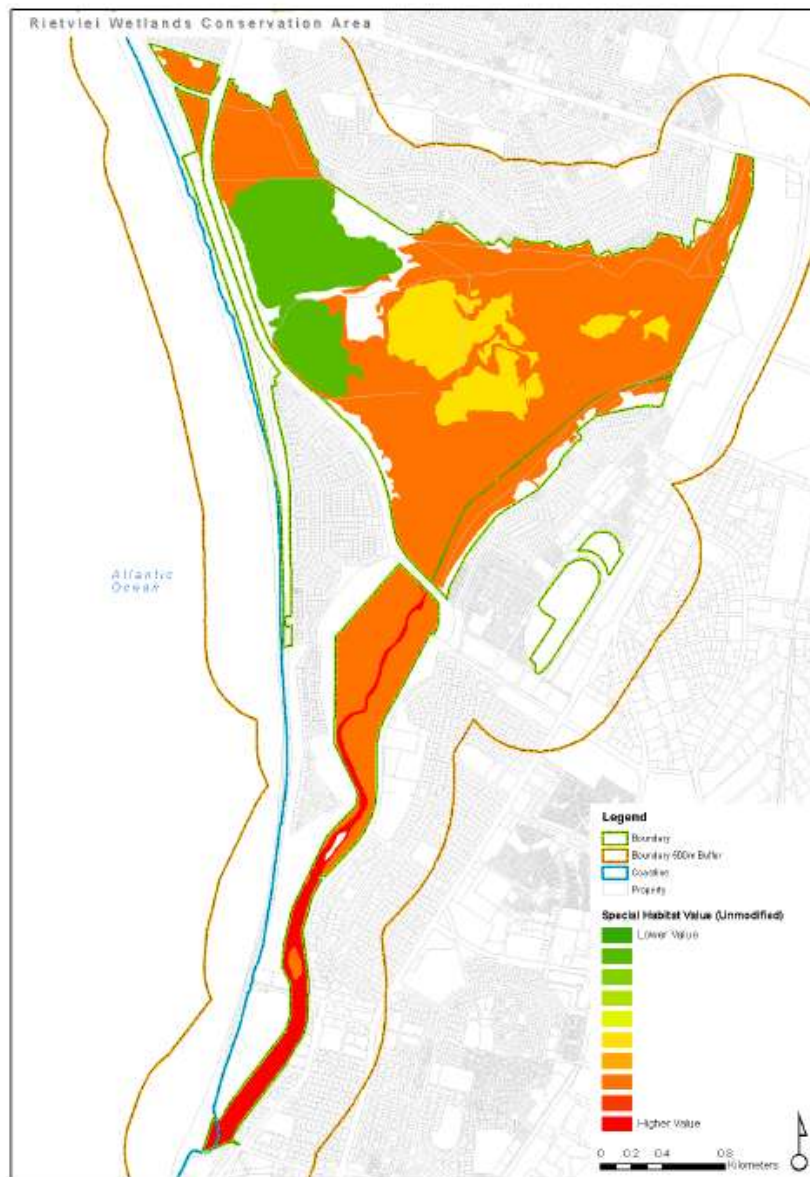


Figure 3c: Rietvlei Wetlands Conservation Area: Special Habitats layer

3.1.1d Combined Habitat Value Map

Figures 3(a) and 3(c) were combined to create a final habitat value map.

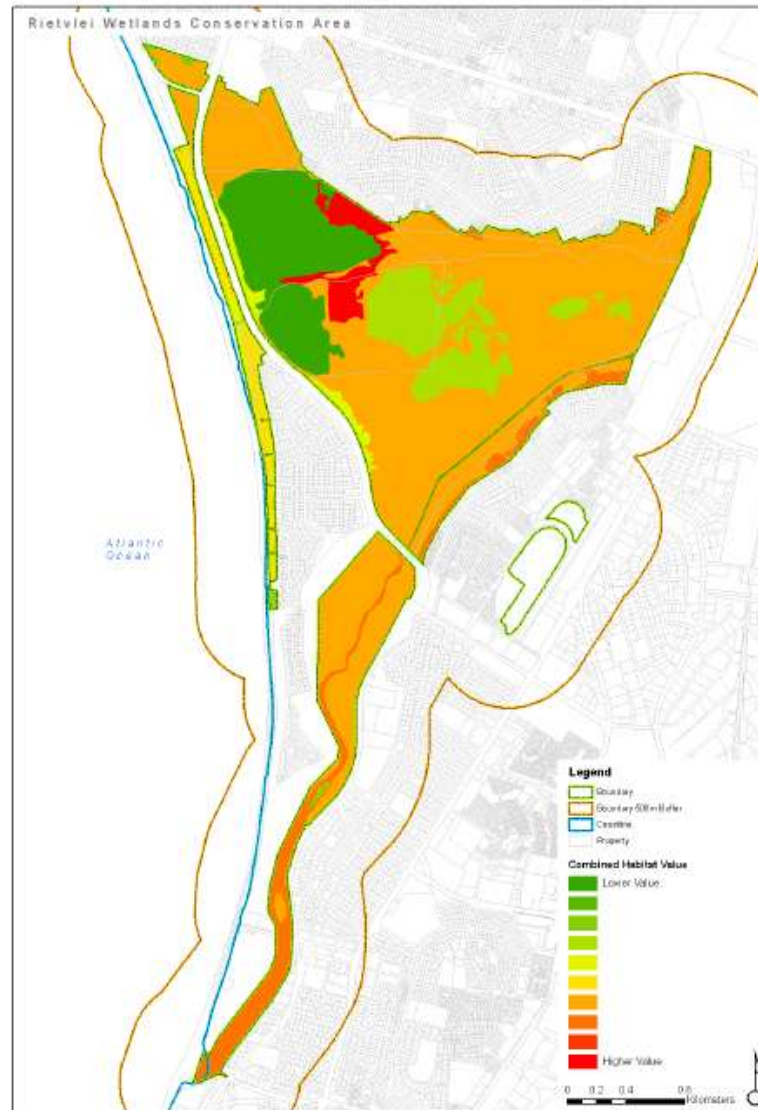


Figure 3d: Rietvlei Wetlands Conservation Area: Combined habitat value layer (modified)

3.1.2 Topographic Sensitivity

This layer is used to identify areas with steep slopes or with sensitive geological or geomorphologic features. Significant impacts (such as accelerated soil erosion or landslides) may occur during construction in, or with improper management.

Data Inputs (GIS methods and sources)

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

Scoring, logic and rationale

Slope angles were split into categories that relate to potential impacts and the limits of construction without significant cut and fill.

Procedure:

- Buffer study area by 500m
- Clip the 2m contour layer with the buffered boundary layer
- Calculate Slope angles
- Reclassify according to Table 4 using 3D Analyst - reclassify
- Convert raster layer to vector shapefile and clip to the reserve boundary
- Create new field "VALUE"
- Assign values according to attribute field "GRIDCODE" to shapefile field "VALUE"
- Create and export map
- Final Topographic Sensitivity layer: RIET_topo_sensitivity.shp

Table 4: Topographic sensitivity

Source	Category	Value	Note
Slope angles calculated from 2m contour layer	45° - <90°	10	Very high potential for erosion and slope instability
	30° - <45°	9	Strong potential for erosion and slope instability
	15° - <30°	8	High risk of erosion following disturbance
	10° - <15°	6	Moderate risk of erosion following disturbance
	5° - <10°	2	Low sensitivity
	0° - <5°	0	No special topographical sensitivity

Outputs

See Figure 4



Figure 4: Rietvlei Wetlands Conservation Area: Topographic Sensitivity Map

Showstoppers/fatal flaws and Special Management Area Informants

Structures or development on steep slopes should be avoided and conversely, low lying areas are vulnerable to high water events.

3.1.3 Hydrological Sensitivity

The hydrological sensitivity layer has two purposes: to identify areas important for maintaining hydrological processes and to identify areas where infrastructure could be damaged by flooding. For the Rietvlei Wetlands Conservation Area, this value is captured in the Special Habitats Value layer and a separate analysis was not deemed necessary. Rietvlei Wetlands Conservation Area has a very narrow buffer between the wetlands and water bodies and the reserve boundaries. The flood lines as have been determined should always be considered when planning developments either inside the reserve or outside. The hydrological map (Figure 5) is for reference only and is not included in the analysis.

Outputs

See Figure 5

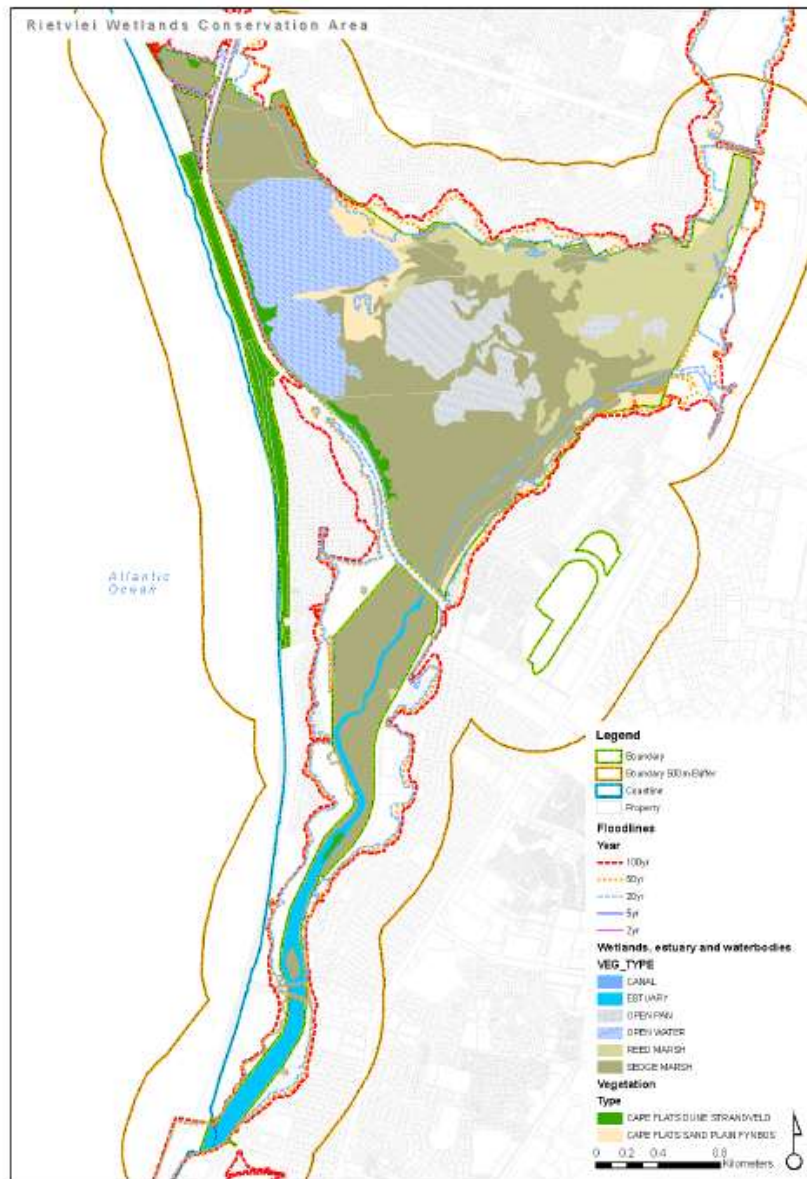


Figure 5: Rietvlei Wetlands Conservation Area: Hydrological Map

Interpretation in local context

Important NOTE:

For inclusion into the final sensitivity layer, the actual wetlands and water bodies extent is not included from this layer. This is to prevent double counting as the wetlands and water bodies are included in the Special Habitats Layer.

3.1.4 Visual Sensitivity

This layer examines the value of the study area from a visually aesthetic perspective. Visually intrusive development should not occur in areas with a high visual aesthetic value.

The visual sensitivity layer examines how visually intrusive a development will be in a landscape.

Data inputs (GIS methods and sources)

A viewshed analysis was run on the TIN created for the study area, using ArcMap 9.3.1 and the 3D Analyst extension.

Scoring, logic and rationale

The visual analysis examined how visually intrusive a development or structure would be at a particular point. Three separate variables were calculated (see Table 6).

- Slope steepness was calculated based on the TIN for the study area. Slope angles were divided into 10 equal width categories (the range was 0°-40°). These were scored in the range 1-10.
- An analysis of the visibility of each site from every other site in the reserve was undertaken. A 200m grid of points within the reserve was used to define 280 viewpoints with a Z value of 1.5m (the grid was created using the "Special Raster Tools" in Hawth's Tools extension for ArcMap 9.3). The viewshed examines (on a proportional basis) which sites are most visible. Similar to slope steepness, these values were divided into 10 equal width categories and scored on a 0-10 basis.
- A viewshed analysis from all roads, paths and trails was undertaken. The analysis parameters used were the same as above except for the viewpoints used.

- These 3 values were added together and reclassified into the range 0-10 equal width categories to ensure compatibility with other layers.

Table 6: Visual Sensitivity Procedure

Source	Category	Value	Note
1. Slope Steepness			
□ Slopes modeled in ArcGIS using Spatial Analyst		0-10	Slope angles calculated TIN created from 2m Contours
□ Slopes reclassified	10 equal width categories Scored 1 to 10		Values converted into ten integer based classes, with the maximum value equivalent to slopes of over 45°
2. Grid visibility			
□ 200m grid of reserve area used as viewpoints 280 Viewpoints		0-10	Analysis based on the TIN
□ Reclassified	10 equal width categories		Values converted into ten integer based classes, with the maximum value equivalent to visibility from 2.5% of park viewpoints.
3. Tourist viewpoint and public road visibility			
□ All tourist roads, paths, trails and the railway line was used as viewpoints		0-10	Analysis based on the TIN
□ Reclassified	10 equal width categories		Values converted into ten integer based classes, with the maximum value equivalent to visibility from 5% of park viewpoints.

Procedure:**Visual Sensitivity**

- Create a 200m point grid covering the buffered reserve boundary layer. Hawth's tools have an easy tool for this.
- Create a point shapefile using the roads, paths and railway line shapefile. Hawth's tools have an easy tool for this.
- Run the viewshed analysis using the two shapefiles above as the view points. Use a Z factor of 1.5m.
- Reclassify into 10 equal width categories and export the raster to feature class.
- Clip to the reserve boundary
- Intersect the 3 shapefiles and delete all unnecessary fields. Add field "VISUAL_VAL". Add up the 3 "VALUE" fields using the field calculator and populate the "VISUAL_VAL" field
- Reclassify into 10 equal class categories
- Create and export map
- Final Visual Sensitivity layer: RIET_visual_sensitivity.shp

Outputs

See Figure 6

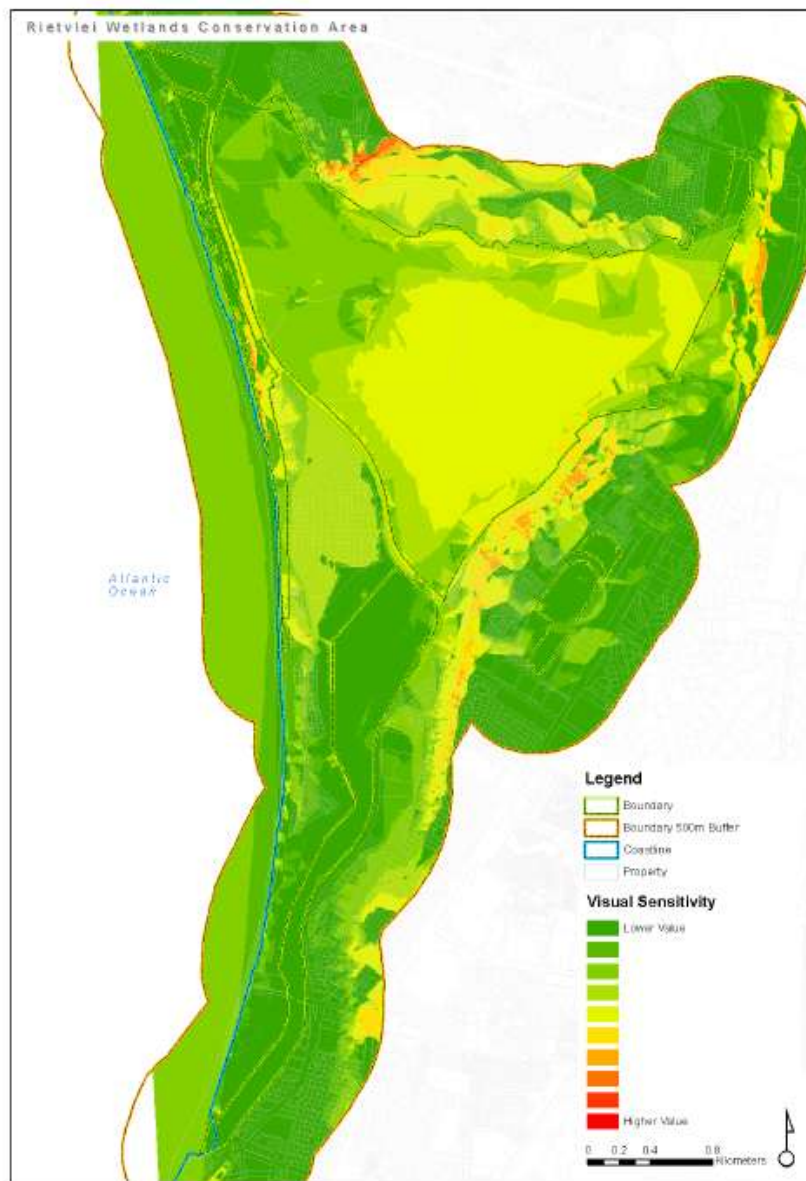


Figure 6: Rietvlei Wetlands Conservation Area: Visual Sensitivity Map

Interpretation in local context

Visually intrusive structures or development should be avoided.

Showstoppers/Fatal flaws and Special Management Area Informants

The viewshed analysis determines the visibility of areas from predefined observation points. However, the visibility of a development is only one of the components that determine its visual impact. Other factors, such as the development's design, construction and layout also contribute to the overall impact on the aesthetic character of its environment. Special consideration should be given to developments that are proposed in highly visible areas.

3.1.5 Heritage Sensitivity

This layer summarises the value or significance of a heritage site. The significance of a site will to a large extent determine the level of protection and management measures required for a site, and hence should be taken into account when undertaking spatial planning.

The Rietvlei Wetlands Conservation Area does not have any specific sensitive heritage points.

4. Sensitivity-Value Analysis process (including weightings) and summary layers

The sensitivity-value analysis process has two key parts:

- The preparation of the input layers in a consistent and easy to analyze format (as outlined in the previous sections)
- The preparation of a summary layer which allows all the input layers to be easily accessed, interrogated, combined in a range of weightings (if necessary), and then used as a decision support tool in a workshop situation.

Data inputs (GIS methods and sources)

The GIS process is geared to keeping the dataset flexible enough for use in a workshop situation. All input and summary data need to be available within a single vector shapefile. The GIS method is as follows:

- Clip all input summary datasets to the spatial footprint of the smallest layer. This should correspond to the extent of the study area boundary. It is critical that all the clipped layers have the spatial extent, even though not all the area within the layer may be included within a polygon. Areas outside the polygons receive a 0 value in the union process so it is critical that these represent true 0 values and not gaps in the dataset.
- Union all datasets. This produces a composite vector shapefile containing all the data from the underlying summary layers.
- Delete all unnecessary attribute fields from the union shapefile.
- Summary information is calculated for each of the fragmented polygons using simple field calculations. A new attribute field is added for each summary weighting. Values are calculated using the field calculator. Complex calculations can be saved as expressions.
- Details of the summary calculations are given in Table 7.
- Export final sensitivity layer as RIET_sensitivity.shp

Table 7: Sensitivity-Value Weightings*

Name	Field Name	Composition	Notes
Balanced summary	BALANCED	2x(Habitat Value) + 2x(Special Habitat Value) + Topographic Sensitivity + Hydrological Sensitivity + Visual sensitivity	This is the favoured layer which emphasizes biodiversity value and aesthetic considerations, and de-emphasizes biodiversity sensitivities

Outputs

See Figure 7

Interpretation in local context

The Balanced Summary weighting (see Figure 7) was used as the sensitivity analysis input for the zonation process.

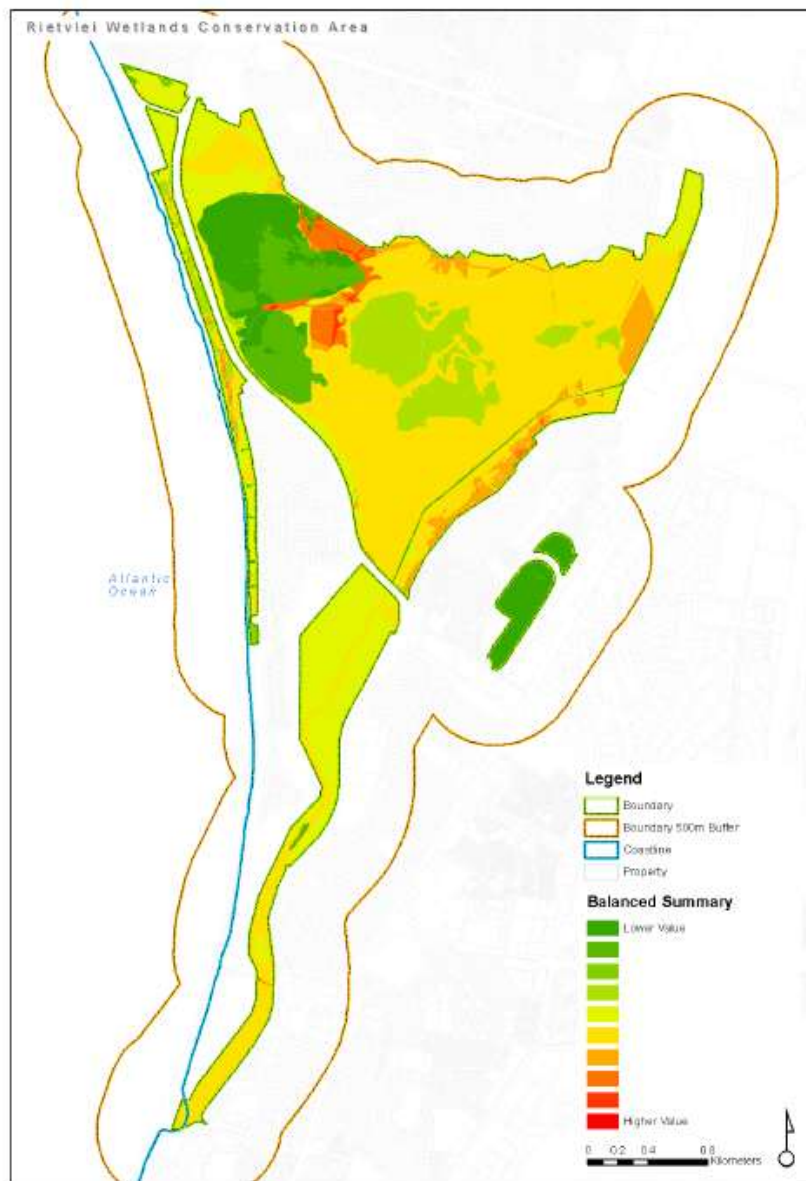


Figure 7: Sensitivity Analysis: Balanced Summary

5. Zoning Process

5.1 Zoning Informants

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

Underlying decision making rules used in the zonation process:

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

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

Two key points need to be emphasized:

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

(Adapted from Holness, 2008)

5.2 Zoning Definitions and Descriptions

The zonation definitions and descriptions were workshopped with reserve and area managers.

Four categories were decided on, namely; Primary Conservation zone, Conservation zone, Low Intensity leisure zone and High Intensity leisure zone. Table 11 outlines the proposed zonation and zone descriptions. The link is still made to the Zonation used for the CapeNature Reserves (Holness, 2008) as there should be general alignment of the broader use zones for ease of comparison and integration if required in Provincial documents.

5.3 Draft Zoning Outputs

The zonation for the Rietvlei Wetlands Conservation Area was adapted from the EMP for the Diep Estuary (Peak Practice, 2008). The zonation for the Rietvlei Wetlands Conservation Area was drawn up using the balanced sensitivity analysis as an input in applying the Zonation categories as defined in Table 11. Figure 9 shows the draft zonation for the Rietvlei Wetlands Conservation Area. Table 8 shows the breakdown per zonation category and the % of the total per category.

Table 8: Breakdown (in HAs and % of Area) of the 5 Zonation Categories in the reserve

Zonation category	Area Has	% of Area
Primary Conservation		
Conservation		
Low Intensity Use		
High Intensity Use		
Utility		

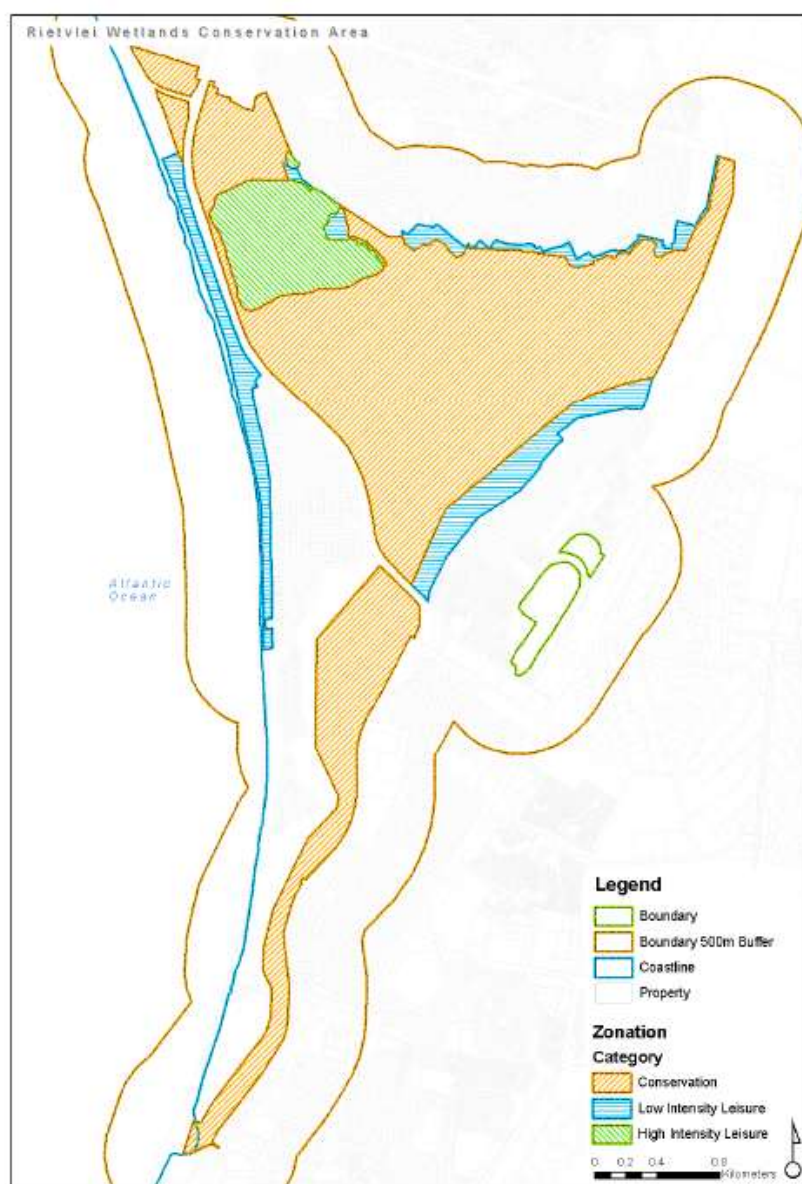


Figure 8: Draft Zonation for the Rietvlei Wetlands Conservation Area

5.4 Special Management Overlays

Overlay zones are applied to different areas of the reserve requiring special management intervention. Overlay management zones are applied to areas of national, regional or reserve based importance for example: RAMSAR SITE or IBA (important Bird Areas), NB cultural sites or Natural resource consumptive use areas (Medicinal Plants).

The potential special management overlays are:

1. Heritage
2. Special Conservation
 - a. This special management overlay defines areas around known locations of critically endangered species or species requiring specific management interventions.
3. Rehabilitation
 - a. Areas identified for restoration and rehabilitation

TBC

5.4.1 Special Management Overlays

- 5.4.1.1 Rehabilitation of the model aircraft strip (2014)
- 5.4.1.2 Rehabilitation of the estuary; tidal flats, mud prawn populations
- 5.4.1.3 Rehabilitation of degraded natural vegetation
- 5.4.1.4 Proposed IBA/Ramsar Site

Figure 10: Special Management Overlay zones

6. Conclusions and Recommendations

TBC

7. References

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Appendices

Table 9: Base values: Ecosystem Status of National vegetation types occurring in the City

Vegetation Type	NSBA Conservation Status	NSBA Conservation Status - Score	Criterion D Status	Criterion D score	SANBI Conservation Status (% target Conserved in City)	Conservation Status Score
Atlantis Sand Fynbos	Vulnerable	6	Critically endangered	10	Not Protected	5
Boland Granite Fynbos	Endangered	8	Vulnerable	6	Poorly Protected	3
Cape Estuarine Salt Marshes	Least threatened	4			Well Protected	-1
Cape Flats Dune Strandveld: False bay	Endangered	8	Endangered	8	Poorly Protected	3
Cape Flats Dune Strandveld: West Coast	Least threatened	4	Endangered	8	Poorly Protected	3
Cape Flats Sand Fynbos	Critically endangered	10	Critically endangered	10	Hardly Protected	4
Cape Lowland Freshwater Wetlands	Least threatened	4			Well Protected	-1
Cape Winelands Shale Fynbos	Endangered	8			Poorly Protected	3
Elgin Shale Fynbos	Critically endangered	10			Hardly Protected	4
Hangklip Sand Fynbos	Vulnerable	6	Vulnerable	6	Well Protected	-1
Kogelberg Sandstone Fynbos	Least threatened	4	Critically endangered	10	Moderately Protected	2
Laurenstord Alluvium Fynbos	Critically endangered	10	Critically endangered	10	Poorly Protected	3
North Peninsula Granite Fynbos	Least threatened	4			Well Protected	-1
Peninsula Sandstone Fynbos	Least threatened	4	Endangered	8	Well Protected	-1
Peninsula Shale Fynbos	Vulnerable	6			Well Protected	-1
Peninsula Shale Renosterveld	Critically endangered	10			Poorly Protected	3
South Peninsula Granite Fynbos	Endangered	8			Moderately Protected	2
Southern Afrotropical Forest	Least threatened	4			Well Protected	-1
Swartland Alluvium Fynbos	Critically endangered	10			Not Protected	5
Swartland Granite Renosterveld	Critically endangered	10	Critically endangered	10	Hardly Protected	4
Swartland Shale Renosterveld	Critically endangered	10	Critically endangered	10	Hardly Protected	4
Swartland Silcrete Renosterveld	Critically endangered	10			Not Protected	-1
Western Shaleband Vegetation	Least threatened	4			Poorly Protected	3

Table 10: National vegetation types for the City of Cape Town showing historic extent, remaining extent, targets and targets achieved inside and outside Protected Areas

National Vegetation Type	Historic extent (ha)	Current extent (ha)	Selected in Biorisk (ha)	Target %	Target (ha)	Extent in protected Protected Areas	Target met in selected Biorisk	% Target conserved	% Target met in protected Protected Areas	% Selected in Biorisk from current extent	% Remaining from historic extent	15% of historic extent	% that is not selected in Biorisk	Conservation Status	SAAB Conservation Status
Atlantis Sand Fynbos	25234.63	15711.95	12695.95	30	7570.39	0.00	Yes	168	0	81	62	3785.19	19	VU	Not Protected
Boland Granite Fynbos	9575.31	6064.19	4807.17	30	2872.59	354.52	Yes	167	12	79	63	1436.30	21	EN	Poorly Protected
Cape Estuarine Salt Marshes	39.86	25.79	25.64	24	9.57	25.64	Yes	268	268	99	65	5.98	1	LT	Well Protected
Cape Flats Dune Strandveld: False Bay	27260.11	8467.86	7272.84	24	6542.43	1855.58	Yes	111	28	86	31	4089.02	14	EN	Poorly Protected
Cape Flats Dune Strandveld: West Coast	12700.27	10603.88	6892.82	24	3048.07	964.79	Yes	226	32	65	83	1905.04	35	LT	Poorly Protected
Cape Flats Sand Fynbos	54410.34	8466.70	8464.75	30	16323.10	464.07	No	52	3	100	16	8161.55	0	CE	Hardly Protected
Cape Lowland Freshwater Wetlands	1463.98	1095.47	1068.83	24	351.36	786.66	Yes	304	224	98	75	219.60	2	LT	Well Protected
Cape Winelands Shale Fynbos	2666.97	1706.19	1388.97	30	800.09	217.89	Yes	174	27	81	64	400.05	19	EN	Poorly Protected
Elgin Shale Fynbos	841.18	321.14	282.77	30	252.35	4.58	Yes	112	2	88	38	126.18	12	CE	Hardly Protected
Hangklip Sand Fynbos	3301.60	1910.25	1489.88	30	990.48	1363.63	Yes	150	138	78	58	495.24	22	VU	Well Protected
Kogelberg Sandstone Fynbos	9499.63	9260.73	8814.04	30	2849.89	1944.47	Yes	309	68	95	97	1424.94	VU	LT	Moderately Protected
Lourensfontein Alluvium Fynbos	4819.25	409.97	409.97	30	1445.77	190.30	No	28	13	100	9	722.89	0	CE	Poorly Protected
North Peninsula Granite Fynbos	1997.35	1439.12	1343.54	30	599.21	986.44	Yes	224	165	93	72	299.60	7	LT	Well Protected
Peninsula Sandstone Fynbos	21896.12	21348.95	20761.60	30	6568.83	17306.57	Yes	316	263	97	98	3284.42	3	LT	Well Protected
Peninsula Shale Fynbos	1262.79	690.37	688.96	30	378.84	686.97	Yes	182	181	100	55	189.42	0	VU	Well Protected
Peninsula Shale Renosterveld	2374.81	316.89	316.89	26	617.45	261.67	No	51	42	100	13	366.22	0	CE	Poorly Protected
South Peninsula Granite Fynbos	7148.66	2481.74	2290.70	30	2144.60	1770.19	Yes	107	83	92	35	1072.30	8	EN	Moderately Protected
Southern Afrotemperate Forest	347.52	346.79	346.79	34	118.16	276.80	Yes	294	234	100	100	52.13	0	LT	Well Protected
Swartland Alluvium Fynbos	1742.41	75.91	75.91	30	522.72	0.00	No	15	0	100	4	261.36	0	CE	Not Protected
Swartland Granite Renosterveld	8059.16	1951.89	1951.89	26	2095.38	35.64	No	93	2	100	24	1208.87	0	CE	Hardly Protected
Swartland Shale Renosterveld	46712.40	4019.33	4018.76	26	12145.22	408.13	No	33	3	100	9	7006.86	0	CE	Hardly Protected
Swartland Silcrete Renosterveld	1066.65	188.43	188.43	26	277.33	0.00	No	68	0	100	18	160.00	0	CE	Not Protected
Western Shaleband Vegetation	328.59	328.57	328.57	30	98.58	31.11	Yes	333	32	100	100	49.29	0	LT	Poorly Protected
	244749.59	97232.12	86925.67		68622.40	29935.65						36712.44			

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

* Note. The "Desired State" is the long term objective of the zone and these desired conditions may not actually exist at the time of zoning. Achieving the "Desired State" will be informed by many factors and may only be reached after many years.

** Accompanied access refers to controlled access. The level and type of control is determined at reserve level.

*** Non-motorised access refers to mountain bikes, horses, paragliding etc. These activities are reserve specific and reference must be made to the reserve management plan for a list of acceptable activities per reserve.

APPENDIX D5: DIEP ESTUARY MANAGEMENT PLAN DETAILED ACTION PLAN: 2011–2015

WATER QUANTITY MANAGEMENT				
Steps	Date	Responsibility	Estimated Budget	Indicator
Objective A: Re-establishment of a regime more typical of an estuarine system				
1. Comprehensive Ecological Reserve Determination for the estuary.	2011- 2013	DWA + Manager ERMD	R 1.2 million (including det. of resource quality objectives)	Target value for water quantity in place.
2. Investigation into alternative options for the disposal of Potsdam effluent	2011	Manager: WSS	TBD	Alternative options identified, assessed & costed, but implementation likely to be beyond the time-frame of this Action Plan.
3. Development & implementation of a programme for the reduction of discharges from Potsdam during the summer months to 10 MgL/day or below (at least at high spring tides).	2011 - 2015	Manager: WSS (Potsdam, Water Demand Management Committee, Reticulation) + Manager: ERMD	TBD	Achievement of optimal salinity regime and mouth conditions (closes late summer for a short period).
Objective B : Management of water levels, flood risk and seasonal drying				
1. Pumping of water from north lake onto the central pans during summer months as required (until an alternative solution has been determined).	January-April annually	Manager: ERMD (BM and E & H) + Manager: Roads & Stormwater (Operational Division)	R 200,000/ year	Reduction in complaints about dust.

2. Maintenance excavations of the bypass channel from below the Potsdam outlet to be discontinued.	Ongoing	Manager: ERMD + Manager: Roads & Stormwater, (Operational Division)	N/A ¹	Channel depth reduced.
3. Sourcing of funds to undertake study of hydrology & geohydrology of the estuary + execution of study.	2011/2013	Manager: ERMD: BM & Chair: Rietvlei MWG	R 375,000	Improved understanding of water balance in the system, and therefore capacity to manage it.
4. Development of a hydro-dynamics model based on the above data to support management decisions.	2013/14	ERMD: Manager: BM & Chair: Rietvlei MWG	TBD	Improved capacity to manage hydrodynamics.
5. Based on the hydrodynamics model, implement alternative solution.	2014 onwards	Manager: ERMD (BM and E & H)	TBD	Effective management of water levels, especially in the central pans during summer.
6. Ongoing monitoring of water levels, salinity etc. at stations established during hydrology study. (Could be done in-house, or by consultant).	2013 - 2015	Regional Director: DWA + Manager: Catchment, Stormwater & River Management Branch (CSRM)	R 5,000 per sampling run (if done by consultant).	Database to support management of hydrodynamics.
7. Study of the sediments – rates of sedimentation & source of sediments. Should include a bathymetric survey	2011/2012	Manager: ERMD: BM & Chair: Rietvlei MWG	TBD	Improved understanding of sedimentation + management proposals.

¹ N/A in relation to budget implies that the work will be done in-house and can be accomplished by existing staff and within normal running costs.

of the bypass channel every second year to assess fill rates.				
8. Development of a Disaster / Flood Management Plan, including the installation of an early warning system at the mouth.	2011	Manager: CSRM, Head: Disaster Management + Regional Director: DWA	TBD	Plan in place and water level recorder + extras in place.
9. Implement riverine buffer zones/set-back lines in the catchment	2011/12	Department of Agriculture	N/A	Reduction in sediment loads in the estuary

ESTUARINE ENVIRONMENTAL QUALITY MANAGEMENT				
Steps	Date	Responsibility	Estimated Budget	Indicator
Objective C : Establishment of binding Resource Quality Objectives				
1. Determination of Resource Quality Objectives using Rapid Determination methodology	2011	Regional Director: DWA	R 250,000	Resource Quality Objectives in place + requirements for Potsdam.
2. Gazetting of Resource Quality Objectives.	2011	Regional Director: DWA	N/A	Binding Resource Quality Objectives in place.
3. Sediment quality guidelines based on international practice.	2011/2012	DEA (Oceans & Coasts)	N/A	RSA sediment quality guidelines in place.
Objective D : To meet interim and longer-term water quality objectives				
1. Investigation into alternative options for the disposal of Potsdam effluent (see also A2).	2011	Manager: Water and Sanitation Services	TBD	Alternative options identified, assessed and costed, but implementation likely to be beyond the time-frame of this Action Plan.
2. Review of Potsdam permit standards and stormwater quality objectives should water quality in the receiving waters not improve.	January 2013	Manager: ERMD (BM and E & H) Regional Director: DWA, & DEA (Marine Pollution)	N/A	Revised permit conditions for Potsdam effluent and revised stormwater quality objectives.
3. Implementation of source reduction measures for contaminants in stormwater (as recommended in	2011 – 2015 & beyond	Manager:CSRM	TBD	Stormwater complies with recommended quality objectives.

study).				
4. Institution of regular surveys of toxic contaminants in sediments & biota (preferably every second year)	From 2012	Managers: CSRM/ ERMD	TBD	Improved information on trends in contamination.
5. Mapping and assessment of stormwater drains along the western and northern banks of the estuary.	2011	Manager: CSRM	TBD	Inclusion of all stormwater outlets on GIS map, and report on quantity and quality of flows.
6. Comparative assessment of pollution loads from various sources.	2012	Manager: CSRM	TBD	Comprehensive understanding of pollution sources to the estuary.
Steps	Date	Responsibility	Estimated Budget	Indicator
Objective E : Reduction in accidental discharges to the estuary				
1. Development of system for recording & managing blockages through preemptive maintenance	2011	Manager: Water and Sanitation Services: (Reticulation)	N/A	Reduction in blockages..
2. Install back-up generators (fixed or mobile) to cater for power outages.	2011/2012	Manager: Water and Sanitation Services: (Reticulation)	TBD	Reduction in frequency of accidental discharges as a result of pump station failures.
3. Inclusion of Reserve Management in incident reporting system, & development of a Response Plan.	2011/2012	Manager: Water and Sanitation Services: Reticulation + Manager: ERMD	N/A	Improved communications around and response to accidental spills.

Objective F : To reduce inputs from informal settlements				
1. Development of a community health & sanitation awareness programme	2011 – 2012	Regional Director: DWA + Manager: ERMD	R 50,000	Increased utilization of sanitation facilities.
Objective G : To manage short-term fluctuations in critical water quality parameters				
1. Establish on-site monitoring of key parameters.	2012	Reserve Management	TBD	Early warning of potential water quality problems eg. low oxygen events.
2. Develop response plan in the event of changes to critical parameters eg. aerators in the case of low oxygen.	2012	Reserve Management	TBD	Effective response to low oxygen and pollution events.

BIODIVERSITY MANAGEMENT				
Steps	Date	Responsibility	Estimated Budget	Indicator
Objective H : To improve understanding of the ecological requirements of the central pans (wading birds)				
1. Review of relevant literature & expert consultation.	2011	Manager: ERMD (BM and E & H)	R 20,000	Recommendations on ecological requirements in management of water levels in central pans.
Objective I : To improve knowledge of the biology of the estuary				
1. Identify gaps in the knowledge base and prioritise taxonomic groups, species, habitats etc.	2011	Reserve Manager & Chair: Rietvlei MWG	N/A	List of priority biological studies.
2. Develop a programme to address priorities, through student projects.	2011 – 2015	Reserve Manager & Chair: Rietvlei MWG	N/A	Structured programme in place to address priority knowledge gaps.
3. Approach tertiary institutions for possible involvement in this programme.	2011	Reserve Manager & Chair: Rietvlei MWG	TBD	Externally funded projects involving tertiary institutions.
4. MoU in place with DAFF on fish surveys	2011	CapeNature/DAFF/Reserve Manager	N/A	Improved understanding of the fish populations in the estuary.
Objective J : Invasive species management				
1. Development of an invasive	2011	Reserve Management +	R 60,000	Integrated approach to addressing

species management plan for the RWNr (terrestrial and aquatic).		City's Invasive Species Unit (ISU)		invasive species in the estuary/Nature Reserve.
2. Ongoing maintenance clearing of terrestrial invasives (woody plants) in and near the reserve.	Ongoing	Reserve Management	R 100,000 for 2010/11	Priority areas cleared of woody plants.
3. Development & implementation of plan on invasive grasses (esp. <i>Paspalum</i>)	2011-2013	Reserve Management + City's ISU	TBD	Reduction of extent of invasive grasses
4. Development & implementation of programme on aquatic invasives.	2012- 2014	Reserve Management + City's ISU	TBD	Reduction in aquatic invasives.
5. Annual surveys with EDRR/SANBI for emerging species (eg. <i>Lythrum</i>) + establishment of volunteer network.	2011 - 2013	Reserve Management + EDRR + ISU	N/A	Early detection & removal of potential invasives
Steps	Date	Responsibility	Estimated Budget	Indicator
Objective K : Rehabilitation of biodiversity				
1. Rehabilitation of sand plain fynbos in Milnerton Ridge area.	2011 - 2015	Reserve Management	TBD	Sand plain fynbos re-established.
2. Rehabilitation of aquatic areas (once water quality has improved).	2013	Reserve Management	TBD	Aquatic biodiversity restored.
3. Rehabilitation of salt marsh	2013	Reserve Management	TBD	Salt marsh vegetation restored.

vegetation.				
4. Annual discussions with Working for Wetlands on priorities for wetland rehabilitation.	2011/2015	Reserve Management + Working for Wetlands	TBD	Partnership with Working for Wetlands & funding for agreed priorities.

CONSERVATION AND PLANNING INITIATIVES				
Steps	Date	Responsibility	Estimated Budget	Indicator
Objective L : Development and upgrading of Reserve infrastructure				
1. Appointment of building contractors	2011/12	Reserve Management + City Planners/Works	Approx. R 4 million	Construction of office block completed.
2. Development of a detailed assessment of fencing requirements, including budget and motivation.	February, 2011	Reserve Manager	TBD	Submission of budget request for at least priority fencing requirements.
3. Installation of fencing in priority areas	2012	Reserve Management + City Works	TBD	Priority areas fenced & reduction in wildlife kills.
Objective M : Conservation & ecotourism development				
1. A Conservation Development Framework for the North District – which includes the estuary - should be put in place (links, bird hides, breeding features, walking trails etc).	2011	Manager: ERMD + SDI & GIS + Reserve Manager	N/A	Structured approach to development of appropriate facilities, features etc in the reserve.
2. Implementation of the CDF.	2011 - 2015	Reserve Management	TBD	Facilities, features etc. in place.

LEGAL/POLICY MEASURES				
Steps	Date	Responsibility	Estimated Budget	Indicator
Objective N : to formalize the expanded boundaries of the reserve				
1. Formal submission of application for Contract Nature Reserve status – including expanded reserve boundaries to the Province (has been approved in principle).	2011	Manager: ERMD: BM	N/A	Rietvlei recognized as a Contract Nature Reserve with expanded boundaries.
Objective O : to formalize the Estuary Management Plan				
1. The EMP – including the Zonation Plan – to be formalised according to the National Protocol (to be finalized in March, 2011)	2011	Manager: ERMD: BM & Chair: Rietvlei MWG	N/A	Estuary Management Plan formally adopted.
Objective P : to improve protection of the reserve from encroachment of private gardens and invasive plants				
1. Make submission to City's IAS policy process on possible development of an appropriate by-law or other mechanism to facilitate this.	2011	Manager: ERMD: BM, Chair: Rietvlei MWG, City ISU	N/A	By-law approved and implementation initiated.

EDUCATION AND AWARENESS-RAISING				
Steps	Date	Responsibility	Estimated Budget	Indicator
Objective Q : To improve public awareness on the importance of wetlands in general and the Diep Estuary in particular				
1. Update and improve displays, posters brochures etc. To include socio-economic value, link to River Health Programme etc.	2011	Reserve Manager + Environmental Communications + Friends of Rietvlei	R 50,000	Updated material available for distribution.
2. Establish contact with Intaka re Xhosa-speaking guides.	2011	Reserve Manager + Avifauna Advisor	N/A	Xhosa-speaking guides available for school programme
3. Establish links with Two Oceans, the Wetland Forum etc re teacher training opportunities.	2011	Reserve Manager + Friends of Rietvlei	N/A	Teacher training programmes include material on wetlands
4. Develop a Catchment-to-Coast brochure to promote understanding of the links to catchment activities.	2011	Reserve Manager + Department of Agriculture (Landcare)	R 25,000	Brochure available for distribution to farmers, miners etc in the catchment.
Objective R : To promote awareness of and compliance with the Estuary Zonation Plan				
1. Displays, posters and brochures showing the zoning	July, 2012	Reserve Manager + ERMD (Communications) + Friends of Rietvlei	R 25,000	Awareness of Zonation Plan.
Objective S : To document and promote awareness of the rehabilitation initiative				
1. Investigate options for the production of a DVD.	2011	Reserve Manager + ERMD (Communications)	TBD	Partnership with relevant institution.

		+ Friends of Rietvlei		
2. Implement	2011 - 2015	Reserve Manager + ERMD (Communications) + Friends of Rietvlei		DVD documenting rehabilitation process, with clips aired on 50/50 & other relevant programmes
Objective T : To promote awareness of health & sanitation issues around the estuary				
1. Develop brochure in relevant languages	2011	Reserve Manager + Environmental Communications + DWA	R 25,000	Brochure available for use in community education programme.
2. Meetings with community leaders	2011-2012	Regional Director: DWA	N/A	Support of community leaders for educational programme.
3. Compilation of a leaflet/brochure on potential health impacts of consumption of fish from Rietvlei & distribution in surrounding communities	2010/11	DEA & DP	TBD	Community awareness of potential health impacts of fish from Rietvlei.
Objective U : To promote and market the Reserve				
1. Improve signage in line with new policy	2011	Reserve Manager + Roads Department	TBD	Increased number of visitors
2. Brochures provided to Cape Town Tourism	2010 (ongoing)	Reserve Manager	N/A	Increased number of visitors

RESOURCE REQUIREMENTS				
Steps	Date	Responsibility	Estimated Budget	Indicator
Objective V : To increase capacity of human resources				
1. Training in estuaries management (C.A.P.E. Training)	2011/2012	Manager: ERMD	R 10,000	Staff capacity increased.
Objective W : To improve availability of financial resources to implement the Action Plan				
1. Investigate mechanisms to access the funds from the Rietvlei Trust Fund and/or have the funds transferred to Friends of Rietvlei	2011	Manager: ERMD/ Rietvlei Management WG	N/A	Funds available to implement relevant aspects of the EMP/Action Plan.
2. Identify and target additional potential sources of funding	2011 ongoing	ERMD/ Rietvlei Management WG	N/A	Funds available to implement relevant aspects of the EMP/Action Plan.

APPENDIX D6: BLAAUWBERG FYNBOS CORRIDOR OEMP: SUMMARY TABLE

Table 1: Blaauwberg Fynbos Corridor OEMP: Summary Table

The information summarised in the table below describes the key objectives, strategies and actions associated with the implementation of the Blaauwberg Fynbos Corridor OEMP. It specifies time frames within which actions should take place as well as the parties responsible for undertaking the actions, importance of implementation, and reference number. These items are explained briefly below:

- **Issue:** The management aspect that requires specific attention and forms the title for each table;
 - **Objective:** The desired outcome of the particular management intervention/s;
 - **Strategy:** The general approach to be adopted in achieving the objective;
 - **Actions:** The specific measures, initiatives and interventions that form part of the strategy;
 - **Time-frame:** The anticipated time within which the action/s shall be implemented, or the timing for the recurrence of interventions; and
 - **Responsibility:** The relevant City of Cape Town department that is responsible for implementing the specific action/s;
 - **Reference:** The section of the report which should be referred to for detailed information.
-
- **Importance:** The different shades of colour (see legend below) indicate the level of importance (in terms of achieving the overall vision for the Corridor) of implementing specific action/s timeously.

Legend:

	Critical
	Important
	Recommended

ISSUE: IMPLEMENTATION OF THE OEMP								
Objective	Strategy	Action/s	Time-frame	Short (0 to 3 years)	Medium (3 to 5 years)	Long (>5 years)	Responsibility	Reference
To ensure the effective implementation of the various actions detailed in the OEMP	Assign responsibilities	Circulation of OEMP to various CoCT Departments.	ASAP	✓			CoCT- Environmental Resource Management: District B & C	Section 2.1
		Meet with relevant CoCT depts to confirm responsibilities for actions listed in Table	Two weeks after circulation of OEMP to CoCT departments.	✓			CoCT- Environmental Resource Management: District B & C	Section 2.1
		Investigate possibility of manpower assistance from Friends groups/ Parklands HOA, schools etc re certain actions within the OEMP	Post 2 nd year of implementation, ongoing	✓	✓	✓	CoCT- Environmental Resource Management: District B & C	Section 2.1

	Funding and budgets	Obtain funding from CoCT existing budgets	Two weeks after circulation of OEMP to CoCT departments.	✓	✓	✓	CoCT- Environmental Resource Management: District B & C & CoCT: Budget department	Sections 1.5 and 2.3
		Investigate possibility of receiving donations from Friends groups/ Parklands HOA, schools etc re certain actions within the OEMP	Post 2 nd year of implementation, ongoing	✓	✓	✓	CoCT- Environmental Resource Management: District B & C	Section 2.3
	Monitoring	Conduct audit re implementation actions and compile Compliance report	Annually	✓	✓	✓	EO under the management of the CoCT- Environmental Resource Management: District B & C	Section 2.2
To publicise the Fynbos Corridor	Develop an identity for the Fynbos Corridor	Hold a competition re finding a suitable name for the Fynbos Corridor.	As soon as possible	✓			CoCT- Environmental Resource Management: District B & C	Section 6.1

	Marketing/ branding	Distribute flyers.	Post 2 nd year of implementation, every 6 months	✓	✓	✓	CoCT- Environmental Resource Management: District B & C	Section 6.1
		Advertise/ articles in the local newspaper	Post 2 nd year of implementation, quarterly	✓	✓	✓	CoCT- Environmental Resource Management: District B & C	Section 6.1
		Erection of initial signage.	Within 1 st year of implementation	✓			CoCT- Environmental Resource Management: District B & C	Section 4.3.1 and 6.1
		Erection of additional signage/ information boards.	After 3 rd year of implementation As/ when needed.		✓	✓	CoCT- Environmental Resource Management: District B & C	Section 4.3 and 6.1
	Environmental awareness	Inform/ educate schools re environmental issues re the Fynbos Corridor	Post 2 nd year of implementation, ongoing	✓	✓	✓	CoCT- Environmental Resource Management: District B & C	Section 6.2

ISSUE: CONCEPTUALISATION AND STRATEGIC PLANNING								
Objective	Strategy	Actions	Time-frame	Short (0 to 3 years)	Medium (3 to 5 years)	Long (>5 years)	Responsibility	Reference
To ensure that the Fynbos Corridor is effectively utilised as both a biodiversity corridor in addition to use for public amenity.	Layout and design	Confirm strategic planning issues re the layout and design of the Fynbos Corridor.	During the design phase	✓			CoCT- Environmental Resource Management: District B & C CoCT- Strategic Development Information department	Section 4.2, 5.1 and 5.8.1(b)
	Mapping	Map existing indigenous remnants, existing infrastructure, utilisation areas, no-go areas, access points.	Within 1 st year of operation	✓			CoCT- Environmental Resource Management: District B & C in consultation with the EO; & CoCT- Strategic Development Information department	Section 4.2.1, 4.3.1 and 5.8.1(b)

		Update maps re indigenous remnants, infrastructure, utilisation areas, no-go areas, access points	Every 6 months (bi-annually) or annually		✓	✓	CoCT- Environmental Resource Management: District B & C in consultation with the EO	Section 4.2.1
		Include Fynbos Corridor into the CoCT's Biodiversity Network			✓	✓	CoCT- Environmental Resource Management: District B & C in consultation with the Biodiversity Management Branch	Section 4.1.2

	Zoning	Re-zone the Fynbos Corridor				✓	CoCT- Environmental Resource Management: District B & C in consultation with the CoCT- Planning & Building Development Management department	Section 4.2.2
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ISSUE: MANAGEMENT OF DEVELOPMENT ABUTTING THE CORRIDOR								
Objective	Strategy	Actions	Time-frame	Short (0 to 3 years)	Medium (3 to 5 years)	Long (>5 years)	Responsibility	Reference
To ensure that abutting developments have a minimal negative impact on the Fynbos Corridor.	Design	Develop Site development plans	During design phase, ongoing	✓	✓	✓	CoCT- Environmental Resource Management: District B & C in consultation with the Biodiversity Management Branch and CoCT- Planning & Building Development Management department	Sections 4.2 and 5.1

		Design according to the Fynbos Corridor development guidelines	During design phase, ongoing	✓	✓	✓	CoCT-Environmental Resource Management: District B & C in consultation with the CoCT-Planning & Building Development Management department	Sections 4.2.2, 5.1.1 and 5.7
	Establish control measures during construction	Develop and implement project specific EMP	Prior to commencement of construction activities.	✓			EO under the management of CoCT-Environmental Resource Management: District B & C	Sections 5.1.2 and 5.3.1
		Include Project Spec EMP into future contract documents	Ongoing	✓	✓	✓	Developers	Section 5.1.2
		Stabilise undeveloped abutting sites	When required/needed.	✓	✓		Developers/Contractors	Section 5.1

	Monitoring	Audit of CEMP	Ongoing	✓	✓	✓	EO under the management of the CoCT-Environmental Resource Management: District B & C	Sections 5.1.2 and 8
Manage the conduct of residents and landowners to facilitate environmentally sound management of the Fynbos Corridor and abutting areas.	Escaping gardens including growth of Kikuyu grass.	Promote use of indigenous plants	Ongoing		✓	✓	EO under the management of the CoCT-Environmental Resource Management: District B & C Developer and Home Owners Associations	Sections 5.1.2 and 5.2.2
	Provision of rules	Implement 'Code of Conduct' (refer to section 5.1.3 and 5.3.1 of the OEMP).	Ongoing	✓	✓	✓		Refer to sections 5.1.3 and 5.3.1 of the OEMP.
		Revision of voluntary code of conduct			✓	✓	Home Owners Associations	5.1.3

		Incorporate 'Code of Conduct' into homeowners associations rules		✓	✓	✓	Developer and Home Owners Associations	5.13
	Policing/monitoring	Monitoring	Monthly	✓	✓	✓	EO under the management of the CoCT- Environmental Resource Management: District B & C	Sections 2.1, 4.3.3, 5.2.1, 5.2.2, 5.3, 5.4, 5.5, 5.6, 5.7.

ISSUE: VEGETATION MANAGEMENT								
<i>Alien, invasive vegetation</i>								
Objective	Strategy	Actions	Time-frame	Short (0 to 3 years)	Medium (3 to 5 years)	Long (>5 years)	Responsibility	Reference
To: - prevent the establishment or spread of alien vegetation, - eliminate potential invasion, - improve aesthetics, - decrease fire risk, - avoid compromising the ecological integrity of any natural areas.	Identification of aliens within the Fynbos Corridor (refer to identification sheets in Annexure C)	Train staff to assist in identification of species	1 st year of operations then ongoing	✓	✓	✓	EO under the management of the CoCT-Environmental Resource Management: District B & C & Biodiversity Management Branch	Section 5.2.1
	Control alien plant re-growth	Manually remove re-growth of all alien species	Spring/ early summer. Within the first three months.	✓	✓	✓	EO under the management of the CoCT-Environmental Resource Management: District B & C	Section 5.2.1 (b)

	Pro-active control and eradication of invasive alien (terrestrial) plants (refer to management guidelines in section 5.2.1)	Train staff, volunteers and contractors to assist with the manual removal as labour intensive	Initial stages then ongoing	✓	✓	✓	EO under the management of the CoCT-Environmental Resource Management: District B & C	Section 5.2.1
		Hand-remove germinating seedlings.	Bi-annually, after the first rains	✓	✓	✓	EO	Section 5.2.1 (b)
		Clarify legal responsibilities to landowners	1 st year of operations and then ongoing	✓	✓	✓	CoCT-Environmental Resource Management: District B & C	Section 2.1
		Encourage removal of alien species on private land	1 st year of operations and then ongoing	✓	✓	✓	EO	Section 5.2.1
		Prohibit planting of invasive species in private gardens and during rehabilitation/ re-vegetation or developed sites.	Ongoing	✓	✓	✓	Developer and Home Owners Associations	Sections 5.1.1 and 5.1.2

	Monitoring	Follow up inspections	Every 3 months	✓	✓	✓	EO	Section 5.2.1 (c)
	Follow up control	Removal and weeding where necessary	Spring/ early summer	✓	✓	✓	EO	Section 5.2.1 (b)
	Pro-active control and eradication of invasive alien (aquatic) plants	Removal of <i>Typha Capensis</i>	During Summer, annually	✓	✓	✓	CoCT: Roads and Stormwater department, under the management of the EO	Section 5.2.1 (b)
	Monitoring	Follow up inspections	Every 3 months	✓	✓	✓	CoCT: Roads and Stormwater department, under the management of the EO	Section 5.5
	Follow up control	Removal	Ad hoc, but preferably during summer	✓	✓	✓	CoCT: Roads and Stormwater department, under the management of the EO	Sections 5.2.1 and 5.5

Indigenous vegetation								
Objective	Strategy	Actions	Time-frame	Short (0 to 3 years)	Medium (3 to 5 years)	Long (>5 years)	Responsibility	Reference
To protect existing indigenous vegetation within the Fynbos Corridor.	Conserve existing indigenous plants	Map existing indigenous plant remnants / hotspots (botanical survey)	ASAP and then annually	✓	✓	✓	EO under the management of the CoCT-Environmental Resource Management: District B & C & Biodiversity Management Branch	Section 5.2.2 (a)
		Fence off/ demarcate plant remnants-protected plants	Quarterly / every 6 months	✓	✓	✓	CoCT-Environmental Resource Management: District B & C	5.2.2 (c)
		Erect signage	ASAP	✓	✓	✓	CoCT-Environmental Resource Management: District B & C	5.2.2 (c)

To control access and movement to avoid damage to indigenous flora as well as prevention of erosion within the Corridor.	Control access	Establish and clear thoroughfares based on desire lines	Ongoing	✓	✓	✓	EO under the management of the CoCT- Environmental Resource Management: District B & C	Sections 4.2.1, 4.2.2 and 5.8
		Restrict pedestrian movement to pathways/ thoroughfares made using branches etc.	Within 1 st year of operations	✓			EO	Section 4.2.2 and 5.8
		Obliterate and re-vegetate unused pathways	With 1 st year of operations	✓			EO	Section 5.8.1
	Formalise access and thoroughfare arrangements	Construct entranceways with signage re prevailing management restrictions (information boards).			✓	✓	CoCT- Environmental Resource Management: District B & C & CoCT: City Parks	Section 5.8.1

		Formalise pathways via constructing basic infrastructure such as		✓	✓		CoCT- Environmental Resource Management: District B & C & CoCT: City Parks	Section 5.8.1
		(a) Construct boardwalks			✓	✓	CoCT- Environmental Resource Management: District B & C & CoCT: City Parks	Section 5.8.1 (a)
		(b) Maintain formal access paths and gateways			✓	✓	EO	Section 5.8.1 (a)
	Manage movement of people, and domestic animals	Install rules and regulations on signage	1 st year of operation	✓			EO & CoCT- Environmental Resource Management: District B & C	Section 5.8.1 (a)

		Maintain Veldspan fence	Ongoing	✓			EO	Sections 1.1, 5.7 5.8.1 (a)
		Identify areas for public recreation	Within 1 st year of operations	✓			CoCT- Environmental Resource Management: District B & C & CoCT: City Parks	Section 5.8.1 (b)
		Install structures for public use e.g. benches, play area			✓	✓	CoCT- Environmental Resource Management: District B & C & CoCT: City Parks	Section 5.8.1 (b)
		Construct birdhide near the Diep River			✓	✓	CoCT- Environmental Resource Management: District B & C & CoCT: City Parks	Sections 4.1.2, 4.3.2 and 5.8.1 (b)

		Minimise removal of indigenous plants/ roots for medicinal purposes	ASAP, ongoing	✓	✓	✓	EO	Sections 3.3 and 5.2.2
	Prohibit entry of vehicles/ quadbikes	Prevent entry of motorised vehicles by means of formalising pedestrian access points	Within 1 st year of operations	✓			EO & Law Enforcement	Sections 3.3, 5.8.1 (b) and 5.9
		Locals to note vehicles registrations and report transgressions to EO	Ad hoc	✓	✓	✓	Users & EO	Sections 3.3, 5.3.1 (c), 5.8.1 (b) and 5.9
		Construct gravel parking areas for the southern portion			✓		CoCT- Environmental Resource Management: District B & C & CoCT: Roads and Stormwater / City Parks	Sections 4.3.2 and 5.8.1 (b)

		Maintain Veldspan fence	Ongoing	✓	✓	✓	EO	Sections 1.1, 5.7 and 5.8.1 (a)
	Monitoring	Spot checks and fining for transgressions	Ad hoc	✓	✓	✓	EO & Law Enforcement	
	Erosion prevention	Install / construct erosion protection measures where necessary	Quarterly / after spring/ after heavy rains and bad weather conditions	✓	✓	✓	EO	Sections 5.2.1 (a), 5.5.2 and 5.8.1 (a)
To enhance species diversity within the Fynbos Corridor.	Target setting	Set conservation targets to increase biodiversity	Annually		✓	✓	EO & CoCT- Environmental Resource Management: District B & C & Biodiversity Management Branch	Sections 4.1.2 and 5.2.2 (c)

	Monitoring	Monitoring effectiveness of any rehabilitation	Quarterly/ bi-annually		✓	✓	EO & Biodiversity Management Branch	Sections 2.1 and 2.2
	Rehabilitation and restoration	Planting from search and rescue operations	After the first winter rains		✓	✓	EO	Section 5.2.2 (c)
		Controlled burning particularly for the Cape Flats Sand Fynbos		✓		✓	Biodiversity Management Branch	Section 5.2.2 (b)
	Monitoring	Monitor/ follow up re success of rehabilitation/ controlled burns		✓	✓	✓	EO	Sections 2.1 and 2.2

ISSUE: FAUNAL MANAGEMENT

Objective	Strategy	Actions	Time-frame	Short	Medium	Long	Responsibility	Reference
To encourage habitation by wild animals as well as to monitor occurrence of animals and maintain carrying capacity of the Fynbos Corridor	Identify and manage faunal species occurring within the Fynbos Corridor.	Develop species checklist	1 st year of operations	✓	✓	✓	EO & Biodiversity Management Branch	Refer to section 5.3.1 (d) for fauna and antelope control recommendations
		Reporting of injured or sick animals	Ad hoc	✓	✓	✓	Users & EO	Section 5.3.1 (a)
	Encourage habitation by wild animals and identification and control of threats	Management of domestic pets	Ad hoc	✓	✓	✓	Residents, Users & EO	Section 5.3.1 (d)
		Removal of snares, prohibition of hunting	Ongoing Ad hoc and spring/ early summer during alien clearing operations	✓	✓	✓	EO	Sections 5.3.1 (a), (d) and 5.7

		Minimise disturbance or disruption to wildlife by prohibiting camping/ informal settlements from occurring within the Fynbos Corridor.		✓	✓	✓	EO & Law Enforcement	Sections 2.1 and 5.3.1
		Control movement of people and domestic animals (Refer to sections 5.3.1 (d), 5.7 and 5.8.1 (b))	Ongoing, ad hoc	✓	✓	✓	EO	Sections 5.3.1 (d), 5.7 and 5.8.1 (b)
	Maintain integrity of habitat	Encourage growth of shrubs and endemic species	Before winter rains	✓	✓	✓	EO & Biodiversity Management Branch	Section 5.2.2
		Prevent the 'Edge effect' from abutting development	Ongoing	✓	✓	✓	EO	Sections 5.1.3 and 5.3.1 (a)

	Monitoring	Monitoring of species on site and capturing/recording data	Monthly	✓	✓	✓	EO & Biodiversity Management Branch	Section 5.3.1 (e)
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ISSUE: WASTE MANAGEMENT

Objective	Strategy	Actions	Time-frame	Short	Medium	Long	Responsibility	Reference
Control the incidence of illegal dumping and littering occurring within the Fynbos Corridor	Communication of litter management strategy	Signage re prevailing management restrictions and establishment of 24-hour dumping hotline.	Within 1 st year of operations, ongoing	✓	✓	✓	CoCT- Environmental Resource Management: District B & C & City Parks	Section 5.4
		Provision of bins with lids at strategic positions outside the Fynbos Corridor	Within 1 st year of operations	✓			CoCT: Solid Waste Management Department	Section 5.4
		Encourage good housekeeping and management of domestic waste	Ongoing	✓	✓	✓	EO & Home Owners Associations	Section 5.4

		Establish rules, regulations and penalties for abutting developments re domestic refuse storage and disposal	Within 2 nd year of operations	✓			Home Owners Associations	Section 5.4
		Remove of litter and dumped material within the Fynbos Corridor	Twice a month/ ad hoc	✓	✓	✓	CoCT: Solid Waste Management under the management of the CoCT- Environmental Resource Management: District B & C	Section 5.4.1
		Remove litter from abutting streets, kerb grids, public dustbins etc	Weekly / ad hoc	✓	✓	✓	CoCT: Solid Waste Management	Section 5.4.1
	Assistance/ partnerships	Encourage/ initiate litter clear-ups amongst schools, Friends groups etc	Quarterly		✓	✓	CoCT- Environmental Resource Management: District B & C	Section 5.4.1

	Monitoring and fining	Monitoring on monthly basis	Monthly	✓	✓	✓	EO & Law Enforcement	Section 5.4.
		Fines issued for illegal dumping	Ad hoc	✓	✓	✓	EO & Law Enforcement	Section 5.4.1
		Locals to note registration numbers and report incidents	Ad hoc	✓	✓	✓	Users & Residents etc	Section 5.4.1

ISSUE: STORMWATER MANAGEMENT								
Objective	Strategy	Actions	Time-frame	Short	Medium	Long	Responsibility	Reference
To reduce the negative impacts associated with stormwater	Alien vegetation control/removal	Remove invasive alien vegetation (<i>Typha Capensis</i>) from detention ponds within Fynbos Corridor	During summer, annually	✓	✓	✓	CoCT: Roads and Stormwater department	Section 5.2.1(b)
		Monthly monitoring	Ongoing after heavy rains	✓	✓	✓	EO & CoCT: Roads and Stormwater department	Section 5.2
	Enhance water quantity and quality	Remove alien invasive aquatic plants	During summer, annually	✓	✓	✓	CoCT: Roads and Stormwater department in consultation with EO	Section 5.2.1(b)
		Remove litter/debris/ silt from stormwater infrastructure	Prior to onset of winter and after heavy rains	✓	✓	✓	CoCT: Roads and Stormwater department	Section 5.5.1
		Install litter, silt, oil (pollutant) traps	During construction phase	✓			CoCT: Roads and Stormwater department	Section 5.5.1

		Clear pollutant traps	Prior to onset of winter and after heavy rains	✓	✓	✓	CoCT: Roads and Stormwater department	Section 5.5.1
	Follow-up control / Maintenance	Maintain vegetation stabilising banks etc of detention ponds e.g. <i>Carpobrotus edulis</i> (Sour Fig)	Ad hoc	✓	✓	✓	CoCT: Roads and Stormwater department	Section 5.2.2(c) and 5.5.2(c)
		Remove alien, invasive vegetation growing within detention ponds		✓	✓	✓	CoCT: Roads and Stormwater department	Section 5.2.1(b)
	Monitoring	Inspect all stormwater infrastructure and pollutant traps within and surrounding the Fynbos Corridor	Prior to onset of winter and after heavy rains, ad hoc	✓	✓	✓	EO & CoCT: Roads and Stormwater department	Section 5.5.1

		Measure and record quality and quantity of water within stormwater system especially water leaving the detention pond within the Fynbos Corridor buffer area		✓	✓	✓	EO Environmental Resource Management Department & Scientific Services Department	Section 5.5.2
		Inspect banks of detention ponds for erosion and implement protection measures if required	Quarterly	✓	✓	✓	CoCT: Roads and Stormwater department	Section 5.5.1

ISSUE: WILDFIRE PREVENTION								
Objective	Strategy	Actions	Time-frame	Short	Medium	Long	Responsibility	Reference
Prevention and control of wildfires to retain biodiversity of area and reduce risk to residents and users	Proactive identification and management of fire risks and institution of preventative measures	Alien vegetation clearing	Ongoing	✓	✓	✓	EO under the management of the CoCT-Environmental Resource Management: District B & C	Section 5.2.1
		Assess and develop capacity and staff training	Ongoing	✓	✓	✓	CoCT-Environmental Resource Management: District B & C Biodiversity Management Branch CoCT: Emergency Services department	

		Prohibit burning of vegetation or garden refuse on private abutting properties.	Ongoing	✓	✓	✓	EO & Home Owners Associations	Section 5.4 and 5.4.1
		Forbid open fires within the Fynbos Corridor.	Ongoing	✓	✓	✓	EO & Law Enforcement	Section 5.6
		Remove post fire aliens	Every 3 months/quarterly	✓	✓	✓	EO	Section 2.1 and 2.2
	Develop a fire management plan	Develop procedures and protocols for wildfires	Ongoing	✓			CoCT- Environmental Resource Management: District B & C Heritage Management Branch & CoCT: Emergency Services department	Section 5.6

		Assess maintenance procedures (e.g. firebreaks and infrastructure)	Every 6 months	✓	✓	✓	EO	Section 5.6
		Display emergency numbers on signage	When needed	✓	✓	✓	CoCT- Environmental Resource Management: District B & C	Section 2.1, 5.6, 5.7 and 5.9
	Implementation of control measures	Acquire the necessary infrastructure and equipment for fire management	Within the 1 st year of operations and then ongoing	✓	✓	✓	CoCT- Environmental Resource Management: District B & C & CoCT: Emergency Services department	Section 5.6

		Identify vehicle access points to the Corridor	Within the 1 st year of operations	✓			CoCT-Environmental Resource Management: District B & C & CoCT: Emergency Services department	Section 5.6
		Install fire hydrants	When needed and ongoing	✓	✓	✓	CoCT: Emergency Services department	Section 5.6
		Create fire break using Carpobrotus cuttings along inner boundary of the Corridor.	Within the 1 st year of operations	✓	✓		CoCT-Environmental Resource Management: District B & C	Section 5.6 and 5.8.1(b)
	Follow-up control/ Maintenance	Maintain firebreak	Every 6 months	✓	✓	✓	EO	Section 5.6 and 5.8.1(b)
		Maintain corridors for fire fighting vehicles (removable bollards)	Quarterly	✓	✓	✓	EO	Section 5.6

		Maintain fire hydrants/ clear of vegetation overgrowth if required	Every 6 months	✓	✓	✓	EO	Section 5.6 and 5.8.1(b)
	Maintain records of fire history to inform fire prevention policy	Update fire history records	Ongoing	✓	✓	✓	EO & CoCT: Emergency Services department	Section 5.6

ISSUE: SAFETY AND SECURITY								
Objective	Strategy	Actions	Time-frame	Short	Medium	Long	Responsibility	Reference
To ensure that the Fynbos Corridor is safe to use for all users	Development and implementation of a management plan	Display emergency numbers on signage		✓	✓	✓	CoCT- Environmental Resource Management: District B & C	Section 2.1, 5.6, 5.7 and 5.9
		Fix Veldspan fence as soon as it is damaged.		✓	✓	✓	EO	Section 5.8.1(a)
		On-foot surveillance within the Fynbos Corridor		✓	✓	✓	EO	Section 5.7

ISSUE: INFRASTRUCTURE MAINTENANCE								
Objective	Strategy	Actions	Time-frame	Short	Medium	Long	Responsibility	Reference
To ensure that all infrastructure within the Fynbos Corridor and immediate surrounds is maintained and has no avoidable environmental impact associated with it	Maintain pathways, access routes, signage, benches etc	Clear overgrown bushes	Annually in Spring/ early Summer	✓	✓	✓	EO under the management of the CoCT- Environmental and Heritage Management: District B & C	Section 5.8.1(a)
		Replace/ fix boardwalks, signage etc	Quarterly/ when the need arises	✓	✓	✓	CoCT- Environmental Resource Management: District B & C & CoCT: City Parks department	Section 5.8.1(a) and (b)

		Treatment of wood components			✓	✓	CoCT- Environmental Resource Management: District B & C & CoCT: City Parks department	Section 5.8.1(a) ii
		Inspect for erosion effects and stabilise pathways	Annually after high rainfall periods/ when needed	✓	✓	✓	EO	Section 5.8.1(b) ii
		Replace/ repair structures for recreation e.g. benches, bird hide etc	Every 6 months/ when needed	✓	✓	✓	CoCT: City Parks department	Section 5.8.1(a) and (b)
	Fence repairs	Minor repairs: Fix the Veldspan fence as soon as it is broken/ damaged	Ad hoc/ weekly	✓	✓	✓	EO	Section 5.8.1(a)
		Major repairs	Every 6 months	✓	✓	✓	CoCT: City Parks department	Section 5.8.1
	Monitoring / Maintenance	Inspections to infrastructure	Quarterly	✓	✓	✓	EO	Section 5.8.1

ISSUE: EMERGENCY PROCEDURES								
Objective	Strategy	Actions	Time-frame	Short	Medium	Long	Responsibility	Reference
To ensure the effective response to emergency situations within the Fynbos Corridor	Development and implementation of a management plan	In consultation with the relevant CoCT departments, identify risk areas for potential emergencies	Within the first 3 months	✓			CoCT- Environmental Resource Management: District B & C & CoCT: Emergency Services department & CoCT: Electricity Services & CoCT: Water & Sanitation	Section 5.6 and 5.9

		Develop procedures for each potential emergency	Within the first 3 months	✓		CoCT- Environmental Resource Management: District B & C & CoCT: Emergency Services department & CoCT: Electricity Services & CoCT: Water & Sanitation	Section 5.6, 5.7 and 5.9
		Train EO re procedure in case of an emergency	Within the first 3 months	✓		CoCT: Emergency Services department	Section 5.9
		Confirm fire hydrant locations	Within the first 3 months	✓		EO	Section 5.6
		Formalise gated entry/ access points for emergency vehicles along the Fynbos Corridor	Within the first 3 months	✓		CoCT: Emergency Services department	Section 5.6

		Provide the contact details in case of emergency on information boards/ signage	Within the first 3 months	✓			CoCT- Environmental Resource Management: District B & C	Section 2.1, 5.6, 5.7 and 5.9
		List of incidents, complaints	Ongoing, ad hoc	✓	✓	✓	EO & CoCT: Emergency Services department	Section 2.1

ISSUE: REVIEW OF OEMP								
Objective	Strategy	Actions	Time-frame	Short	Med	Long	Resp	Reference
To ensure that the OEMP is up to date and relevant to proactively and effectively manage the Fynbos Corridor.	Review and amendment	Revise and update OEMP	October 2009	✓			CoCT-Environmental Resource Management: District B & C	Section 2.1, 2.3, 4.3.3 and 8
		Systematic revision of OEMP	Every three years		✓	✓	CoCT-Environmental Resource Management: District B & C	Section 2.1, 2.3, 4.3.3 and 8

APPENDIX D7: ROYAL ASCOT ENVIRONMENTAL MANAGEMENT SYSTEM: 3-YEAR MANAGEMENT PROGRAMME

Royal Ascot Environmental Management System 3 YEAR MANAGEMENT PROGRAMME (JAN 2008 – DEC 2010)	RA EMS <i>Conservation</i>
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Task	Objective As defined in Procedures Manual	Goals	Responsibility	Timeframe		
				2008	2009	2010
1 Contracts Management	The management of contract work undertaken within the Conservation Area must aim to ensure that: ✗ suitably qualified contractors are chosen to undertake work within the Conservation Area; ✗ the best value for money is obtained; ✗ full transparency with respect to the use of funds set aside for conservation is achieved.	Specific goals will be determined by the Tasks set out below	The EMC is to manage the allocation of funding, sourcing of service providers, awarding of contracts & payment thereof	As and when necessary		
2 Invasive Vegetation Management	Maintain, and improve where possible, the level of biodiversity within the Conservation Area by: ✗ preventing the homogenisation of the vegetation by invasive plant species (indigenous or alien); ✗ limiting fuel load for fire; ✗ limiting unnatural changes to ecosystem structure (e.g. nitrogen fixing of the soil, changes to soil structure by roots etc).	Carry out annual alien vegetation mapping - plot species & density	ECM	Jul	Jul	Jul
		Prioritise areas requiring clearing & draw up specifications & schedule for the following year	ECM	Aug	Aug	Aug
		Approach Working for Wetlands/Water and CCT for assistance during their respective planning cycles	ECM	Sep - Oct	Sep - Oct	Sep - Oct
		Arrange contracts for shortfall - put out to tender, EMC approval	ECM / EMC	Nov	Nov	Nov
		Initiate & manage invasive clearing contracts undertaken by contractors	ECM	Jan - May	Jan - May	Jan - May
				As necessary		

Task	Objective As defined in Procedures Manual	Goals	Responsibility	Timeframe		
				2008	2009	2010
3 Fire Management	Fire is an important conservation management tool but it can also be dangerous and damaging to not only the environment, but also people and property. The aims of fire management within the Conservation Area are therefore to: ✕ protect human life ✕ protect property ✕ maintain biodiversity ✕ reduce fuel load thereby preventing uncontrollable catastrophic fires ✕ stimulate vigorous new growth within vegetation associations	Obtain burning permit for Burn Block 1 & carry out public participation	CCT / ECM	Mar		Jan
		Carry out pre-burn preparation: ✕ Photographic record ✕ Clear fire breaks & under fences ✕ Clear thick bush (Rhus)	ECM / CCT	Feb - Apr		Jan - Apr
		Undertake controlled burn 1. Burn Block 1 - Northern portion of Southern Conservation Area 2. Burn Block 2 - Southern portion of S. Conservation Area (2010). 3. Burn Block 3 - Northern. Conservation Area (2012).	ECM to ensure all logistics have been addressed. CCT to implement burn, providing manpower & equipment. Gold Circle to assist where possible. MPOA to inform residents.	Burn Block 1 Apr		Burn Block 2 Mar - Apr
		Carry out post-burn monitoring: ✕ Photographic record as plant material starts regenerating ✕ Determine if any infrastructural interventions are required ✕ Determine if any additional ecological interventions are required (source specialist advice if required) - ensure that regular monitoring is included in monitoring programme (Proc. 7). ✕ Vegetation exclusion plots (Carried out by CCT)	ECM to co-ordinate data collection & implementation of recommendations. CCT to assist where logistically possible.	May - Sep		May - Sep
		Carry out post-burn repairs: ✕ Repair infrastructure if required	ECM to co-ordinate with assistance from CCT & Gold Circle where appropriate	May		May
		Hold training session with Gold Circle staff - Fire Response.	ECM	Sep - Oct		

Task	Objective As defined in Procedures Manual	Goals	Responsibility	Timeframe		
				2008	2009	2010
4 Rehabilitation	In the context of this EMS, rehabilitation refers collectively to all efforts made to restore natural areas within the racetrack area to a good condition. As the Conservation Area is situated within an urban area with very little connection to other pockets of fynbos, complete restoration of ecosystem functioning is impossible. Rehabilitation efforts will therefore aim to improve ecosystem functions in small areas. To achieve this, rehabilitation must aim to: ✂ improve biodiversity within the Conservation Area ✂ maintain the genetic integrity of species already occurring in the area ✂ reduce negative impacts of surrounding land uses ✂ maximise the conservation potential of the available area ✂ increase the size of the effective natural remnant	Identify new plant species that could be reintroduced.	ECM to coordinate & source specialist input where necessary. CCT to assist.	Sep		
		Propagate plants: ✂ Approach potential suppliers who may be able to offer “in-kind” services first (Working for Wetlands, CREW, Kirstenbosch) ✂ Arrange contract propagation for shortfalls.	ECM to investigate propagation possibilities & secure facilities. CCT, as the landowner, to provide letter of permission to collect plant material from the Conservation Area (legal requirement).	Sep		
		Plant out propagated plants. 1. <i>Cliffortia ericifolia</i> collected & propagated by ECM during 2007. 2. Species propagated 08/early 2009. 3. Species propagated 09/early 2010.	ECM to co-ordinate planting efforts. CCT/Working for Wetlands to be approached for assistance. Outsource labour if required.	1 Jul	2 Jun	3 Jun
		Monitor rehabilitation areas: ✂ Ensure the rehabilitation areas are mapped & physically marked on the ground to aid monitoring. Species lists to correspond to planted areas. ✂ Ensure that regular 6 monthly monitoring is included in the monitoring procedure (Proc. 7).	ECM to co-ordinate / undertake monitoring, ensuring accuracy and quality, & recording of data.	Sep & Mar	Sep & Mar Next review	Sep & Mar
		Ensure that monitoring data of all species (fauna & flora) considers rehabilitation possibilities. Undertake an “audit” of monitoring tables annually to formulate a rehabilitation plan for the following year.	ECM	Nov	Nov	Nov

Task	Objective As defined in Procedures Manual	Goals	Responsibility	Timeframe		
				2008	2009	2010
5 Infrastructure Mang.	This section serves to provide: ✕ a structure for the maintenance of existing infrastructure within the Conservation Area; and ✕ a guideline for introducing additional infrastructure if required (e.g. signage).	Install lockable pedestrian gate & stile at entrance to Northern area.	ECM to co-ordinate & monitor EMC to appoint contractor.	Apr		
		Pathway maintenance: ✕ Prepare specification ✕ Obtain quotation ✕ Carry out maintenance	ECM to put together specifications & monitor work on the ground, & EMC to appoint contractor (VULA).	Apr - May		
		Visual monitoring of infrastructure every 2 nd month, (gates pathways, boardwalk; fences & signboards)	ECM to report observations & recommendations to EMC every 2 nd month at meetings.	Every 2 months	Every 2 months	Every 2 months
		Prepare annual inventory & map infrastructure in conservation area to identify needs.	ECM to photograph & map & report to EMC for inclusion into APO.	Dec	Dec	Dec
6 Fauna Management	✕ Minimise human and animal conflict. ✕ Prevent alien species from out-competing indigenous fauna. ✕ Maintain reasonable population sizes of large animals that could impact the vegetation (Grysbok and Cape Hare). ✕ Ensure genetic viability of larger fauna such as Grysbok. ✕ As far as is possible to maintain natural ecosystem function. ✕ Improve biodiversity by undertaking reintroductions of locally extinct fauna where possible.	Re-write Procedures Manual to incorporate review comments (i.e. repackage to address all fauna, not only problem animals)	ECM / EMC	Jul		
		Game capture to be undertaken prior to controlled burn.	Giraffe House to organise capture, CCT / ECM to assist	Apr - May		Mar
		Make contact with SPCA to obtain information with regards to trapping and removal of cats from the MCA. Carry out recommendations.	ECM to liaise with SPCA. MPOA to encourage assistance through education & pet policies. CCT to provide law enforcement & resources. Gold Circle to manage as per OEMP & educate staff.	Jun As needed		
		Limit ease of access of dogs into the MCA by the installation of suitable infrastructure. i.e. Stile.	ECM to draw up spec. and run necessary contract.	Mar		
		Introduce 1 new Grysbok to increase genetic stability as vegetation allows.	ECM to coordinate with CCT & Giraffe House.	Possibly Oct		
		Conduct research into historic records & possibilities of reintroducing Cape Hare. Implement as indicated.	ECM to coordinate with CCT specialist input.	Sep - Nov		

Task	Objective As defined in Procedures Manual	Goals	Responsibility	Timeframe		
				2008	2009	2010
7 Biological Monitoring	The aim of monitoring to provide an indication (baseline data) as to what species occur in the Conservation Area, and provide a reliable record of any changes to these species, such as perpetuation and health. Monitoring data can act as an early warning system for negative ecosystem changes by mapping trends Any monitoring programme carried out in the Conservation Area must ensure that: ✂ the data collected is sound and reliable. ✂ data that will assist with management decisions. ✂ components to be monitored include flora (plants); fauna (animals) & water (quality & levels)	Map red data plants (individuals) once Burn Block 1 has recovered in late spring. Specialist assistance may be required (CREW, specialist consultant)	ECM to plan, coordinate, & approach specialists as needed, & manage data collection & storage.	Oct		
		Set up and monitor post burn transect lines in Block 1.	ECM to coordinate, CCT to assist.	Oct-Nov	Oct-Nov	
		Monthly fixed point photographs to be taken (6 points established).	ECM to carry out	Monthly	Monthly	Monthly
		Monthly monitoring of water levels in wetland areas 1 & 2.	ECM to carry out	Monthly	Monthly	Monthly
		Water quality testing: Establish need & desirability, & establish viability of annual testing. Set parameters as required.	EMC to coordinate discussion. EMC / ECM to implement recommendations as necessary.	Jul		
8 Environmental & Outreach	The aim of Environmental Education is to increase awareness about the Conservation Area and its importance to biodiversity in the region. Any Environmental Education Campaign implemented as part of the EMS should aim to improve: ✂ understanding about the importance of preserving the Conservation Area ✂ the sense of ownership and responsibility toward the Conservation Area ✂ interest about what is happening in and around the Conservation Area	Contact media, local councillors, committee members & invite to Grysbok release.		Aug - Sep		
		Submit 2 nd poster (ECM) & give presentation to Fynbos Forum (CCT)		Aug		
		Attend public forums & conduct talks (FoR meeting etc) where possible.		As needed		
		Update Do's & Don'ts poster & distribute.		May	May	May
		Develop environmental checklist for complexes, distribute & evaluate responses. Address where required.		Jun	Jun	Jun
		Set cat policy as per Proc 6, and inform residents of the way forward.		Jul	As needed	
		Begin investigating possible project funders such as Caltex and Roland Letter Hill trust		Oct	Ongoing	

Task	Objective As defined in Procedures Manual	Goals	Responsibility	Timeframe		
				2008	2009	2010
9 Review	The review is a mechanism for evaluating the performance of management on the ground, as well as reviewing the EMS in its entirety.	Undertake internal mid-year assessment.	ECM is to make all relevant documentation information available for review purposes. EMC to co-ordinate reviews and nominate or appoint persons to undertake the reviews.	Aug - Sep	Aug	Aug
	The objective of the review process is to ensure that the EMS:	Undertake detailed internal reviews every second year.		Jan		Jan
	✂ as a whole, the objectives & targets as laid out in the APO, and procedures remain up to date, meaningful and implementable;	Undertake detailed external reviews every alternate year			Jan	
	✂ is maintained to expected standards, that it is relevant and utilises the latest technology and accepted conservation practice norms	Update APO based on information gathered during implementation	ECM & EMC together with input from CCT.	May - Jun	Jan - Feb	Jan - Feb