VROLIJKHEID NATURE RESERVE COMPLEX MANAGEMENT PLAN 2013-2018

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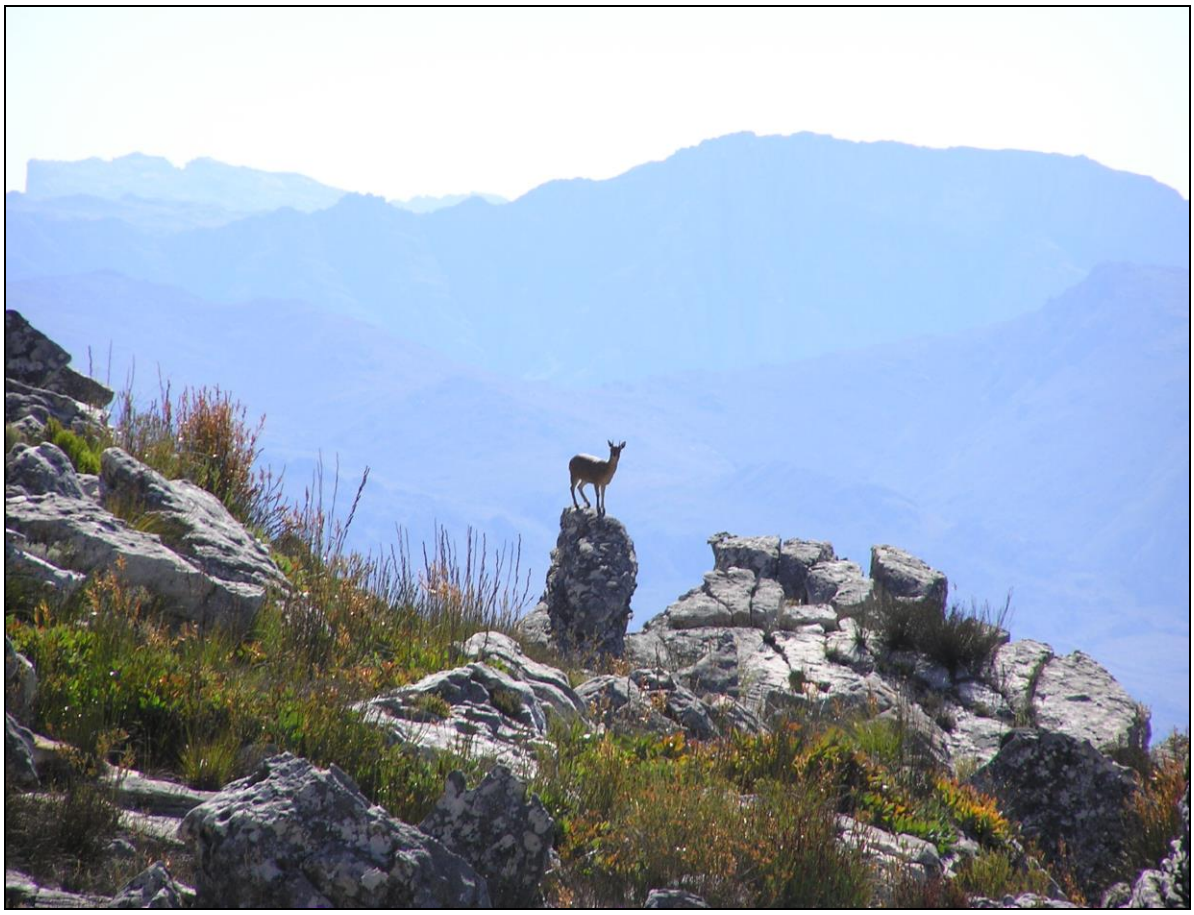
The Vrolijkheid Nature Reserve Complex comprises the following:

Vrolijkheid Provincial Nature Reserve established as a Provincial Nature Reserve in terms of Section 6 the Nature Conservation Ordinance, 1974, on 10 December 1976 and proclaimed in the Provincial Gazette by Proclamation No. 409/1976;

The boundaries of the Nature Reserve were amended in terms of Section 6 the Nature Conservation Ordinance, 1974, on 16 September 1991 and proclaimed on 1 October 1991 in the Provincial Gazette by Proclamation No. 75/1991;

Riviersonderend Mountain Catchment Area declared as The Riviersonderend Mountain Catchment Area in terms of Section 2 of the Mountain Catchment Act, 1970 (Act 63 of 1970), on 9 October 1981 and proclaimed in the Government Gazette by Proclamation No. 2121/1981.



Klipspringer in the Riviersonderend Mountains. Photo: Deon Plaatjies

[Cover: Mountain Fynbos on the dry northern slopes of the Riviersonderend Mountain. Photo: Deon Plaatjies]

AUTHORIZATION PAGE

This Integrated Management Plan for the Vrolijkheid Nature Reserve Complex (VNRC) was drafted and recommended by the Reserve Management Committee (RMC), a multi-disciplinary team consisting of:

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Recommended and adopted by:

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CapeNature – Directorate: Conservation Management Dr Q. Espey EXECUTIVE DIRECTOR	11/12/2012
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Western Cape Nature Conservation Board Conservation Committee Dr C. Johnson CHAIRMAN OF THE BOARD CONSERVATION COMMITTEE	18/12/2012
Western Cape Nature Conservation Board Dr C. Johnson CHAIRMAN OF THE BOARD	18/12/2012

PREAMBLE

The aim of the Nature Reserve Complex Management Plan is to ensure that the Vrolijkheid Nature Reserve Complex has clearly defined objectives and activities to direct the protection and sustainable use of its natural, scenic and heritage resources over a five year time period. The Management Plan thus provides the medium-term operational framework for the prioritized allocation of resources and capacity in the management, use and development of the reserve complex. The Management Plan intends to add value and continuity by clearly stating management objectives, scheduling action and providing guidelines on the management approach, the most important to manage a network of functionally connected protected properties for the conservation of a representative sample of the natural and cultural heritage of the Robertson Karoo, Riviersonderend Mountain Catchment Areas and associated lowlands, maintaining the biodiversity, ecosystem processes and services and providing opportunities for conservation education.

The Vrolijkheid Nature Reserve Complex falls within two global acknowledged biodiversity hotspots, the Cape Floristic Region (CFR), often referred to as Fynbos Biome, as well as the Succulent Karoo Biome. These two biomes fall within the Greater Cape Floristic Kingdom (GCFR) represented by the Fynbos and Succulent Karoo Biomes. The rich biodiversity in this Floristic Kingdom is under serious threat for a variety of reasons including conversion of natural habitat to permanent agriculture, inappropriate fire management, rapid and insensitive development, overexploitation of water resources, marine resources, and infestation by alien species. The combination of mountain Fynbos and Karoo vegetation, low-lying areas, valleys, plateaus and mountain peaks creates a unique diverse landscape and this scenic beauty of the surrounding landscape from the elevated areas of both the Vrolijkheid Nature Reserve and Riviersonderend State Land is valued and appreciated by hikers and visitors to the reserve complex.

The Vrolijkheid Nature Reserve:

- conserves Succulent Karoo vegetation in a region where the natural vegetation has been, and continues to be, transformed by agriculture.
- has been identified as a priority nature reserve specifically for youth development. Infrastructure and capacity support this key focus which is led by the Langeberg community conservation component in conjunction with reserve management. Youth groups from various parts of the surrounding and extended communities benefit Environmental Education programmes on the nature reserve.
- has cultural historical value with a distinguishing landmark feature of a 2 kilometre stone wall, built in 1891, running through the reserve.
  has a long and varied conservation history. The Vrolijkheid Nature Conservation Station, known today as “Vrolijkheid Nature Reserve”, was founded in 1958 as a Vermin Research Farm and Hound Breeding Station and is still referred to by the locals as the “Proefplaas”. South African indigenous game species, but not indigenous to the Succulent Karoo, were introduced to the conservation station. Experience has indicated that these introductions should not have been made since the vegetation cannot sustain these animals. All but the springbok and ostrich have been removed, with only animals indigenous to the Robertson Karoo on the present day nature reserve. The springbok population has declined steadily through the years with only a

few remaining. The ostrich population has increased to the detriment of the vegetation and will soon be removed.

The Riviersonderend State Land (RSL):

- not only makes a valuable contribution to conservation of the North and South Sonderend Mountain Fynbos ecosystem with a remnant patch of Afro-temperate Forest vegetation at Olifantsbos adding to diversity, but it also makes a valuable contribution to the Breede River catchment through the provision of ecosystem service dependant on water yield and distribution. Jonaskop is a well know site for Fynbos diversity and endemism, often visited by national and international botanists.
- is the site of major climate change research along a gradient on the northern side of the mountain from the lowlands up to Jonaskop.
- is surrounded by declared private mountain catchment which ensures connectivity and continuity of ecosystem processes.
- is the home of four indigenous fish species that have become locally extinct in other catchments due to infestations of alien fish. Four of the catchments in the RSL are classified as fish sanctuaries by the National Freshwater Ecosystem Priority Areas (NFEPA) while the Hoeks River is also highlighted as a fish sanctuary as well as a river Freshwater Ecosystem Priority Area (FEPA).
- has cultural historical value with rock art sites and caves as well as more recent historical incidents. The Riviersonderend Mountain was exploited for the indigenous forests situated on the southern slopes of the mountain between Greyton and Riviersonderend. Olifantsbos was exploited since the early 1800's until the early 1900's and various species of wood were harvested. Farmers from the southern side of the mountain used foot-paths, that transverse the mountain, to hunt on the drier northern slopes where there was an abundance of game. The veld along these foot-paths was burned regularly to make it easier to walk. Planting of alien trees started in 1830 when the first pine plantations were laid out at the Genadendal Mission Station. Over the years these trees have spread to cover most of the southern slopes of the mountain north of Genadendal. The earliest record of grazing in the mountains was in 1893 and the first aerial photos of the mountain were taken in 1938. The aerial photos taken since show that burning for grazing was conducted quite widely and even state land was used. Fire management in Riviersonderend mountain started in 1977 when the mountain was divided into compartments of between 500-1000 ha each. These compartments were burned on a 12 to 15 year rotation to prevent mass fuel-loads and to create a mosaic of different veld ages to limit large fires. Through the years this practice was reduced to the scale of only burning as part of alien vegetation control (Heard *et al*. 2000b). Since the late 1970's large areas of alien vegetation have been removed.

THE PROCESS

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

The final objectives were prioritised through a pairwise comparison and the results were used to populate the section in the management plan referred to as the Strategic Implementation Framework. Actions Plans were associated with Objectives, and Tasks (Activities) were identified within each Action Plan.

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

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

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

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

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

Approval Process

The RMC compiled the draft Management Plan for review. The VNRC Management Plan was internally reviewed and recommended for stakeholder participation by all Executive Directors, Programme Managers, Catchment Managers, Senior Managers within each Support Service including Financial and Administration Services, Human Resource Management, Occupational Health and Safety, Risk Management and Business Development. A review was undertaken by Scientific Services on the ecological content of the Management Plan. Furthermore an internal review on the scientific and technical content was undertaken respectively, using the CapeNature Scientific and Technical Protected Area Management Plan (PAMP) review template (Waller 2011). The Executive Directors reviewed the Management Plan and the Executive Director: Conservation Management recommended the plan to the CEO. The Western Cape Nature Conservation Board (WCNCB) Conservation Committee recommended to the WCNCB that the management plan be adopted. The WCNCB adopted the VNRC management plan and submitted to the Department of Environmental Affairs and Development Planning (DEA&DP) for submission to the Provincial Minister for approval.

ACKNOWLEDGEMENTS

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

Mr Chris Martens, Mr Corne Claassen, Ms Cher-lynn Petersen, Ms Annelise le Roux, Dr Donovan Kirkwood and Dr Martine Jordaan. Mr Duncan Heard of Duncan Heard Environmental Consulting is thanked for facilitating the public participation process. Mr Clement Cupido is thanked for his valuable comments as the external reviewer.

EXECUTIVE SUMMARY

In compliance with the National Environment: Protected Areas Act No. 57 of 2003 (NEM: PAA), CapeNature is required to develop management plans for each of its nature reserves. The management plan for the Vrolijkheid Nature Reserve Complex (VNRC) comprises of two distinct areas in the Breede River Valley namely the Vrolijkheid Nature Reserve (provincial nature reserve) and the Riviersonderend State Land (state forest) parcels. The VNR lies approximately 15km south of Robertson on the road to McGregor. The RSL stretches along the Sonderend mountain range from Villiersdorp in the west to Stormsvlei in the east. The RSL has been nominated for World Heritage Site status.

The VNRC falls within the Theewaterskloof, Breede Valley and Langeberg municipalities. The following towns border the VNRC: Villiersdorp, Genadendal, Greyton, Riviersonderend, Stormvlei, and McGregor. The surrounding economy is based on agriculture which includes fruit, vineyards, grain and livestock. The VRNC supplies benefits to the rural communities in the region through various job creation projects in the area.

The VNRC falls within two globally acknowledged biodiversity hotspots, the Cape Floristic Region (CFR), often referred to as Fynbos, as well as the Succulent Karoo. These two hotspots have special programmes, the Cape Action Plan for People and the Environment (CAPE) and the Succulent Karoo Ecosystem Programme (SKEP), to ensure conservation and sustainable use in these regions. The CAPE programme focuses on conserving and restoring the biodiversity of the Cape Floristic Region and the adjacent marine environment, while delivering significant benefits to the people of the region. The VNRC, which falls within the Greater Cape Floristic Kingdom (GCFR), is represented by the Fynbos and Succulent Karoo Biomes.

The VNRC consist of the following vegetation units/ecosystems:

- Breede Shale Renosterveld;
- Robertson Karoo;
- Robertson Granite Fynbos;
- Breede Alluvial Renosterveld;
- South Sonderend Sandstone Fynbos;
- North Sonderend Sandstone Fynbos;
- Western Coastal Shale Band Vegetation;
- Southern Afro-temperate Forest;
- Greyton Shale Fynbos.

Invasive alien vegetation on the RSL is an on-going challenge and requires significant funding, expertise and personnel to address this threat to the biodiversity. Frequent wildfires, largely resulting from human activities, are also a significant threat to the biodiversity in the Riviersonderend mountain catchment. Management difficulties include the vast extent and inaccessibility of the area and high fire danger in the summer months. A system of fire-breaks around the catchment greatly assists with the control of wildfires.

The VNRC has been identified by CapeNature for possible tourism development. A feasibility study was carried out and due to the nature of the areas concerned the VNRC has been determined as having a relatively low tourism potential.

The Management Plan is divided into four parts. The first part outlines the management objective framework of CapeNature and the VNRC. The Reserve's vision and purpose was developed to guide reserve management in its daily operations and longer term planning. The objectives for the VNRC were developed in line with CapeNature's strategic goals, objectives and key measurable objectives.

Part 1 (Sections 1 to 3) also highlights the legal framework under which CapeNature and the VNRC operates and details the Reserve's history and legal status, abiotic and biotic information, cultural heritage, tourism and youth development and awareness programs.

The second part of the management plan (Sections 4 to 6) outlines the VNRC's strengths, weaknesses, opportunities and threats (SWOT). A conservation development framework is set out for the VNRC, which includes a sensitivity analysis and zonation. In addition to the Reserve's zonation plan, an all-inclusive conservation development framework (CDF) and expansion strategy for the NRC is presented. These are in line with local Integrated Development Plans (IDP) to facilitate development and conservation issues.

Part 3 (Section 7) summarises the VNRC's Strategic Implementation Framework which guides the implementation of the management plan over five years to ensure that it achieves its management objectives.

Part 4 (Section 8) comprises the references, acronyms and abbreviations.

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PART 1

SECTION 1: MANAGEMENT OBJECTIVES FRAMEWORK

1.1 Vision and Mission of CapeNature

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

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

1.2 CapeNature Strategic Goals, Objectives and Key Measurable Objectives

CapeNature has four strategic goals, underpinned by nine strategic objectives. Each strategic objective is further divided into key measurable objectives, as shown in Table 1.1.

Table 1.1: Summary of CapeNature Strategic Results and Programme Allocations.

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

STRATEGIC GOAL STATEMENT	STRATEGIC OBJECTIVE STATEMENT	KEY MEASURABLE OBJECTIVES	CURRENT PROGRAMME
capital.	assist in developing the knowledge, skills, values and commitment necessary to achieve sustainable development.	environmental education Programme. 2.1.2 To provide experiential service learning opportunities in the conservation sector.	
3. Sustaining and growing the conservation economy.	3.1 Develop and implement strategies to facilitate equitable access to and participation in the conservation economy through a People and Parks Programme.	3.1.1 To provide access to work opportunities through implementation of conservation and tourism management services. 3.1.2 To improve access to protected areas for sustainable traditional, cultural and spiritual uses. 3.1.3 To enhance opportunities for stakeholder participation in protected area management. 3.1.4 To grow and effectively deploy volunteer capacity.	3: Conservation Management
4. Ensuring an efficient and effective institution through cutting edge leadership.	4.1 Increased sustainable revenue is attained through enhanced tourism product development and the development of a system for payment of ecosystem services.	4.1.1 Create awareness/market the tourism products within our portfolio to domestic and international visitors, and contributing positively towards sustainable tourism. 4.1.2 To establish partnerships that will improve corporate and social investment into our reserves and by so doing positively impacting on visitor expectations and the livelihoods of local communities. 4.1.3 Develop sustainable tourism products while providing access to both the domestic and international market. 4.1.4 To establish a system for payment for ecosystem services management as a sustainable basis for income in the MTEF allocation.	4: Marketing and Eco-tourism 2: Biodiversity Support
	4.2. Develop policies, systems and processes to support effective service delivery.	4.2.1 Support strategic decision making to ensure good corporate governance. 4.2.2 Ensure all CapeNature's activities are executed within a framework of sound controls and the highest standards of corporate governance. 4.2.3 To develop and implement an effective and efficient communication strategy for all internal and external stakeholders and role-players. 4.2.4 To implement Information Technology and Systems that are compliant and support the core business of the organisation.	1: Administration/ Corporate 4: Marketing and Eco-tourism
	4.3. Institution building enables a supportive working environment.	4.3.1 To provide a professional human resource management support service.	1: Administration/ Corporate

1.3 Values of CapeNature

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

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

Excellence: We espouse a deep sense of responsibility to our work and endeavour to constantly improve it, so that we may give our stakeholders the highest quality of service. We believe that work done excellently gives us dignity, fulfilment, and self-worth.

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

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

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

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

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

1.4 Reserve Vision, Purpose, Values and Objectives

VISION

The conservation of biodiversity, ecosystem processes, natural and cultural heritage of the Vrolijkheid Nature Reserve Complex representative of the diverse succulent karoo and fynbos vegetation in the Breede River catchment area providing benefits for communities.

PURPOSE

The management of a network of functionally connected protected properties for the conservation of a representative sample of the natural and cultural heritage of the Robertson Karoo, Riviersonderend Mountain Catchment Areas and associated lowlands, maintaining the biodiversity, ecosystem processes and services and providing opportunities for conservation education.

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

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

VALUES

- The VNRC makes a valuable contribution to the Breede River catchment through the provision of ecosystem service dependant on water yield and distribution. The Riviersonderend State Land (RSL) comprises 26 552 hectares of the total 69 452 hectares of catchment area.
- A remnant patch of Afro-temperate Forest vegetation at Olifantsbos adds diversity to the predominantly Sonderend fynbos vegetation in the RSL.
- The Vrolijkheid Nature Reserve (VNR) conserves Succulent Karoo vegetation in a region where the natural vegetation has been and continues to be transformed by agriculture.
- The RSL, with surrounding privately owned declared Mountain Catchment Areas, provides for continuous habitat of the largely un-fragmented North and South Sonderend Mountain Fynbos ecosystems.
- The RSL is surrounded by declared private mountain catchment which ensures connectivity and continuity of ecosystem processes. Limited opportunities exist to expand the VNR, however representation of eco-tonal change and connectivity between three vegetation types namely: Robertson Karoo vegetation; Breede Shale Renosterveld and Breede Quartzite Fynbos are achieved.
- The scenic beauty of the surrounding landscape from the elevated areas of both the VNR and RSL is valued and appreciated by hikers and visitors to the reserve.
- The variety of natural vegetation habitats found in the VNRC along with the associated transitional zones plus man-made dams supports a wide variety of bird species.
- The combination of mountain and Karoo vegetation, low-lying areas, valleys, plateaus and mountain peaks creates a unique diverse landscape.
- VNR is a priority nature reserve site identified specifically for youth development. Infrastructure and capacity support this key focus which is led by the Langeberg community conservation component in conjunction with reserve management. Youth

groups from various parts of the surrounding and extended communities benefit from the environmental education programmes on the nature reserve.

- The 2 km stonewall running through VNR, built in 1891, is a distinguishing landmark feature of historic value. The rock art sites and caves on RSL are not well documented but nevertheless add to the cultural heritage value of the area and could potentially make a further contribution as the area has not been fully investigated for these features.

OBJECTIVES

Objective 1: To conserve the Riviersonderend Mountain Catchment Area to ensure sustainable water yield to the surrounding region, focusing on the management of fire and aliens.

Objective 2: To conserve biodiversity on the Vrolijkheid Nature Reserve Complex by implementing strategic ecological programmes and related actions.

Objective 3: To conserve and manage the Succulent Karoo vegetation on the Vrolijkheid Nature Reserve.

Objective 4: To ensure sound governance and implementation of policies, plans, systems, strategies, procedures and agreements for the management of the Vrolijkheid Nature Reserve Complex.

Objective 5: To ensure appropriate benefits for local communities surrounding the Vrolijkheid Nature Reserve Complex.

Objective 6: To ensure the conservation of ecosystem processes and the implementation of the CapeNature Protected Area Expansion Strategy in the Vrolijkheid Nature Reserve Complex.

Objective 7: To conserve natural and cultural heritage on the protected areas of the Vrolijkheid Nature Reserve Complex.

Objective 8: To develop appropriate Community Based Natural Resource Management (CBNRM) opportunities for the Vrolijkheid Nature Reserve Complex.

1.5 Guiding Principles

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

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

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

Duty of Care - The VNRC must ensure that all individuals, institutions and organisations act with due care and share the responsibility to conserve, and avoid degradation of, the ecological, cultural and scenic resources, and to use the resources of the VNRC sustainably, equitably and efficiently.

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

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

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

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

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

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

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

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

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

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

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

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

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

In practical terms, the Management Plan needs to ensure that the following requirements for the effective management of the VNRC are adequately addressed:

The necessary mandate, human capacity and financial resources to implement and achieve the objectives and activities described in the management plan;

- The delivery of socio-economic benefits to local communities where possible.
- Flexibility of service delivery that encourages innovation and a wide range of government, community and non-government sector involvement.
- Performance indicators and accountability measures that provides for regular review of outcomes.

SECTION 2: LEGAL FRAMEWORK

2.1 Legal and Policy Framework

2.1.1 Legal Framework

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

Constitutional and Legislative mandates

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

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

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

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

International Conventions, Protocols and Policies

- Bonn Convention on the Conversation of Migratory Species of Wild Animals (CMS)
- Convention on Biological Diversity (The) (CBD)
- Convention on International Trade in Endangered Species in Wild Fauna and Flora (The) (CITES)
- International Union for the Conservation of Nature (The) (IUCN)
- World Heritage Committee (WHC)
- World Tourism Organisation (WTO)

National Legislation

All National legislation applies to activities in the VNRC, but the following have direct reference to the reserves management activities:

- Constitution of the Republic of South Africa, (Act No. 108 of 1996)
- National Environmental Management Act,(Act No. 107 of 1998)
- National Environmental Management Biodiversity Act, (Act No. 10 of 2004)
- National Environmental Management: Protected Areas Act, (Act No. 57 of 2003)
- Mountain Catchment Areas Act, (Act No. 63 of 1970)
- National Forests Act, (Act No. 84 of 1998)
- Conservation of Agricultural Resources Act, (Act No. 43 of 1983)
- World Heritage Convention Act, (Act No. 49 0f 1999)
- Environment Conservation Act, (Act No. 73 of 1989)
- National Water Act, (Act No. 36 of 1998)
- National Veld and Forest Fire Act, (Act No. 101 of 1998)
- National Heritage Resources Act, (Act No. 25 of 1999)
- Disaster Management Act, (Act No. 57 of 2002)

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

a) To protect ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes in a system of protected areas;
b) To preserve the ecological integrity of those areas;
c) To conserve biodiversity in those areas;
d) To protect areas representative of all ecosystems, habitats and species naturally occurring in South Africa;
e) To protect South Africa's threatened or rare species;
f) To protect an area, which is vulnerable or ecologically sensitive;
g) To assist in ensuring the sustained supply of environmental goods and services;
h) To provide for the sustainable use of natural and biological resources;
i) To create or augment destinations for nature-based tourism;
j) To manage the interrelationship between natural environmental biodiversity, human settlement and economic development;
k) Generally, to contribute to human, social, cultural, spiritual and economic development; and
l) To rehabilitate and restore degraded ecosystems and promote the recovery of endangered and vulnerable species.

Provincial Legislation

Although all Provincial legislation applies to activities in the VNRC, the following have direct reference to the reserve management activities:

- Constitution of the Western Cape Act, (Act No. 1 of 1998)
- Western Cape Nature Conservation Board Act, (Act No. 15 of 1998)

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

New legislation

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

-
- CITES Regulations, 2009
- Threatened or Protected Species (ToPS) Regulations, 2007
- Alien and Invasive Species (AIS) Regulations, 2009, (still in draft form)
- NEM:PAA, (Act No. 57 of 2003) Regulation 99: Proper administration of nature reserves (Government Gazette No. 35021 Vol 560, No 6979, February 2012).
- Norms and Standards for the management of protected areas in South Africa, 2011, (still in draft)
- Norms and standards for Biodiversity Management Plans for Species, 2009, (Gazette No. 214 March 2009)

2.1.2 Coordinated Policy Framework

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

2.2 Management Agreements

No formal management agreements for the VNRC exist.

2.3 Regional and Provincial Planning

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

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

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

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

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

The VNRC falls within the Cape Winelands and Overberg District Municipalities and the Langeberg, Theewaterskloof and Breede River local municipalities. The RSL is indicated as a conservation area in the Overberg District Municipality SDF; however VNR is not listed in the Cape Winelands District Municipality SDF. In Environmental Management Framework for the Cape Winelands District Municipality, in the formally protected areas, VNR is listed as a provincial nature reserve and RSL is listed as a proclaimed mountain catchment area in (SRK Consulting 2011).

2.4 Institutional Framework

The WCNCB is trading as CapeNature. The organisational structure of CapeNature is shown in Figure 1.

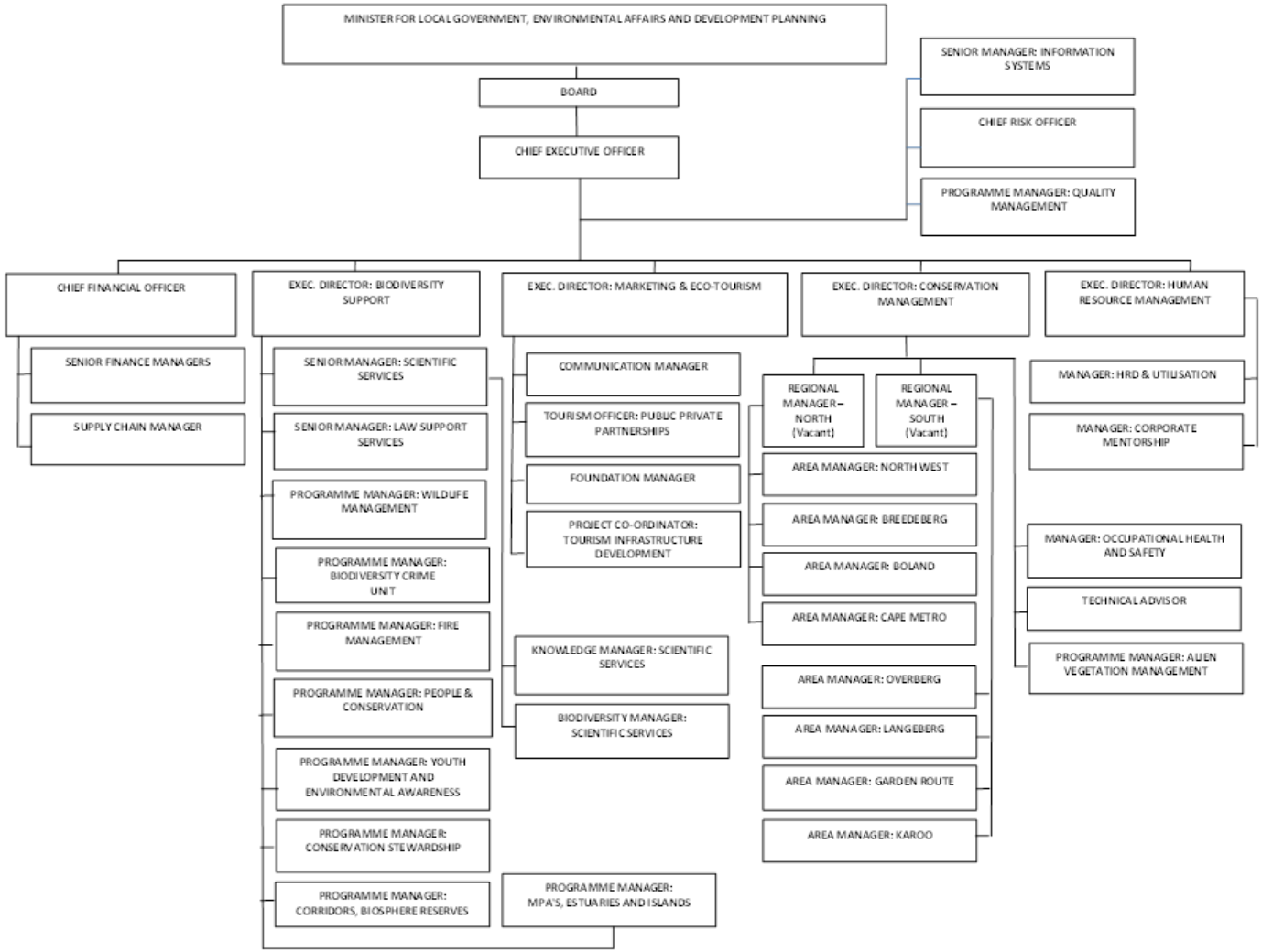

Figure 1: CapeNature Organogram (dated 18 October 2012).

2.5 Strategic Management Plan

2.5.1 Purpose of this Management Plan

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

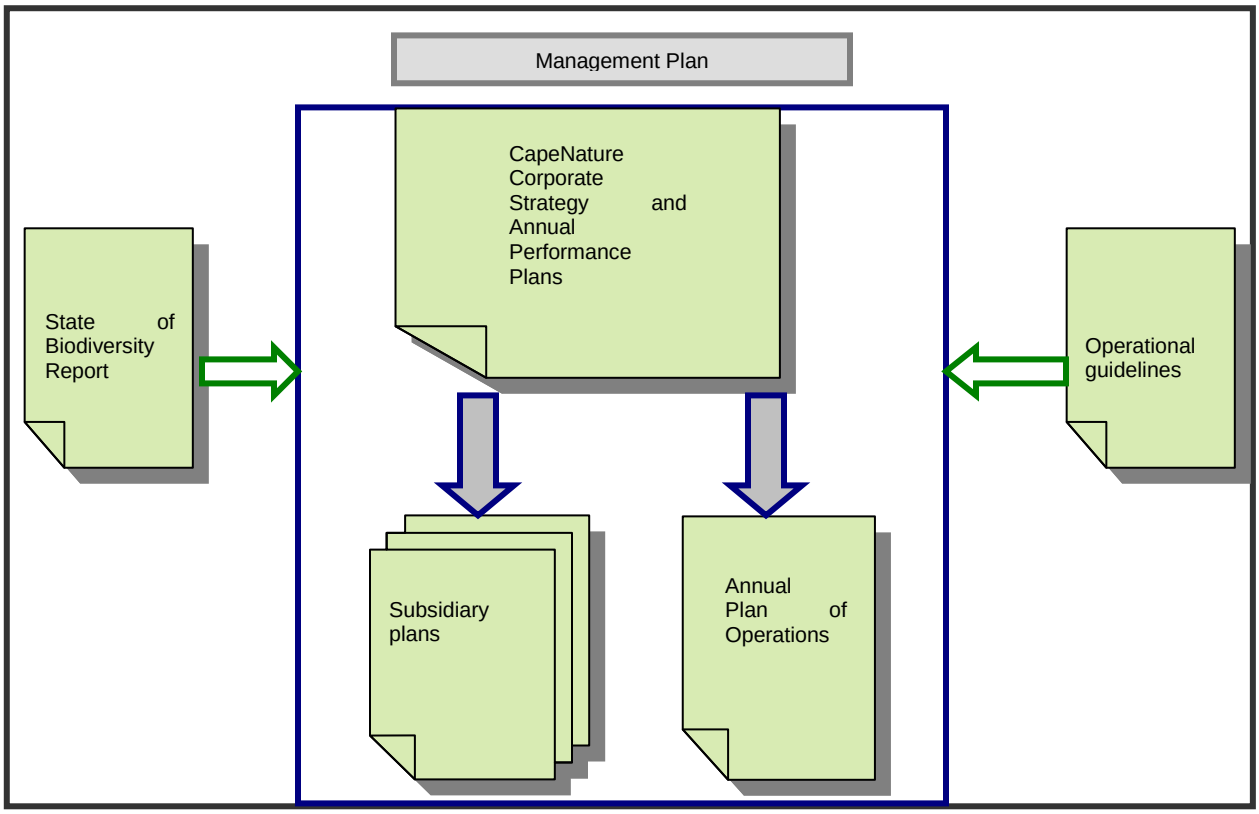

Figure 2: The elements of CapeNature management plans.

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

Figure 3: Adaptive management cycle (CSIRO 2012).

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

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

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

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

The VNRC Management Plan has been compiled on the basis of current available resources (funding and human capital). Legislation listed in the Strategic Implementation Framework is non-exhaustive.

2.5.2 Stakeholder Participation Process

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

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

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

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

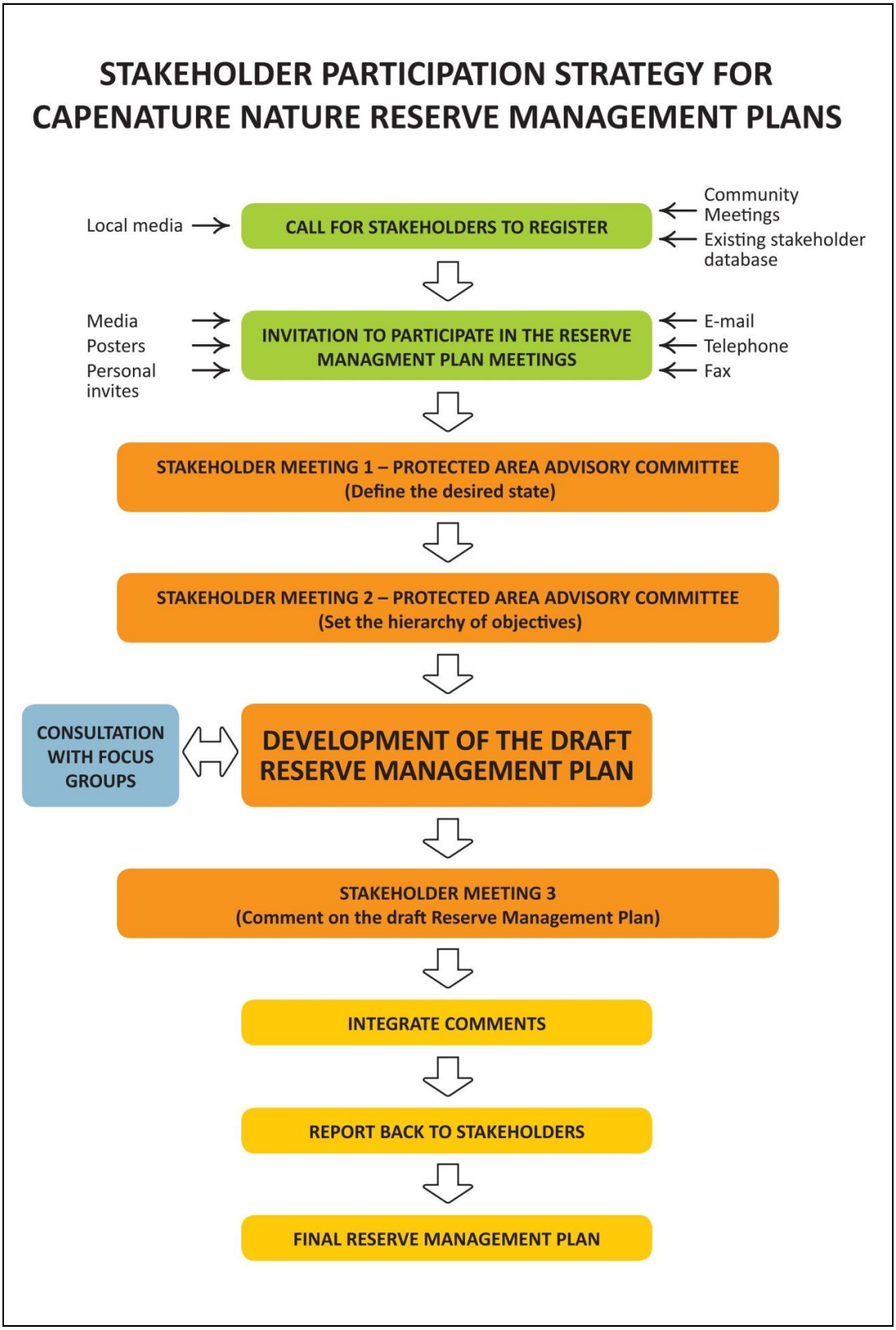

Figure 4: Stakeholder Participation Strategy for CapeNature Nature Reserve Management Plans.

2.5.3 Establishment of a CapeNature Protected Area Advisory Committee

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

Procedure

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

Minimum requirements and other criteria

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

Composition

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

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

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

Term of office

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

Terms of Reference for PAACs

The committee will be expected to:

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

Functioning of the Advisory Committee

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

Decision Making

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

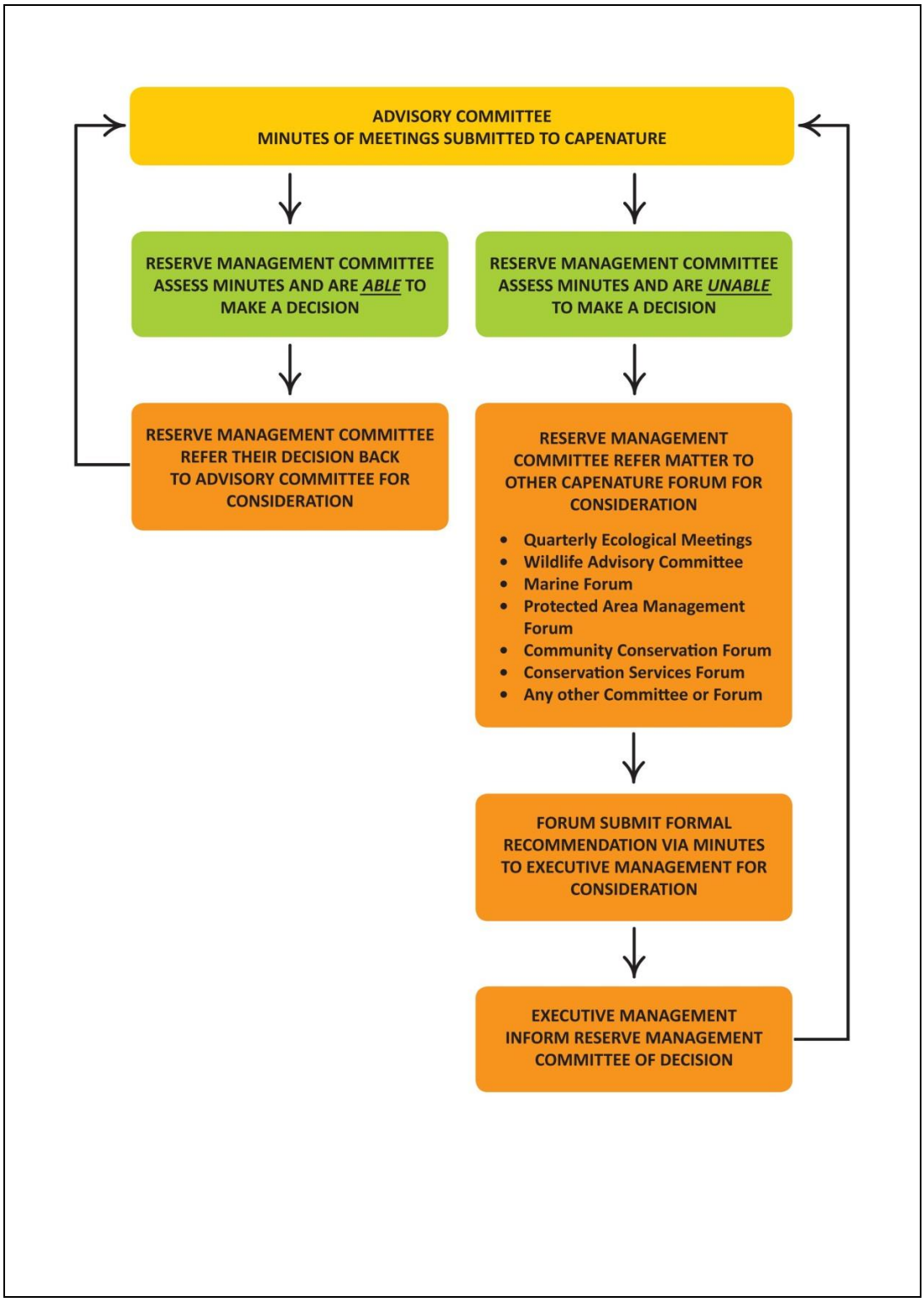

Figure 5: Decision Tree for the acceptance and rejection of advice from the PAAC.

SECTION 3: OVERVIEW AND BACKGROUND OF THE RESERVE

3.1 Location and Extent

The Vrolijkheid Nature Reserve Complex lies between latitudes 33° 54' S and 34° 08' S and longitudes 19° 18' and 20°00' E.

This management plan covers two distinct areas namely the Vrolijkheid Nature Reserve (VNR) and Riviersonderend State Land (RSL) which includes Declared Mountain Catchment and State Forest.

VNR lies in the Breede River Valley, about 15 km south of Robertson on the McGregor road (1: 50 000 Topocadastral map 3319 DD Robertson). The reserve comprises the following farms: Portions 5, 31, 32, 37 and 46 of Vrolykheid No. 135 including portions 5 and 6 and the remaining extent of Doornkloof 163 and Schoongezicht No. 131 (Figure 6). The VNR is 1 898 ha in extent.

The RSL comprises 26 552 ha of the total 69 453 ha of mountain catchment area (1:50 000 Topocadastral maps 3319 CD – Villiersdorp; 3319 DC – Langvlei; 3319 DD – Robertson; 3419 AB – Caledon; 3419 BA – Greyton; 3419 BB – Riviersonderend and 3420 AA – Stormsvlei). These land parcels stretch along the Sonderend mountain range from Villiersdorp in the west to Stormsvlei in the east. It is surrounded by private mountain catchment and the Greyton Nature Reserve, a local municipal conservation area, in the south. The RSL comprises 26 farms listed in Table 3.1 and shown in Figure 6. The total area is 26 712.4 ha.

The boundaries are mainly demarcated with beacons and certain sections are fenced to prevent livestock from entering the state land.

Table 3.1: Portions of land comprising the RSL.

PROPERTY DESCRIPTION	FARM NO	TITLE DEED	SG DIAGRAM	NOTING SHEET	SIZE (ha)	OWNER
The farm OLIPHANTS BERG No. 29, Caledon	29	G214/1952	893/1908	AI-1B 3315	1638.4715	RSA
The farm KROM DRAAI No. 30, Caledon	30	G214/1952	894/1908	AI-1B 3315	1352.9701	RSA
The farm LANGE BERG No. 31, Caledon	31	G214/1952	32/1874	BI-8C 3918	2068.3535	RSA
The farm GALGE BERG No. 34, Caledon	34	Not registered	34/1874	AI-2A 3331	780.0408	RSA
FARM No. 35, Caledon	35	Not registered	Un-surveyed	AI-2A 3331		RSA
The farm ZILVERMYN No. 36, Caledon	36	Not registered	37/1874	AI-2A 3331	785.5683	RSA
The farm MOLEN RIVIER No. 49, Caledon	49	T38020/1970	29/1874	AI-1B 3315 & AI-2A 3331	433.2924	RSA
The farm VOORSTE RANDT No. 50, Caledon	50	G214/1952	28/1896	AI-1B 3315	322.8440	RSA
Portion 1 of the farm DONKERHOEK No. 64, Caledon	64	T25713/1974	9449/1949	AI-1BA 6071	305.2329	RSA
Remainder of the farm DONKERHOEK No. 64, Caledon	64	T14993/1973	9448/1949	AI-1BA 6071	1135.3887	RSA
The farm UITKYK SUID No. 121, Caledon	121	G24/1955	B110/1870	AI-1B 3315	450.1347	RSA
The farm UITKYK NOORD No. 143, Caledon	143	T24/1955	733/1874	AI-2A 3331	331.5664	RSA
Portion 4 (a portion of Portion 2) of FARM No. 144, Caledon	144	T7682/1970	1153/1880	AI-2A/3331	180.0801	RSA
The farm JONAS PLAATS No. 145, Robertson	145	T7487/1932	388/1876	BI-8C 3918	1035.8170	RSA
The farm BYE NEST KRANTZ No. 153, Caledon	153	Not registered	730/1874	AI-2A 3331	393.5707	RSA
The farm ZONDER END FOREST RESERVE No. 168, Caledon	168	Not registered	Un-surveyed	AI-2B 3334		RSA
Portion 1 of the farm VOORUITZICHT No. 175, Caledon	175	T33829/1980	4721/1975	AI-2B 3334	376.4007	RSA
FARM No. 176, Robertson	176	Not registered	Un-surveyed	AI-2B 3334		RSA
Remainder of the farm BIG TIGER BERG No. 184, Caledon	184	T/A 15621/1959	113/1916	A1-2B S334/A1-2DBA 3340	760.0099	RSA
Portion 1 of the farm BIG TIGER BERG No. 184, Caledon	184	T15621/1959	A753/1924	A1-2B S3334	438.5444	RSA
FARM No. 185, Robertson	185	Not registered	Un-surveyed	AI-2A 3331		RSA
Remainder of the farm OLIPHANTS KLOOF No. 185, Caledon	185	T/A 18194/1959	607/1839	A1-2B S334/A1-2DBA 3340	940.526	RSA
FARM No. 188, Robertson	188	Not registered	Un-surveyed	AI-2A 3331		RSA
The farm DASSIEDALE SWELLENDAM FOREST RESERVE No. 401, Swellendam	401	Not registered	Un-surveyed			RSA
The farm WATERVAL'S KLOOF No. 586, Worcester	586	T10462/1937	1263/1879	BI-7DB 3900	4433.7380	RSA
Remainder of FARM No.780, Caledon	780	G214/1952	1411/1980	BI-7D 3898	2276.6069	RSA

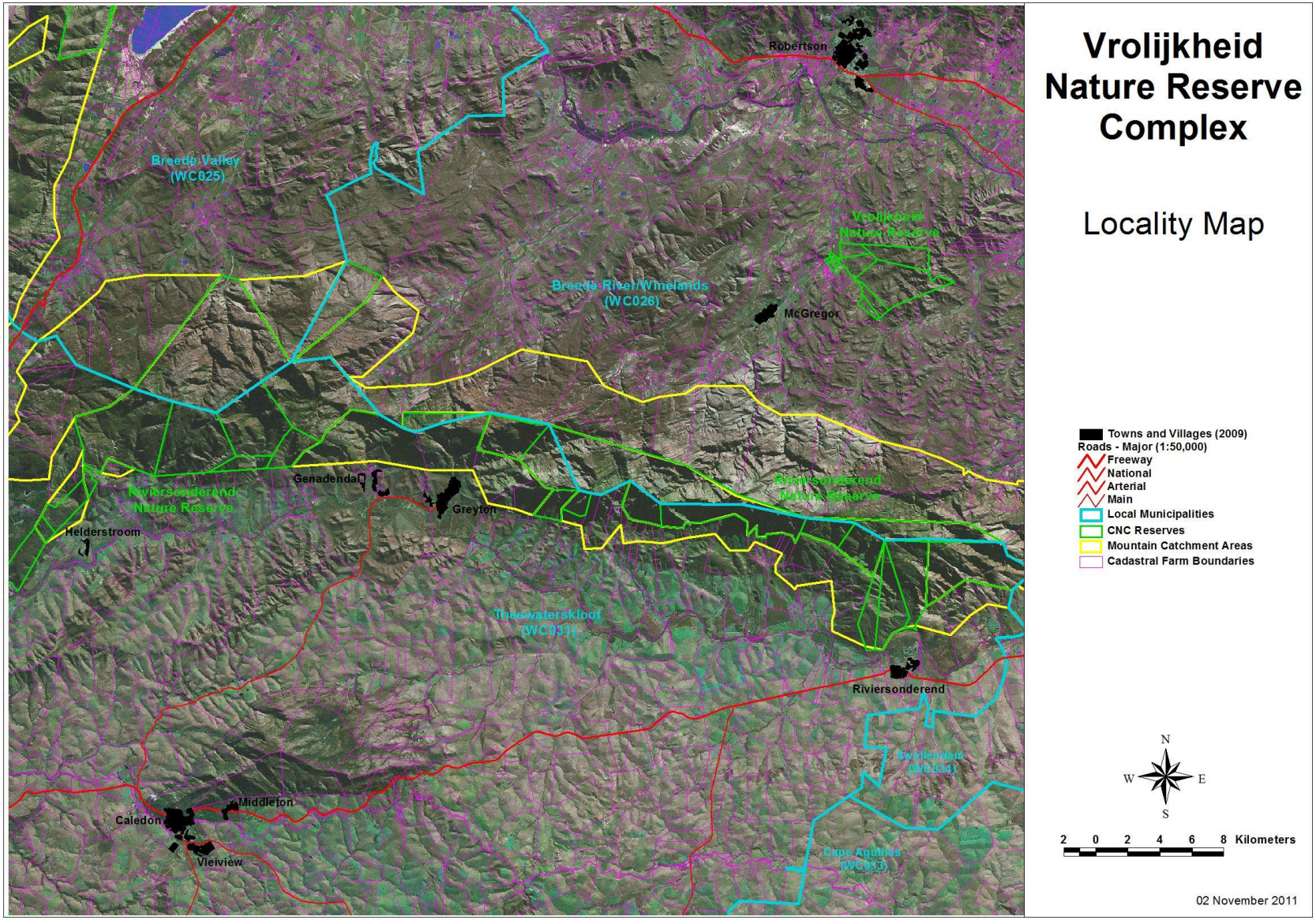

Figure 6: Location and extent of the Vrolijkheid Nature Reserve Complex.

3.2 Legal Status

Vrolijkheid Nature Reserve was established as a Provincial Nature Reserve in terms of Section 6 the Nature Conservation Ordinance, 1974, on 10 December 1976 and proclaimed in the Provincial Gazette by Proclamation No. 409/1976. The boundaries of the Nature Reserve were amended in terms of Section 6 the Nature Conservation Ordinance, 1974, on 16 September 1991 and proclaimed on 1 October 1991 in the Provincial Gazette by Proclamation No. 75/1991.

The Riviersonderend Mountain Catchment Area is declared as The Riviersonderend Mountain Catchment Area in terms of Section 2 of the Mountain Catchment Act, 1970 (Act 63 of 1970), on 9 October 1981 and proclaimed in the Government Gazette by Proclamation No. 2121/1981.

The Riviersonderend Nature Reserve, established as a State Forest Nature Reserve in 1940, is included in the expansion nomination for the Cape Floral Region World Heritage Site.

3.3 History

The history of the original farm “De Vrolykheid” dates back to 4 July 1831, when the field-cornet of Midden Boschjesveld granted the land to Hercules Viljoen. The original farm covered a total area of approximately 26 km^2 and it stretched from McGregor in the south-west to Uitnood in the north-east. (Heard *et al*. 2000a)

There have been numerous subdivisions and subsequent consolidations since 1831 and today there are 12 farms within the original boundary of “De Vrolykheid”, later to be known as “De Vrolykheid aan de Keisersrivier”. The VNR includes only a small portion of the original farm - this being a piece of ground that was known initially as “Klawer Leegte” and later as “Fairview 3”. On the final deeds of transfer this section was referred to as remainder and portion of Lot F and E of Vrolykheid. The only other piece of the original farm included is the extreme western tip of the sub-divided “De Elandskloof”. This ground was purchased from Hercules Viljoen on 7 July 1862 by A.G. Wessels. Other portions outside the original “De Vrolykheid” but now included in the Vrolijkheid Nature Reserve are “Schoongezicht” and a large section of “Doornkloof”. “Schoongezicht” came about as a result of a subdivision of “De Elandskloof” - this being finalised on 14 December 1874. The last private owner of “Schoongezicht”, which then included “Thornville 3”, was Martha Margaretha De Wet (Heard *et al*. 2000a).

The remaining and largest portion of the VNR is “Doornkloof”, previously known as “Doorn Kloof aan de Elandsberge”. The Cape Provincial Administration purchased this property from Fanie Viljoen who had in turn purchased it from Mr. Conradie (Heard *et al*. 2000a).

A piece of State Land, known as “Wolvedrift Annex No. 2”, runs from the far eastern boundary of the VNR to the Breede River and consists entirely of the ridge of the Elandsberge, but is not proclaimed as part of the nature reserve (Heard *et al*. 2000a).

Until 1989 the total area of VNR was 182.0914 ha and was made up of 1 174.3882 ha - “Doornkloof”; 414.6586 ha - “Schoongezicht” and 238.0446 ha of the original “De Vrolykheid”.

During September 1989 a “land swop” took place when 200.51 ha (portion of the rest of portion 8 of the farm 135) was bought from Klein Begin Boerdery Beleggings B.K. and 54.39 ha (portion 45 (a portion of portion 5) of the farm 135) including a K.W.V. quota of 2710 hℓ (± 370 tons of grapes) was sold to the same company (owner, C.W.L. Baard). This enlarged the reserve by 146.12 ha to the present 1 973.21 ha (Heard *et al*. 2000a).

The Vrolijkheid Nature Conservation Station, known today as “Vrolijkheid Nature Reserve”, was founded in 1958 as a Vermin Research Farm and Hound Breeding Station (and still referred to by the locals as the “Proefplaas”)(Heard *et al*. 2000a). The breeding of hounds for hunting vermin, including a special strain of Jack Russell dogs to hunt rock dassie (*Procavia capensis*) in the rocky hills, was stopped during 1984 and the last of the hounds were transferred to Adelaide in 1985. The facilities of this station was used as a venue for the Cape Quagga experimental breeding programme being undertaken by the S.A. Museum to “re-breed” the extinct Cape Colony quagga (*Equus quagga quagga*). This project started at Vrolijkheid with the arrival of nine zebra from Etosha Pan on 21 April 1987. Lucerne was grown on the reserve to feed the animals. The project was stopped during 1993 and all the animals were removed. Since 1987 this station was managed as a nature reserve *per se*, although it was already proclaimed a Provincial Nature Reserve in terms of section 6 the Nature Conservation Ordinance, 1974.

Alien game species on the reserve included black wildebeest (*Connochaetes gnou*) (P. H. Lloyd pers. comm.), blesbok (*Damaliscus pygargus phillipsi*), gemsbok (*Oryx gazella*) and fallow deer (*Dama dama*) along with naturally occurring species and reintroduced species such as springbok (*Antidorcas marsupialis*) and ostriches (Annual Report No. 25, 1968/69 in Heard *et al*. 2000a). At one stage Namaqua sheep were also kept on the reserve (P. H. Lloyd pers comm. in Heard *et al*. 2000a).

The breeding of hounds was stopped during 1984 and the last of the hounds were transferred to Adelaide in 1985. The station has been managed as a nature reserve with the transfer of Mr Q. Hahndiek during 1987 (Nature Conservator: Reserve Management) to VNR, with the removal of animals not indigenous to the area, the removal of internal fences and some of the lands been allowed to revert back to their natural state (Heard *et al*. 2000a).

VNR was also used as a venue for the Cape Quagga experimental breeding programme being undertaken by the S.A. Museum to “re-breed” the extinct Cape Colony quagga (*Equus quagga quagga*). This project started at Vrolijkheid with the arrival of nine zebra from Etosha Pan on 21 April 1987. Lucerne that was grown at VNR was used to feed the animals. The project was stopped during 1993 and all the animals were removed (Heard *et al*. 2000a).

The historical use of the Riviersonderend Mountain was mainly the exploitation of the indigenous forests that is situated on the southern slopes of the mountain between Greyton and Riviersonderend. Olifantsbos was exploited since the early 1800’s until the early 1900’s and various species of wood was removed like assegaai (*Curtisia dentata*), Yellowwoods (*Podocarpus* spp.), Red pear *(Scolopia mundii*), Hard pear (*Olinia ventosa*), Ironwood (*Olea capensis* subsp. *macrocarpa*), Red alder (*Cunonia capensis*), White alder (*Platylophus trifoliatus*) and Stinkwood (*Ocotea bullata*) (Heard *et al*. 2000b).

Farmers from the southern side of the mountain used foot-paths, that transverse the mountain, to hunt on the drier northern slopes where there was an abundance of game. The veld along these foot-paths was burned regularly to make it easier to walk (Heard *et al*. 2000b).

The planting of alien trees started in 1830 when the first pine plantations were laid out at the Genadendal Mission Station. Over the years these trees have spread to cover most of the southern slopes of the mountain north of Genadendal (Heard *et al*. 2000b).

Wild flower utilisation started in approximately 1965 on farms on the northern side of the mountain however there are no records of use on state land (Heard *et al*. 2000b).

The earliest record of grazing was in 1893 and the first aerial photos of the mountain were taken in 1938. The aerial photos taken since show that burning for grazing was conducted quite widely and even state land was used (Heard *et al*. 2000b).

Fire management in Riviersonderend mountain started in 1977 when the mountain was divided into compartments of between 500-1 000 ha each. These compartments were burned on a 12 to 15 year rotation to prevent mass fuel-loads and to create a mosaic of different veld ages to limit large fires. This was a huge task with limited resources and carried very high risk. Through the years this practice was reduced to the scale of only burning as part of alien vegetation control (Heard *et al*. 2000b).

Since the late 1970's large areas of alien vegetation has been removed (Heard *et al*. 2000b).

3.4 Climate

The Robertson Karoo area is a semi-arid region with a mainly inter-rainfall regime and with maximum precipitation occurring in August (61 mm for Worcester). Another slight precipitation peak is in June. Mean Average Precipitation is 125–350 mm; with most of the region receiving about 300 mm. The low precipitation of this region surrounded from all sides by various Fynbos Biome vegetation units is ascribed to the rain-shadow effect due to the high surrounding mountain ranges. Mean Average Temperature is above 16°C. Summer temperatures are high and in January vary from 30–40°C (an average of 34.5°C in February was recorded for Worcester). Occasional north western berg winds may intensify the heat. Winter nights might experience light frost—7 days a year on average (Mucina & Rutherford 2006).

Rainfall recorded at the VNR office complex between 1968 and 2010, averaged 275 mm, with the lowest rainfall recorded in 1973 (125 mm) and the highest during 2008 (417 mm) (Figure 7). The wettest months are from April to August. Mist occurs during the winter in the low lying areas.

The RSL lies in a winter rainfall area with cold, wet winters and dry, hot summers. The rainfall is linked to the topography and ranges between 900 to 1 200 mm on the peaks and 300 mm at the foot of the mountain range. The southern slopes receive considerably more rain compared to the northern slopes. Snow can occur between June and September in the higher lying areas. Rainfall on the RSL is measured at seven stations, including Jonaskop 1

and 2, Groot Toren, Greyton 1 and 2 and Boskloof 1 and 2 which are situated at permanent protea monitoring plots. These rainfall stations are spread out over the extent of the Riviersonderend mountain catchment area. The average annual rainfall for the RSL for the period 1996 and 2010 is 863 mm, with the lowest rainfall recorded in 2000 (330 mm) recorded at Jonaskop 2 and the highest during 2007 (1 919 mm) recorded at Greyton 2, shown in Figure 7. The wettest months are generally from May to August.

Temperature data is only available for the VNR, measured at the VNR office complex. Temperature data was calculated for the period 1995 – 2010 and is shown in Figure 7. Maximum temperatures can reach 45°C with an average maximum of 30°C during the period November to March and 21°C during the period May to August. Temperatures during winter can reach -3°C with an average minimum of 5.1°C during the period May to August and 15°C for the period November to March.

For the VNRC the prevailing wind during summer is south east and in winter the wind blows mainly from the north west. In general the north westerly winds are more gusty and stronger than the south easterly winds. The South-Easter that blows during summer has a cooling effect especially during late afternoons when it tends to blow at its strongest (Heard *et al.* 2000a). Berg winds can occur in winter which increases the temperature drastically (Heard *et al.* 2000b).

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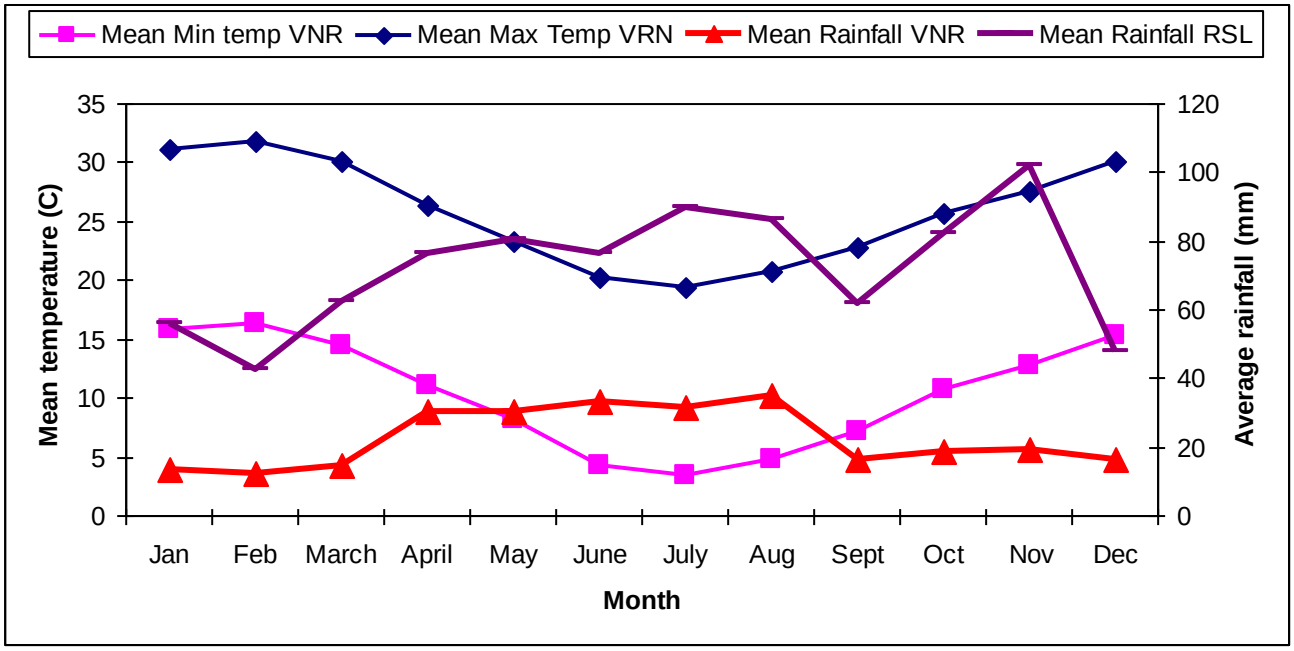

Figure 7: Climate for the Vrolijkheid Nature Reserve Complex.

3.5 Topography

The altitude for VNR ranges from 200 m to 635 m.a.s.l., with Witkrans being the highest peak (Heard *et al.* 2000a), and from 150 m (the lowest point at Stormsvlei Poort) to 1 653.8 m.a.s.l. at the highest point for the RSL (Heard *et a*l. 2000b).

3.6 Geology

The VNR geology, as shown in Figure 8, is dominated by shale which is a sedimentary rock consisting of silt and clay sized particles and with visible layering (fissile) as opposed to a mudstone that is massive. Shale always occurs within a succession of coarse-grained sandstone alternating with fine-grained shale (mud rock). These soils are highly erodible and thus result in deep donga's forming on many slopes in the Karoo. The geology also comprises arenite (Council of Geoscience 2001).

The geological formations occurring in the VNR is represented by shales and sandstones of the Bokkeveld and Witteberg group belonging to the Cape supergroup. Two subgroups of the Bokkeveld group occur namely Bidouw (represented by the formations Klipbokkop, Wuppertal and Waboomberg) and Ceres (represented by the formation Boplaas). Of the Witteberg group the subgroup Weltevrede occurs and is represented by the formations Blinkberg and Wagen Drift. Cenozoic deposits occur in the form of light-grey to pale-red wind-blown sand along the areas closer to the Keisers River and the drainage line from the Highland Home dams with alluvium in the river and on the riverbank. The windblown sands are most likely a weathering product of Table Mountain sandstone. In total there are eight geological formations represented on the nature reserve (Council for Geoscience 1997 in Heard *et al*. 2000a).

The largest part of the nature reserve is rugged mountainous terrain with only about 500 ha of low-lying flats. The formations of the Witteberg group represent the higher altitudinal areas, the Bokkeveld group the lower slopes and most flats and the Cenozic deposits, the lowest parts close to the river (Heard *et al*. 2000a).

On the RSL the dominant lithological class are the Sandstones of the Peninsula Formation of the Table Mountain Group (Deacon *et al*. 1992 in Heard *et al.* 2000b). There is also representation from the following classes: granites, shales, sandstones and limestones (Low & Rebelo 1996).

According to the Council of Geoscience (2001), the dominant geology for the RSL, as shown in Figure 8, is arenite. Arenite is a sedimentary rock of which there are three types: quarts-arenite (quarts grains with secondary silica content), lithic-arenite (quarts and grains of rock like chert and lava) and felspathic-arenite (up to 25% feldspar). These rocks are formed when weathered grains are consolidated into rock via consolidation and cementation. Typically they occur along the coastlines of Southern Africa within the sand deposits (Council of Geoscience 2001). Limited Phyllite and shale also occurs on the RSL (Council of Geoscience 2001).

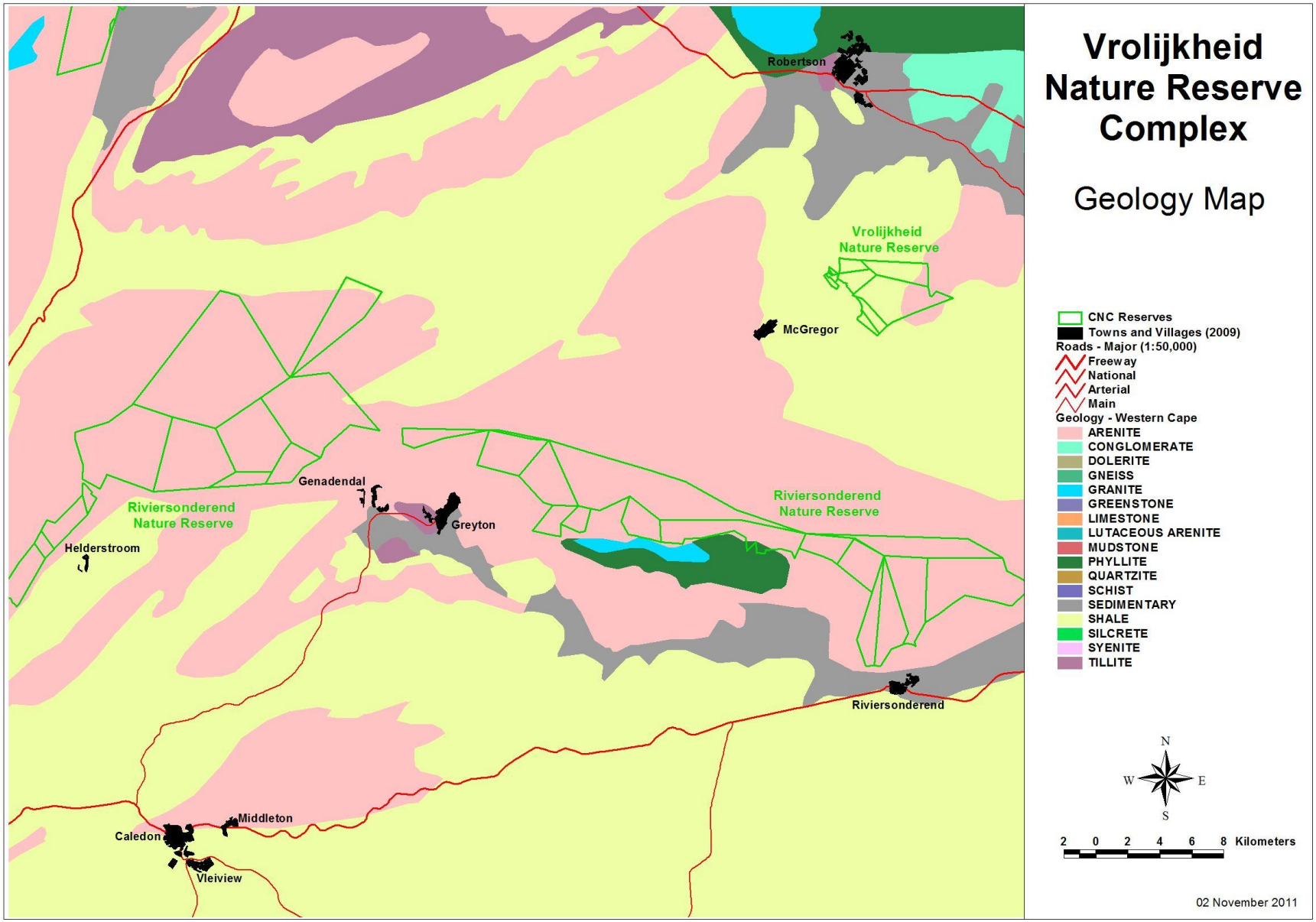

Figure 8: Geology for the Vrolijkheid Nature Reserve Complex (Council for Geoscience 2001).

3.7 Hydrology

3.7.1 Groundwater

The VNR's water needs are primarily fulfilled by water derived from the Vrolijkheid Water Users Association. One borehole, situated on the open space between the VNR office and staff houses, is used to supplement the water needs for irrigation of the grounds in the development zone.

There are numerous seeps on the RSL mountainous area, however they have not been mapped and this will be included as a priority.

3.7.2 Rivers

The upper sections of the Doring, Meul, Gobos, Soetmelksvlei and Baviaans Rivers, as well as an unnamed tributary of the upper Riviersonderend (near the town of Helderstroom) fall within the reserve boundaries of the RSL. These rivers all flow into the upper sections of the Riviersonderend River which eventually flows into the Breede River upstream of the town of Swellendam. The catchments of the Gobos, Soetmelksvlei and Baviaans Rivers have been highlighted as indigenous fish sanctuaries in the National Freshwater Ecosystem Priority Areas (NFEPA) project (Nel *et al*. 2011a). The Hoeks River catchment, which is located in the Riviersonderend Mountain and flows towards McGregor, joins the Houtbaai tributary and becomes the Keisers River (Nel *et al*. 2011b). The Keisers River in turn flows into the Konings River which joins the Breede River (Nel *et al*. 2011b). According to Nel (*et al.* 2011b) the Hoeks River is also highlighted as a fish sanctuary as well as a river Freshwater Ecosystem Priority Area (FEPA). This area also includes some wetland FEPA's along the mid-section of the Keisers River, which forms a part of the VNR boundary (Nel *et al*. 2011b). The Doring and Meul Rivers located within the western boundaries of the RSL is not highlighted as either fish sanctuaries or river FEPA's and is therefore a lower priority for aquatic ecosystem conservation at present (Nel *et al*. 2011b). The hydrology for the VNRC, including the National FEPA's, are shown in Figure 9.

On VNR water for all utilities i.e. irrigation and domestic use, is derived from a water allocation sluice allocated by the Vrolijkheid Water Users Association (previously known as Vrolijkheid Irrigation Board) and is incorporated into the title deeds of the properties. Annual tax is paid to the Water Users Association for this water. The water is fed via two cement water channels from the Hoeks River and Houtbaais River and lead into earth dams and reservoirs on VNR. This allocation is monitored by measuring the size and speed of the stream flow in the channel at that time.

3.7.3 Catchments

The VNRC lies within the Breede Water Management Area (WMA) and is the southernmost water management area in South Africa. The greater part of the area is drained by the Breede River and its main tributary the Riviersonderend River. Several small coastal rivers drain the southern part of the water management area, while seasonal rivers and vleis are found in the south east (River Health Programme 2011).

The VNRC falls within the Breede Overberg Catchment Management Agency (BOCMA) which was established in July 2005 (River Health Programme 2011). VNR is a member of the Vrolijkheid Water Users Association.

3.7.4 Wetlands

The hydrology map of the VNRC does not indicate any wetlands but the existence of possible wetlands are investigated as part of the ecological matrix. This will form part of the verification and update process of the Critical Biodiversity Areas (CBA) and NFEPA products for the region.

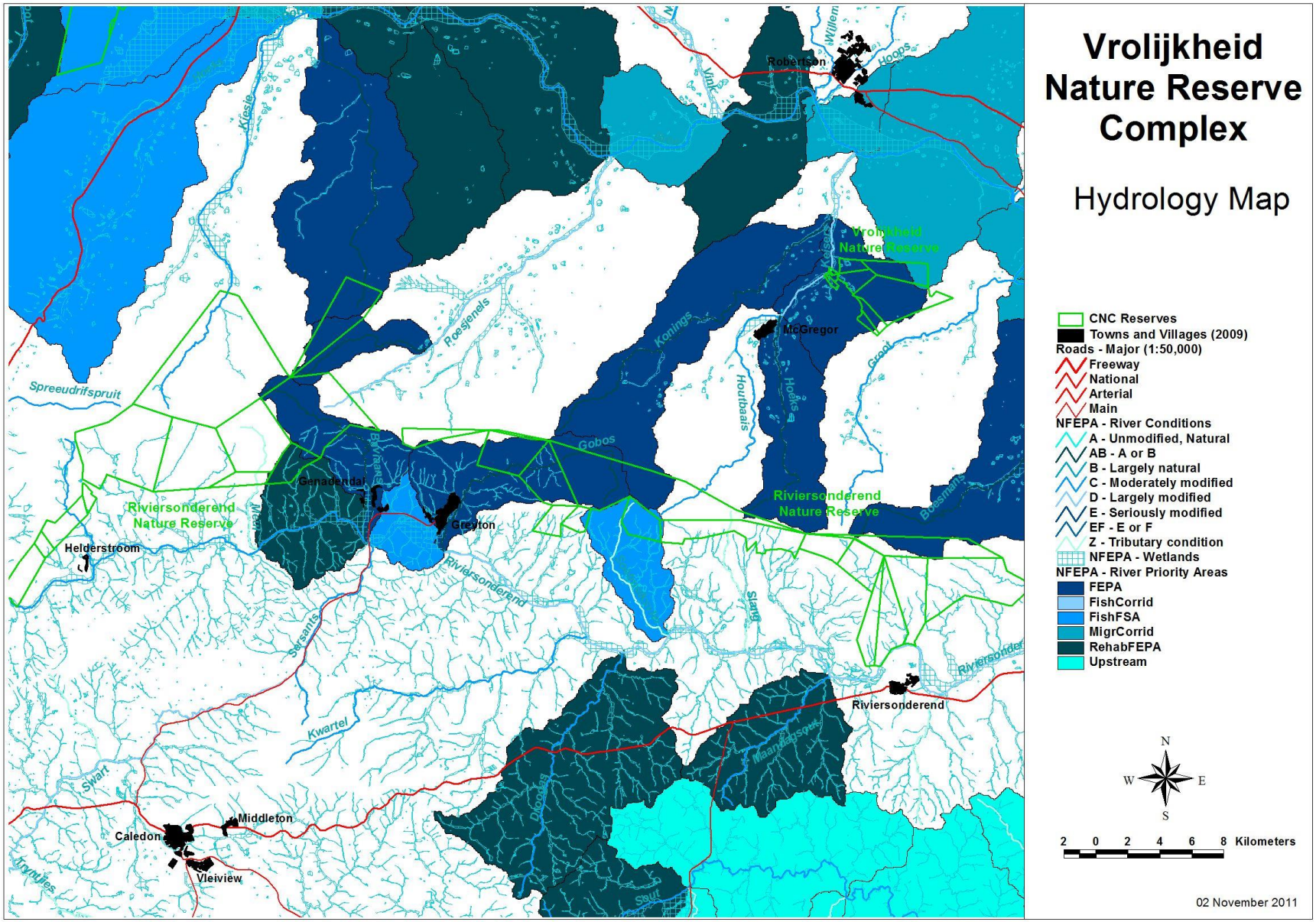

Figure 9: Hydrology of the Vrolijkheid Nature Reserve Complex.

3.8 Flora

Species lists are available on request from Scientific Services, Assegaaibosch Nature Reserve, Jonkershoek Road, Stellenbosch.

3.8.1 Terrestrial vegetation

The following is a description of the various vegetation units occurring in the management area according to Mucina & Rutherford (2006) as shown in Figure 10.

Vrolijkheid Nature Reserve (VNR)
The reserve is fairly unique in that it is the only provincial nature reserve in the area that represents the Robertson Karoo vegetation (Status classification Least Threatened of extent 298 ha). This vegetation is characterised by undulating flats and adjacent hills sometimes with very steep flanks supporting dwarf succulent shrubland to succulent thicket of medium height dominated by succulent species of *Euphorbia*, *Crassula* and vygies (members of the Mesembryanthemaceae family). *Euphorbia mauritanica* is usually dominant on heuweltjies which are an important element of the landscape and vegetation of the Robertson Karoo.

The majority of the reserve is classified as Breede Shale Renosterveld (Status classification Least Threatened of extent 1 631 ha - National Gazette No 34809 of 09 December 2011, Volume 558). This vegetation is characterised by low hills, slightly undulating to undulating plains and lower mountain slopes. In the western regions low, cupressoid-leaved shrubland is dominated by renosterbos. Elements of shale fynbos are present. In the eastern regions open, tall shrublands are found with microphyllus shrubs forming the dominant layer. Breede Shale Renosterveld grades into Robertson Karoo in the central valley with karoo shrublands occurring on the northern aspects with a decline in the extent of the karoo shrubland to the south. “Heuweltjies” are very prominent with either bush clumps in the moister areas or succulent shrubs in drier habitats.

The higher lying area of the reserve represents a small area of Breede Quartzite Fynbos (Status classification Least Threatened with extent of 8 ha). The landscape of this vegetation is characterised by a single range of parallel ridges and flat topped hills in the west and high hills and low mountains to the east. The vegetation is an open tall shrubland in a medium dense, medium tall shrub matrix structurally classified as asteraceous, restoid and proteoid fynbos.

To the west of the reserve the vegetation classification is classified as Breede Alluvium Renosterveld (Status classification Vulnerable with extent of 32 ha - National Gazette No 34809 of 09 December 2011, Volume 558 (Part 1 and 2 of 4)) is characterised by flat alluvial fans and valley bottoms supporting short grassy cupressoid-leaved shrubland usually dominated by renosterbos. However much of this area has been transformed and is under development.

The vegetation for VNR are further broken down by Du Preez *et al*. (1993) to 8 plant communities as listed below and shown in Figure 11.

1. Flats community / Euphorbia-Pteronia-Galenia community

This community is a combination of communities. It contains the on-mound *Euphorbia mauritanica* and the off-mound *Pteronia paniculata* communities as well as some *Pteronia incana* and *Galenia fruticosa* communities also off-mound. These communities are grouped together, because they are too patchy to separate.

The flats community covers the flats and lower slopes of hills on the reserve. If the contours are extrapolated, then the old lands most probably also consisted of this community.

The *Euphorbia mauritanica* communities are the mound or "heuweltjie" communities. Various plant species occur in these communities, differing with altitude and aspect. It is however always (at least visibly) dominated by *E. mauritanica*.

The *Pteronia paniculata , Pentzia incana* and *Galenia fruticosa* communities are found between the mounds on poorer, shallower soils. The contents of these communities also vary with altitude and aspect. The latter two communities are greatly reduced were grazing pressure was high.

2. Elytropappus community

This community is found on the south-facing slopes or other slopes in higher areas. The dominant plants are (in order of dominance) *Elytropappus rhinocerotis, Pteronia paniculata* and *Ruschia caroli.* Grasses are fairly common.

3. Euclea hills community

This community is found on the lower hills of the reserve. It consists mainly of the same communities as the Flats community / Euphorbia-Pteronia-Galenia community (No. 1), but is distinguished by the visibly dominant *Euclea undulata* tree layer.

4. Euclea-Elytropappus community

This community is found on one site of the reserve between the *Elytropappus-, Euclea*- hills and *Euclea* high mountain communities. It consists mainly of an *Elytropappus* community, but has a tree component of *Euclea undulata* distinguishing it from the former.

5. Euclea high mountain community

This community is found on the highest mountain in the reserve. The most (visibly) dominant plants are *Euclea undulata, Dodonaea viscosa* subsp.

angustifolia and *Rhus burchelli.* *Pteronia paniculata* and *Pentzia incana* are also abundant, as well as *Crassula rupestris.*

6. Acacia karoo riverine community

This community is found in the beds of the little rivers on the reserve which only flow when it has rained enough. *Salsola glabrescens* and *Acacia karroo* are the most dominant plants in the community, with *Euphorbia mauritanica, Galenia fruticosa, G. africana, Psilocaulon utile* and *Delosperma pageanum* also fairly dominant (Joubert 1968).

7. Wildenowia reed community

This community is dominated by *Wildenowia* reeds (which appear reddish) and *Elytropappus rhinocerotis.* It is found at high altitudes on the south facing slopes.

8. Merxmuellera grass community

This community is found at high altitudes on koppies, plateaux and slopes with a southerly aspect. It is identified by the tall tufts of grass dominating all other vegetation. This community includes the *Danthonia* spp.-*Othonna gymnodiscus* and *Hetelolepsis pendicularis-Danthonia* spp. communities as described by Van der Merwe (1977).

There are one Critically Endangered, one Endangered, eight Vulnerable and one Near Threatened plant species recorded for the VNR (Table 3.2).

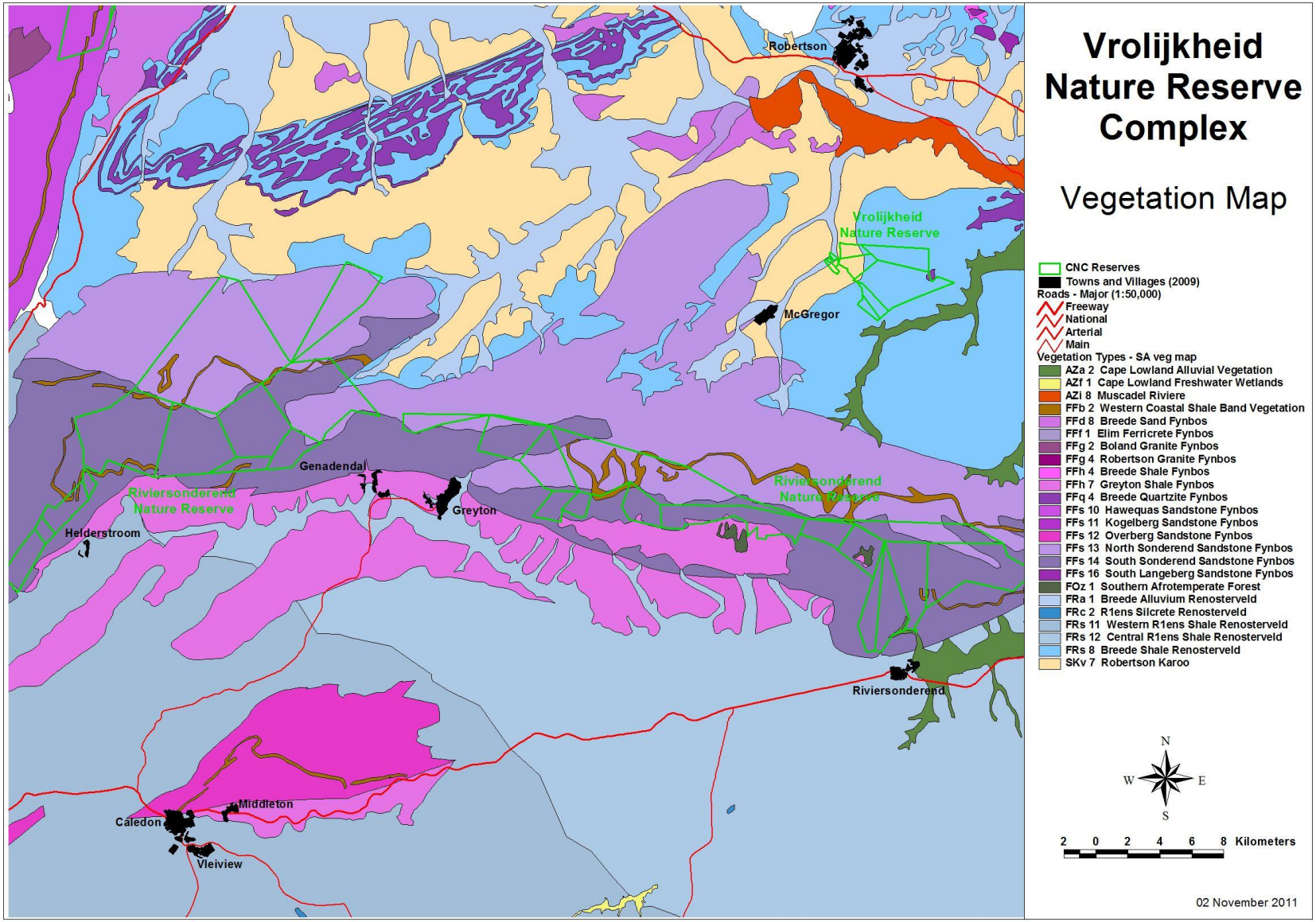

Figure 10: SA Vegetation (Mucina & Rutherford 2006) on the Vrolijkheid Nature Reserve Complex.

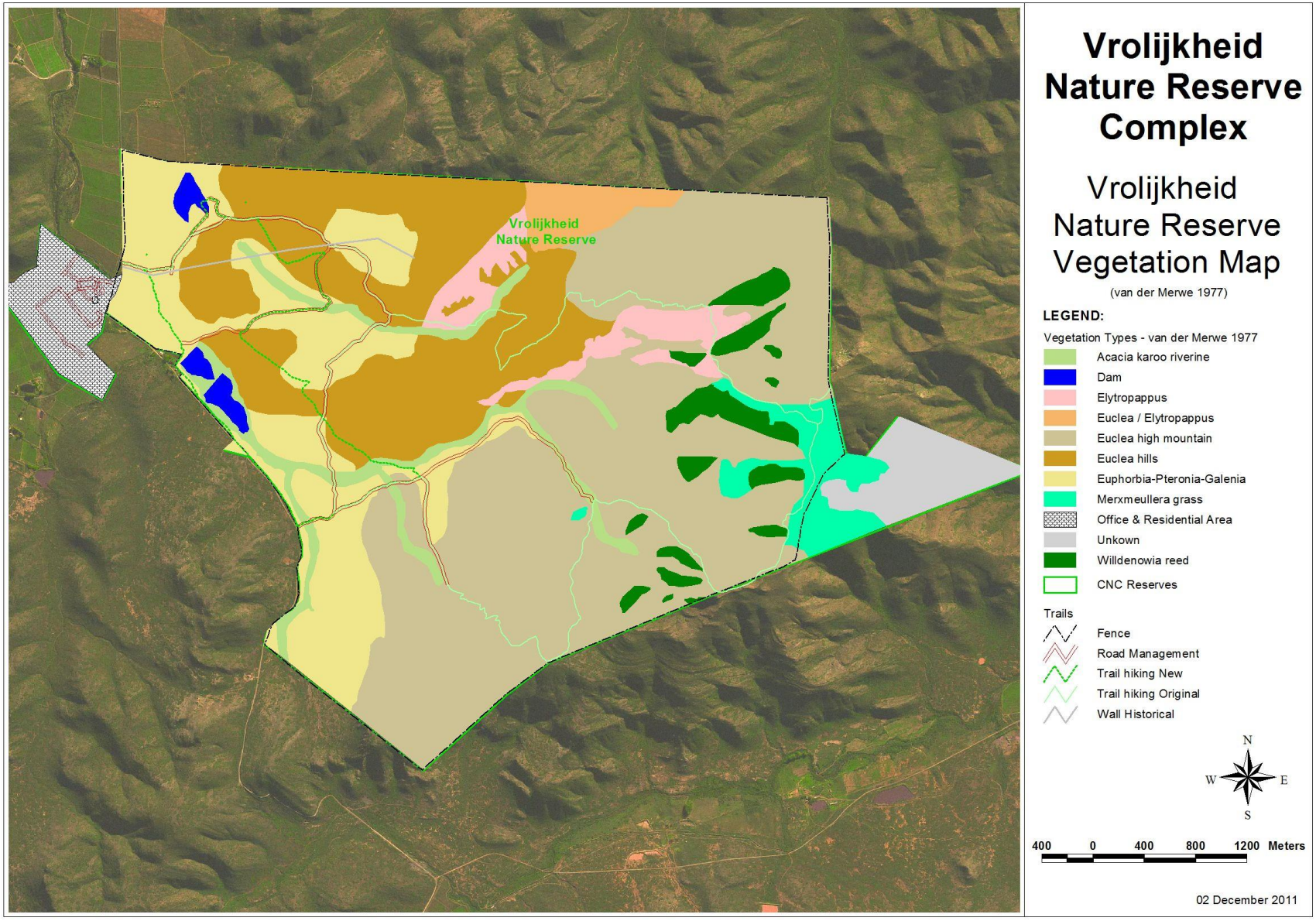

Figure 11: Vrolijkheid Nature Reserve Vegetation Map (Van der Merwe 1977).

Table 3.2: Plant Species of Conservation Concern recorded for the Vrolijkheid Nature Reserve.

FAMILY	TAXON	IUCN STATUS = SPECIES OF CONSERVATION CONCERN
ASPHODELACEAE	*Astroloba rubriflora* (L.Bolus) Gideon F.Sm. & J.C.Manning	Vulnerable (B1ab)
ASTERACEAE	*Gnaphalium declinatum* L.f.	Near Threatened (B1ab)
FABACEAE	*Amphithalea pageae* (L.Bolus) A.L.Schutte	Vulnerable (B1ab)
FABACEAE	*Aspalathus lactea breviloba* R.Dahlgren	Vulnerable (D2)
FABACEAE	*Aspalathus steudeliana* Brongn.	Vulnerable (A2c)
IRIDACEAE	*Chasmanthe bicolor* (Gasp.) N.E.Br.	Vulnerable (B1ab)
IRIDACEAE	*Ferraria crispa nortieri* M.P.de Vos	Vulnerable (A2bc, A4bc)
IRIDACEAE	*Gladiolus vandermerwei* (L. Bolus) Goldblatt & M.P.de Vos	Endangered (B1ab+2ab; C2a)
IRIDACEAE	*Moraea cooperi* Baker	Vulnerable (B1ab)
IRIDACEAE	*Moraea radians* (Goldblatt) Goldblatt	Critically Endangered (B1ab)
POLYGALACEAE	*Muraltia obovata* DC.	Vulnerable (C2a)

Riviersonderend State Land (RSL)

The vegetation on the RSL is predominately Northern and Southern Sonderend Sandstone Fynbos (Status classification Least Threatened).

The Northern Sonderend Sandstone Fynbos vegetation is an open, tall, proteoid-leaved evergreen shrubland with a dense moderately tall ericoid-leaved shrubland as understory. This is mainly asteraceous fynbos on the western and lower slopes but extensive proteoid and restoid fynbos dominate the middle slopes. Ericaceous fynbos is restricted to the highest peaks.

The South Sonderend Sandstone Fynbos vegetation is a moderately tall, dense ericoid-leaved shrubland with open emergent proteoids. Ericaceous and restoid fynbos is most common with proteoid fynbos found mainly on the lower slopes.

There is minor representation of the following vegetation units:

- Western Coastal Shale Band vegetation (Status classification Least Threatened). This vegetation unit supports diverse renosterveld and fynbos shrublands of all structural type.
- Cape Lowland Alluvial Vegetation (Status classification Critically Endangered National Gazette No 34809 of 09 December 2011, Volume 558). This vegetation unit's landscape is characterised by a flat landscape with slow-flowing and often meandering lowland rivers fringed on banks by extensive tall reeds dominated by *Phragmites australis* and *Typha capensis* as well as by flooded grasslands and herblands and tall riparian thickets with *Salix mucronata* subsp. on river terraces.
- Greyton Shale Fynbos (Status classification is Least Threatened). This vegetation is moderately tall and dense shrubland predominantly proteoid and asteraceous fynbos with some graminoid fynbos.

- Southern Afrotemperate Forest (Status classification Least Threatened). This vegetation unit's landscape is characterised tall, multi-layered afrotemperate forest trees. The shrub understorey and herb layers are well developed, especially in mesic and wet habitats.
- Breede Shale Renosterveld (Status classification Least Threatened).

No more detailed vegetation descriptions for plant communities on the RSL could be sourced.

There are three Critically Endangered, thirteen Endangered, eighteen Vulnerable, fifteen Near Threatened and seven Rare plant species recorded for the RSL (Table 3.3).

Table 3.3: Plant Species of Conservation Concern recorded for the Riviersonderend State Land.

FAMILY	TAXON	IUCN STATUS = SPECIES OF CONSERVATION CONCERN
IRIDACEAE	*Aristea recisa* Weim.	Rare
IRIDACEAE	*Geissorhiza callista* Goldblatt	Rare
IRIDACEAE	*Gladiolus emiliae* L. Bolus	Near Threatened (B1ab)
IRIDACEAE	*Gladiolus subcaeruleus* G.J.Lewis	Near Threatened (B1ab)
IRIDACEAE	*Ixia longituba bellendenii* (R.C.Foster) M.P.de Vos	Vulnerable (B1ab)
IRIDACEAE	*Nivenia dispar* N.E.Br.	Vulnerable (D1)
ORCHIDACEAE	*Disa bodkinii* Bolus	Rare
ORCHIDACEAE	*Disa hallackii* Rolfe	Endangered (C2a)
PROTEACEAE	*Aulax pallasia* Stapf	Near Threatened (A4c)
PROTEACEAE	*Leucadendron burchellii* I.Williams	Near Threatened (D2)
ASTERACEAE	*Anaxeton brevipes* Lundgren	Vulnerable (D2)
ASTERACEAE	*Anaxeton hirsutum* (Thunb.) Less.	Vulnerable (D2)
ASTERACEAE	*Metalasia plicata* P.O.Karis	Vulnerable (B1ab)
BRASSICACEAE	*Heliophila tricuspidata* Schltr.	Rare
BRUNIACEAE	*Staavia zeyheri* Sond.	Critically Endangered (D)
ERICACEAE	*Erica alfredii* Guthrie & Bolus	Vulnerable (D1+2)
ERICACEAE	*Erica galgebergensis* H.A.Baker	Vulnerable (D1+2)
ERICACEAE	*Erica insolitanthera* H.A.Baker	Vulnerable (D2)
ERICACEAE	*Erica rufescens* Klotzsch	Rare
ERICACEAE	*Erica xanthina* Guthrie & Bolus	Rare
FABACEAE	*Aspalathus steudeliana* Brongn.	Vulnerable (A2c)
FABACEAE	*Podalyria cordata* (Thunb.) R.Br.	Vulnerable (B1ab)
PENAEACEAE	*Endonema lateriflora* (L.f.) Gilg	Endangered (B1ab; D)
PENAEACEAE	*Endonema retzioides* Sond.	Vulnerable (D2)
PROTEACEAE	*Leucadendron nervosum* E.Phillips & Hutch.	Near Threatened (A3d+4d)
PROTEACEAE	*Leucadendron procerum* (Salisb. ex Knight) I.Williams	Vulnerable (A4c)
PROTEACEAE	*Leucadendron tinctum* I.Williams	Near Threatened (A4c)
PROTEACEAE	*Leucospermum formosum* (Andrews) Sweet	Endangered (A3c+4c; B1abc+2abc)
PROTEACEAE	*Mimetes argenteus* Salisb. ex Knight	Endangered (B1abc+2abc)
PROTEACEAE	*Paranomus adiantifolius* Salisb. ex Knight	Endangered (B1ac+2ac)
PROTEACEAE	*Paranomus sceptrum-gustavianus* (Sparrm.) Hyl.	Near Threatened (B1abc)
PROTEACEAE	*Protea aurea potbergensis* Rourke	Near Threatened (D2)
PROTEACEAE	*Protea caespitosa* Andrews	Critically Endangered (B1ac+2ac)

PROTEACEAE	*Protea compacta* R.Br.	Near Threatened (A2c+4d)
PROTEACEAE	*Protea coronata* Lam.	Near Threatened (A2c+3c+4c)
PROTEACEAE	*Protea effusa* E.Mey. ex Meisn.	Near Threatened (A4c)
PROTEACEAE	*Protea grandiceps* Tratt.	Near Threatened (B1ac+2ac)
PROTEACEAE	*Protea lacticolor* Salisb.	Endangered (B1ab+2ab)
PROTEACEAE	*Protea longifolia* Andrews	Vulnerable (A2c+3c+4c)
PROTEACEAE	*Protea scabra* R.Br.	Near Threatened (A2c+3c+4c)
PROTEACEAE	*Serruria elongata* (P.J.Bergius) R.Br.	Near Threatened (A2c+4c)
PROTEACEAE	*Serruria fasciflora* Salisb. ex Knight	Near Threatened (A2c+4c)
PROTEACEAE	*Serruria inconspicua* L.Guthrie & T.M.Salter	Vulnerable (A2c)
PROTEACEAE	*Serruria incrassata* Meisn.	Endangered (A2c; B1ab+2ab)
PROTEACEAE	*Serruria meisneriana* Schltr.	Endangered (A2c; B1ab+2ab)
PROTEACEAE	*Serruria stellata* Rourke	Vulnerable (D2)
PROTEACEAE	*Serruria williamsii* Rourke	Endangered (B1ac+2ac)
PROTEACEAE	*Sorocephalus alopecurus* Rourke	Endangered (B1ac+2ac)
PROTEACEAE	*Sorocephalus crassifolius* Hutch.	Critically Endangered (A2c; D)
PROTEACEAE	*Sorocephalus pinifolius* (Salisb. ex Knight) Rourke	Endangered (B1ac+2ac)
PROTEACEAE	*Spatalla argentea* Rourke	Endangered (B1ac+2ac)
PROTEACEAE	*Spatalla propinqua* R.Br.	Endangered (A3c+4c)
RUTACEAE	*Adenandra villosa apiculata* Strid	Rare
RUTACEAE	*Agathosma leptospermoides* Sond.	Vulnerable (D2)
RUTACEAE	*Diosma thyrsophora* Eckl. & Zeyh.	Vulnerable (D2)
THYMELAEACEAE	*Lachnaea greytonensis*	Vulnerable (D2)

3.8.2 Invasive Alien Plants

On the VNR invasive alien plans, as listed in Table 3.4, are minimal and continual follow-up maintenance is carried out.

One of the main priorities on the RSL is the removal of invasive alien plants which can be considered the largest threat to biodiversity. The invasive alien plants in the western section of the RSL have been cleared over a number of years with funding provided by the Working for Water Programme and currently only very scattered *Pinus* spp and *Hakea sericea* occur. A few areas of medium infestation of *Pinus* spp and *Hakea sericea* remain in inaccessible areas.

Dense infestations of *Pinus* spp and *Hakea sericea* occur in areas north of Genadendal and Greyton. In the central sections of the RSL *Pinus* spp and *Hakea sericea* have medium infestation with a few areas with scattered infestations. Other *Acacia* species occur on the lower slopes at lower infestations.

In the eastern section of the RSL a mixture of Dense, Medium, Scattered and Very Scattered infestation of alien vegetation occurs.

The density of invasive alien plants on the RSL is shown in Figure 12 with a list of invasive alien plants known to occur on the VNRC included in Table 3.4.

3.8.3 Plantations

There are currently no commercial plantations in the RSL or in the VNR surrounds. Pine plantations were planted in 1830 at the Genadendal Mission Station for timber production.

The mountain catchment area, including RSL, north of Genadendal has been invaded by pine species from the Genadendal plantation and extensive alien clearing work is carried out in the mountain catchment area.

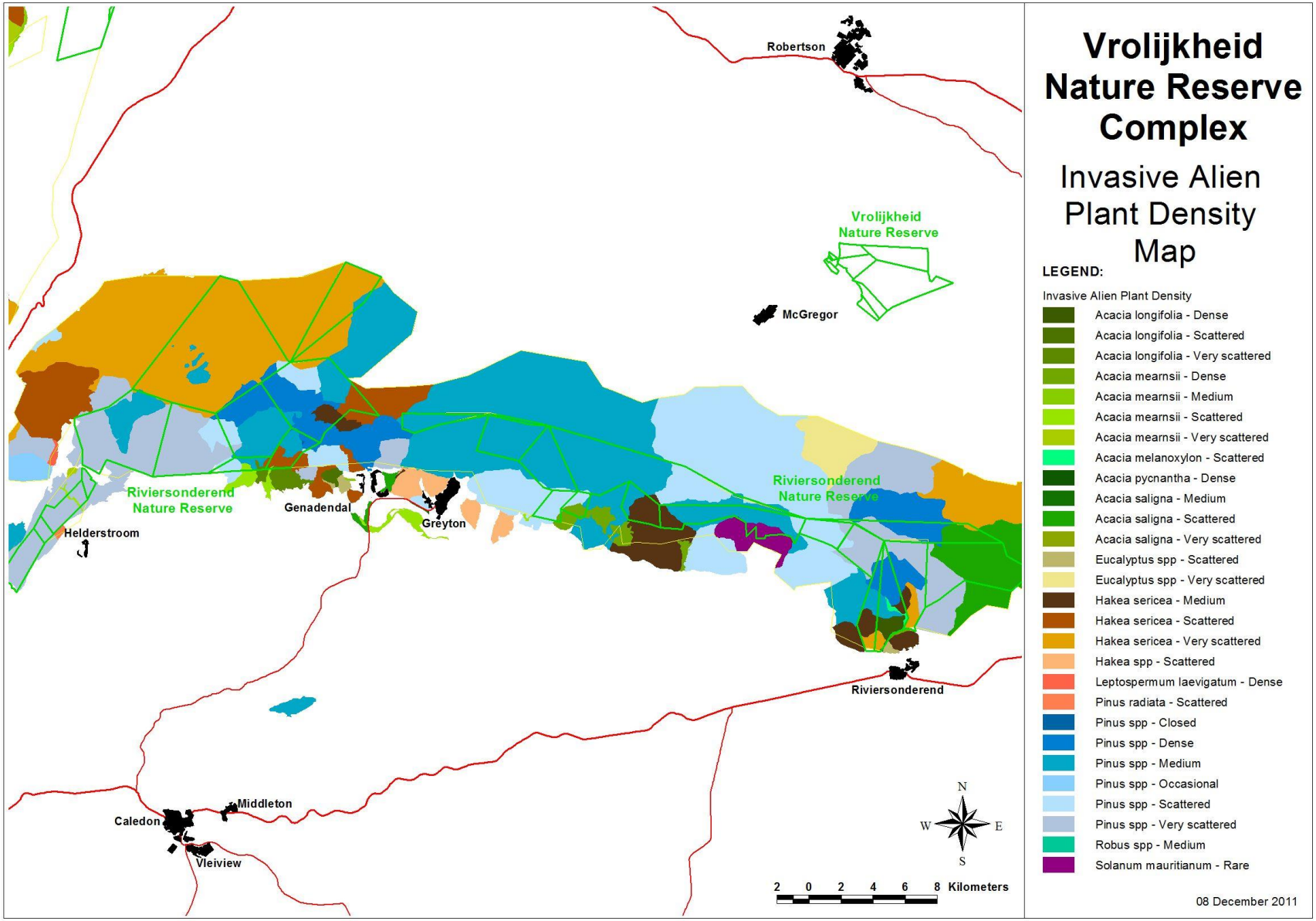

Figure 12: Density of Invasive Alien Plant infestation on Riviersonderend State Land.

Table 3.4: Invasive Alien Plants of the VNRC.

Locality	Species	Common Name, Comments
VNR	*Pannisetum clandestinum**	Kikuyu
VNR	*Melia azedarach**	Syringa
VNR	*Nerium oleander**	Oleander
VNR	*Acacia saligna**	Port Jackson wattle
VNR	*Acacia cyclops**	Rooikrans
VNR	*Atriplex linleyi subsp. inflata*	Klappiesbrak
VNR	*Raphanus raphistrum*	Ramnas
VNR	*Amaranthus hybidus**	Pigweed
VNR	*Prosopis glandulosa var. torreyana**	Mesquite
VNR	*Sesbania punicia**	Sesbania
VNR	*Eucalyptus spp*	Bloekom, Bluegum – initial clearing
VNR	*Uromycladium tepperianum)**	Rust fungus, used to control *Acacia saligna*
RSL	*Acacia longifoliam*	Long leaf wattle
RSL	*Acacia melanoxcylon*	Blackwood
RSL	*Acacia mearnsii*	Black wattle
RSL	*Acacia salign*	Port Jackson wattle
RSL	*Acacia pycnantha*	Golden wattle
RSL	*Pinus pinaster*	Pine
RSL	*Pinus radiat*	Pine
RSL	*Hakea sericea*	Silky hakea
RSL	*Hakea gibbosa*	Hairy hakea
RSL	*Hakea drupacea*	Sweet habea (= *Hakea suaveolens*)
RSL	*Sesbania punicea*	Red sesbania
RSL	*Xanthium spinosum*	Spiny cocklebur
RSL	*Paraserianthes lophantha*	Stinkboom
RSL	*Eucalyptus spp.*	Bluegum
RSL	*Pennisetum clandestinum*	Kikuyu
RSL	*Solanum mauritianum*	Bugweed
RSL	*Populus canescens*	Poplar
RSL	*Lantana camara*	Lantana
RSL	*Leptospernum laevigatum*	Australian myrtle
RSL	*Rubus spp.*	Bramble

* Species are under control but need continuous follow-up as seed from seed stores in the soil and from sources outside the nature reserve, still germinate.

3.9 Fauna

Species lists are available on request from Scientific Services, Assegaaibosch Nature Reserve, Jonkershoek Road, Stellenbosch.

3.9.1 Mammals

Vrolijkheid Nature Reserve

The only mammal species of conservation concern, listed in the South African Red Data Book (Friedmann & Daly 2004), as Near Threatened, that has been recorded on the reserve is the Honey badger (*Mellivora capensis*). The Robertson Karoo forms an important transition zone

between the Fynbos and the Little Karoo and is the limit of the distribution of many species, e.g. it represents the north-eastern distribution limit of Cape gerbil (*Tatera afra*), Cape mole rat (*Georychus capensis*) and Greater red musk shrew (*Crocidura flavescens*) (Friedmann & Daly 2004).

The relatively small size and isolated position of the VNR requires attention in order to facilitate better ecological functioning and connectivity with other natural areas to ensure the long term viability of the reserve particularly to maintain ecological and genetic interactions with the broader landscape. This has particular, but not exclusive, reference to wide ranging species such as the Near Threatened honey badger, as well as aardvark (*Orycteropus afer*), aardwolf (*Proteles cristatus*) and African wild cat (*Felis silvestris*).

Although springbok (*Antidorcas marsupialis*) were introduced to VNR, they have not thrived and their population is steadily decreasing. This may be due to the fact that springbok were never a true resident in the Robertson Karoo but were most likely migratory through this area.

Riviersonderend State Land
It is critical that connectivity with other nature reserves to the west, in particular, be consolidated and expanded to ensure that ecological process can continue and to facilitate genetic interaction. Some of the larger mammals that have been recorded on the RSL include: Chacma baboon (*Papio hamadryas*); porcupine (*Hystrix africaeaustralis*); Cape grey mongoose (*Galerella pulverulenta*); rock dassie (*Procavia capensis*); klipspringer (*Oreotragus oreotragus*); caracal (*Caracal caracal*); leopard (*Panthera pardus*); grey rhebuck (*Pelea capreolus*); grysbok (*Raphicerus melanotis*) and African wild cat (*Felis silvestris*).

3.9.2 Avifauna

Vrolijkheid Nature Reserve
One hundred and ninety eight species of birds have been recorded for VNR (BIRP 2011a). The avifauna species diversity is typical of the Karoo vegetation units found on the reserve and include species such as Rufous-eared Warbler (*Malcorus pectoralis)* and Karoo Chat (*Cercomela schlegelii*). There are three sizeable dams on the reserve, providing habitat for a wide range of water dependant species that would not otherwise occur on the reserve. This includes species such as Lesser Swamp-warbler (*Acrocephalus gracilirostris)* and African Reed-warbler (*Acrocephalus baeticus)* in the reeds surrounding the dams, Common Sandpiper (*Actitis hypoleucos)* and Common Greenshank (*Tringa nebularia)* on the mud banks and Yellow-billed Duck (*Anas undulate)* and Little Grebe (*Tachybaptus ruficollis)* on the open water. Threatened species recorded on the reserve are listed in the Table 3.5 below.

Table 3.5: Threatened Bird Species recorded on VNR.

Species	IUCN Category (IUCN 2011)	South African Red Data Book Category (Barnes 2000)
African Marsh-harrier *Circus ranivorous*		Vulnerable
Black Harrier *Circus maurus*	Vulnerable	Near Threatened
Lanner Falcon *Falco biarmicus*		Near Threatened

Peregrine Falcon *Falco peregrinus*		Near Threatened
Martial Eagle *Polemaetus bellicosus*		Vulnerable
Secretary bird *Sagittarius serpentarius*		Near Threatened
Black Stork *Ciconia nigra*		Near Threatened
Blue Crane *Anthropoides paradiseus*	Vulnerable	Vulnerable

Riviersonderend State Land

One hundred and seventy-eight species have been recorded for the Riviersonderend properties of state land (BIRP 2011b). The species diversity is typical of mountainous fynbos habitat, which includes Cape Rock-jumper (*Chaetops frenatus)* and Cape Rock-thrush (*Monticola rupestris)*. The large dam in the Elands kloof provides habitat for a variety of water birds that would otherwise not be recorded on the state land such as Reed Cormorant (*Phalacrocorax africanus)* and yellow-billed Duck (*Anas undulate).* Threatened species recorded on the reserve are listed in Table 3.6.

Table 3.6: Threatened Bird Species recorded on RSL.

Species	IUCN Category (IUCN 2011)	South African Red Data Book Category (Barnes 2000)
African marsh-harrier *Circus ranivorous*		Vulnerable
Black harrier *Circus maurus*	Vulnerable	Near Threatened
Peregrine falcon *Falco peregrinus*		Near Threatened
Lesser kestrel *Falco naumanni*	Vulnerable	Vulnerable
Martial eagle *Polemaetus bellicosus*		Vulnerable
Secretary bird *Sagittarius serpentarius*		Near Threatened
Black stork *Ciconia nigra*		Near Threatened
Blue crane *Anthropoides paradiseus*	Vulnerable	Vulnerable
Denham's bustard *Neotis denhami*	Near Threatened	Vulnerable
Half-collared kingfisher *Alcedo semitorquata*		Near Threatened

3.9.3 Reptiles

No Threatened reptile species have been recorded on VNR or RSL. Twenty-six and twelve reptile species have been recorded for VNR and RSL respectively.

Fisk's house snake (*Lamprophis fiskii*), which is listed as Rare, has been recorded from the Robertson Karoo near Worcester and may occur on the reserve.

3.9.4 Amphibians

Eight and seven amphibian species have been recorded for VNR and RSL respectively. The Vulnerable Cape Mountain toad (*Capensibufo rosei)* is recorded from the RSL. No Threatened species are known from VNR.

3.9.5 Fish

The VNRC is situated in the greater Breede River WMA and rivers on the reserve will therefore contain species associated with this river system. It must be noted that large sections of the reserve complex is mountain catchment area which means that the distribution ranges of many fish species may only start downstream of the reserve borders. Indigenous freshwater fish species of the Breede WMA include three smaller species namely the Breede River redfin (*Pseudobarbus burchelli*), the Cape kurper (*Sandelia capensis*), the Cape galaxias (*Galaxias zebratus*) and one large cyprinid, the Berg-Breede River whitefish (*Barbus andrewi*) (Skelton 2001). Historically all these species were present throughout the Breede River but their distribution ranges have been dramatically reduced by the presence of alien invasive fish species such as Rainbow trout (*Oncorhynchus mykiss*), Black bass (*Micropterus spp*.), Mozambique tilapia (*Oreochromis mossambicus*), Bluegill sunfish (*Lepomis macrochirus*) and, more recently, Sharptooth catfish (*Clarias gariepinus*).

In the reserve complex, historical records and recent survey data exist for the occurrence of all three smaller indigenous species in the Gobos River above the town of Greyton (Jordaan & Impson, unpublished data). Furthermore, *P. burchelli* was sampled from the Baviaans River during a 2009 River Health Programme (RHP) survey and historical records exist for their occurrence in the Hoeks and Soetmelksvlei Rivers (CapeNature Biodiversity Database). *Sandelia capensis* is known to occur in the Hoeks, Doring and Baviaans Rivers, while there are historical records for the occurrence of *G. zebratus* in the Baviaans River (Jordaan and Impson, unpublished data; CapeNature Biodiversity Database). No evidence exists for the presence of alien fish species in the Baviaans and Gobos Rivers, which is of key conservation concern given the deleterious impacts that alien invasive fish species have had in the majority of the Breede River WMA.

While the Hoeks River tributary was not sampled during the 2009 RHP survey, a sampling site exists for the Keisers River downstream of the reserve. No fish were caught at the time of sampling but according to historical records, a number of fish species has been sampled in this river. These include all four indigenous species, namely *B. andrewi*, *P. burchelli*, *S. capensis* and *G. zebratus*, but the local extinction of these species must be considered given the fact that there are historical records for the occurrence of two highly predatory alien invasive species, *M. salmoides* and *M. dolomieu*, as well as *L. macrochirus* in this river. The numbers of *B. andrewi* has been severely reduced throughout the Breede River by the presence of alien species and the occurrence of riverine populations is rare. Healthy populations of this species are restricted mainly to large public dams such as Brandvlei and Kwaggaskloof. The Longfin eel (*Anguilla mossambica*), a catadromous species, occurs in parts of the Breede River but their presence in the Riviersonderend and rivers within the reserve needs to be investigated. Most rivers on the reserve are believed to be relatively free of alien invasive fish species at present, with the exception of the species listed for the Keisers River. The presence of indigenous *S. capensis* and alien *L. macrochirus* and

Cyprinus carpio (Common carp) was reported for the Doring River (Jordaan & Impson, unpublished data; E. Swartz, pers. comm).

Genetic research by Swartz *et al*. (2009) has presented evidence that the species currently described as *P. burchelli* is three distinct lineages of which the more widespread one occurs in the RSL. The most recent IUCN conservation status of this lineage is Near Threatened (Tweddle *et al*. 2009). The conservation status of both *G. zebratus* and *S. capensis* is presently listed by the IUCN as Data Deficient (Tweddle *et al.* 2009). The reason for this is that the taxonomic status of both species is in the process of being reviewed as recent genetic research has presented evidence for the existence of a number of unique lineages of which the exact distribution ranges have not been confirmed (Tweddle *et al*. 2009). These unique lineages are in the process of being described as new species, many of which will likely be listed as Endangered or Critically Endangered due to the presence of invasive alien fish species and a loss of suitable habitat (Swartz *et al.* unpublished data). Despite the relatively low numbers of *B. andrewi* in the greater Breede River, their conservation status is listed as Endangered (Tweddle *et al*. 2009), likely as a result of the large populations in public dams.

On the VNR the following species have been recorded: Largemouth bass (*Micropterus salmoides*) and Common carp (*Cyprinus carpio*). Two fish species were recorded in the RSL namely Cape kurper (*Sandelia capensis*) and *Pseudobarbus spp.*

3.9.6 Invertebrates

Heard *et al*. (2000b) state that the butterfly species *Poecilmitis endymion* – Vulnerable (Gimenez Dixon 1996) occur on the Riviersonderend Mountain Catchment Area and according to Hutchinson (1928 in Heard *et al.* 2000b) two species of Velvet worms, namely *Peripatopsis balfouri* and *P. capensis*, occurs in the Jonaskop area and other regions of the RSL.

No species lists exist for the VNR or RSL.

3.9.7 Invasive/alien fauna

Six ostrich were introduced to VNR between 1968 and 1969 (Annual Report No 25, 1968/69 in Heard *et al.* 2000a). The current population is approximately 25-30 individuals. All ostriches on CapeNature nature reserves are "hybrids" and have a negative effect on the functioning of the ecosystems especially in restricted and sensitive areas. All the ostriches will be removed from the reserve. Feral cats are found on and around the VNR and negatively impact on the biodiversity.

European starling (*Sturnus vulgaris*) and feral domestic pig (*Sus scrofa domesticus*) are noted to occur on the RSL.
Carp and bass and sharptooth catfish are present in the dams on Vrolijkheid Nature Reserve.

3.10 Cultural Heritage Resources

A stone wall of almost 2 km built in 1891 that previously served as a fence to retain stock occurs on VNR. A permit was issued by the National Monuments Council to break down certain sections of the stone wall to allow for movement of game. There are four buildings, house no. 7 (VRO 27), the stores below it (VRO 26), house no. 8 (VRO 28) and store (VRO 30) that are older than 50 years and regarded as having historical value on VNR.

One graveyard site occurs on the property with graves from 1815 to 1956 representing the following families: Malherbe, Combrinck, Beukes, Nel and De Wet. There are five graves without inscriptions.

Rock art sites can be found in certain areas of the RSL.

3.11 People and Conservation

The following towns border the VNRC: Villiersdorp, Genadendal, Greyton, Riviersonderend, Stormsvlei, and McGregor. The surrounding economy is based on agriculture which includes fruit, vineyards, grain and livestock. Agriculture is also the largest employer in the area.

There are currently three Expanded Public Works Programmes (EPWP) on the VNRC. These include Working for Water, Working on Fire (WOF) and CapeNature Integrated Catchment Management. These projects provide employment to communities of McGregor, Robertson, Riviersonderend, Berea, Genadendal, Voorstekraal, Greyton and Robertson. A total of eight contract teams provide integrated catchment management services to CapeNature and provide approximately 206 beneficiaries with sustainable land-based livelihoods.

A WOF team is based at the VNR and is managed by CapeNature by providing fire fighting services to the greater Western Cape Province. Currently the FFA Operation (PTY) Ltd, trading as Working on Fire, is responsible for the administration of the team.

The VNR PAAC was established on 8th January 2011, currently membership includes: McGregor Tourism; Robertson Tourism; Langeberg Municipality (Parks); Langeberg Municipality (Youth); Robertson Rastafarians; Robertson Sangomas; Robertson Traditional Healers; Friends of Vrolijkheid and McGregor Farmers Union. Currently the PAAC meetings take place every three months. This PAAC does not currently include the RSL reserve. It is envisaged that one PAAC for the VNRC be established, however the VNR and RSL reserves would each have a sub-committee of the PAAC that would continue to operate individually, but meeting annually as the overall PAAC for the VNRC.

The Langeberg People and Parks Forum meet on a quarterly basis and focus on people and conservation issues within the wider Langeberg Area. The Forum has become a platform to address both conservation and non-conservation issues, where CapeNature is able to facilitate with other stakeholder where appropriate, to assist communities to address critical issues. Two members from this forum represent the Langeberg Area on the Provincial People and Parks Steering Committee.

People access the VNR for spiritual activities. Access to the RSL is not controlled and illegal access is prevalent and poses a risk due to illegal harvesting and fires.

Due to the arid nature of the Succulent Karoo environment on VNR, sustainable harvesting of natural resources would not be considered viable. Limited opportunities for harvesting may exist on the RSL and most of the land is at high altitude and inaccessible. All applications for access for cultural, traditional and spiritual reasons, as well as applications for harvesting within the VNRC will follow the relevant CapeNature policies and protocols.

3.12 Awareness, Youth Development and Volunteers

Visits by school groups to VNR for environmental education are actively promoted where guided field excursions, talks, slide and video shows are presented. There are currently six schools participating in the Wildlife and Environment Society of South Africa (WESSA) Eco-schools programme, these include Vergesig, Vinkrivier, Huguenot, Riverside, Uitnood and Maraisdal Primary Schools. CapeNature provides environmental education and awareness at schools, where they are unable to visit the reserve.

A National Youth Service Programme (NYSP) was started in 2005 with funds from Umsovumbu Youth Fund. Existing recreational facilities were refurbished and additional new infrastructure built to accommodate the programme. The aim of this programme was to provide technical skills in conservation and related fields and through service to contribute to delivery of the conservation mandate of nature reserves. This programme also enhanced the life skills of the students who all originated from low-income communities in the Winelands and Drakenstein municipal districts. There is currently no available funding for the NYSP and the facilities are now being utilised for school camps and training throughout the year.

There is an annual guided night walk to the Wonderklippe section of the RSL for the Grade 12's of the Emil Weder High School.

Awareness raising initiatives takes place in various communities around the VNRC. Specific topics are identified and addressed with the community to change attitudes towards practises that may have a negative impact on the environment and to support sustainable conservation for future generations.

Annually an open day is held at the VNR to coincide with one of the environmental calendar days, where free access is provide for local schools and communities.

Five Honorary Nature Conservation Officers (HNCO's) assist on an informal basis in the Greyton and Genadendal area with access control on the Boesmanskloof Trail and efforts continue in order to strengthen the number of HNCO's.

The Friends of Vrolijkheid consist of members of the public that are volunteers mainly form the McGregor and Robertson area. The Friends of Vrollijkheid have funded and constructed the wheel-chair friendly boardwalk and bird hide at the Upper bird hide dam. They continue to assist on an *ad hoc* basis with maintenance work on VNR and generate funding to implement projects on the VNR.

3.13 Infrastructure

Various infrastructure occurs on the VNR and RSL and is shown in Figures 13 and 14 respectively. A detailed infrastructure map of the VNR office and administrative complex is provided in Figure 15.

Tourism Hiking and Cycling Trails
There are three day trails on VNR and include the following:

- Rooikat Trail is a 19 km trail into the reserve. The Rooikat Trail includes a mountain bike route of 8 km confined to existing vehicle tracks;
- Heron Trail provides a short walk (3 km / 45 min.) to two bird hides that overlook the Highlands Home dams; and
- Braille Trail is a 1 km interpretative braille trail that starts at the main gate and ends at the first bird hide.

The RSL has two overnight hiking trails traversing the state land, namely:

- Genadendal hiking trail of 22 km that traverses the De Hoek section of RSL, is operated as a standard overnight hiking trail, allowing for two groups of up to 14 people each per day;
- Boesmanskloof Trail accommodates unusually high traffic of up to 50 hikers per day, and can be walked either as a 14 km route from Greyton to the overnight accommodation for up to 100 at Die Galg on private land just beyond the reserve boundary, and then returning the following day, or using Die Galg as an overnight point for hiking between Greyton and McGregor in either direction. Only 5.28 km of the Boesmanskloof trail traverses RSL.

Tourism recreational facilities and interpretation
On VNR there is an Interpretation Centre at the main gate which is used only for school groups i.e. there is restricted access. A wheelchair accessible picnic area with braai facilities is shaded by mature sweet thorn trees (*Acacia karroo*) and has ablution facilities. Three bird hides with interpretation boards overlook the two dams, one of which is wheelchair accessible.

Dams
There are two earth dams that are fed on a water rotational basis every fortnight. Water is sent to reservoir for use in the VNR. Elandskloof dam is a man-made dam situated in the RSL area.

Management roads and trails
VNR and RSL land have jeep tracks that are used as service roads for reserve management, including 8 km of the Rooikat Trail also used as a dual footpath and mountain bike route.

Firebreaks
There are no firebreaks on the VNR and due to the vegetation type they are not required.

CapeNature firebreaks on the RSL are situated on the declared private mountain catchment boundary. The firebreak is continuous around the entire private mountain catchment boundary. These firebreaks are maintained on a 4-yearly rotation and are hoed to between

5-10 m depending on the vegetation. Firebreaks are maintained with Integrated Catchment Management funding. Currently no contribution from adjacent landowners is received for making firebreaks.

Administrative offices, staff housing, tourism accommodation and associated infrastructure

The administrative complex serves as the management base for the following components: VNRC Management, Finance and Administration, Conservation Services, Community Conservation and WOF.

The following infrastructure occurs on the parcel comprising the VNR administrative complex:

- The five stores on the property ['1'], ['2'], ['4'], ['6'] and ['7'], shown in Figure 15, are used for storage of wood, petrol, herbicide and operational equipment.
- Eight houses in the development zone are currently utilised as accommodation for staff or rented out on a short-term basis (year to year) to private tenants (Figure 15), these include five thatched houses ['B']; Hunter's Quarters house ['D'] and two cottages ['5']). The "Manor House" ['C'] has been renovated by the Department Transport and Public Works and is currently not being utilised.
- The eight rondawels ['E'] (Figure 15) are currently used as environmental education accommodation for youth, school, church, cultural and training groups. The two halls, one situated at the rondawels and one adjacent to Jakkalsgat accommodation, are used for meetings both internal and external as well as a training venue and interpretation areas for school groups. The thatch lapa, situated in the vicinity of the rondawels, is used as a recreational meeting area for people using the facility.
- Jakkalsgat accommodation ['A'] and House No. 8 ['F'], as shown in Figure 15, were previously used for tourism and to provide accommodation to visiting staff.
- The water supply system treatment plant ['3'].

Additional infrastructure at the VNR administration complex includes the following:

- A pump house which also contains the switch for the borehole and monitoring gauge for the borehole use, also houses the electrical substation for the reserve.
- An old reservoir has been renovated as a swimming area for the use of staff and people living in houses. This is maintained once a week in the summer month. It is also use as standby reservoir in case of fire. The remaining five reservoirs are used for water storage.
- A fire hydrant system has been installed to safeguard property on the office area.
- There is one graveyard site on the property that is cleaned annually.
- An incinerator is used to dispose of carcasses.
- There are two helipads on the property, mainly utilised by WOF aerial support teams.
- The tennis court is used by the public and staff members for recreation.
- The weather station is used to monitor climate.
- There are parking areas situated around the offices and picnic area.

The following infrastructure occurs on the VNR reserve section situated to the east of the road between Robertson and McGregor:

- An interpretation centre;
- Picnic site (wheelchair accessible);
- Braai and ablution facilities; and

- Three bird hides are situated at the two dams, one of which is wheel chair accessible.

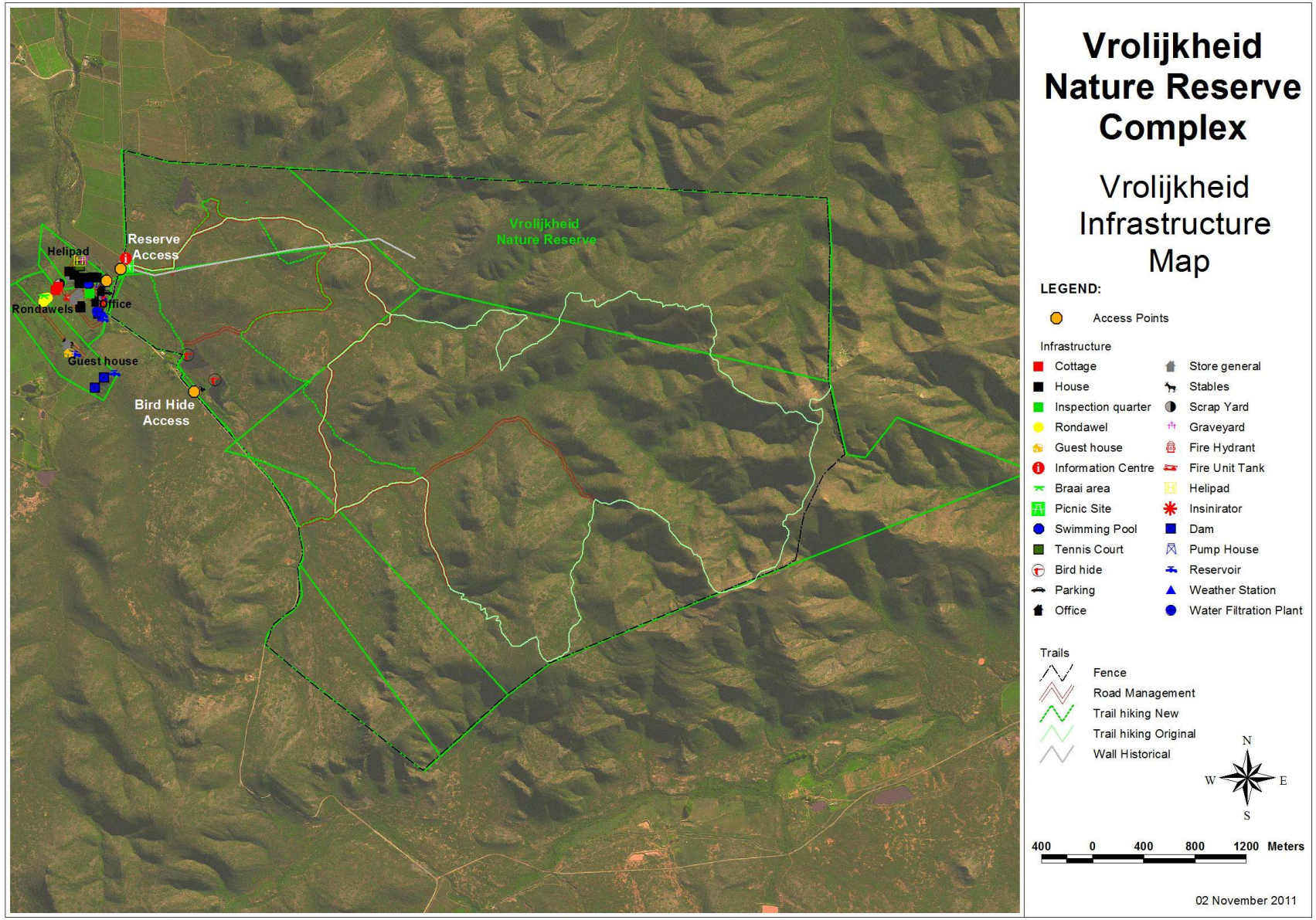

Figure 13: Infrastructure on the Vrolijkheid Nature Reserve.

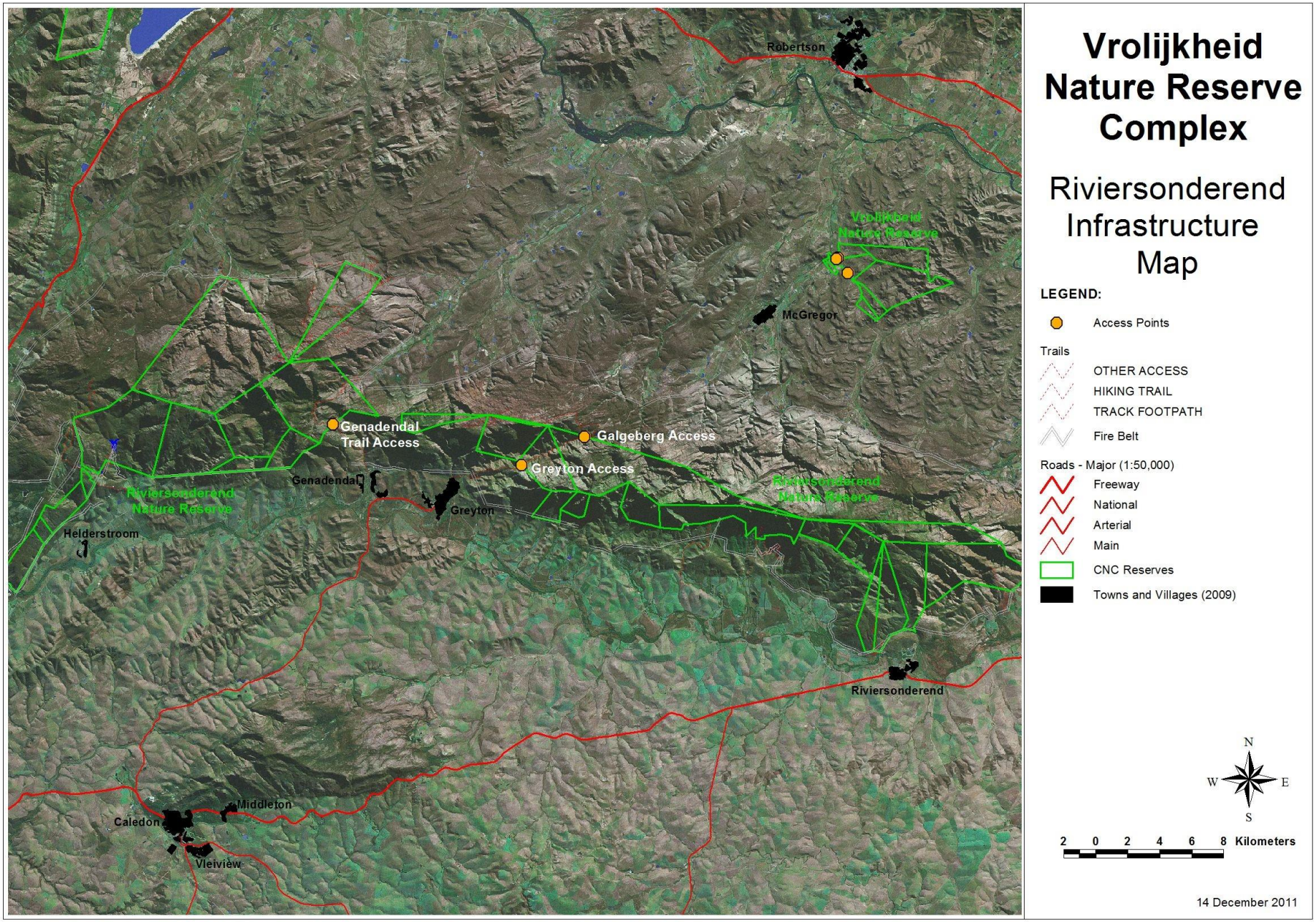

Figure 14: Infrastructure on the Riviersonderend State Land.

Figure 15. Office, housing and administrative area. Existing management infrastructure: (1) Administrative offices and reserve reception; (2) Field Ranger offices and Store; (3) Water supply treatment plant; (4) Stores and Workshop; (5) staff cottages to be retained; (6) and (7) old barns used as stores. Existing tourism accommodation infrastructure: (A) Jakkalsgat – two suites with shared kitchen, bathroom and lounge; (F) House Number 8; Existing EE and youth accommodation infrastructure: (E) Rondawels. Infrastructure proposed for conversion to tourism self-catering units: (B) 5 Thatched houses; (C) Old Manor House; (D) Hunter's Quarters.

3.14 Recreational and tourism services

The following information was obtained from the CapeNature website www.capenature.co.za (CapeNature 2011)

Recreational and tourism facilities for the VNR include the following:
The Heron Trail is an easy 3 km walk that takes about an hour to complete. The route follows fairly flat terrain to two dams, each with an attractive bird hide. The latest addition to the trail is a new board walk and bird hide at the upper dam that is wheelchair friendly. The bird hides can also be reached by driving to the parking area on the Steenboksvlakte / Stormsvlei road.

The Rooikat Trail is a circular 19 km trail that winds through the Elandsberg mountains, offering scenic views of the Robertson landscape, the Langeberg and Riviersonderend mountains. The route is fairly strenuous and takes 7 to 8 hours to complete. No water is available on the route so hikers must carry their own (2 litres or more per person). The path is rough underfoot and sturdy hiking boots are recommended.

There is an 8 km mountain bike trail that meanders through a section of the reserve and takes about an hour to complete. Visitors must stay on the marked route.

The Jakkalsgat self-catering guesthouse is located quite near the reservation office. It sleeps six in four rooms. It has a generous kitchen and bathroom, a small sitting room and a braai area, all which is not connected to the sleeping areas.

A group of five rondawels is located within the greater office complex but is fairly secluded. This is a no-frills experience, ideal for school groups, and bunk beds are the norm. Each rondawel has its own fridge but the kitchen (equipped with hot-plates) and ablutions are communal, as is the rustic lapa/braai area

Recreational and tourism facilities for the RSL include the following:
On the Boesmanskloof Trail hikers have the option to either start this route just outside Greyton, or 14 km south of McGregor at Die Galg. This can also be walked as an “out-and-back” 2-day trail.) Transport for pick-up at the end of the hike should be organised accordingly. The trail winds through the Riviersonderend Mountains in the Robertson Karoo region and links the towns of McGregor in the north and Greyton in the south. It passes through the Riviersonderend Conservation Area, which is a declared mountain catchment area comprised of state land and private property. It is reasonably strenuous and you should be fit and well-equipped. A series of waterfalls and pools known as the Oakes Falls provides swimming and a cool resting place for weary hikers. It can be very warm in summer and it is advisable to carry water at all times. A popular option is to walk an "out and back" route (a total of 28 km) and overnight in either of the two towns where ample private accommodation is available. Private overnight facilities are also available at Die Galg.

The Genadendal Trail is fairly strenuous. It leads through private property and traverses the conservation area on both sides of the Riviersonderend mountain range. The trail provides panoramic views of the Overberg as well as the Worcester-Robertson Karoo. This is a two-day circular route of 25.3 km. It begins and ends in Genadendal at the historic

Moravian Mission Church which dates back to 1738. Overnight facilities are available at the church for hikers who prefer to stay the night before starting on the route. Day 1 leads past two pools at Groot and Klein Koffiegat, ending at the farm Die Hoek on the north side of the mountain. Overnight accommodation, including braai facilities, is available here. Day 2 returns to Genadendal. Hikers should be fit and well-equipped. In summer it can be extremely hot and it is advisable to carry water. Winters are cold and wet and hikers should.

PART 2

SECTION 4: SWOT ANALYSIS

4.1 SWOT Analysis

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

4.1.1 Strengths, Weaknesses, Opportunities and Threats

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

Table 4.1: SWOT for the Vrolijkheid Nature Reserve Complex.

Strengths	**Weaknesses**
• Pockets of capacity. • Pockets of expertise. • Commitment and good team skills. • Good working relationship with partners. • High diversity of fauna and flora with different types of ecosystems (Robertson Karoo, Mountain Fynbos and Afro-temperate Forest habitats) in the region. • Large geographical area of operation. • Existing infrastructure and facilities. • Base station for various programmes e.g. WOF.	• Lack of staff succession planning. • Large area to service with limited budget. • Lack of specialised resources and capacity to service and manage the large mandated area. • Inaccessible areas (high altitude teams) to carry out conservation work. • Inadequate ablution facilities for large groups. • Water scarcity. • Poor support for maintenance of infrastructure. • Ineffective fire management interventions, due to inexperience.
Threats	**Opportunities**
• Climate change. • Public awareness. • Larger fires occurring and no mosaic veld age distribution. • Continued invasion of alien vegetation from adjacent land, inaccessible areas and ineffective use of biological control. • Legal status of State Forest not finalised. • Illegal use of natural resources.	• Job opportunities through work creation. • Expand conservation initiatives to the landscape through recognised landscape conservation methods and CapeNature protected area expansion strategy.

SECTION 5: CONSERVATION DEVELOPMENT FRAMEWORK

5.1 Sensitivity-value Mapping

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

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

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

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

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

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

Biodiversity, heritage and physical features are rated on a standard scale of 1 to 5, where 1 represents no or minimal sensitivity and 5 indicates maximum sensitivity (See Figure 16). Additional features such as visual sensitivity, fire risk and transport costs can also be included. Higher scores represent areas that should be avoided for conventional access and infrastructure, or where specific mitigation would be required in order to address identified environmental sensitivity. A score of 5 typically represents areas where mitigation for conventional access or infrastructure development would be extensive, costly or impractical enough to be avoided at all costs, or features so sensitive that they represent a ‘no go’ area. For biodiversity features highest scores represent high priority sites where conservation management cannot be compromised.

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

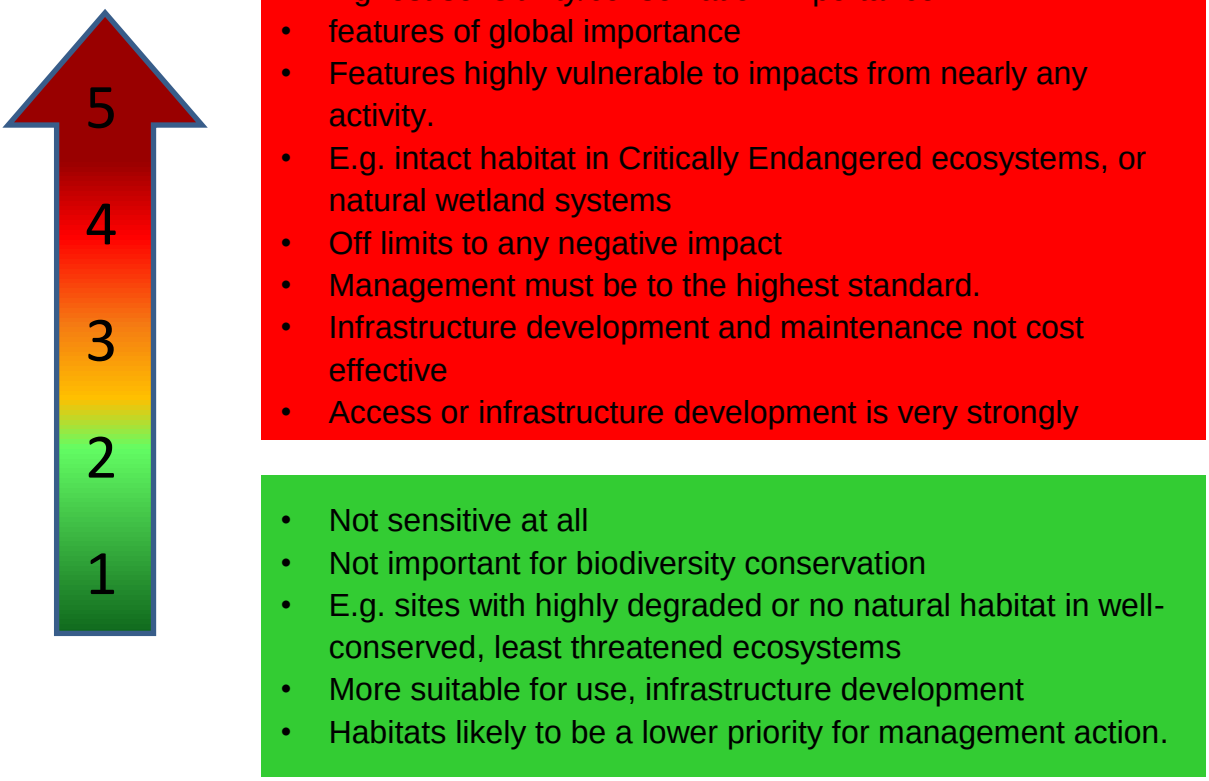

Figure 16: Sensitivity-Values

Vrolijkheid Complex Sensitivity Analysis
This complex comprises two distinctly different environments.

Vrolijkheid Nature Reserve (Figure 17 and 18) is relatively accessible, and includes large areas of completely transformed and degraded habitat adjacent to roads, and suitable for infrastructure development. However, the Natural areas include threatened and/or under-conserved habitats, and any access must make every attempt to prevent further habitat loss or degradation. Heritage buildings and infrastructure around the lower non-natural areas must be managed appropriately and protected from damage.

The Riviersonerend State Land (Figure 17) by contrast, is a very steep, mountainous and inaccessible landscape. There is very little existing infrastructure, and new road and path construction should be avoided, or very carefully planned, with due consideration of the likely difficult, sensitive and on-going costly nature of access if steep and physically sensitive areas cannot be avoided. The reserve includes small areas of threatened and/or extremely under-conserved habitats, and a number of important aquatic Special Habitats, and a number of threatened and/or extremely range restricted plants where any impact on local populations would substantially increase the risk of global extinction.

Any proposed infrastructure or activity must take relevant sensitivity features into account.

Table 5.1: Sensitivity of VNRC in terms of biodiversity, heritage and physical features.

	Class	Sensitivity layer	Description
Biophysical sensitivity: ANY infrastructure or access	**Biodiversity**	Ecosystem representivity	Vegetation map, ecosystem threat and conservation status derived from the South African Vegetation Map (Rutherford & Mucina 2011), updated with the 2011 Ecosystem status (A1 criterion only, NEMBA Threatened Ecosystems). Habitat condition was mapped to 1:20,000 scale on 2008 SPOT5 satellite images, using Google Earth as a visual reference. It is noted that in the Robertson Karoo, the SA Vegetation Map is considered a poor surrogate for actual habitat delineation, and development of improved habitat mapping should be a priority.
		Special Habitat	All natural wetlands from NFEPA 2010
		Species	Although at least 129 records of threatened or very rare or highly range-restricted plants are recorded from the complex, only 30 records had sufficient spatial accuracy to be useful for sensitivity mapping. Better species data is urgently required.
	Heritage	Heritage	Heritage features around Vrolijkheid farmstead and lower areas of the reserve were mapped at 1:1,000 scale or better.
	Physical	Slope	Slope analysis highlighting areas vulnerable to erosion and less suitable for infrastructure development was done using the Western Cape Digital Elevation Model (Anonymous 2001) with slope classes converted to generalised polygons with spurious slivers/small areas removed.
		Substrate	As no reliable data were available, substrate sensitivity was not mapped, but attribute columns could be populated from habitat types if required.
		Hydrological	In the absence of any mapping of flood lines of other features that represent highly sensitive environments, the 32m and 100m buffers of classes 1-3 and >3 rivers were considered highly and moderately sensitive respectively. All natural NFEPA wetlands were also considered highest sensitivity.

Although a detailed viewshed analysis informed zoning, no thorough analysis of visual sensitivity could be performed due to time constraints. It must be noted that due to its mountainous nature, the majority of the reserve is visible from the surrounding landscape, and in turn looks onto transformed, partly non-natural landscapes and infrastructure. Due to the mountainous nature of the environment, any development or impacts, including paths and firebreaks, are potentially highly visually sensitive and should be subject to formal visual impact assessment.

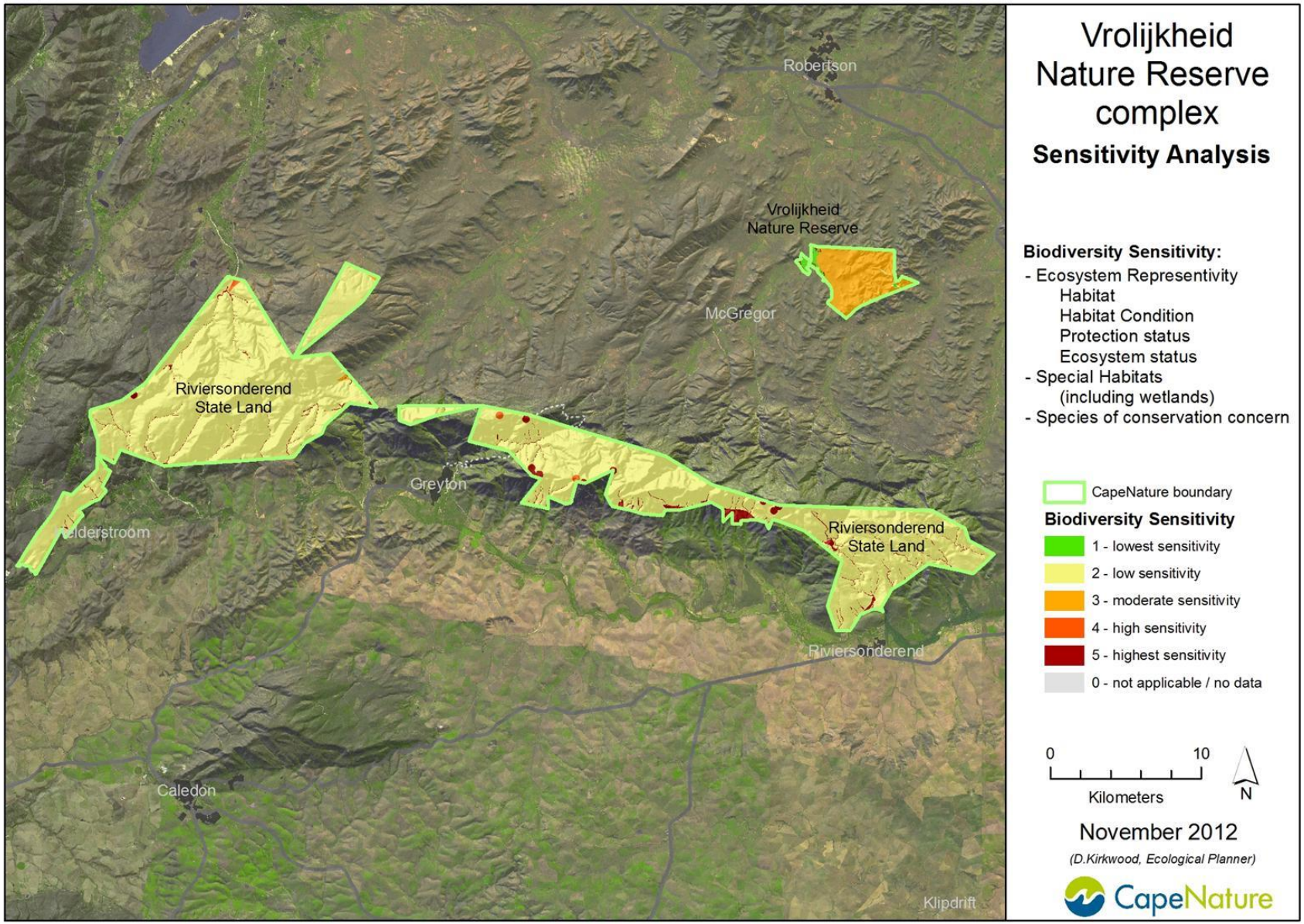

Figure 17: Sensitivity Analysis for Vrolijkheid Nature Reserve Complex

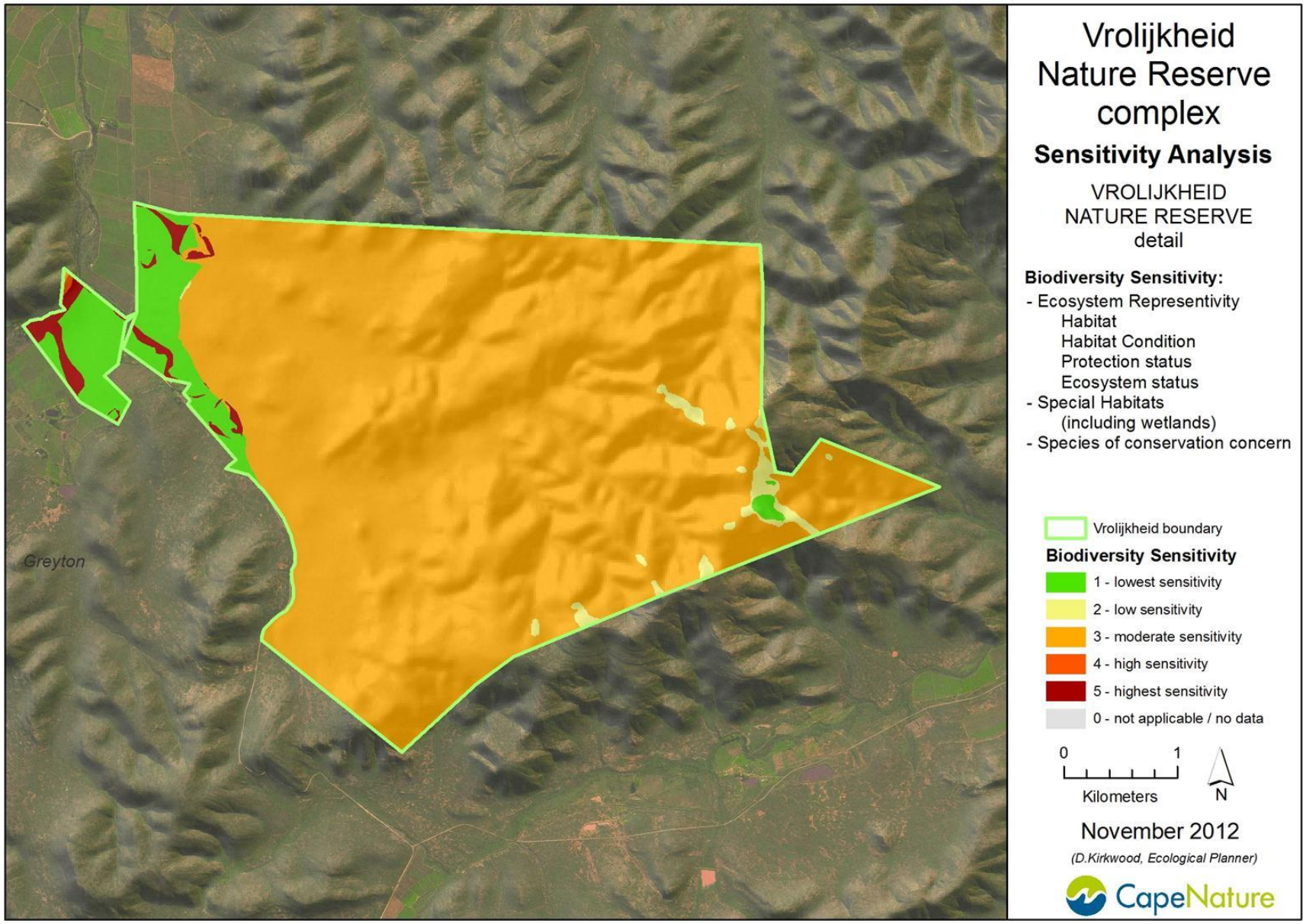

Figure 18: Sensitivity Analysis – Vrolijkheid Nature Reserve

For further information, please see the Vrolijkheid Complex Conservation Development Framework Report (2012), which includes a detailed description of the Sensitivity Analysis components and analysis.

5.2 Protected Area Zonation

Protected Area Zonation provides a standard framework of formal guidelines for conservation, access and use for particular areas.

Zonation goes beyond natural resource protection and must also provide for:

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

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

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

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

5.2 Zonation Categories

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

For a detailed description of process and outputs, including the underlying reserve Sensitivity Analysis, please refer to the report *Conservation Development Framework: Vrolijkheid Nature Reserve* (Kirkwood 2012) which includes full descriptions of the Sensitivity and Opportunity Analysis, Zonation and Infrastructure Development Plan process and outputs.

Key Drivers

- VNR is a relatively small 1 898 ha nature reserve with a number of day trails accessible on an ad-hoc basis. The adjacent administrative centre is located across a road, on an almost entirely transformed 63.5 ha property.
- The remainder of the complex comprises 26 712.4 ha of State Land along the Riviersonderend Mountain chain as two separate parcels. The primarily fynbos montane habitat is rugged and requires periodic natural fires. The area is relatively inaccessible, with no dedicated management centre.
- Although the reserve complex includes large areas that are remote, the location on an east-west ridge, overlooking farms, roads and human infrastructure means that there is no extensive area that qualifies as true wilderness, with entirely natural viewsheds.
- VNR conserves Breede Shale Renosterveld and Robertson Karoo habitats that are Least Threatened, but also extremely poorly represented in formal protected areas. The Riviersonderend State Land consists of vegetation that is both Least Threatened and very well represented in formal Protected Areas. Therefore although environmental degradation should be prevented as per normal best practise, no broad habitat unit should be considered exceptionally sensitive or off-limits to appropriate use.
- Both VNR and the RSL areas are considered to have relatively low tourism potential. The reserves are less accessible to the major centres than other CapeNature reserves, with no outstanding attractions or scenic features, and no established high volume tourism nodes or visitor activities nearby.

These factors require that the zonation and infrastructure development plan of the VNRC reflects that broadly, current use is appropriate and should be retained. No sensitive features are identified that impose problems or constraints on current layout and use. Zones adhere to CapeNature's standard zonation scheme (Table 5.2) – please refer to this for full zone descriptions. The overall VNRC zonation is included in Figure 19, with the VNR zonation shown in Figure 20 and the detailed zonation for the VNR tourism, administration and management area is shown in Figure 21.

Development – Low Intensity Zone: The almost entirely non-natural or heavily degraded administrative complex is separate from the actual nature reserve, and provides adequate space to accommodate any foreseeable tourism development or management infrastructure. This zone includes the reserve administrative offices, which are accessible to public visitors and provide a reception desk facility.
The rondawels accommodation and associated hall and housing are indicated as a separate Development - Low Intensity Zone polygon, with this areas primary function to be supporting Environmental Education, outreach and youth development. Other use for tourism accommodation could be permitted at times when the facilities were not required for their environmental education function.

Development – Management Zone: Management infrastructure including primary stores and field ranger's offices are zoned Development – Management Zones to denote that these facilities need to be screened from tourism facilities and do not provide for public access.

Nature Access Zone: VNR itself currently primarily promotes and caters for day visitor access on foot and mountain bikes, with no overnight hiking trails, and little expectation of solitude. VNR comprise habitats that are Least Threatened, but also extremely poorly

represented in formal protected areas, and it is important that this Nature Access Zone does receive appropriate visitor education, control and infrastructure maintenance required to prevent environmental degradation.
The Boesmanskloof Trail is used as an overnight hiking trail, but as it allows up to 50 people per day, traversing in both directions, this trail route does not provide the expectation of solitude and lower maintenance requirements typical of hiking trails in Primitive Zones where access is restricted to small groups of 16 visitors or less per day.
Nature Access Zoning is therefore appropriate for the entire 1898 ha VNR, and a 50 m buffer along the 5.3 km of the Boesmanskloof Trail that traverses RSL (Figure 22).
Access Zoning not only guides visitor experience, but indicates that there is a higher requirement for intensive visitor and infrastructure management to prevent environmental degradation than in Primitive Zones.

Primitive Zone: The river and associated habitat at the administrative portion of VNR is mostly transformed and only partly rehabilitated. But nonetheless the natural remnants of Breede Alluvium Fynbos here are considered Endangered (National Gazette No 34809 of 09-December-2011, Volume 558 (Part 1 and 2 of 4) and very poorly conserved with some conservation value. In addition, development within river buffers should be avoided unless there is a strong motivation for doing so, and any development within 100 m of the river would likely be subject to NEMA Environmental Impact Assessment (EIA) authorisation requirements. Given the large area of transformed land available for development, a generous no-access Primitive Zone of over 200 m was therefore allowed to provide for riparian habitat protection and avoidance of any risk of flood risk to infrastructure. If a day trail route within this zone was required, and appropriately planned and assessed, all or part of the zone could be re-zoned to Nature Access as required, but no built infrastructure should be contemplated in this zone.
The RSL is either inaccessible, or would only cater for overnight hiking groups and is therefore appropriately zoned Primitive Zone.

Other Zones: The reserve has no areas with true Wilderness character and entirely natural viewshed, therefore no area is zoned *Wilderness Zone*. No Special Management Overlays for Species/Habitat or Heritage Protection are required to provide for special protection, as no features are at risk from current zoning, layouts or use. Any proposed infrastructure development, including firebreaks, should however be considered against the reserve Sensitivity Analysis and proper site evaluation.

Table 5.2: Guide to CapeNature Zones.

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

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

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

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

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

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

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

Zone	Zone Objective	Characteristics	Visitor Activities	Facilities / Infrastructure	Visitor Access	Management Guidelines
Development - Production	Commercial or subsistence farming. (only applicable to privately owned & managed Contract Nature Reserves)	Areas identified for production farming. Areas with extensive degraded or transformed footprints. Natural or semi-natural habitats only when use of these areas is supported by a bioregional plan and specialist site assessment.	May allow agri-tourism	Any agricultural infrastructure.	May allow agri-tourism	Agricultural best practise to support surrounding natural areas, particularly with regard to river and wetland buffer areas.
Development – Private Areas	Private dwelling and surrounds. (only applicable to privately owned & managed Contract Nature Reserves)	Private homestead. Areas with existing degraded or transformed footprints. Natural or semi-natural habitats only when use of these areas is supported by a bioregional plan and specialist site assessment.	n/a	Dwellings and private accommodation areas. Roads to access these.	No access by the public without permission from landowner.	Should have no negative impacts on the surrounding conservation area.

Protection Zones

Zone	Zone Objective	Characteristics	Visitor Activities	Facilities / Infrastructure	Visitor Access	Management Guidelines
Species / Habitat / Cultural Protection	***Users:*** This zone's primary purpose is conservation and research. Limited tourism use only if compatible with conservation objective. ***Conservation:*** Protection of species or habitats of special conservation concern. Restrict access to prevent disturbance and/or damage.	Larger areas where uncontrolled public access is undesirable due to presence of regionally critically rare and endangered fauna, flora, habitat. Typical example would be a seabird breeding colony, particularly for threatened species.	Research. Nature observation under strictly controlled conditions only if specifically noted.	Usually none, but footpaths and tracks to allow management access may be permitted. Where visitor access is permitted, strict access control infrastructure is required to delimit access routes, and if necessary screen visitors. I.e. hides, boardwalks, screened routes, and paths with railings may be appropriate.	Public / Tourism access normally not allowed. May be permitted under very tightly controlled conditions, to be determined per site.	***Visitor Management:*** Prevent visitor access or restrict numbers of visitors and allow for no-use rest periods if required. Infrastructure layout, design and construction must be designed and maintained to highest environmental standards. ***Conservation Management:*** Feature specific – as required. Prevent any negative impacts on identified feature/s. Consider removal and/or rehabilitation of non-essential infrastructure. ***Consumptive Use:*** Not compatible.

Special Management Overlays

Special management overlays provide an indication of areas requiring special management intervention within the above zones. Overlays would typically only be applied where zoning does allow visitor or management access, but special measures are required, particularly to ensure protection of important and sensitive features or sites. Overlays should include specific indication of permitted activities, access, facilities/infrastructure and management guidelines that differ from the rest of that zone. Overlay requirements can be flexible, adapted to the requirements of the feature/s they protect.

Overlay	Overlay Objective	Characteristics	Visitor Activities	Facilities / Infrastructure	Visitor Access	Management Guidelines
Cultural	Protection of localised identified important Cultural Feature.	Can overlap any zone. Permanent, temporary or temporal zone to manage important cultural or heritage features.	Specific activities dependent on ability to manage activity and feature in question.	Usually none, but specific infrastructure dependent on feature in question.	Specific access dependent on ability to manage access and feature in question.	Feature specific – as required.
Species / Habitat	Protection of localised identified important Biodiversity Feature	Can overlap any zone. Permanent, temporary or temporal zone to manage important and sensitive species and/or habitats. Typically only applied where visitor impacts are expected.	Specific activities dependent on ability to manage activity and feature in question.	Usually none, but specific infrastructure dependent on feature in question.	Specific access dependent on ability to manage access and feature in question.	Feature specific – as required.
Visual	Protection of sensitive view sheds and particularly for Wilderness Zone view sheds.	Can overlap any zone. Sensitive view sheds and particularly for areas within Wilderness Zone view sheds.	Specific activities dependent on ability to manage activity and feature in question.	No roads, firebreaks or buildings. No visible infrastructure. Trails may be appropriate.	Walking access likely to be appropriate.	Feature specific – as required.
Natural Resource Access	Access to identified sustainable consumptive use resources as per a resource management plant.	Can overlap any zone except Wilderness and Protection zones. Areas with identified natural resources formally assessed as not sensitive to harvesting and where an approved sustainable harvesting plan is in place.	Harvesting of identified resources.	None	Specific access dependent on feature in question.	Feature specific – as required.

Research is usually permissible in all zones, except Species/Habitat protection or Cultural Protection where it may be restricted. Research that requires destructive harvesting or manipulation of more than a few square metres of habitat should not be considered in any of the Protection overlays, except where research outputs are considered essential for management of that ecosystem, research cannot be done at an equivalent site elsewhere, and research results are certain to contribute substantially to management objective.

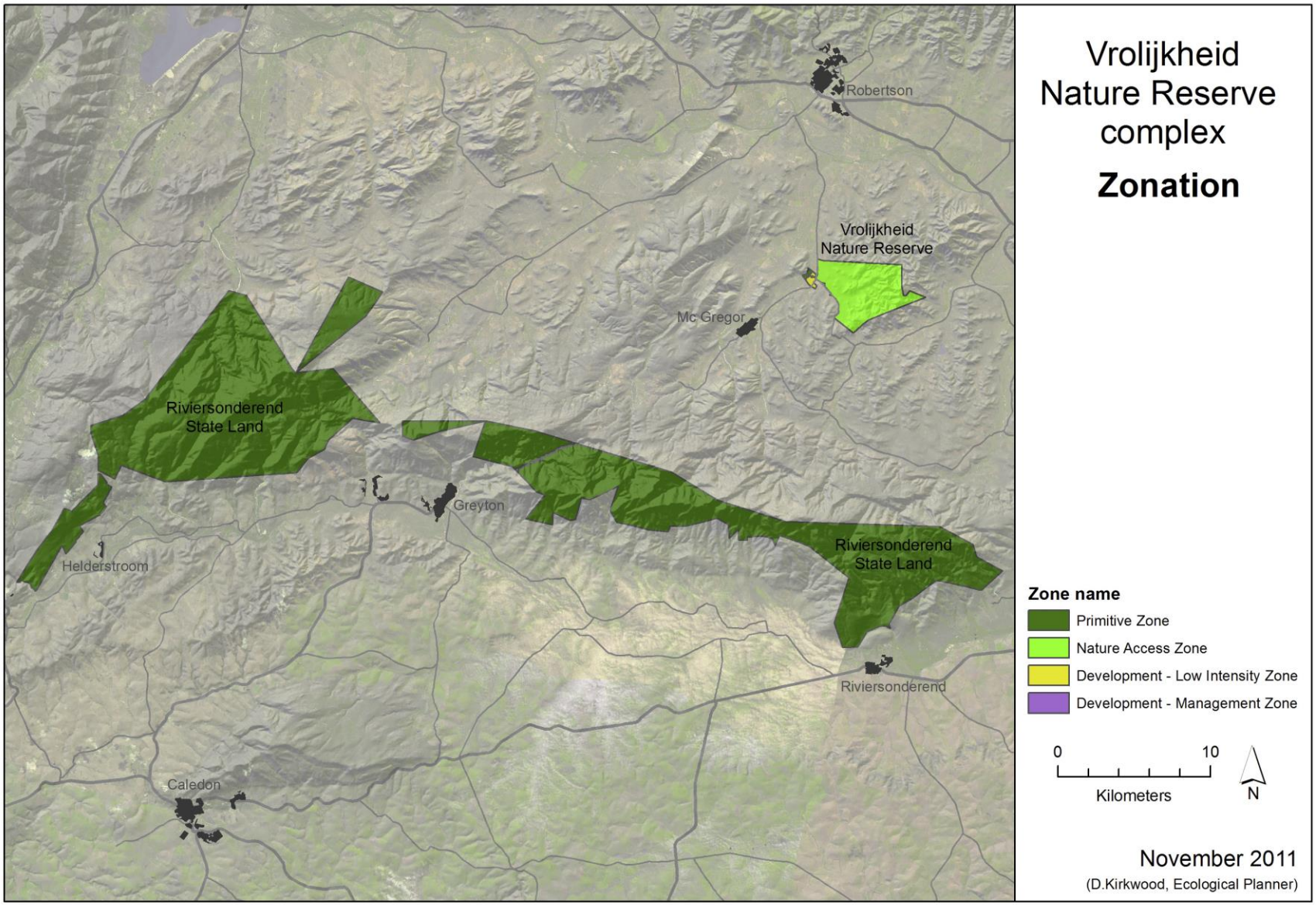

Figure 19: Zonation of the Vrolijkheid Nature Reserve Complex.

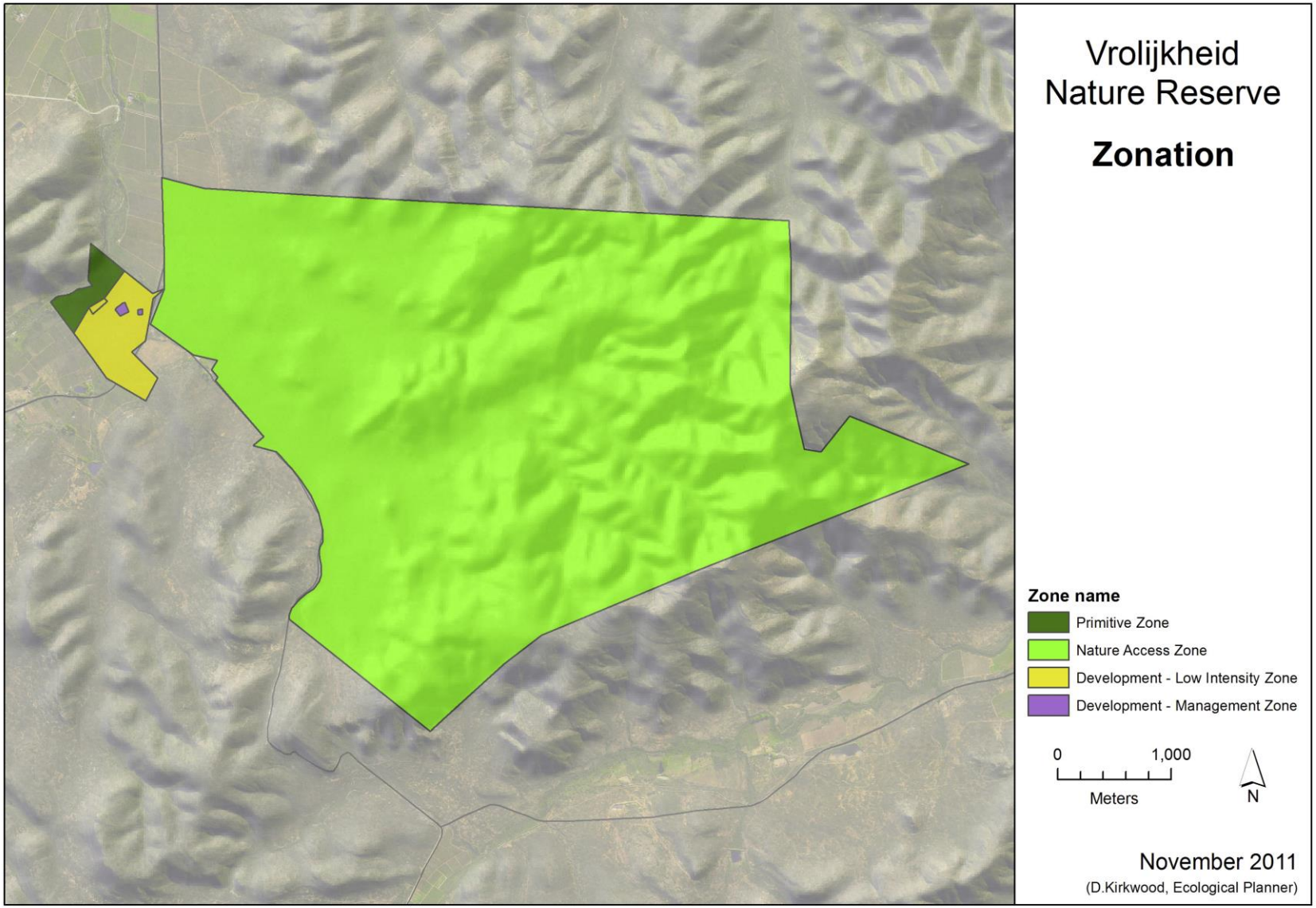

Figure 20: Zonation of the Vrolijkheid Nature Reserve.

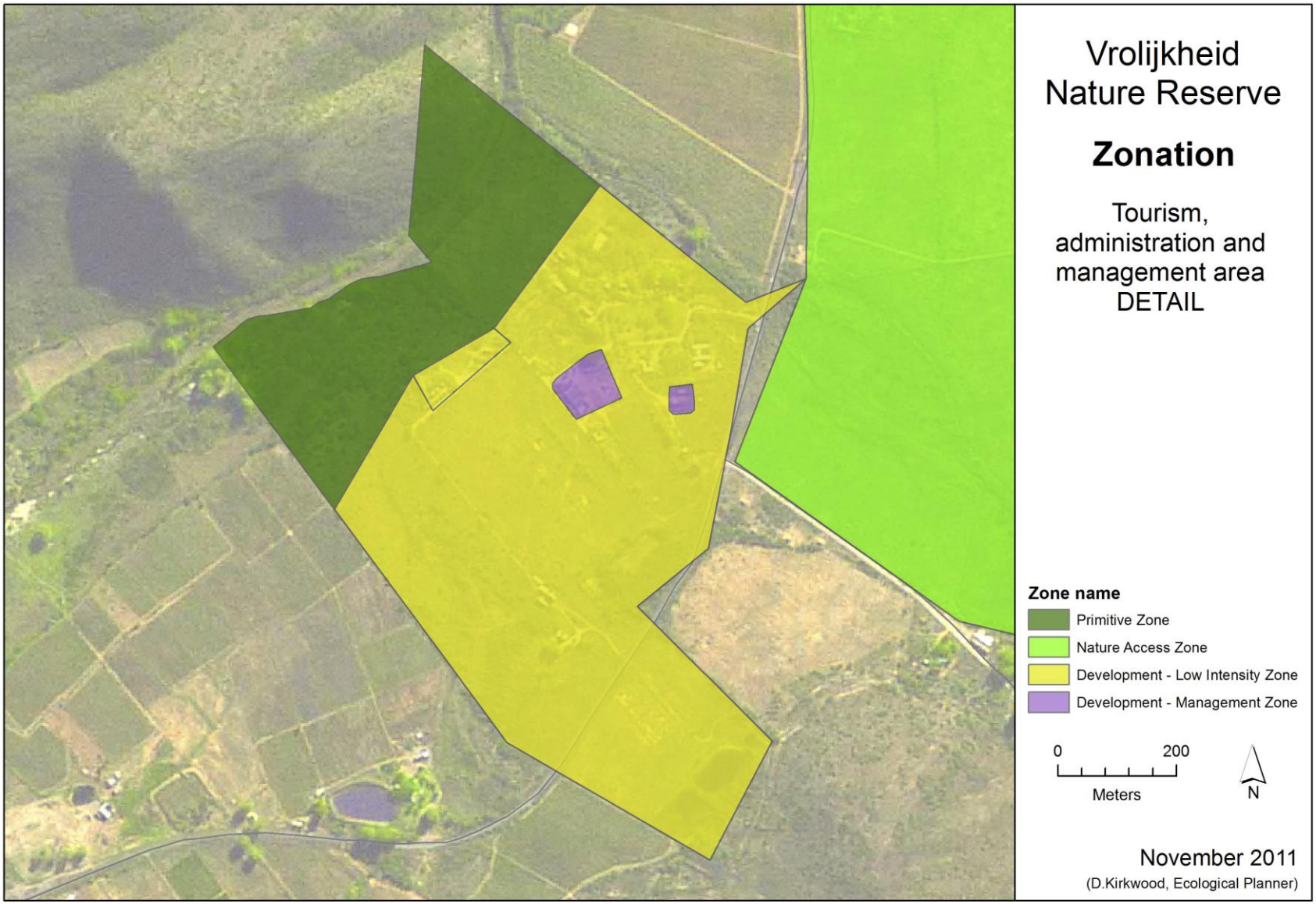

Figure 21: Zonation of Vrolijkheid Nature Reserve (Detail).

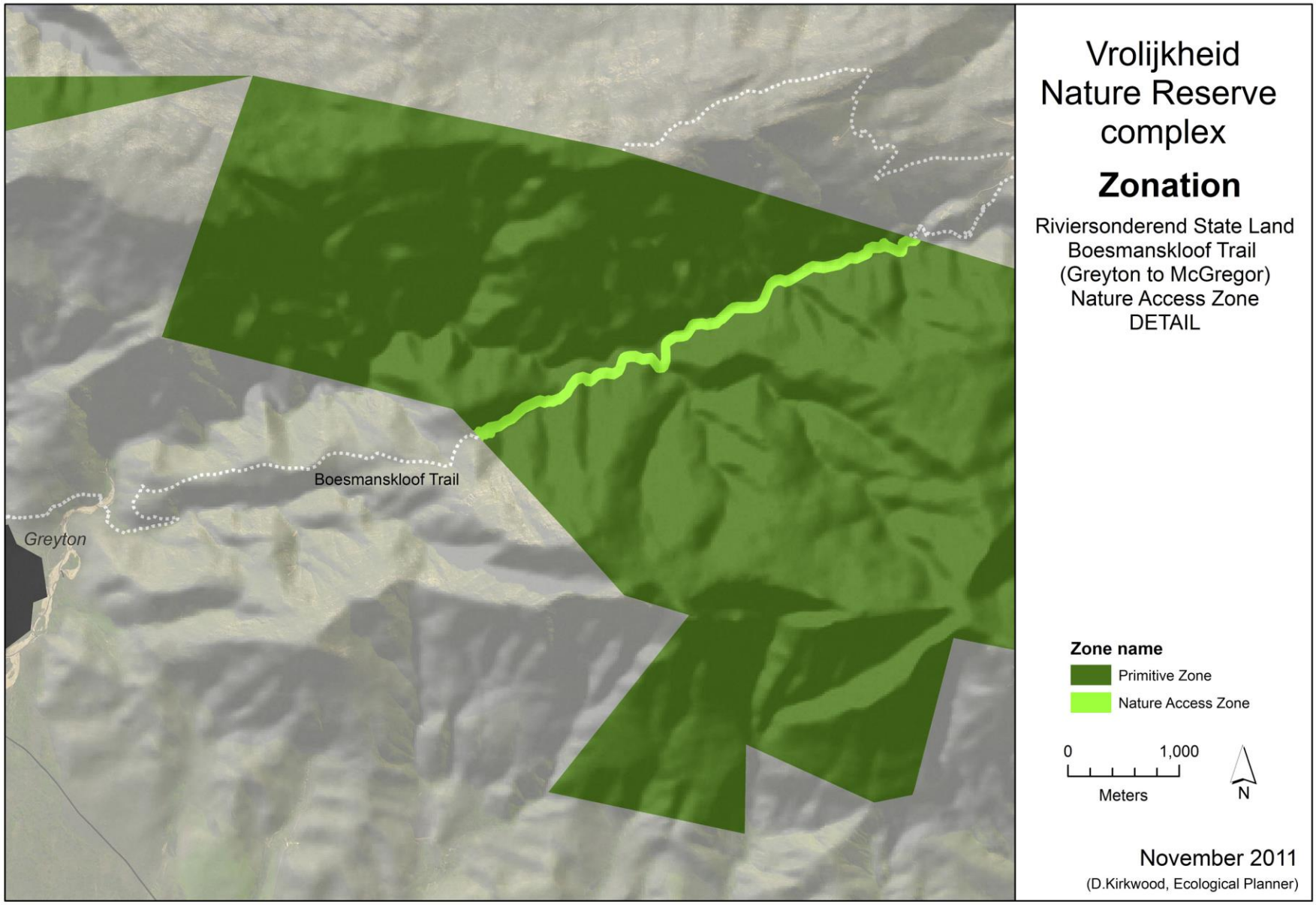

Figure 22: Zonation of the Riviersonderend State Land (Detail).

5.3 Access

Permits are required for access to VNRC. Public access points are shown for VNR and RSL in Figures 23 and 24 respectively.

Access to the VNR is via two gated public entrances. A “self-issue” permitting system is in place, next to the information centre and at the bird hide entrance. The public enter and complete the relevant permit and deposit the entrance fee into a deposit box. Gate times are sunrise to sunset.

There are two restricted access gates for management use. The office complex has an access controlled electric sliding gate that is open during office hours (07h30 – 16h00). The office complex has a helipad for emergencies and is used by WOF as a base of aerial fire fighting support.

Access to the RSL at Jonaskop is via a locked gate on the Sentec service road. Two existing servitudes are currently in place in the Elandskloof area off the RSL; one is an access road to a dam and the other a pipeline from the dam to the farms.

No commercial and concession activities or community use agreements are currently in place for the VNRC.

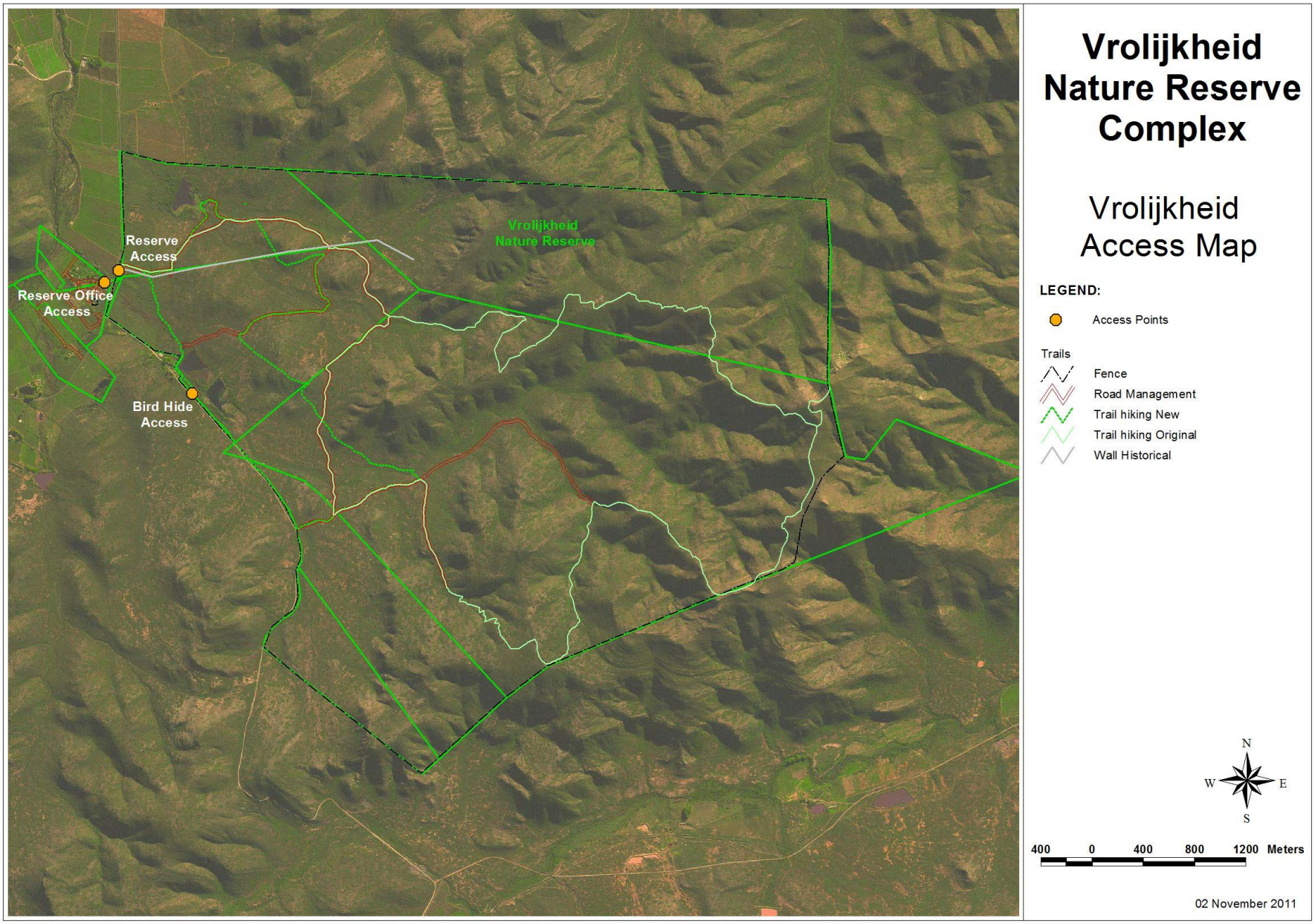

Figure 23: Access and tourism facilities for the Vrolijkheid Nature Reserve.

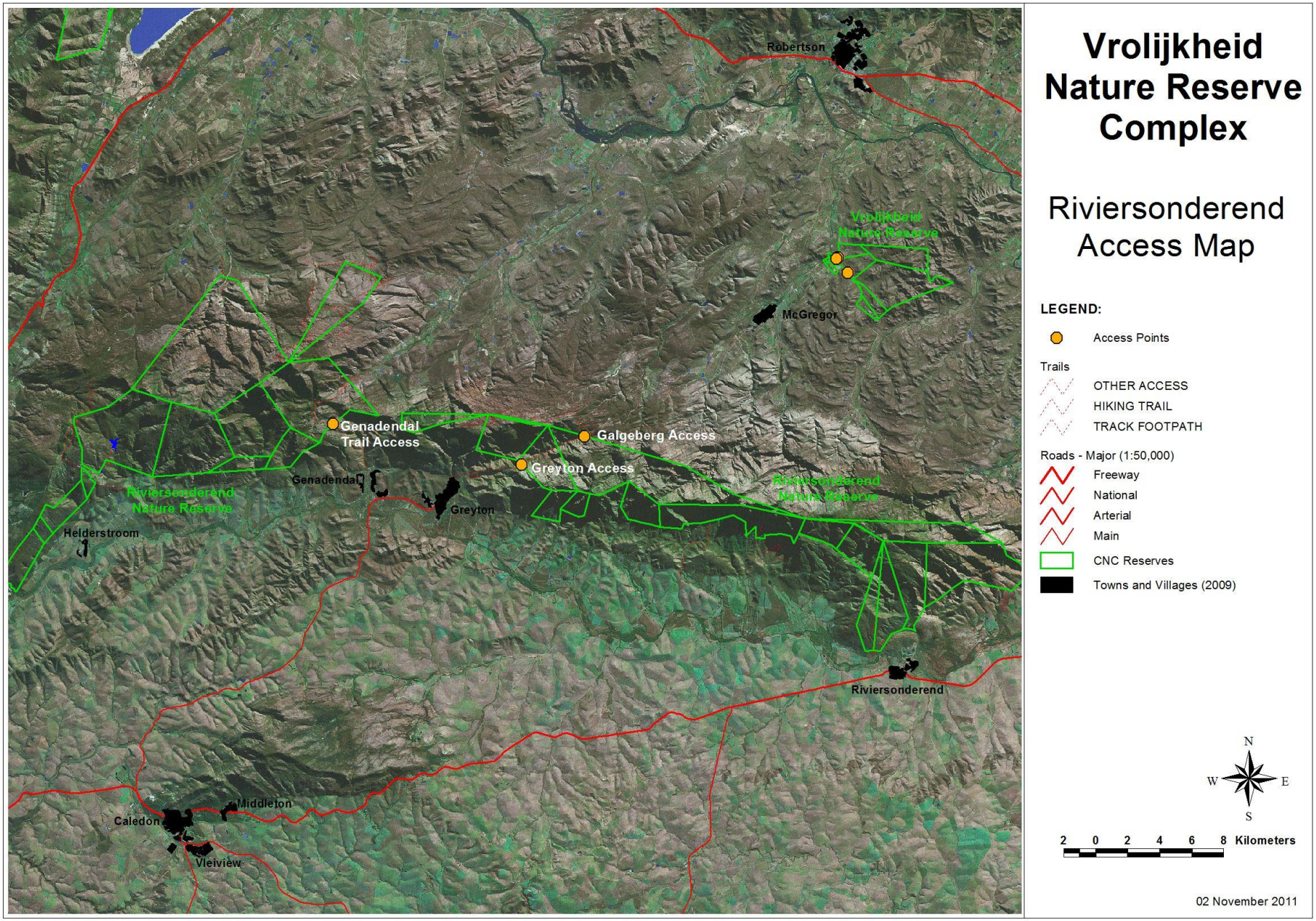

Figure 24: Access and tourism facilities for the Riviersonderend State Land.

5.4 Concept Development Plan

5.4.1 Long term development plan

Limited additional self-catering tourism development is planned. It is felt that the existing trails and recreational facilities can absorb the proposed additional capacity created by overnight visitors without significantly changing sense of place or visitor experience. Refer to Section 3.13, Figure 15 for orientation.

Only two tourism accommodation products exist at present providing a current capacity of 16 self-catering overnight visitors: Jakkalsgat Accommodation and House No. 8 (see Figure 15), each with four bedrooms, sleeping a maximum of two per bedroom.

A recent independent tourism feasibility study for VNR (Siyengo 2011) indicates that use of some existing structures for tourism can provide access, would not run at a loss, and would likely generate a small profit. However, development of new, custom built infrastructure would be unlikely to generate acceptable return on investment.

It is not required from an operational perspective that staff stay on the station, and currently many of the houses are leased to non-CapeNature tenants and these houses can be utilised by CapeNature for other purposes if required.

Therefore it is proposed that in 2012-2013 the five thatched houses (Figure 15 ['B']), Hunter's Quarters (Figure 15 ['D']), and the Manor House (Figure 15 ['C']) be upgraded for use as tourism accommodation providing a maximum possible total additional capacity of 34 overnight guest. It is noted that as these units are not known to have previously been used for tourism accommodation, that a NEMA EIA Basic Assessment process and approval is likely to be triggered by this change of use if this area is considered part of the proclaimed VNR, even where no expansion of existing structures is required.

Table 5.3: Proposed infrastructure to be converted to self-catering tourism use

Description	Number of units	Number bedrooms each	Capacity
Two bedroom thatched cottages	2	4	8
Three bedroom thatched cottages	2	6	12
Manor House	1	6	6
Hunter's Quarters	1	8	8
			TOTAL 34

Tourism Infrastructure – access, roads and trails

No entirely new trails will be established in VNR although rerouting of sections of footpaths may be undertaken to reduce long-term environmental impacts where appropriate.

RSL Primitive Zoning could allow for development of further hiking trails and overnight accommodation, following appropriate Business Case evaluation and Environmental Assessment, and any authorisation required, but no specific plans for expansion or new trails are currently proposed.

Management Infrastructure – roads and trails

The existing management and tourism track, footpath and trail network provides adequate access for required management and monitoring activities.

Management Infrastructure – Offices, stores, garages and workshops

Current infrastructure is considered adequate and no major management infrastructure development is proposed at present. It is important to note that the management infrastructure at the VNR administrative complex is currently not optimally located. Structures are scattered across the area, and likely to significantly degrade tourism experience. Also, on-going unnecessary time and travel costs will arise from multiple short trips between management buildings and offices. While current and proposed use for the next five year period does not justify changes to layout and significant costs involved, in the event that tourism or other development were to be significantly expanded or upgraded, layout of infrastructure and location of Development – Low Intensity vs. Management zones should be reconsidered, aiming for creation of a compact management centre, adjacent to the road and well screened from tourism infrastructure.

Decommissioning of obsolete infrastructure and site rehabilitation

No road closures are envisaged in the VNRC.

It is noted that any infrastructure development may require environmental authorisation in terms of NEMA EIA regulations and other legislation , and no activity may proceed without written evaluation of the requirements, and if necessary, any necessary authorisations.

SECTION 6: RESERVE EXPANSION STRATEGY

6.1 Protected Area Expansion

6.1.1 Introduction

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

The strategy aims to guide expansion priorities which contribute towards meeting national and provincial biodiversity targets [2] and national and provincial protected area targets[3]

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

6.1.2 Spatial Focus

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

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

6.1.3 Protected Area Expansion Mechanisms

Several mechanisms are available for the expansion of protected areas in order to meet both biodiversity and protected area targets and are linked to land ownership and tenure.

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

Table 6.1 is an extract from the National Protected Area Expansion Policy (South African National Biodiversity Institute and Department of Environmental Affairs 2010) and is relevant to CapeNature.

Table 6.1: Mechanism for protected area expansion

Mechanism	Implementation options	Land ownership and tenure
1. Declaration of public land available for conservation	i) Allocate unvested / unallocated national state land to the conservation agency	State (national)
	ii) Re-allocate national state land from a responsible national organ of state to the conservation agency	State (national)
	iii) Lease national state land under communal tenure to the conservation agency	State (national) Communal tenure
	iv) Dispose of provincial state land to the conservation agency	State (provincial)
	v) Allocate, sell, lease or contract non-state, public land to the conservation agency	Non-state public land (local authorities, public entities, government enterprises)
2. Acquisition of land	i) Land donation	Private
	ii) Land purchase	Non-state public land Private land
	iii) Property lease	State (provincial) Private land State (national) under communal tenure
	iv) S23 Contract nature reserve / protected environment with title deed restrictions	Private land
3. Negotiation of contractual arrangements with landowners	i) Contract nature reserve / protected environment	Private land State (national) under communal tenure Non-state public land
4. Regularizing the protected area status of existing conservation areas within the informal conservation area system.	i) Statutory informal conservation areas	Private land State (national) State (provincial) Non-state public land
	ii) Non-statutory informal conservation areas	Non-state public land Private land

6.1.4 CapeNature's Strategic Approach to Protected Area Expansion in the Western Cape

6.1.4.1 Spatial Focus

The Conservation Action plan (CAP) map is the primary informant to the expansion priorities for CapeNature. This product is supported by IBL and the Fine-Scale Plans. These plans are all biodiversity driven and CapeNature will unreservedly pursue priorities based on biodiversity net gain. Marine priorities which are adjacent to existing terrestrial areas or protected islands will be prioritised accordingly. Other marine / terrestrial interfaces e.g.

estuaries will be considered in the priority evaluation process as informed by relevant biodiversity conservation plans not listed above.

Properties which have cultural, archaeological and paleontological features will also be evaluated in the context of biodiversity first.

6.1.4.2 Primary Mechanisms for CapeNature

The following mechanisms which address the various landownership scenarios for properties which are identified will be used by CapeNature for the immediate future:

i. Declaration of Provincial Nature Reserves on state owned land / sea or island.
    a. CapeNature as management authority
    b. Co-management agreement with another organ of state
    c. Another organ of state delegated as management authority
ii. Declaration of S23 Nature Reserves on private land as per the stewardship protocol.
iii. Biodiversity Agreements (including those with “in perpetuity” title deed restrictions usually also zoned Open Space III Nature Reserve).
iv. Declared Protected Environments (preferably with title deed restrictions in perpetuity or at least 30 years).
v. Donation of land which contributes significantly to both biodiversity and protected area targets.
vi. Purchase of land of biodiversity significance either with state or donor funds.

6.1.4.3 Implementation Phases

a. Annual Expansion plan spatially depicted per Area or conservation region;
b. Five Year Plan (revised at end of MTEF three year cycle); and
c. 20 Year Plan.

6.1.4.4 Planning and Implementation Review Protocol

Annual and 5-year Protected Area Expansion plans at Area level will be reviewed by an appropriately constituted panel. This is in order to verify biodiversity and other strategic gains and to consolidate a provincial plan for CapeNature for executive approval. All sites identified for protected area expansion will be assessed using the appropriate site review process these site assessments will be evaluated by the Protected Area Expansion Review Panel (appropriate management and scientific representation being a pre-requisite). A site assessment protocol will be provided (using refinements from the draft land acquisition policy and the stewardship site assessment template as well as protected areas and their expansion by other agencies e.g. SANParks and Department of Environmental Affairs (DEA): Oceans and Coast and Department of Agriculture, Forestry and Fisheries (DAFF).

6.1.5 Financial Plan for Protected Area and Buffer zone expansion

Should CapeNature be the management authority of a stewardship site as per agreement with the private landowner then the details of this budget should be reflected in the respective

management plan whether it is an extension of one of CapeNature's own reserves or a Nature Reserve in its own right which will require a management plan approved by the Provincial Minister: Environmental Affairs and Development Planning.

6.2 Buffer zones

The term "buffer zone" is widely used in the context of the conservation of biodiversity, and is usually used to denote some sort of spatial protection mechanism. The configuration and extent of, and "restrictions" applied to a particular buffer zone may vary considerably depending on the attributes that require protection, and the nature of the "threat/s".

World Heritage Sites (WHS) are designed to recognise and protect areas of "Outstanding Universal Value" (OUV) to humanity, both cultural and natural. Biosphere Reserves are designed to conserve for use by mankind, the diversity and integrity of biotic communities within natural and semi-natural ecosystems and to maintain genetic diversity; to provide areas for research and facilities for research and training. Thus the difference is that WHS have to have OUV and Biosphere Reserves may not. Both however have "buffer zones".

WHS "buffer zones" are clearly delineated area(s) outside a World Heritage property but adjacent to its boundaries which contribute to the protection, management, integrity, authenticity and sustainability of the OUV of the property. Although World Heritage "buffer zones" are not regarded as part of the inscribed World Heritage property, their boundaries and relevant management approaches are evaluated, approved and formally recorded at the time they are proposed by a State Party. Where "buffer zones" are defined, they should be seen as an integral component of the State Party's commitment to the protection and management of the World Heritage property. The functions of the buffer zone should reflect the different types and levels of protection needed to protect the outstanding universal value of the World Heritage property. Biosphere Reserve "buffer zones" are typically arranged concentrically around the core areas to which they provide protection by restricting potentially detrimental activities and promoting wise utilisation.

Due to the importance and distribution across the landscape of the biodiversity of the Cape Floristic Region several "buffering mechanisms" have been developed to ensure the long term persistence of both pattern and process, as well to provide mitigation for Global Climate Change. These "buffering mechanisms" are often overlapping, always mutually supportive and continuously evolving and expanding. These buffering mechanisms include but are not restricted to, declared private mountain catchments areas, biosphere reserves, corridor initiatives, stewardship agreements and critical biodiversity areas (both terrestrial and aquatic). It is from these "buffer zones" that most, but not all, stewardship sites are likely to come. It is also important to bear in mind that local development plans need to take into account the buffering requirements of protected areas.

The RSL is nominated as a WHS and the surrounding private catchment area will serve as a buffer zone. The declared private mountain catchment surrounding the RSL acts as a buffer and regular interactions with these landowners to promote sound integrated catchment management practices, specifically focused on invasive alien vegetation, fire and erosion management.

6.3 Expansion Opportunities

The CapeNature Protected Area Expansion Strategy document describes an implementation plan and explicit spatial targets for the next 5 year period for the Biodiversity Stewardship Programme. It also describes the current approach to land acquisition, and how explicit spatial targets and a funding and implementation strategy will be developed for this mechanism. The CapeNature Protected Area Expansion Strategy and Implementation Plan therefore provide a provincial framework for an integrated and coordinated approach to:

- the expansion of Protected Areas to allow for the protection of biodiversity and persistence of ecological services; and
- the securing of landscape corridors to facilitate climate change adaptation.
- Three focus areas for expansion include:
- Wolfendrift Annex will connect VNR to the Breede River; and
- Genadendal Moravian Church land and adjacent Communal land will expand the RSL into the endangered Renosterveld Lowlands.
- The farm Wilde Paarde Berg, private Mountain Catchment Area which gives access to Jonaskop and is also the site of intensive climate change research done by SANBI. Jonaskop, part of a CBA, is also a well know botanical “hotspot” in the Fynbos with a great variety of species, many of them endemic.

PART 3

SECTION 7: STRATEGIC IMPLEMENTATION FRAMEWORK

7.1 Management Programmes

7.1.1 Legal Status and Reserve expansion

The VNRC comprises the following:

- Vrolijkheid Provincial Nature Reserve established as a Provincial Nature Reserve in terms of Section 6 the Nature Conservation Ordinance, 1974, on 10 December 1976 and proclaimed in the Provincial Gazette by Proclamation No. 409/1976;
- The boundaries of the Nature Reserve were amended in terms of Section 6 the Nature Conservation Ordinance, 1974, on 16 September 1991 and proclaimed on 1 October 1991 in the Provincial Gazette by Proclamation No. 75/1991;
- Riviersonderend Mountain Catchment Area declared as The Riviersonderend Mountain Catchment Area in terms of Section 2 of the Mountain Catchment Act, 1970 (Act 63 of 1970), on 9 October 1981 and proclaimed in the Government Gazette by Proclamation No. 2121/1981;

Riviersonderend State Forest declaration information is being sourced.

7.1.2 Legislation

- National Environmental Management: Protected Areas Act, (Act No. 57 of 2003) (NEM: PAA)
- National Forest Act, (Act No. 84 of 1998)
- Mountain Catchment Areas Act, (Act No. 63 of 1970)
- Nature Conservation Ordinance, (Ordinance No. 19 of 1974)

All parcels of land of the VNRC need to be consolidated and awarded secure conservation status in terms of the NEM: PAA.

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

- Special Nature Reserves, National Parks, Nature Reserves (including Wilderness Areas) and Protected Environments
- World Heritage Sites
- Specially protected Forest Areas, Forest Nature Reserves and Forest Wilderness Areas declared in terms of the National Forests Act, (Act No. 84 of 1998)
- Mountain Catchment Areas declared in terms of the Mountain Catchment Areas Act, (Act No. 63 of 1970).

Section 12 of the NEM: PAA, recognises a protected area which immediately before this section took effect was reserved or protected in terms of provincial legislation for any purpose for which an area could in terms of this Act be declared as a nature reserve or protected

environment, must be regarded to be a nature reserve or protected environment for the purpose of this Act, including Provincial Nature Reserves established in terms of the Nature Conservation Ordinance, 1974.

7.1.3 Guiding Principles

- Reserve management will ensure the nature reserve is awarded secure legal status according to the Protected Areas Act.
- Reserve management will ensure that the nature reserve boundaries are clearly demarcated and known to local residents.
- Reserve management shall identify and prioritise parcels of land, public and private, to be incorporated into the nature reserve through an on-going systematic, defensible and socially acceptable procedure in accordance with the CapeNature Protected Area Expansion Strategy and Implementation Plan 2010-2015.
- Reserve management shall strive to seek the incorporation of identified land parcels at the lowest possible financial, social and ecological net cost to the nature reserve.
- Reserve management shall continue to work together with private, public, and communal landowners, to enable the donation, purchase and contracting-in of conservation worthy land into the nature reserve in accordance with the Cape Nature Protected Area Expansion Strategy.
- Reserve management shall, with the co-operation of stakeholders, strive to prevent any fragmentation of the nature reserve and of areas that have been identified for inclusion into the nature reserve.

7.1.4 Management Actions

Refer to Table 7.1

7.1	LEGAL STATUS AND RESERVE EXPANSION				
Objective 6	**To ensure the conservation of ecosystem processes and the implementation of the Protected Area Expansion Strategy in the Vrolijkheid Nature Reserve Complex.**				
Key Deliverables	**Management/Monitoring Activities**	**Responsibility**	**Indicators**	**Timeframe**	**Reference to Existing Procedures**
1. The VNRC has secure permanent legal conservation status in terms of NEM: PAA.	• Formalise and consolidate the legal status of State Forest and Mountain Catchment Areas on State land. • Declare state land under the NEM: PAA. • List the protected areas on the Protected Areas Register as required by NEM: PAA.	Director: Operations, Law Administration Manager, Programme Manager: Stewardship	The VNRC is legally secure.	Year 1-2	Provincial Notices, Provincial Gazettes, DEA Management Plan Guidelines, National Norms and Standards for Management of Protected Areas, METT-SA, copies of title deeds, diagrams, noting sheets and proclamations
2. The VNRC boundary is known and appropriately demarcated and secure (Subject to funding).	• Survey boundaries for inclusion in proclamations (Refer to Table 7.2). • Demarcate boundaries and ensure that these are known by both the reserve management and the neighbouring community. • Address any boundary related conflicts.	Conservation Manager, Law Administration Manager.		Year 1-2	Title Deeds and diagrams.
3. To consolidate all possible land within the VNRC, as well as other identified conservation-worthy areas adjacent to and contiguous with the reserve as identified. (Subject to funding).	• Ensure Riviersonderend State Land included in the CFRPA World Heritage Site extension nomination is proclaimed in terms of World Heritage Convention Act (Act No 49 of 1999). • Identify potential stewardship agreements with the surrounding land owners in line with CapeNature PAES. • Maintain relationships with existing agreements and future agreements.	Conservation Services Manager Conservation Manager, Scientific Manager: Biodiversity	Hectares added to the conservation estate (TBD).	Year 1-5	CapeNature Protected Area Expansion Strategy and Implementation Plan 2010-2015; Extension nomination for the Cape Floral Region Protected Areas World Heritage Site.

Budget Allocation	**Development**	
	Operation (5 Year Forecast)	R 479 829.45

7.2 Regional Integrated Planning and cooperative Governance

7.2.1 Legislation

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

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

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

7.2.2 Guiding Principles

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

7.2.3 Management Actions

Refer to Table 7.2.

7.2	REGIONAL INTEGRATED PLANNING AND COOPERATIVE GOVERNACE				
Objective 4	**To ensure sound governance and implementation of policies, plans, systems, strategies, procedures and agreements for the management of the Vrolijkheid Nature Reserve Complex.**				
Key Deliverables	**Management/Monitoring Activities**	**Responsibility**	**Indicators**	**Timeframe**	**Reference to Existing Procedures**
4. The VNRC is integrated into land-use planning outside of the nature reserve.	• Integrate with the SDFs and IDPs of the district (Cape Winelands and Overberg) and local municipalities (Langeberg, Breede Valley and Theewaterskloof). • Ensure VNRC is included on the SDFs and IDPs.	Conservation Manager, Area Manager, Community Conservation Manager.	The protected area is integrated into land-use planning outside of the protected area	Year 1-5	
5. Water-use planning outside the VNRC takes into account the objectives of the nature reserve.	• Attend regular meetings with Vrolijkheid Water Users Association and BOCMA.	Conservation Manager		Year 1, on-going	
6. Establish a functioning Advisory committee for the VNRC.	• Identify Stakeholders (including the Friends of Vrolijkheid, Greyton Nature Reserve Advisory Board and Genadendal Conservation Forum) and initiate stakeholder participation processes in line with the CapeNature Stakeholder Participation Process. • Appoint an independent facilitator to manage the stakeholder participation process. • Establish a Protected Area Advisory Committee (PAAC) for the VRNC. • Develop and apply a Terms of Reference for involvement of stakeholders in strategic decision-making. • Attend and participate in PAAC meetings.	Community Conservation Manager, Conservation Manager, Area Manager	Advisory committee for the VNRC has been established, is functioning and effective.	Year 1	Ref Section 10.1.3; Draft regulations for proper the administration of nature reserve (2009). CapeNature Stakeholder Process, PAAC TOR, VNRC integrated management plan.

Budget Allocation	**Development**	
	Operation (5 Year Forecast)	R719 744.17

7.3 Ecosystem and biodiversity management

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

7.3.1 Legislation

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

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

7.3.2 Guiding Principles

- Biodiversity resources must be conserved at community and species levels in the long term and the reduction of population levels of individual species, or the extinction of any species, as a result of human activity, must be prevented.
- Adequate management attention must be given to maintaining and improving, where relevant, the status of endemic, rare or threatened species (species of conservation concern).
- The unintentional introduction into the nature reserve of all plants or plant materials must be controlled.
- An active adaptive management, minimum intervention approach, based on scientific evidence will be followed.
- The quantity, quality and reliability of water required to maintain the ecological functions on which humans depend shall be reserved so that the human use of water does not individually or cumulatively compromise the long term sustainability of aquatic and associated ecosystems.
- Water quality and quantity are interdependent and shall be managed in an integrated manner, which is consistent with broader environmental management approaches.

- Water quality management options shall include the use of economic initiatives and penalties to reduce pollution; and the possibility of irretrievable environmental degradation as a result of pollution shall be prevented.
- Water resource development and supply activities shall be managed in a manner which is consistent with the broader national approaches to environmental management.
- Water management issues must be integrated into local catchment management authorities' activities.
- The knowledge base available to the reserve will be promoted and developed to support applied and other research.
- Research cooperation and collaboration partnership will be established and maintained.
- All research carried out on CapeNature nature reserves require permits.

7.3.3 Threats to Biodiversity and Ecosystems

- Climate change
- Unplanned and uncontrolled fires, larger fires occurring and no mosaic veld age distribution
- Continued invasion of alien vegetation from adjacent land, inaccessible areas and poor use of biological control
- Legal status of State Forest not finalised
- Illegal use of natural resources
- Loss of habitat around VNR limits expansion possibilities
- Increased surface water abstraction from the catchment
- Negative impacts from uncontrolled tourist activities

7.3.4 Management Actions

Refer to Table 7.3.

7.3	ECOSYSTEM AND BIODIVERSITY MANAGEMENT				
Objective 2 **Objective 3**	**To conserve biodiversity on the Vrolijkheid Nature Reserve Complex by implementing strategic ecological programmes and related actions.** **To conserve and manage the Succulent Karoo vegetation on the Vrolijkheid Nature Reserve Complex.**				
Key Deliverables	**Management/Monitoring Activities**	**Responsibility**	**Indicators**	**Timeframe**	**Reference to Existing Procedures**
7. Compile and Ecological Plan of Operation and Ecological Matrix for VNRC.	• Compile an Ecological Plan of Operations to support the Ecological Matrix. • Collate all relevant monitoring and research protocols and data sheets to inform the Ecological Plan of Operations. • Develop and implement an approved Ecological Matrix for the VNRC. • Annually review the Ecological Matrix for VNRC.	Conservation Manager, Ecological Coordinator, Regional Ecologist	The VNRC will annually indicate an upward trend in METT-SA score. 100% of actions identified in the integrated auditing system will be implemented.	Year 1 - 5	Ecological Matrix, Ecological Plan of Operations.
8. A biodiversity resource inventory for the VNRC is in place.	• Prioritisation of species for inclusion on the Ecological Matrix. • Compile and implement the Ecological Matrix. • Collect specimens (where relevant) and submit to Scientific Services. • Analyse data, re-assess and implement adaptive management strategies.	Conservation Manager, Ecological Coordinator, Regional Ecologist		Year 1 – 5	Baseline data collection and monitoring manual (2010).
9. A monitoring programme for the VNRC is being implemented.	• Review monitoring protocols. • Conduct population monitoring for the following species: Black Eagle, Black Harrier, Secretary Bird, Riverine Rabbit, Breede River redfin and ostriches on VNR. • Conduct annual line transect monitoring on VNR. • Identify monitoring needs of the reserve in consultation with Scientific Services. • Establish indicators for monitoring. • Implement monitoring activities as per the Ecological Matrix. • Report on monitoring activities as per the Ecological Matrix. • Analyse data, re-assess and implement adaptive management strategies. • Implement SABAP and NERCS monitoring.	Conservation Manager, Ecological Coordinator, Regional Ecologist		Year 1 - 5	Baseline data collection and monitoring manual (2010)

Key Deliverables	Management/Monitoring Activities	Responsibility	Indicators	Timeframe	Reference to Existing Procedures
	• Collect climate data on the VNRC.				
10. A research programme for the VNRC is being implemented.	• Identify research needs for the reserve. • Develop and implement an applied research programme for the reserve in consultation with Scientific Services. • Results of research projects are fed back to the management of the reserve. • Results are used to adapt management of the nature reserve where relevant.	Conservation Manager, Ecological Coordinator, Regional Ecologist		Year 1 - 5	CapeNature Research Permit Application Protocol, IUCN Guidelines.
11. The VNRC contributes to the maintenance of ecosystem services.	• Design and implement appropriate fire (Refer to Table 7.5) and alien invasive management (Refer to Table 7.6) programmes. • Conduct a roads and footpath assessment.	Conservation Manager, Ecological Coordinator, Regional Ecologist, Catchment Manager, Programme Managers		Year 1 - 5	AVM Working for Water Systems, WIMS, ICM Management systems, WFW and ICM Annual Plan of Operations, Ecological Planning Matrix, Ecological Plan of Operations.
12. Prevent and mitigate soil erosion on the VNRC.	• Conduct a soil erosion assessment. • Map and ensure photo's available. • Compile an erosion maintenance plan. • Monitor the affectivity of the erosion control mitigation. • Monitor cost effectiveness of maintenance. • Monitor site recovery.	Conservation Manager, Ecological Coordinator, Regional Ecologist, Catchment Manager, Programme Managers		Year 1 - 5	Ecological Planning Matrix, Ecological Plan of Operations.
13. Mitigate the impacts of groundwater abstraction on the reserve.	• Establish and monitor the rest level for the borehole on VNR.	Conservation Manager		Year 1 - 5	Ecological Planning Matrix, Ecological Plan of Operations.
14. Conserve and protect rivers.	• Determine the 1:100 year flood line of the Keisers River for VNR to prevent any developments within the flood line. • Conduct SASS 5 and fish surveys.	Scientist: Aquatic, Scientific Technician		Year 1 - 5	Ecological Planning Matrix, Ecological Plan of Operations.

Key Deliverables	Management/Monitoring Activities	Responsibility	Indicators	Timeframe	Reference to Existing Procedures
15. Rehabilitate and conserve wetlands.	• Identify and map all wetlands and seeps. • Identify wetlands and seeps potentially impacted by groundwater abstraction. • Investigate appropriate monitoring strategy for wetlands and seeps, where appropriate. • Identify and prioritise wetlands that require future rehabilitation (use appropriate norms and standards to rehabilitate). • Ground truth NFEPA and CBA wetlands.	Scientist: Aquatic, Scientific Technician		Year 1	Ecological Planning Matrix, Ecological Plan of Operations.
16. The protection of flora species of conservation concern.	• Identify priority species of conservation concern and localities of populations on the VNRC. • Conduct monitoring of priority species of conservation concern populations on the Reserve i.e. completion and submission of CREW forms. • Verify CREW data on priority species of conservation concern with field visits. • Limit activities that may impact on priority species of conservation concern. • Maintain the VNRC Herbarium.	Manager, Ecological Coordinator, Regional Ecologist, Catchment Manager, Programme Managers		Year 1 - 5	Ecological Planning Matrix, Ecological Plan of Operations, Eco-audits.
17. Conservation of Threatened and Endemic Fauna.	• Carry out baseline data collection on VNRC.	Conservation Manager, Wildlife Programme Manager and Regional Ecologist		Year 1 - 5	Ecological Planning Matrix, Ecological Plan of Operations.
18. Manage consumptive utilisation of biological resources.	• Database established indicating all utilised species and the extent of their use within the reserve.	Conservation Manager, Community Conservation Manager, Botanist, Regional Ecologist		Year 1 - 5	CapeNature Policy on consumptive utilisation (2007).

Budget Allocation	**Development**	
	Operation (5 Year Forecast)	R 3 598 720.84

7.4 Wildlife Management

7.4.1 Legislation

- Western Cape Nature Conservation Ordinance, (Ordinance 19 of 1974)
- Regulations proclaimed in terms of the Ordinance, Provincial Notice 955 of 1975.

7.4.2 Guiding Principles

- Biodiversity resources of the nature reserve must be protected from illegal harvesting and unsustainable use.
- Reintroduction of species to the nature reserve is only considered if a species occurred historically and suitable habitat is still available on the reserve. Genetics of source populations is also taken into consideration to prevent 'contamination'.
- Lethal control may be used as a management tool in certain instances. This should be professionally done through a tender process. Species must be selected only through extensive research and knowledge of population dynamics.
- Damage causing wildlife/nuisance fauna shall be managed in a humane manner, through recommendation from CapeNature's Wildlife Advisory Committee and authorisation from CapeNature Executive.

7.4.3 Management Actions

Refer to Table 7.4.

7.4	WILDLIFE MANAGEMENT				
Objective 2	**To conserve biodiversity on the Vrolijkheid Nature Reserve Complex by implementing strategic ecological programmes and related actions.**				
Key Deliverables	**Management/Monitoring Activities**	**Responsibility**	**Indicators**	**Timeframe**	**Reference to Existing Procedures**
19. Manage escaped game from neighbouring properties (historical occurrences, extra-limital and alien species).	• Assess and implement appropriate measures to remove ostriches on the VNR.	Reserve Manager, Conservation Services Manager, Wildlife Programme Manager	Removal of all ostriches on the VNR.	Year 1- -5	CapeNature Wildlife Advisory Committee.
20. Manage damage causing/ nuisance fauna.	• Comment on permit applications from neighbouring landowners to remove game. • Control dogs on reserve. • Manage pets kept by staff on the nature reserve.	Conservation Manager, Conservation Services Manager	N/A	Year 1 - 5	

Budget Allocation	**Development**	
	Operation (5 Year Forecast)	R 479 829.45

7.5 Fire Management

The overall goals of fire management in the Western Cape are as follows:

- The maintenance of the optimum levels of biodiversity in all regions managed either directly or indirectly by CapeNature.
- The conservation of all natural processes within the Fynbos Biome.
- The conservation of hydrological systems that deliver a sustained yield of stream flow in all Mountain Catchment Areas.
- The reduction of fire risk and hazard in all protected and neighbouring areas.

The aims of fire management include:

- The maintenance of fire as a vital ecological process in fynbos ecosystems.
- The integration of Fire Management into programmes aimed at the reduction and control of invasive alien plan species.
- The minimisation of the occurrence and extent of ecologically undesirable or otherwise potentially damaging wildfires.

7.5.1 Legislation

- National Veld and Forest Fire Act, (Act No. 101 of 1998)
- National Forest Act, (Act No. 84 of 1998)

7.5.2 Guiding Principles

- Fire management in CapeNature is governed by the Fire Management Policy and Guidelines Version 6 (Erasmus, 2010).
- Prescribed burning will be used when and where appropriate to achieve ecological goals.
- Unplanned wildfires that occur in areas where they could have undesirable ecological effects will be suppressed or controlled where possible.
- Fires that threaten neighbouring property will also be controlled where possible.
- Unplanned wildfires that occur in areas where they will do no ecological or other harm can or may be allowed to burn, provided that safety concerns and the relevant threshold of potential concern (TPC) are not compromised.
- Fire protection measures and resources (equipment, trained personnel, fire-breaks etc.) must be maintained at optimal levels of suitability and affectivity at all times.
- Reserve management will implement integrated fire and alien vegetation management to limit the proliferation of fire adapted alien vegetation and facilitate the alien vegetation control programmes.
- Reserve management will establish partnerships with neighbours and other role-players through agreements and membership of Fire Protection Associations (FPA).

7.5.3 Management Actions

Refer to Table 7.5.

7.5	FIRE MANAGEMENT				
Objective 1	**To conserve the Riviersonderend Mountain Catchment Area focusing on the management of fire and aliens.**				
Key Deliverables	**Management/Monitoring Activities**	**Responsibility**	**Indicators**	**Timeframe**	**Reference to Existing Procedures**
21. Reduce / avoid the spread of fires across the Reserves borders and minimize accidental/deliberate fires within the reserve.	• Update and implement Fire Protection and Reaction Plans including risk assessments. • Construct priority firebreaks according to schedule. • Assess appropriateness of current firebreak network and re-align where appropriate. • Negotiate firebreak agreement with neighbours where relevant. • Fuel reduction around infrastructure to minimise risk. • Conduct a pre-fire season fire audit.	Conservation Manager , Community Conservation Manager, Ecological Coordinator, Regional Ecologist, relevant Programme Managers, Catchment Manager	Reserve has a minimum pre-fire season audit score of 90% by Year 5. The distribution and range of veld age is within the limits of acceptable change (TBD).	Year 1- 5	Fire Management Policy and Guidelines; Fire break register; ICM APO
22. To allow for natural fire processes to occur without negatively impacting on safety and infrastructure.	• Complete Fire Reports. • Map all fires and capture on GIS. • Conduct de-briefing sessions after each fire and maintain records.	Conservation Manager , Area Manager, relevant Programme Managers, Catchment Manager		Year 1 - 5	Fire Management Policy and Guidelines. Fire break register, Pre-season Audits
23. Establish and maintain partnerships to improve fire management on the VNRC.	• Attend FPA meetings. • Maintain WOF base.	Conservation Manager		Year 1 - 5	Fire Management Policy and Guidelines; FPA operational rules and guidelines.
24. Determine and implement thresholds of potential concern for fire management on the VNRC.	• Establish a series of fixed point photograph monitoring plots. • Conduct permanent *protea* plot monitoring. • Conduct post fire regeneration monitoring. • Set and monitor TPC's.	Conservation Manager, Ecological Coordinator, Regional Ecologist,		Year 1 - 5	Fire Management Policy and Guidelines; Baseline data collection and Monitoring Manual; Ecological Matrix.
25. Wildfires as a result of human negligence are reduced.	• Establish a fire awareness programme for tourists, local communities and staff.	Community Conservation Manager		Year 1 - 5	Fire Management Policy and Guidelines; Fire wise Implementation Guidelines

Budget Allocation	**Development**	
	Operation (5 Year Forecast)	R 2 399 147.23

7.6 Invasive and Non-invasive Alien Species Management

7.6.1 Legislation

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

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

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

A status report must include -

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

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

7.6.2 Guiding Principles

- Maintain the integrity of local species biodiversity by prohibiting and, as far as possible, preventing the introduction of alien and invasive species.
- Discourage the keeping of domestic animals within and from entering the nature reserve from surrounding areas. Removal of alien and invasive species must be performed in a cost-effective manner.

7.6.3 Management Actions

Refer to Table 7.6.

7.6	INVASIVE AND NON-INVASIVE ALIEN SPECIES MANEGEMEMNT				
Objective 1 **Objective 2** **Objective 3**	**To conserve the Riviersonderend Mountain Catchment Area focusing on the management of fire and aliens.** **To conserve biodiversity on the Vrolijkheid Nature Reserve Complex by implementing strategic ecological programmes and related actions.** **To conserve and manage the Succulent Karoo vegetation on the Vrolijkheid Nature Reserve Complex.**				
Key Deliverables	**Management/Monitoring Activities**	**Responsibility**	**Indicators**	**Timeframe**	**Reference to Existing Procedures**
Invasive Alien Flora					
26. Eradicate alien and invasive species within the VNRC on an on-going basis.	• Identify and map all alien and invasive flora within the VNRC or threatening the nature reserve. • Integrated Catchment Management informs both fire and alien vegetation management. • Attend regional ICM Meetings. • Compile a Management Unit Clearing Plan using the IAP prioritisation map. • Prioritise removal in collaboration with Working for Water (WFW).	Conservation Manager, Project Manager, Area Manager, Ecological Coordinator, Regional Ecologist, Relevant Programme Managers, Catchment Manager	100% of hectares IAP's cleared annually versus planned. % total area cleared where IAP's have been controlled to a maintenance phase by Year 5 (TBD).	Year 1 - 5	AVM & ICM Management systems
27. Monitoring of alien vegetation on the VNRC informs adaptive management strategies.	• Records are kept to enable the following calculations: - Total Clearing costs per NBAL; - Amount of herbicide utilised; - Person day/hectare.	Conservation Manager, Project Manager		Year 1 - 5	AVM Policy
28. Implement biological control as a method of IAP management.	• Map and update Bio-control sites. • Implement new and supplement existing biological control. • Monitor success of bio control. • Maintain records. • Identify and map sites.	Conservation Manager, Project Manager, Ecological coordinator.		Year 1 - 5	AVM Policy
29. Prevent the introduction of alien and invasive species from neighbouring landowners.	• Conduct awareness programs with neighbouring landowners.	Community Conservation Manager		Year 1 - 5	Working for Water and Dept. Agriculture Landcare Guidelines
Invasive Alien Fauna					
30. Prevent the introduction of alien and invasive species	• Implement the guidelines with regards to domestic animals (pets) within the reserve. • Remove all domestic stock from the nature reserve on an ad hoc basis, when stock enter the reserve from neighbouring landowners. • Prevent tourists to bring any domestic animals into the nature reserve. • Prevent introduction of alien fish species into all river systems.	Conservation Manager	Successful implementation of control program.	Year 1 - 5	CN Policy on domestic animals on nature reserves.

Key Deliverables	Management/Monitoring Activities	Responsibility	Indicators	Timeframe	Reference to Existing Procedures
31. Control alien and invasive species within the VNRC on an on-going basis	• Identify alien fauna occurring on the reserve. • Monitor populations of alien fauna, if necessary. • Implement control measures where appropriate for mallard ducks, feral cats and other identified alien fauna. • Measure success of control methods utilised. • Conduct regular meetings with stake holders	Conservation Manager, Conservation Services Manager, Wildlife Programme Manager	Implementation of policy	Year 1 - 5	CN Policy on domestic animals on nature reserves

Budget Allocation	**Development**	
	Operation (5 Year Forecast)	R 997 868.07

7.7 Cultural Heritage Resource Management

7.7.1 Legislation

- National Heritage Resource Act, (Act No. 25 of 1999) which has repealed the National Monuments Act, (Act No. 28 of 1969)
- World Heritage Convention Act, (Act No. 49 of 1999)

7.7.2 Guiding Principles

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

7.7.3 Management Actions

Refer to Table 7.7.

7.7	CULTURAL HERITAGE RESOURCE MANAGEMENT				
Objective 7	**To conserve natural and cultural heritage on the protected areas of the Vrolijkheid Nature Reserve Complex.**				
Key Deliverable	**Management/Monitoring Activities**	**Responsibility**	**Indicators**	**Timeframe**	**Reference to Existing Procedures**
32. To protect cultural heritage resources.	• Compile a cultural heritage resource inventory for the VNRC. • Identify and GPS bushmen paintings on RSL.	Conservation Manager	METT-SA	Year 1 - 2	Ecological Matrix, Ecological Plan of Operations, Baseline data collection and monitoring manual (2010).
33. Cultural Heritage resources are managed to meet the protected area objectives.	• Maintain the current condition of the historical stone wall running through VNR.	Conservation Manager		Year 1 - 2	
34. Monitor cultural heritage resources.	• Develop monitoring protocols to monitor impacts on cultural resources.	Conservation Manager		Year 1 - 5	Ecological Matrix, Ecological Plan of Operations, Baseline data collection and monitoring manual (2010).
35. Collaboration with external partners ensures the protection and preservation of cultural heritage resources.	Arrange awareness programmes with stakeholders	Community Conservation Manager		Year 1 - 5	
36. Management interventions for cultural heritage resources.	• The required permission of any maintenance/renovations to buildings that are older 50 years will be obtained. • Actions to minimise impacts are to be implemented where appropriate. • Actions to be implemented in case of impact.	Conservation Manager; Community Conservation Manager		Year 1 - 2	

Budget Allocation	**Development**	
	Operation (5 Year Forecast)	R 719 744.17

7.8 Law Enforcement and Compliance

7.8.1 Legislation

- National Environmental Management Act, (Act No. 107 of 1998)
- National Environmental Management: Protected Areas Act, (Act No. 57 of 2003)
- National Environmental Management: Biodiversity Act, (Act No. 10 of 2004)
- Threatened or Protected Species (ToPS) Regulations, 2007
- Western Cape Nature Conservation Ordinance, (Ordinance 19 of 1974)
- Regulations proclaimed in terms of the Ordinance, Provincial Notice 955 of 1975.
- Proclamation 357 of 1972, Fish and Rivers Regulations.

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

7.8.2 Guiding Principals

- Reserve management and personnel will ensure that all law enforcement actions are executed in a Fair, Reasonable and Objective manner, with due respect for Human Rights and in accordance with applicable Law.
- Reserve management and personnel will identify and prioritise sensitive areas and species and prioritise law enforcement patrols accordingly, in order to ensure that resources are allocated in the most efficient and effective manner.
- Reserve management and personnel will partner with local law enforcement role-players, such as SAPS and local authorities in order to effectively utilise resources to combat biodiversity crime within the nature reserve.
- Reserve management will liaise with adjacent communities, in conjunction with relevant components, in order to identify and prioritise areas of natural and cultural heritage significance, in order to effectively manage impacts and to prevent illegal activities in these areas.

7.8.3 Management Actions

Refer to Table 7.8.

7.8	LAW ENFORCEMENT AND COMPLIANCE				
Objective 4	**To ensure sound governance and implementation of policies, plans, systems, strategies, procedures and agreements for the management of the Vrolijkheid Nature Reserve Complex.**				
Key Deliverables	**Management/Monitoring Activities**	**Responsibility**	**Indicators**	**Timeframe**	**Reference to Existing Procedures**
37. Law enforcement for the VNRC is effective.	• Train all staff to have a working knowledge of all legislation applicable to their function and mandate. • Capacitate VNRC staff adequately to enforce legislation within the organisation's mandate and does so effectively. • Designate staff formally to enforce the relevant legislation. • Designate appropriate staff as environmental management inspectors. • Equipment staff to enable them to do law enforcement effectively. • Adequate law enforcement support from other sections of the organisation is provided to the nature reserve staff. • Identify specific relevant training and train staff. • Attend local policing forum meetings in priority areas in order to build partnerships with local law enforcement.	Reserve management, Conservation services, BCU programme	Number of peace officers trained and appointed Number of EMI's trained and appointed. Number of sea fisheries officers trained and appointed.	38. Year 1-5	Criminal Procedure Act 51 of 1977; Bill of Rights; Constitution
39. Protection systems are in place and operating effectively.	• Control legitimate access by implementing the self-issue permit system on VNR and CRS on RSL. • Engage adjacent communities in order to promote the reserve, to build relationships and to identify priority areas. • Conduct awareness raising activities with adjacent communities in order to raise awareness concerning reserve and biodiversity conservation. • Perform regular routine patrols are performed in all identified priority areas. • Complete all compliance documentation properly and retain as means of verification. • Report all relevant cases via BMS and submit documents as	Reserve management, Conservation services, BCU programme		Year 1 - 5	

Key Deliverables	Management/Monitoring Activities	Responsibility	Indicators	Timeframe	Reference to Existing Procedures
	verification.				

Budget Allocation	Development	
	Operation (5 Year Forecast)	R 1 199 573.61

7.9 Infrastructure Management

7.9.1 Legislation

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

7.9.2 Guiding Principles

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

7.9.3 Infrastructure Maintenance

7.9.3.1 Roads/Jeep Tracks

Refer to section 3.13. The existing service roads and jeep tracks are maintained by the ICM project on a regular basis and on an ad-hoc basis by staff and WOF team after incidents of severe damage by erosion.

7.9.3.2 Trails

Refer to section 3.13. These trails are maintained by the ICM project on a two year basis and on ad-hoc basis by staff and WOF team after incidents of severe damage by erosion.

7.9.3.3 Buildings

Refer to section 3.13. The buildings and pumps are maintained by the Department Transport and Public Works. Minor maintenance is carried out by reserve staff.

7.9.3.4 Fences

VNR is fenced by 1.4 m stock proof fencing. Some sections are new and other sections are in excess of 50 years old and in urgent need of replacement. Fencing on the RSL is insufficient and/or absent. In some areas there are still remnants of old farm stock fences. The lack of proper fencing results in difficulties in managing access into the RSL. Fences are maintained by the ICM project when funds are available but ad-hoc maintenance is carried out by the Field Rangers when necessary.

7.9.3.5 Firebreaks

No firebreaks are required at the VNR due to the vegetation type. CapeNature firebreaks on the RSL are situated on the declared private mountain catchment boundary. The firebreak is continuous around the entire private mountain catchment boundary. These firebreaks are maintained on a four yearly rotation with ICM funding. Firebreaks are maintained with ICM funding. Currently no contribution from adjacent landowners is received for making firebreaks.

7.9.3.6 Environmental Management

No waste disposal sites are available within the nature reserve and waste disposal is done at registered dumping sites at Robertson and McGregor respectively.

In general available water quantity is mostly sufficient to support infrastructure at different sites where domestic water is required. Water pumping equipment is, however, not in all instances suitable to cope with the demand.

Water systems
Refer to section 3.13.

Dams
Refer to section 3.13.

Potable water
Refer to section 3.13. The water is stored in reservoirs and purified by a filtration plant that is maintained through Department Transport and Public Works annually Chlorine blocks are

replaced when necessary by reserve staff and is monitored weekly. The reservoirs are cleaned and maintained annually by reserve staff.

Sewage systems
Septic tanks are used at the office and official accommodation and there is a Biolytic system at the youth centre. It is envisaged that the septic tanks will be replaced with a more environmentally acceptable system in the future.

Herbicide and fuel stores
Dedicated fuel store was built in 2010 at the workshop complex according to building standards. No dedicated herbicide store exists and this is an urgent requirement.

7.9.3.7 High Sites

Access to the Jonaskop high site on the RSL is controlled by two locked gates. No servitudes are registered for access to the high site. No CapeNature communication equipment is present on the high site.

7.9.3.8 Signage

All existing hiking trails, bird hides and visitor facilities are marked with appropriate signage. Braille Trail signage was erected along the existing Heron Trail

7.9.4 Management Actions

Refer to Table 7.9.

7.9	INFRASTRUCTURE MANAGEMENT				
Objective 4	**To ensure sound governance and implementation of policies, plans, systems, strategies, procedures and agreements for the management of the Vrolijkheid Nature Reserve Complex.**				
Key Deliverables	**Management/Monitoring Activities**	**Responsibility**	**Indicators**	**Timeframe**	**Reference to Existing Procedures**
40. Ensure maintenance of infrastructure and equipment.	• Map all infrastructure, compile and update infrastructure register and map. • Ensure all infrastructure is recorded in the U-AMP register • Assess if staff facilities are adequate to perform critical maintenance activities. • Ensure that there is adequate operational equipment as required for operational management purposes. • Maintain infrastructure as scheduled in registers to ensure upkeep and prevent degradation. • Ensure equipment is maintained in good working condition. • Liaise with Public Works where required.	Conservation Manager, Area Manager.	U-AMP work schedule	Year 1 - 5	Priority work schedule and minor works schedule
41. Align all infrastructure to the conservation development framework and zonation.	• Assess infrastructure development appropriateness to the CDF. • Compile a re-alignment plan. • Implement the re-alignment plan.	Conservation Manager, Ecological Coordinator, Regional Ecologist, Catchment Manager, Tourism Manager		Year 1 - 2	
42. Roads/Jeep Tracks and Trails are managed to minimise impact on the environment.	• Conduct a roads and footpath assessment • Compile maintenance plan. • Re -align road network and align with the CDF. • Rehabilitate where necessary. • Monitor use and impact • Monitor cost affectivity of maintenance.	Conservation Manager, Ecological Coordinator, Regional Ecologist, Catchment Manager, Tourism Manager	ICM policy	Year 1 - 5	ICM policy and guidelines
43. Buildings are effectively maintained.	• Compile and maintain a building register. • Provide Department of Transport and Public Works with works list to reflect maintenance requirements. • Ensure that maintenance or new infrastructure is appropriately planned (EMP), approved by the QEM and if required the Appropriate EIA completed. • Ensure energy saving and environmentally sound options are being implemented by Department of Transport and Public Works (Green Building principals).	Conservation Manager, Ecological Coordinator, Regional Ecologist, Catchment Manager, Tourism Manager	U-AMP work schedule	Year 1 - 5	Priority work schedule and minor works schedule
44. Maintain fences according to legislative requirements.	• Conduct on going fence assessment and maintenance as dictated by the VNR ICM APO to ensure its efficacy	Conservation Manager, Project Manager	Monthly reports, maintenance schedules, ICM	Year 1 - 5	ICM policy, ICM APO

Key Deliverables	Management/Monitoring Activities	Responsibility	Indicators	Timeframe	Reference to Existing Procedures
	and identify any impact.				
45. Environmental Management: Waste Disposal	• Transport waste including recycling material to municipal refuse site in McGregor.	Conservation Manager	Municipal regulations	Year 1 - 5	
46. Environmental Management: Water	• Maintain water works as scheduled in registers to ensure upkeep and prevent degradation. • Maintain two cement reservoirs on VNR. • Investigate additional water storage capacity for VNR. • Maintain optimum reservoir level. • Implement water saving devices and cost effective habits for tourism development infrastructure.	Conservation Manager, Tourism Manager		Year 1 - 5	
47. Environmental Management: Sewage	• Maintain working condition of the sewerage system on VNR.	Conservation Manager		Year 1 - 5	
48. Environmental Management: Energy	• Implement energy saving devices and cost effective habits for tourism development infrastructure.	Reserve management and tourism	Tourism policy	Year 1 - 5	
49. Environmental Management: Herbicide and Fuel Stores	• Maintain of herbicide and fuel stores.	Conservation Manager , Project Manager	AVM & SHE guidelines	Year 1 - 5	OHS System, WFW systems
50. Management of High Sites.	• Map all High sites and include with photos. • Monitor impacts.	Conservation Manager	Standard reserve operations	Year 1 - 5	
51. Signage is appropriate and effective to support management.	• Conduct a signage audit. • Compile a signage register with maintenance plan.	Conservation Manager , Tourism Manager	Standard reserve operations	Year 1 - 2	Policy on Signage

Budget Allocation	**Development**	
	Operation (5 Year Forecast)	R 479 829.45

7.10 Disaster Management

7.10.1 Legislation

- Disaster Management Act, (Act No. 57 of 2002)
- Occupational Health and Safety Act, (Act No. 85 of 1993)

7.10.2 Guiding Principles

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

7.10.3 Management Actions

Refer to Table 7.10.

7.10	DISASTER MANAGEMENT				
Objective 4	**To ensure sound governance and implementation of policies, plans, systems, strategies, procedures and agreements for the management of the Vrolijkheid Nature Reserve Complex.**				
Key Deliverables	**Management/Monitoring Activities**	**Responsibility**	**Indicators**	**Timeframe**	**Reference to Existing Procedures**
52. Disaster prevention and preparedness	• Conduct a risk assessment and identify areas of potential concern • Compile and implement disaster management plan for VNRC. • Engage and assist with disaster management units from municipalities. • Conduct an annual audit of disaster management plans and mitigation measure readiness. • Annual review and exercise of contingency and evacuation plans.	Conservation Manager, Area Manager, Community Conservation Manager, Tourism Officer.	As per policy guidelines	Year 1 - 5	
53. Disaster response.	• Train staff and NGOs to ensure capacity to manage and mitigate the effects of disasters. • Procure equipment for disaster response and mitigation. • Participate and assist district municipality disaster management structure. • Activate evacuation and contingency plans.	Conservation Manager, Area Manager, Community Conservation Manager, Tourism Officer.		Year 1 - 5	

Budget Allocation	**Development**	
	Operation (5 Year Forecast)	R239 914.72

7.11 People and Conservation

7.11.1 Legislation

- Constitution of the Republic of South Africa, (Act No. 108 of 1996)
- National Environmental Management Act, (Act No. 107 of 1998)
- National Environmental Management Biodiversity Act, (Act No. 10 of 2004)
- National Environmental Management: Protected Areas Act, (Act No. 57 of 2003)

7.11.2 Community Partnerships

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

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

7.11.3 Guiding Principles

- The Vrolijkheid Nature Reserve's contribution to the local and regional economy must be recognised and therefore will be seen as an important vehicle through which rural development and transformation is achieved.
- Promote the strong sense of ownership and empowerment amongst resident people and communities and ensure a strong supporting institutional base.
- The right to equality, a healthy environment and the right to information are to be guaranteed.
- Co-operative governance should take place between citizens and between different government departments.
- Benefits from biodiversity are to be fairly shared and the benefit flows to people in and around protected areas improved.
- The capacity of neighbouring communities should be developed in order to participate in protected area management.
- Equitable accessibility by all people to the nature reserve is to be ensured.
- Community based initiatives and partnerships shall promote and support economic and employment opportunities, particularly for local disadvantaged persons and communities.

7.11.4 Management Actions

Refer to Table 7.11.

7.11	PEOPLE AND CONSERVATION				
Objective 5 **Objective 8**	**To ensure appropriate benefits for local communities surrounding the Vrolijkheid Nature Reserve Complex.** **To develop appropriate Community Based Natural Resource Management (CBNRM) opportunities for the Vrolijkheid Nature Reserve Complex.**				
Key Deliverables	**Management/Monitoring Activities**	**Responsibility**	**Indicators**	**Timeframe**	**Reference to Existing Procedures**
54. Create access to the conservation economy through the implementation and management of appropriate initiatives and projects.	• Advertise tenders for AVM and ICM job creation projects • Create jobs through a range of projects: AVM, ICM, and Tourism. • Consult IDP for unemployment figures for communities adjacent to reserve • Adjudication of tenders • Complete reporting on EPWP database monthly.	Conservation Manager, Community Conservation Manager, Conservation Services Manager	Number of EPWP job opportunities (n). Number of EPWP full time equivalents (n). Number of people directly benefitting from Sustainable Livelihood Programmes (n) Number of person days employment created (n).	Year 1 -5	ICM SOP AVM SOP Supply chain policy
55. The VNRC provides community development opportunities through various capacity building interventions, linked to job creation opportunities.	• Implement training for contractors and workers in accordance with SMME processes.	Conservation Manager, Community Conservation Manager, Conservation Services Manager, SMME Manager.		Year 1-5	CapeNature Policy on consumptive utilisation (2007).
56. Manage consumptive utilisation of biological resources.	• Database established indicating all utilised species and the extent of their use within the reserve. • All requests to utilise resources from the VNRC will be deal with in terms of the CapeNature Policy on consumptive utilisation.	Conservation Manager, Community Conservation Manager, Conservation Services Manager		Year 1-5	CapeNature Policy on consumptive utilisation (2007).
57. The VNRC has spiritual or religious significance.	• Enable access to the VNRC for spiritual, cultural and traditional purposes will be allowed subject to permit conditions and with prior approval.	Conservation Manager, Community Conservation Manager, Conservation Services Manager	Number of persons accessing CapeNature protected areas for cultural, traditional, spiritual, and sustainable harvesting activities (n).	Year 1-5	Access Protocol as per the People and Conservation SOP.

Budget Allocation	**Development**	
	Operation (5 Year Forecast)	R 959 658.89

7.12 Awareness, Youth Development and Volunteers

Environmental education should be actively encouraged especially in the context of developing knowledge in protected area management, especially for school children from the area. Where possible, partnerships should be established with role players and interested parties to ensure that this takes place.

Facilitate youth and community development through environmental awareness and assist in developing the knowledge, skills, values and commitment necessary to achieve sustainable development.

7.12.1 Legislation

- Constitution of the Republic of South Africa, (Act No. 108 of 1996)
- National Environmental Management Act, (Act No. 107 of 1998)
- National Environmental Management Biodiversity Act, (Act No. 10 of 2004)
- National Environmental Management: Protected Areas Act, (Act No. 57 of 2003)

7.12.2 Guiding Principles

Focus awareness on the protection of the natural environment and sustainable use of natural resources:

- The image of CapeNature is to be promoted among local communities, provincial and national politicians and the public.
- Reserve management shall develop an interpretive and educational programme, which will provide each visitor with an interpretive experience that is enjoyable and inspirational, within the context of the nature reserves tangible resources and the values they represent.
- Reserve management shall provide both on- and off-site interpretive presentations and media, which facilitate a connection between the interests of the visitor and the meanings of the nature reserve.
- Educational Programmes must align with the National School Curriculum.
- Opportunities to participate in National Environmental Initiatives such as Arbor Day, and Water Week should be taken where appropriate.
- Reserve management will create an enabling environment that provides youth with opportunities for learning/training, personal growth and healing.
- The VNRC seeks to create an environment which contributes directly to the growth and development of responsible young citizens.
- Facilitate and promote the use of the natural environment for the development of youth.
- Environmental education activities will be restricted to peripheral / appropriate zones within the nature reserve.
- Promote the use of the VNRC as a place of self-discovery, personal growth, emotional healing, formal learning and adventure.
- Volunteers are encouraged to contribute to projects on the nature reserve.

7.12.3 Management Actions

Refer to Table 7.12.

7.12	AWARENESS, YOUTH DEVELOPMENT AND VOLUNTEERS				
Objective 5 **Objective 7**	**To ensure appropriate benefits for local communities surrounding the VNRC.** **To conserve natural and cultural heritage on the protected areas of the VNRC.**				
Key Deliverables	**Management/Monitoring Activities**	**Responsibility**	**Indicators**	**Timeframe**	**Reference to Existing Procedures**
58. Ensure awareness raising initiatives elevate awareness of the VNRC.	• Compile information and material on VNRC for dissemination and presentation on Environmental Awareness calendar days. • Collaborate with partners to arrange events on Environmental Awareness events, Commemoration of environmental calendar days and scheduled school activities. • Facilitate production of media releases. • Present talks, presentations when requested. • Conduct Environmental awareness activities on Open days.	Community Conservation Manager, Conservation Manager, Ecological Coordinator, Regional Ecologist, Scientific Manager: Biodiversity.	Number of learners provided with environmental education opportunities (n).	Year 1-5	People and Parks Action Plan, CapeNature Communications Policy, The Development of Educational Resources (Corporate Strategic Plan), Youth Development & Environmental Education Programme Strategic Plan.
59. Environmental education is provided to promote an understanding of biodiversity and the use of the natural environment as a vehicle for learning and development.	• Conduct informal EE programmes on the VNRC: Public Environmental awareness, School Environmental awareness and outreach • Develop and implement an education and awareness plan linked to the objectives of VNRC. • Raise the profile of the CFR World Heritage Site through linked awareness and education programmes. • Optimise utilization of Vrolijkheid Youth Centre	Community Conservation Manager, Conservation Manager, Ecological Coordinator, Regional Ecologist, Scientific Manager: Biodiversity.		Year 1-5	People and Parks Action Plan, CapeNature Communications Policy, The Development of Educational Resources (Corporate Strategic Plan), Youth Development & Environmental Education Programme Strategic Plan.
60. Volunteers actively assist in the management of the VNRC.	• Appoint and train volunteers (honorary rangers) to assist in access control. • Utilize the Friends of Vrolijkheid group for voluntary work on VNR.	Community Conservation Manager, Conservation Manager, Ecological Coordinator.	Number of volunteer hours worked (n).	Year 1-5	People and Parks Action Plan, CapeNature Communications Policy, The Development of Educational Resources (Corporate Strategic Plan), Youth Development & Environmental Education Programme Strategic Plan.

Budget Allocation	**Development**	

	Operation (5 Year Forecast)	R 959 658.89

7.13 Management Effectiveness

7.13.1 Legislation

- The Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996)
- Public Finance Management Act, (Act No.1 of 1999).
- National Environmental Management: Protected Areas Act, (Act No. 57 of 2003)
-
- Management effectiveness is further guided by the following documents:
- The White Paper on Transforming Public Service Delivery (Batho Pele White Paper) 1997
- Green Paper on National Performance Management (2009)
- Policy Framework for a Government-wide Monitoring and Evaluation System (2007)
- National Treasury Framework for Managing Programme Performance Information (2007)

7.13.2 Guiding Principals

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

As Protected Area management in the Western Cape is a mandate of CapeNature, all activities in this regard are embedded into the organisation's planning and review mechanisms.

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

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

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

7.13.3 Management Actions

Refer to Table 7.13.

7.13	MANAGEMENT EFFECTIVENESS				
Objective 4	**To ensure sound governance and implementation of policies, plans, systems, strategies, procedures and agreements for the management of the Vrolijkheid Nature Reserve Complex.**				
Key Deliverables	**Management/Monitoring Activities**	**Responsibility**	**Indicators**	**Timeframe**	**Reference to Existing Procedures**
61. Implement and maintain the METT-SA	• Conduct annual METT-SA assessments. • Monitor and improve METT-SA Score through the development of action plans and implementation thereof. • Report to DEA as per requirement for national evaluation of METT-SA scores.	Area Manager, Conservation Manager, Regional Ecologist, Ecological Coordinator, Programme Manager: Quality Management	The VNRC will annually indicate an upward trend in METT-SA score.	Year 1, on-going	METT-SA
62. Auditing systems inform management.	• Conduct CapeNature integrated auditing system. • Compile actions lists to address audit issues. • Track action list for progress. • Apply adaptive management strategies.	Area Manager, Conservation Manager, Regional Ecologist, Ecological Coordinator, Programme Manager: Quality Management		Year 1 - 5	METT-SA
63. A detailed work plan (APO) identifying specific targets for achieving management objectives is approved by CapeNature.	• Assess and prioritise actions from audit results into APO. • Compile APO in terms of actions identified in the Management Plan.	Area Manager, Conservation Manager, Regional Ecologist, Ecological Coordinator, Programme Manager: Quality Management		Year 1 - 5	APO
64. Progress reports are compiled.	• Compile quarterly BMS progress reports. • Progress reports as required.	Area Manager, Conservation Manager, Regional Ecologist, Ecological Coordinator, Programme Manager: Quality Management		Year 1 - 5	BMS report
65. Implement and review the Management Plan for the VNRC.	• Assess all PAM audit results and ensure adaptive management strategies are implemented. • Bi-annual assessment on progress of PAM actions. • Compile annual report on the status of implementation of the PAMP and submit to the MEC.	Area Manager, Conservation Manager, Regional Ecologist, Ecological Coordinator, Programme Manager: Quality Management		Year 1 - 5	

Budget Allocation	**Development**	
	Operation (5 Year Forecast)	R 1 199 573.61

7.14 Administration

7.14.1 Finance and Administration Management

7.14.1.1 Financial Sustainability

Nature Reserves within South Africa are expected to provide a high level of internal and public accountability for the use of resources through the use of accounting systems. The Reserve will have to have the support of external funding from international and local authority sources over and above support received from the provincial body and the income it generates itself.
Legislation

- Public Finance Management Act, (Act No.1 of 1999).

7.14.1.2 Guiding Principles

- Ensure that the nature reserve continually seeks improvements in the management of its financial resources and operations.
- Strive to develop a robust income base for the nature reserve from diverse sources, while conserving the integrity of its ecological, cultural, and scenic resources.
- Support initiatives aimed at increasing grant funding and donations to the nature reserve.
- Assess opportunities for donor funding within the nature reserve, evaluate appropriate donor funding organisations for projects, establish and manage contacts with such organisations and maintain relationships with potential and existing donor organisations.
- Seek, and where possible create, opportunities for economic empowerment and the involvement of Small, Medium and Micro Enterprises (SMMEs) in developing public private partnerships in commercial activities.
- Apply, and be subject to, sound and transparent financial policies and practices, and shall make available detailed information about its income, expenditure and budgets, as well as about the assumptions upon which such budgets are based.
- Financial management will be within the parameters of the PFMA, Treasury regulations and internal policies of CapeNature e.g. Supply Chain Management, delegation of powers etc.
- Charge appropriate fees for the use of the nature reserve's utilisable zones by tourists and operators.

7.14.1.3 Management Actions

Refer to Table 7.14.1.

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7.14.1	FINANCE AND ADMINISTRATION MANAGEMENT				
Objective 4	**To ensure sound governance and implementation of policies, plans, systems, strategies, procedures and agreements for the management of the Vrolijkheid Nature Reserve Complex.**				
Key Deliverables	**Management/Monitoring Activities**	**Responsibility**	**Indicators**	**Timeframe**	**Reference to Existing Procedures**
66. To ensure financial accountability in terms of the PFMA and the Treasury Regulations.	• Facilitate an annual internal audit of the nature reserve financial records. Internal audit report with findings and recommendations is tabled. • External audit report with findings and recommendations communicated. • Provide relevant financial information to reserve management. • An operational budget is allocated to fund the critical management needs of the nature reserve. • Cash flow management • Supply Chain Management • Relevant SCM reports. • Financial management practice enables efficient and effective protected area management. • Monthly management reports submitted to reserve management. • Acknowledgement of report by Conservation Manager. • Variance report signed and returned. • Reserve Management provide input to monthly cash flow forecast. • Signed and approved budget provided by 1 April.	Finance Manager, Conservation Manager	Percentage increase shown on revenue as a result of additional funding sourced. Annual increase in visitor numbers.	Year 1, on-going	Budgeting process; APO. SAP system; Supply Chain Management Act. Statements of GRAP.
67. Identify opportunities that are robust to create a diverse income base.	• Identify sources of potential income. • Maintain new and existing partnerships with external funders / stakeholders.	Conservation Manager, Financial Manager, Area Manager, Business Development, Foundation Manager		Year 1, on-going	National Treasury Regulations with regard to Donations, Sponsorships.
68. Fixed Asset Management	• To manage the assets of the reserve in accordance with the relevant legislation. • To ensure that all reserve assets are bar coded. • To ensure that all reserve assets are verified bi-annually. • To provide input into infrastructure asset management plan annually. • Fixed Asset Register is approved by	Conservation Manager, Finance Manager, Area Manager		Year 1, bi-annually	SOP's and policies. Statement of GRAP, UAMP guidelines.

Key Deliverables	Management/Monitoring Activities	Responsibility	Indicators	Timeframe	Reference to Existing Procedures
	the Conservation Manager. • Verification Report is approved by the reserve management. • Disposal of assets in line with policies. • GIAMA requirement is met annually. • Trip authorisation forms in place. • To manage CapeNature and Government Motor Transport assets in accordance with policy.				
69. Capacity Building among staff.	• Provide relevant financial and Administrative training to reserve staff.	Conservation Manager, Finance Manager		Year 1, on-going	SOP's and policies PFMA

Budget Allocation	**Development**	
	Operation (5Year Forecast)	R 1 919 317.78

7.14.2 Human Resource Management

7.14.2.1 Legislation

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

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

7.14.2.2 Guiding Principals

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

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

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

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

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

7.14.2.3 Management Actions

See Table 7.14.2.

7.14.2	HUMAN RESOURCE MANAGEMENT				
Objective 4	**To ensure sound governance and implementation of policies, plans, systems, strategies, procedures and agreements for the management of the Vrolijkheid Nature Reserve Complex.**				
Key Deliverables	**Management/Monitoring Activities**	**Responsibility**	**Indicators**	**Timeframe**	**Reference to Existing Procedures**
70. Ensure an adequately resourced staff complement on the reserve.	• Ensure current posts are filled and appointment of additional staff (subject to funding). • Ensure resourced (tools and skills) staff in line with approved budget to manage the nature reserve effectively (subject to funding). • Prioritise all critical posts for filling and develop a phased implementation plan in line with approved personnel budget. • Ensure on-going assessment of workloads (volumetric analysis) through interventions in consultation with the Organisational Development Unit of the Department of the Premier. • Employment relationship is in line with employment contract commitments. • Implement an Employment Well-being Programme	Conservation Manager, Area Manager, Executive Director Operations and Human Resources	Human resource capacity is adequate to manage the protected area effectively subject to funding	Year 1, on-going	Recruitment and Selection Policy; Standard Operating Procedures for Recruitment and Selection SA Constitution Labour Relations Act Basic Conditions of Employment Act Employment Equity Act Occupational Health & Safety Act Overtime Policy Equate System for Job Evaluation Leave Policy
71. Integrate and align organisational and employee performance.	• Implement a Performance Management System in place. • Ensure compliance with Code of Conduct.	Conservation Manager; Area Manager; Executive Director Operations HR and Chief Executive Officer	Performance agreements completed and signed for all employees. Performance appraisals completed for all employees.	Year 1, Annually	Performance Management Handbook Annual Plan of Operations Rewards Foundation Policy Disciplinary Code and Procedures (Managing poor performance) Code of Conduct
72. Skilled employees on the reserve	• Ensure and develop staff skills to perform according to job specification in the roles they occupy in line with mandatory legislative requirements. • Develop personal development plan for all staff on the reserve. • Roll out of personal development plan for all staff on the reserve. • Reflect capacity development interventions which are supported by mentorship and coaching agreements. • Conduct annual Skills audit.	Conservation Manager; Area Manager; HR and Employment Equity and Training Committees	Develop personal development plan for all staff on the reserve. Mentorship and coaching agreements. Implement Skills Plan according to priorities and budget availability	Year 1, Annually	Individual PDPs Mentorship strategy and toolbox Skills Development Act Training Policy Bursary Policy Internship Policy

Budget Allocation	**Development**	
	Operation (5 Year Forecast)	R 719 744.17

7.14.3 Occupational Health and Safety Management

7.14.3.1 Legislation

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

7.14.3.2 Guiding Principals

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

7.14.3.3 Management Actions

Refer to Table 7.14.3.

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

Budget Allocation	**Development**	
	Operation (5 Year Forecast)	R 719 744.17

7.14.4 Risk Management

7.14.4.1 Legislation

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

7.14.4.2 Guiding Principals

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

7.14.4.3 Management Actions

Refer to Table 7.14.4.

7.14.4	RISK MANAGEMENT				
Objective 4	**To ensure sound governance and implementation of policies, plans, systems, strategies, procedures and agreements for the management of the Vrolijkheid Nature Reserve Complex.**				
Key Deliverables	**Management/Monitoring Activities**	**Responsibility**	**Indicators**	**Timeframe**	**Reference to Existing Procedures**
77. Ensure effective and integrated risk management within a framework of sound corporate governance.	• Document business processes. • Conduct on site risk identification and analysis. • Conduct on site identification of controls/ mitigations. • Monitor risks.	Conservation Manager, Chief Risk Officer.	Risks in the Risk Register mitigated in a cost effective manner and to an acceptable level.	Year 1-5	PFMA Section 38. Risk Management Policy and Strategy.

Budget Allocation	**Development**	
	Operation (5 Year Forecast)	R 239 914.72

7.15 Visitor Management and Services

7.15.1 Legislation

- Tourism Act, (Act No. 72 of 1993)

7.15.2 Guiding Principles

- Acknowledgement of the areas diverse natural heritage and a commitment to ensuring the safeguarding thereof for future generations.
- The responsible and sustainable development of tourism facilities compatible with the nature reserve's zonation policy.

7.15.3 Visitor management and services

The short to medium-term strategic focus for tourism and recreation in the VNRC is:

- The development of a middle- market visitor accommodation facilities;
- The maintenance of a range of low impact recreational adventure activities;
- Access control at entry points;
- The maintenance of key information on visitor profiles and their needs.

7.15.4 Concessionaries

- Not relevant

7.15.5 Public Private Partnerships

- Not relevant.

7.15.6 Management Actions

Refer to Table 7.15.

7.15	VISITOR MANAGEMENT AND SERVICES				
Objectives 5	**To ensure appropriate benefits for local communities surrounding the Vrolijkheid Nature Reserve Complex.**				
Key Deliverables	**Management/Monitoring Activities**	**Responsibility**	**Indicators**	**Timeframe**	**Reference to Existing Procedures**
78. To plan for and manage visitor facilities.	• Monitor and manage visitor numbers and their environmental impact. • Plan for and develop visitor facilities within CDF and local area plans. • Monitor visitor numbers. • Survey visitor opinions. • Ensure tourism facilities are accessible for disabled persons.	Conservation Manager, Tourism Manager.	Annual increase in visitor numbers. Annual increase in tourism income.	Year 1 - 5	Strategic tourism plan, Vrolijkheid feasibility study.
79. To strive to ensure visitor safety.	• Outsource security management. • Appoint and train volunteers. • Establish collaborative relationships with policing authorities. • Gate Entrances to be protected against armed robberies and hi-jacking. • Liaise with local authorities and stakeholders on security issues.	Conservation Manager.		Year 1 - 5	
80. To promote and manage access to the Reserve.	• Set management guidelines for different use zones. • Provide season ticket and special user discounted rates to enable equitable access including the *Wild Card* system. • Monitor pay access points and control access where required. • Identify areas requiring special management strategies and protection from visitor use. • Facilitate access for disadvantaged groups on request.	Conservation Manager.		Year 1 - 5	Standard reserve operations, Strategic tourism plan

Budget Allocation	**Development**	
	Operation (5 Year Forecast)	R 479 829.45

7.16 Tourism Development Framework

7.16.1 Legislation

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

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

7.16.2 Guiding Principles for infrastructure planning and development

- Before any significant infrastructure development, reserves must have:
- a zoning scheme based on a defensible environmental analysis of sensitivity and opportunities, proper internal consultation, and CapeNature regional strategy ; and
- an infrastructure development plan that specifies the type and location of all new infrastructure;
- Any infrastructure or activity, including change of use, must comply with all legislated licencing and authorisation requirements.
- Roads and tracks have the highest environmental and cost impact – planning should focus on providing efficient, lowest-impact road and trail networks.
- Layout of existing infrastructure and operations should be re-evaluated.
- Development Zones and Access Zones should be peripheral to nature reserve, and easily accessible to staff and visitors.
- Viewshed impacts of new infrastructure should be considered, especially any that might impact Wilderness Areas.
- Development Zones should be as tightly clustered as possible.
- All planning must explicitly avoid, minimise and mitigate fire risk.

- Management vs. tourism infrastructure should be close but separate.
- Tourism products should be located to balance visitor experience against environmental impact and access.
- Development Zones should utilise existing degraded or transformed habitat, although road access must be factored into the overall impact footprint.
- All new development or expansion must be informed by a financial feasibility study, reserve sensitivity analysis, and if appropriate specialist assessment of impact.
- New building infrastructure, especially in remote or sensitive locations, must consider total lifespan impact including decommissioning and removal.
- Green building techniques must be implemented to reduce carbon emissions, energy and water use, and waste contamination associated with construction and operation, although the primary consideration must be reducing local impact.

7.16.3 Management Actions

- Refer to Table 7.16

7.16	TOURISM DEVELOPMENT FRAMEWORK				
Objective 5	**To ensure appropriate benefits for local communities surrounding the Vrolijkheid Nature Reserve Complex.**				
Action plans	**Management/Monitoring Activities**	**Responsibility**	**Indicators**	**Timeframe**	**Reference to Existing Procedures**
1. To provide nature and cultural tourism and recreational opportunities within the Reserve without affecting the ecological processes negatively.	• Comply with Reserve Zonation • Prioritise different types of tourism development within the Reserve. • Implement the Strategic Development Plans, 2007 & Vrolijkheid Feasibility Study • Ensure tourism facilities are managed according to Tourism minimum standards.	Conservation Manager, Tourism Management	Standards compliant with CN approved minimum standards. Development priorities in place and implemented in the correct Zones within the Reserve	Year 1 – 5	Reserve Zonation Vrolijkheid feasibility study.

Budget Allocation	**Development**	
	Operation (5 Year Forecast)	R 479 829.45

PART 4

SECTION 8: REFERENCES

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8.2 List of Acronyms and Abbreviations

%	Percentage
°C	Degrees Celsius
APO	Annual Plan of Operations
APP	Annual Performance Plans
BOCMA	Breede Overberg Catchment Management Agency
CAP	Conservation Action Plan
CAPE	Cape Action Plan for People and the Environment
CBA	Critical Biodiversity Areas
CBNRM	Community Based Natural Resource Management
CBO	Community Based Organisations
CDF	Conservation Development Framework
DAFF	Department of Agriculture, Forestry and Fisheries
DEA	Department of Environmental Affairs
DEA&DP	Department of Environmental Affairs and Development Planning
EIA	Environmental Impact Assessment
EKZNW	Ezemvelo KZN Wildlife
EPWP	Expanded Public Works Programmes
FEPA	Freshwater Ecosystem Priority Area
FPA	Fire Protection Associations
GCFR	Greater Cape Floristic Region (CFR used in text)
ha	Hectares
hℓ	Hectolitre
HNCO	Honorary Nature Conservation Officer
IBL	Important Biodiversity Layers ()
ICM	Integrated Catchment Management
IDP	Integrated Development Plans
IT	Information Technology
km	Kilometers
km^2	Kilometers square
m.a.s.l.	Meters above sea level
MEC	Member of Executive Councils
mm	Millimetres
MOU	Memorandum of Understanding
NBF	National Biodiversity Framework
NEMA	National Environmental Management Act
NEM: BA	National Environmental Management: Biodiversity Act
NEM: PAA	National Environmental Management: Protected Areas Act
NFEPA	National Freshwater Ecosystem Priority Areas
NGO	Non-governmental organisations
NSBA(NBA)	National Spatial Biodiversity Assessment
NYSP	National Youth Service Programme
OUV	Outstanding Universal Value
PAAC	Protected Area Advisory Committee
PAMP	Protected Area Management Plan
RHP	River Health Programme
RMC	Reserve Management Committee

RSL	Riviersonderend State Land
SANParks	South African National Parks
SDF	Spatial Development Framework
SKEP	Succulent Karoo Ecosystem Programme
SOB	State of Biodiversity
SWOT	Strengths, Weaknesses, Opportunities and Threats
ToPS	Threatened or Protected Species
TPC	Threshold of potential concern
VNR	Vrolijkheid Nature Reserve
VNRC	Vrolijkheid Nature Reserve Complex
WCNCB	Western Cape Nature Conservation Board
WESSA	Wildlife and Environment Society of South Africa
WHS	World Heritage Sites
WMA	Water Management Area
WOF	Working on Fire

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