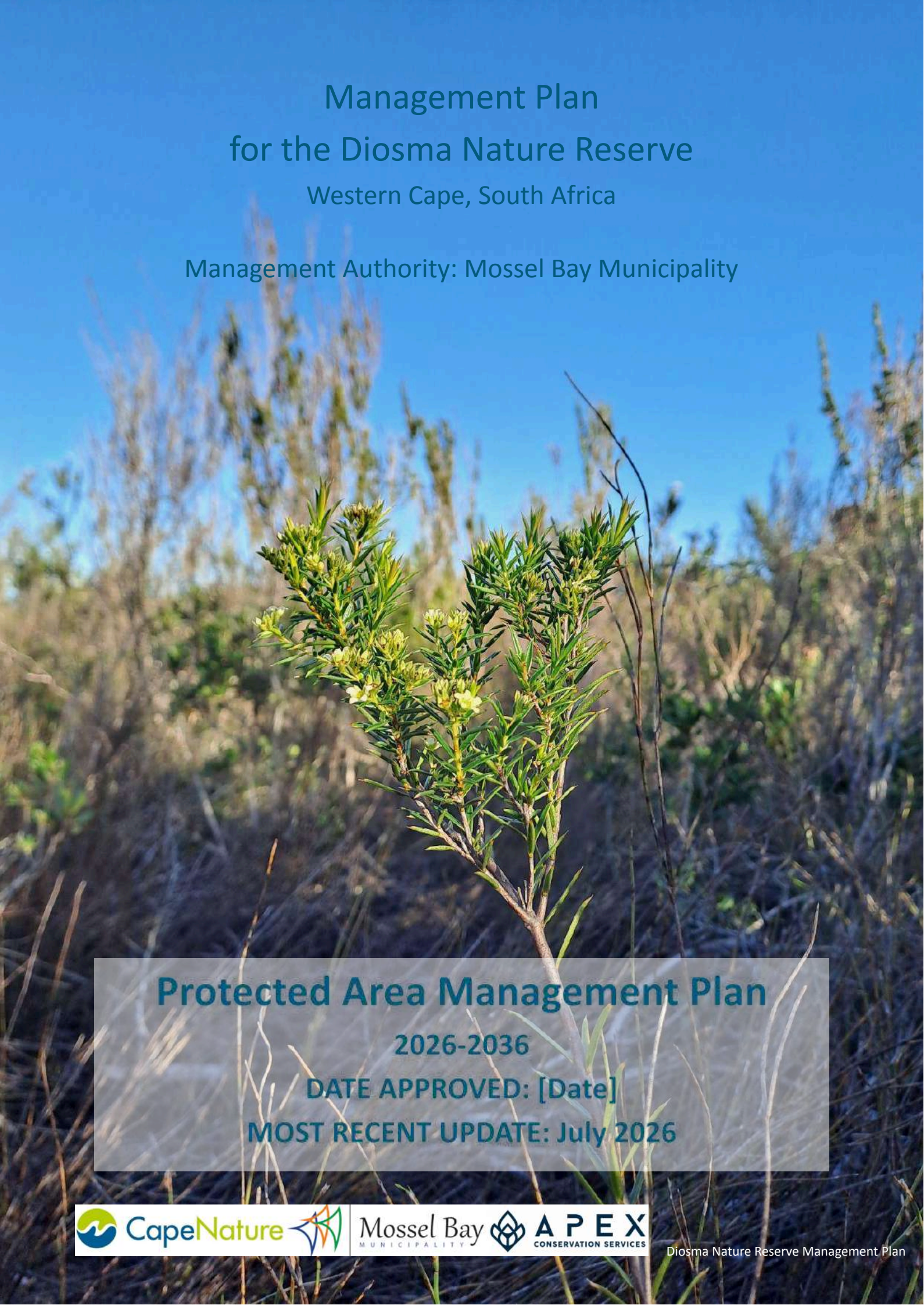




Management Plan for the Diosma Nature Reserve Western Cape, South Africa

Management Authority: Mossel Bay Municipality

Protected Area Management Plan

2026-2036

DATE APPROVED: [Date]

MOST RECENT UPDATE: July 2026

Management plan prepared by:

Apex Conservation Services: Rachel Putzier, Bruce Taplin and Stefan le Roux

Management plan prepared for:

Mossel Bay Municipality

Contributors:

Jan Vlok, Independent Specialist Botanist
Dr AnneLise Schutte-Vlok, CapeNature
Sandra Falanga, CREW Outramps group
Carlo Van Tonder, CapeNature
Rudi Minnie, Mossel Bay Local Municipality

Acknowledgements:

To Charl du Plessis and Sean Ranger from FOOTPRINT Environmental Services for their work on the previous Environmental Management Plan (2014) and Rudi Minnie from the Mossel Bay Local Municipality for support and resources provided.

Cover image:

Apex Conservation Services

Recommended citation:

Apex Conservation Services (Putzier, R., Taplin, B. and le Roux, S.) 2026. Diosma Nature Reserve Management Plan. Version 1.0 (July 2026). Mossel Bay Municipality.

Management plan format:

CapeNature, version February 2023

Protected area management plan format has been developed by CapeNature with input from external partners and industry stakeholders



The development of this revised management plan format has been funded by the Table Mountain Fund.



STATUS

The Diosma Nature Reserve has been declared as a Section 23 Nature Reserve.

Declaration Date:

Government Gazette Notice:

2025-11-21

Western Cape Provincial Gazette No.: 9164
Reference No.: PN 134/2025

AUTHORISATION

This Protected Area Management Plan for the Diosma Nature Reserve was drafted and recommended by Apex Conservation Services.

Supported by:

- CapeNature Conservation Management

Recommended and adopted by:

Name and Title	Signature and Date
<u>Management Authority</u> Mossel Bay Municipality	
<u>CapeNature</u> Name of CapeNature signatory Title of CapeNature signatory	

Approved by:

Name and Title	Signature and Date
[Name of MEC] Minister of Local Government, Environmental Affairs and Development Planning	

Review Date: YYYY-MM-DD

PART A • Strategic Management Plan

Table of Contents

1. BACKGROUND	11
1.1 Purpose of the Plan	11
1.2 Structure of the Plan	11
1.3 Guiding Legislation	11
1.3.1 Purpose of declaring protected areas	12
1.3.2 Declaration Status of Diosma Nature Reserve	13
1.4 Adaptive Management	13
1.5 Management Support Framework	14
1.6 The Annual Plan of Operation	15
1.7 Monitoring and Evaluation	17
1.7.1 Annual Management Review	17
1.7.2 Protected Area Management Effectiveness	17
1.8 The Annual Review and Planning Workshop	18
1.8.1 Management Review	18
1.8.2 Drafting the Next Year's APO	18
1.9 Ten-year Revision of the Strategic Management Plan	19
2. SITE DESCRIPTION	19
2.1 Introduction	19
2.2 Management Authority Details	22
2.3 Administrative Structure	23
2.4 Key Attributes	23
2.5 Summary of Management Challenges and Opportunities	25
2.6 Historical and Current Landuse	30
2.7 Ecological Context	31
2.7.1 Climate and Weather	31
2.7.2 Topography, Hydrology and Soils	32
2.7.3 Vegetation	34
2.7.4 Fire Regime	39
2.7.5 Invasive Species	43
2.7.6 Species of Conservation Concern	49
2.8 Cultural Heritage	54
2.8.1 Heritage Resources	54
2.8.2 Living Heritage	55
2.9 Regional and Local Planning Context	58
2.9.1 The Protected Area Expansion Strategy and Implementation Plan	58
2.9.2 The Strategic Development Framework and Integrated Development Plan	59
2.9.3 Expansion Strategy	66
3. STRATEGIC MANAGEMENT FRAMEWORK	73
3.1 Purpose	73
3.2 Vision	73
3.3 Management Objectives under Key Performance Areas	73

3.4 Annual Costing Plan	81
3.4.1 <i>Funding and Financial Sustainability</i>	81
3.5 Management Authority Policy Frameworks	83
3.6 Protected Area Zonation Plan	86
3.6.1 <i>Existing Infrastructure</i>	88
3.6.2 <i>Development Plans</i>	90
3.6.3 <i>Fire Management Infrastructure</i>	100
3.6.4 <i>Neighbouring Developments</i>	104
3.7 Management Units	105
4. OPERATIONAL MANAGEMENT GUIDELINES	106
4.1 Biodiversity and Ecological Components	106
4.1.1 <i>Integrated Wildfire and Invasive Alien Plants</i>	106
4.1.2 <i>Aquatic and Riparian Systems</i>	112
4.1.3 <i>Rehabilitation and Restoration</i>	113
4.1.4 <i>Species of Special Concern</i>	114
4.1.5 <i>Wildlife</i>	116
4.2 Sustainable Utilisation of Natural Resources	117
4.2.1 <i>Grazing and Browsing of Livestock and Wildlife</i>	117
4.2.2 <i>Recreation</i>	118
4.2.3 <i>Sustainable Harvesting</i>	119
4.3 Socio-economic and Heritage	119
4.3.1 <i>Environmental Awareness and Education</i>	119
4.3.2 <i>Socio-economic Development Initiatives</i>	120
4.3.3 <i>Heritage Features</i>	121
4.4 Management Authority Effectiveness and Sustainability	122
4.4.1 <i>Governance and Institutional Arrangements</i>	122
4.4.2 <i>Legal Compliance</i>	124
4.4.3 <i>Employee Skills Development</i>	125
4.4.4 <i>Infrastructure and Equipment</i>	125
4.4.5 <i>Signage, Access Control and Security</i>	127
4.4.6 <i>Research and Management Knowledge</i>	129
5. REFERENCES	130
5.1 Reference List	130
5.2 Data and Information Sources	133
6. APPENDICES	138
6.1 APPENDIX A - List of Statutes to Which the Nature Reserve is Subject	138
6.2 APPENDIX B - Copy of Diosma Nature Reserve Declaration	140
6.3 APPENDIX C - Species Lists	143
6.3.1 <i>Plant Species Lists</i>	144
6.3.2 <i>General Fauna Lists (e.g. Mammals, Herpetofauna, Invertebrates)</i>	148
6.3.3 <i>Bird lists</i>	149
6.3.4 <i>Specific Lists of Listed Threatened and Protected Species</i>	151
6.3.5 <i>Specific Lists of Invasive Alien Species</i>	154
6.4 APPENDIX D – Zonation and Special Management Overlay Categories	155
6.4.1 <i>Zonation Categories</i>	155

6.4.2 Special Management Overlays	162
6.5 APPENDIX E – Annual Plan of Operation	163
6.6 APPENDIX F - Proposed Infrastructure Design and Specifications	177
6.6.1 Proposed Fence and Gate Designs	177
6.6.2 Proposed Design of Signs	179
6.6.3 Proposed Wildlife Proof Bins for Waste Disposal	180

List of Tables

Table 1.1 Structure of the management plan.	11
Table 2.1 Management authority details.	22
Table 2.2 Values of Diosma Nature Reserve.	24
Table 2.3 Management challenges and opportunities.	25
Table 2.4 Vegetation units and their contribution to vegetation targets.	35
Table 2.5 Historic burn information for Diosma Nature Reserve.	40
Table 2.6 Alien Species, Density and Age on Diosma Nature Reserve. Yellow cells indicate the dominant IAP species in each MU.	48
Table 2.7 Sizes of areas proposed for reserve expansion.	70
Table 3.1 Biodiversity and ecological components objectives and deliverables.	74
Table 3.2 Sustainable utilisation of natural resources objectives and deliverables.	76
Table 3.3 Socio-economic and heritage objectives and deliverables.	77
Table 3.4 Management authority effectiveness and sustainability objectives and deliverables.	78
Table 3.5 Estimated annual management cost breakdown for the 2026/27 period.	83
Table 3.6 Management Authority Policy Frameworks.	84
Table 3.7 Guide to CapeNature conservation management zones within Diosma Nature Reserve. Further Information is provided in Appendix D.	86
Table C.1 Full Faunal Species List for Diosma Nature Reserve.	144
Table C.2 Faunal Species lists - including Arachnida, Insecta, Reptilia and Mammalia.	148
Table C.3 Bird Species list.	149
Table C.4 Plant species threatened according to the South African Red List of Species.	151
Table C.5 Protected Tree Species.	151
Table C.6 Faunal species which are threatened or protected.	152
Table C.7 List of Invasive Alien Species - Plants and Animals.	154

List of Figures

Figure 1.1 The Adaptive Management Cycle.	14
Figure 1.2 The Management Support Framework.	15
Figure 2.1 Regional location of Diosma Nature Reserve within the Mossel Bay Local Municipality in the Western Cape province.	20
Figure 2.2 Protected Area Extent of Diosma Nature Reserve within Heiderand, Mossel Bay. The Reserve falls within the Core Zone of the UNESCO Gouritz Cluster Biosphere Reserve.	21
Figure 2.3 Organogram outlining the management structure for Diosma Nature Reserve by Mossel Bay Municipality.	23
Figure 2.4 Topography and geology of Diosma Nature Reserve.	33
Figure 2.5 Vegetation types found on Diosma Nature Reserve classified according to the National Vegetation Map (Vegmap, 2024 Beta). Species lists are included as Appendix C.	36

Figure 2.6 Biomes found on Diosma Nature Reserve classified according to the Vlok Veg maps (Biomes). Species lists are included as Appendix C.	37
Figure 2.7 Vegetation variants found on Diosma Nature Reserve classified according to the Vlok Veg maps (Variants). Species lists are included as Appendix C.	38
Figure 2.8 Veld age map Diosma Nature Reserve.	40
Figure 2.9 Invasive alien species map for Diosma Nature Reserve.	47
Figure 2.10 Diosma aristata plant observed within Diosma Nature Reserve, showing the entire plant, as well as the fine leaves and small white flowers.	50
Figure 2.11 Diosma aristata growing in an area infested with Eucalyptus conferruminata (Spider gum) on ERF RE2001, adjacent to the reserve. The red arrow shows the IAPs, and the black arrow shows the D. aristata.	51
Figure 2.12 Locations of Diosma aristata plants collected as part of a variety of assessments over several years.	53
Figure 2.13 Location of Diosma Nature Reserve in UNESCO Gouritz Cluster Biosphere Reserve domain.	56
Figure 2.14 Heritage Resources: UNESCO World Heritage Site - The Pleistocene Occupation Sites of South Africa at Pinnacle Point Site Complex south of the Diosma Nature Reserve.	57
Figure 2.15 Planning context: Biodiversity Priority Areas in and surrounding Diosma Nature Reserve in accordance with the Western Cape Biodiversity Spatial Plan (2023).	62
Figure 2.16 Mossel Bay Spatial Proposal (screenshot taken from the Mossel Bay IDP 2026 and the SDF 2022).	63
Figure 2.17 Louis Fourie Corridor Precinct Project: Proposed zoning and land use plan (Part 1). Diosma Nature Reserve is indicated using a red arrow.	64
Figure 2.17 (continued) Louis Fourie Corridor Precinct Project: Proposed zoning and land use plan (Part 2).	65
Figure 2.18 Proposed protected area expansion footprint.	72
Figure 3.1 Zonation map of Diosma Nature Reserve.	87
Figure 3.2 Existing services on Diosma Nature Reserve.	89
Figure 3.3 Visitor Facilities: Proposed Interpretive Centre, proposed Interpretive Walks and existing parking area for Diosma Nature Reserve.	93
Figure 3.4 Proposed location of fencelines and entrances for Diosma Nature Reserve if expansion areas are not included.	96
Figure 3.5 Proposed location of fencelines and entrances that are required if expansion areas are included and the Seemeeu Road is not accepted for development between the reserve and ERF RE2001.	97
Figure 3.6 Proposed location of fencelines and entrances if expansion areas are included and the Seemeeu Road is accepted between the reserve and ERF RE2001.	98
Figure 3.7 Firebreak locations for Diosma Nature Reserve.	102
Figure 3.8 Firebreak locations for Diosma Nature Reserve and RE2001 showing fire connection points between the two properties.	103
Figure 3.9 Management Units on Diosma Nature Reserve.	105
Figure F.1 Example of the proposed semi-permeable fence design.	178
Figure F.2 Example of the proposed wildlife-friendly service gates.	178
Figure F.3 Examples of sign designs that could be used for Diosma Nature Reserve.	179
Figure F.4 Proposed designs for dustbins: Double Monkey-Proof Recycling Bin (Quality Timber Plastic Furniture).	180

Abbreviations

APO	Annual Plan of Operation
CARA	Conservation of Agricultural Resources Act
CBA	Critical Biodiversity Area
CBD	Convention on Biological Diversity
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CR	Critically Endangered
CREW	Custodians Rare and Endangered Wildflowers
DEA&DP	Department of Environmental Affairs and Development Planning
DEA	National Department of Environmental Affairs
DNR	Diosma Nature Reserve
DoA	Department of Agriculture Western Cape
EMF	Environmental Management Framework
EMP	Environmental Management Plan
EN	Endangered
ESA	Ecological Support Area
FEPA	Freshwater Ecosystem Priority Area
FIRMS	Fire Information for Resource Management System
FPA	Fire Protection Association
GCBR	Gouritz Cluster Biosphere Reserve
GIS	Geographical Information System
IDP	Integrated Development Plan (Municipal)
IAA	Invasive Alien Animal
IAP	Invasive Alien Plant
IAS	Invasive Alien Species
IASMC&EP	Invasive Alien Species Monitoring, Control, and Eradication Plan
IUCN	International Union for the Conservation of Nature
LC	Least Concern
METT	Management Effectiveness Tracking Tool
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
NBA	National Biodiversity Assessment
NBSAP	National Biodiversity Strategy and Action Plan
NCO	Nature and Environmental Conservation Ordinance
NEM:BA	National Environmental Management: Biodiversity Act
NEM:PAA	National Environmental Management: Protected Areas Act
NEMA	National Environmental Management Act
NFEPA	National Freshwater Ecosystem Priority Area
NPAES	National Protected Area Expansion Strategy
NR	Nature Reserve
ONA	Other Natural Area
PA	Protected Area

PAMP	Protected Area Management Plan
SAHRA	South African Heritage Resources Agency
SANBI	South African National Biodiversity Institute
SANParks	South African National Parks
SDF	Spatial Development Framework
SMP	Strategic Management Plan
SPCA	Society for the Prevention of Cruelty to Animals
SPLUMA	Spatial Planning and Land Use Management Act
TOPS	Threatened or Protected Species
UNESCO	United Nations Educational, Scientific and Cultural Organisation
VU	Vulnerable
WCBSP	Western Cape Biodiversity Spatial Plan
WC PAES	Western Cape Protected Area Expansion Strategy
WWF-SA	World Wildlife Fund for Nature South Africa

PART A

STRATEGIC MANAGEMENT PLAN

1. Background

1.1 Purpose of the Plan

Management plans for biodiversity stewardship sites are strategic documents that provide the framework for the development and operation of biodiversity stewardship sites. They inform management at all levels, from the management authority through to support staff within CapeNature. The purpose of the management plan is to:

- Provide the primary strategic tool for management of Diosma Nature Reserve, informing the need for specific programmes and operational procedures.
- Provide for capacity building, future thinking and continuity of management.
- Enable the management authority to develop and manage Diosma Nature Reserve in such a way that its values and the purpose for which it has been established are protected.

1.2 Structure of the Plan

Table 1.1 Structure of the management plan.

Section 1:	Background. Provides an overview of the guiding legislation, an introduction to protected area management planning centred on the adaptive management cycle with a focus on implementing the management support framework.
Section 2:	Site Description. Provides an introduction of the site and ownership as well as the administrative structure. This section looks to establish the context of the biodiversity stewardship site, including the regional and local planning, zonation plan as well as management units. These all provide the basis for the strategic management framework that follows.
Section 3:	Strategic Management Framework. Lays out the management authority's high-level strategic decisions that guide the operational management of the reserve.
Section 4:	Best Practice Guidelines. Provides guiding principles and factors to be considered for coordinated actions.

1.3 Guiding Legislation

There is a large body of legislation that is relevant to the management of Nature Reserves, all management authorities are subject to the framework of the Constitution, national legislation; the Policy for the Conservation and Sustainable use of South Africa's Biological Diversity, the National Biodiversity Strategy and Action Plan (NBSAP), and the National Protected Areas

Expansion Strategy (NPAES). The government priorities (Asgisa, poverty alleviation, crime prevention, etc) are also a given but the primary legislation guiding the management of protected areas is the National Environmental Management: Protected Areas Act (No.57 of 2003) (Hereafter referred to as the Act). The Act establishes the legal basis for the creation and administration of protected areas in South Africa, as its objectives include provisions “for the protection and conservation of ecologically viable areas representative of South Africa’s biological diversity and its natural landscapes”. The Act sets out the mechanisms for the declaration of protected areas and the requirements for their management.

The Western Cape Biodiversity Act (No. 6 of 2021) sets CapeNature as the Provincial Conservation Authority in the Western Cape and requires support for the Provincial Protected Areas Expansion Strategy, which is primarily through its Biodiversity Stewardship Programme which facilitates the establishment and management of protected areas on private land. The 2025 Western Cape Protected Areas Expansion Strategy (WC PAES) was developed to help provide a provincial strategy for the Western Cape to guide the efficient expansion of the provincial conservation estate and protected area network. This WC PAES is informed by the 2016 NPAES (DEA, 2016), aligned with the NBSAP 2015-2025 (SANBI, 2015). The WC PAES sets quantitative targets and recommends mechanisms for expansion, identifies priority areas for conservation and helps promote and enable biodiversity stewardship. The Western Cape Biodiversity Act makes provision for management of Protected Areas and the criteria and objectives for the management plans of biodiversity stewardship areas, and any other matters necessary for the proper management of biodiversity stewardship areas.

A detailed list of relevant legislation is provided in Appendix A. The management authority should familiarise themselves with the purpose and contents of the statutes and their subsequent amendments and regulations.

Where appropriate the following sections of the Biodiversity Act are to be provided for in this section –

- Norms and standards (section 9) – eg for elephant management
- Biodiversity management plans (section 43)
- Review and amendment of biodiversity management plans (section 46)
- Co-ordination and alignment of biodiversity plans (section 48)
- Invasive species control plans of organs of state (section 76)
- National Environmental Management: Integrated Coastal Management Act, especially with regards to any surrounding coastal areas which are considered for reserve expansion opportunities. Key sections include:(section 16, 17, 22 to 28

1.3.1 Purpose of declaring protected areas

According to S17 of NEM:PAA, the purpose of declaring an area as a protected area are:

- i) to protect ecologically viable areas representative of South Africa’s biological diversity and its natural landscapes and seascapes in a system of protected areas;
- ii) to preserve the ecological integrity of those areas;
- iii) to conserve biodiversity in those areas;

- iv) to protect areas representative of all ecosystems, habitats and species naturally occurring in South Africa;
- v) to protect South Africa's threatened or rare species;
- vi) to protect an area which is vulnerable or ecologically sensitive;
- vii) to assist in ensuring the sustained supply of environmental goods and services;
- viii) to provide for the sustainable use of natural and biological resources;
- ix) to create or augment destinations for nature-based tourism;
- x) to manage the interrelationship between natural environmental biodiversity, human settlement and economic development;
- xi) generally, to contribute to human, social, cultural, spiritual and economic development; or
- xii) to rehabilitate and restore degraded ecosystems and promote the recovery of endangered and vulnerable species.

1.3.2 Declaration Status of Diosma Nature Reserve

Diosma Nature Reserve is declared under Section 23(1) of the National Environmental management: Protected Areas Act (Act 57 of 2003).

Declaration date: 2025-11-21

Government Gazette Notice: 9164

Reference no.: 134/2025

Deed of Transfer no.: T45993/2018

The Management Authority which has been appointed to manage Diosma Nature Reserve is Mossel Bay Municipality.

See Appendix B – Copy of the relevant pages dealing with the declaration of Diosma Nature Reserve as per the Declaration Notice.

1.4 Adaptive Management

The preparation of this management plan has been undertaken based on the guiding principles of adaptive management, which is a structured, iterative process in which decisions are made using the best available information, with the aim of obtaining better information through monitoring of performance (Figure 1.1). In this way, decision making is aimed at achieving the best outcome based on current understanding, whilst accruing the information needed to improve future management. Adaptive management can lead to revision of a part or, if necessary, the whole management plan.



Figure 1.1 The Adaptive Management Cycle.

Adaptive management enables the management authority and managers to:

- Learn through experience.
- Take account of, and respond to, changing factors that affect the biodiversity stewardship site.
- Develop or refine management processes.
- Adopt best practices and new innovations in biodiversity conservation management.
- Demonstrate that management is appropriate and effective.

1.5 Management Support Framework

The National Environmental Management of Protected Areas Act (NEM:PAA) of 2003 mandates that a management plan must be prepared by the management authority, as outlined in Sections 39 and 41. This plan must include a programme for implementation and its associated costs (APO and budget). Section 43 further requires the management authority to monitor and report annually.

To support effective Protected Area management, a range of tools and a structured support system have been developed. These tools provide meaningful assistance and guidance from the provincial conservation authority to the management authority. Key components include:

- **Integrated Management Plans:** A template that integrates with the Protected Area (PA) management system.
- **APO Implementation:** An Annual Plan of Operation (APO) that serves as both a management tool and a reporting mechanism based on the PA management plan.

- **Monitoring & Management Solutions:** Identified management gaps from the Management Review, METT Assessments, and PAMP are addressed in the APO, with customized monitoring and implementation strategies.
- **Effective Data Collection, Storage & Analysis:** Development of efficient, secure, and robust data platforms can be tailored to the needs of the PA.

These have all helped contribute towards effective management where improved management decisions can be made from the combined use of these tools. The Management Support Framework, Figure 1.2, provides for an overview on where these tools and structures integrate. In this framework, the Protected Area Management Plan is at the centre. This Management Plan is developed according to the relevant Key Performance Areas (KPAs) and the associated objectives. The APO then translates the Management Plan into prioritized and scheduled actions. Monitoring and evaluation tools, such as the Management Review and METT assessment, are provided to management authorities to help enable focused management and technical support.

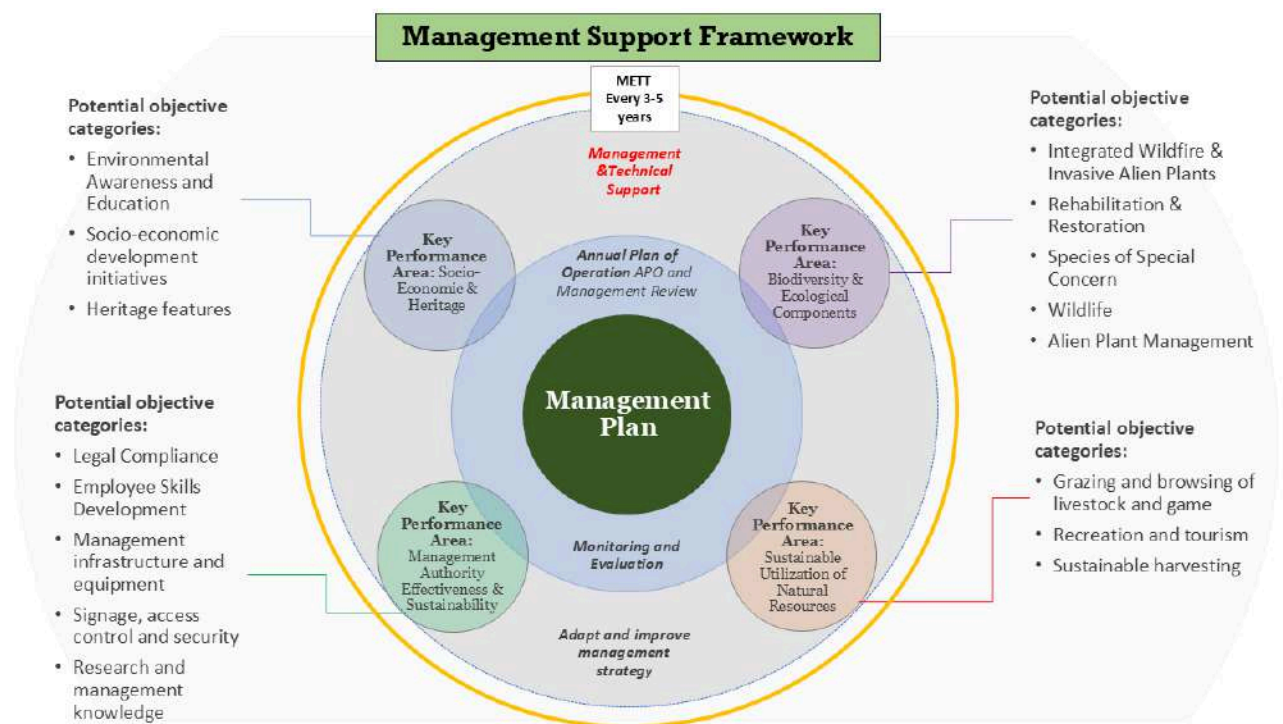


Figure 1.2 The Management Support Framework.

1.6 The Annual Plan of Operation

The Annual Plan of Operation (APO) forms an integral part (Part B) of the Protected Area Management Plan. The APO is documented within an associated excel spreadsheet (as shown in **Annexure E**) and enables the synthesizing of the Protected Area Management Plan. The following reasons enable better tracking of management progress which leads to better management support for the management authority.

This APO process allows for:

- for ease of use as a management tool;
- to facilitate updates and changes;
- to simplify the annual audit/report process;
- to simplify the drafting of subsequent versions of the APO after the annual review and planning workshop.

The Annual Plan of Operation template, or APO as it is commonly referred to, was developed and now maintained through a partnership between Conservation Outcomes, Conservation Management Solutions, and CapeNature with funding made available by the Table Mountain Fund. The initial development of the APO template was made possible by a WWF Nedbank Green Trust grant, and a partnership with Conservation Outcomes. The original template has further been customised specifically for the needs of CapeNature and their Stewardship Programme.

This APO tool is intended to be used, firstly, as a tool to facilitate the management of day-to-day tasks of the protected area. Secondly, to provide a platform to compile and submit the Annual Report, and lastly, to provide a structure to undertake an Annual Review of management interventions carried out for the year. The APO links directly to the protected area management plan's Key Performance Areas and Objectives. In essence, the APO is a work plan or a short-term schedule for implementing the Operational Plan of the protected area management plan (PAMP). It typically lists tasks required, who will be responsible for each task, when each task will need to be undertaken, and the budget required to implement the work plan.

In the APO, specific Management Activities under each Objective are assigned to a staff member and a time period for completion of the task agreed to. Performance and progress of each assigned staff member's tasks can be tracked monthly throughout the year and problems addressed at regular team meetings. The intention is that if the Management Activities are completed under each Objective and KPA, then the overall Objectives of the protected area will be met and management effectiveness of the protected area will improve.

The second function of the APO tool is its ability to automatically generate an Annual Report based on the contents of the APO. This report can be used to inform the Provincial Conservation Authority, the protected area board, or donor organisations on progress of management of the protected area for the year.

The third function is the ability to undertake an Annual Review of the management effectiveness of the protected area. This can either be in the form of a self-assessment by the management team on the ground, or as a facilitated self-assessment carried out with the guidance and support of an extension officer, or an assessment carried out in the presence of a CapeNature official.

1.7 Monitoring and Evaluation

Monitoring and evaluation are essential components of the adaptive management process. Long-term monitoring and evaluation form a clear management baseline and enables the reserve management team to determine if the implemented management activities are achieving the intended outcomes in terms of the identified Objectives within each Key Performance Area (KPA).

Management effectiveness evaluation is the assessment of how well a protected area is being managed, primarily the extent to which management is protecting targets and values and achieving objectives (Hockings et al. 2015). The following questions underpin management effectiveness evaluation (Leverington & Hockings 2004):

- Is the protected area effectively conserving the targets and values for which it exists?
- Is management of the area effective and how can it be improved?
- Are specific projects, interventions and management activities achieving their objectives, and how can they be improved?

1.7.1 Annual Management Review

It is recommended that the Protected Area undertakes an Annual Management Review which is built into the APO tool. Additional ecological indicators may be required to effectively monitor species and ecosystem health. Every action in the APO has a Key Performance Indicator (KPI) and target. The Key Performance Indicator reflects whether an action has been identified as being completed, on track, major issues, minor issues, abandoned or planned. The target is the evidence that has been identified as necessary to complete the activity. Monitoring and reporting on these targets enable the assessment of management effectiveness. The KPIs and targets can also be used to measure the performance of personnel responsible for implementing the different aspects of the management plan. During the annual review and planning workshop, performance against KPI targets must be assessed in order to accurately inform the actions in the following year's APO.

1.7.2 Protected Area Management Effectiveness

Management effectiveness can then be further assessed over time using the Management Effectiveness Tracking Tool (METT). METT-SA has been adapted for South Africa and further to Biodiversity Stewardship sites. It is based on the six elements of good management:

- It begins with understanding the context of existing targets, values and threats;
- Progresses through planning;
- Allocation of resources (inputs);
- and as a result of management actions (processes);
- eventually produces products and services (outputs);
- that result in impacts or outcomes.

A METT workshop will be held for each CapeNature Landscape, alternating every 4 years for willing biodiversity stewardship sites. A METT-Intervention Report is then produced which indicates the overall METT scores over the years, Summary graph of the METT Assessment based on the Management Spheres, priority interventions, Management sphere comparisons, Threats and finally the Management Sphere Summary.

1.8 The Annual Review and Planning Workshop

1.8.1 Management Review

The purpose of undertaking an annual management review of the protected area management plan will be to:

- Determine how effectively the management plan has been implemented.
- Assist in determining the focus for the annual plan of operation and the setting of appropriate time frames and budgets.
- Enable effective adaptive management by identifying changes and modifying management interventions.

This Management Review enables insights for more focussed discussion when the Stewardship Facilitator undertakes a site visit. This annual review and APO Annual Report will form the basis of the management plan review. This should include records of recommendations for update/changes to the annual revision of the management schedules as well as the ten-year plan (**Section 1.9**).

A draft Environmental Management Plan (EMP) was previously compiled and submitted as part of the Protected Area application for Diosma Nature Reserve. The application was approved, and a one year period was subsequently allocated to draft the final management plan, which this document constitutes.

1.8.2 Drafting the Next Year's APO

Either as part of the review process or directly after the review, the reserve management team should compile the list of management actions for the following year's APO.

The following steps should be taken:

- Using the Management Review of the previous year's management actions under each Management Objective. Make note of actual performance relative to the year's plan previously set. Discuss challenges experienced and ways to overcome them.
- You can now revise the year ahead's plan, the associated actions, evidence, responsible person, priority of the action, budget and deadlines, if necessary. If the evidence used previously was found to be an ineffective indicator, specify a different requirement.
- Systematically work through the APO by first addressing the weak management points picked up in the management review and prioritise accordingly.

1.9 Ten-year Revision of the Strategic Management Plan

Legislation stipulates a maximum of a ten-year management period prior to the revision of the (Part A) Strategic Management Plan (SMP). The SMP can be revised after a shorter management period and this is recommended for a newly established Nature Reserve, such as Diosma Nature Reserve, where significant management outcomes and infrastructure or development (e.g. trails, firebreaks, signage) or proposed reserve expansion opportunities are taking place.

2. Site Description

2.1 Introduction

The Diosma Nature Reserve (DNR) is located on Erf 19274, Mossel Bay, within the Mossel Bay Municipality, Western Cape Province, in extent 10.7664 hectares, held by Deed of Transfer No. T45993/2018. The Reserve lies just south of Heiderand, above Pinnacle Point and the St Blaize Hiking Trail, approximately 4 km from the Mossel Bay CBD. To the south and west, the Reserve is bounded by undeveloped municipal property. The northern and eastern boundaries adjoin a mix of developed and undeveloped land owned by Mossel Bay Municipality and private landowners, including residential homes and a religious/worship building. DNR falls within the Core Zone of the UNESCO Gouritz Cluster Biosphere Reserve (GCBR), with neighbouring properties situated within the GCBR buffer zone.

The locality and extent maps are provided in Figure 2.1 showing the location of DNR and Figure 2.2 shows the Protected Area extent.

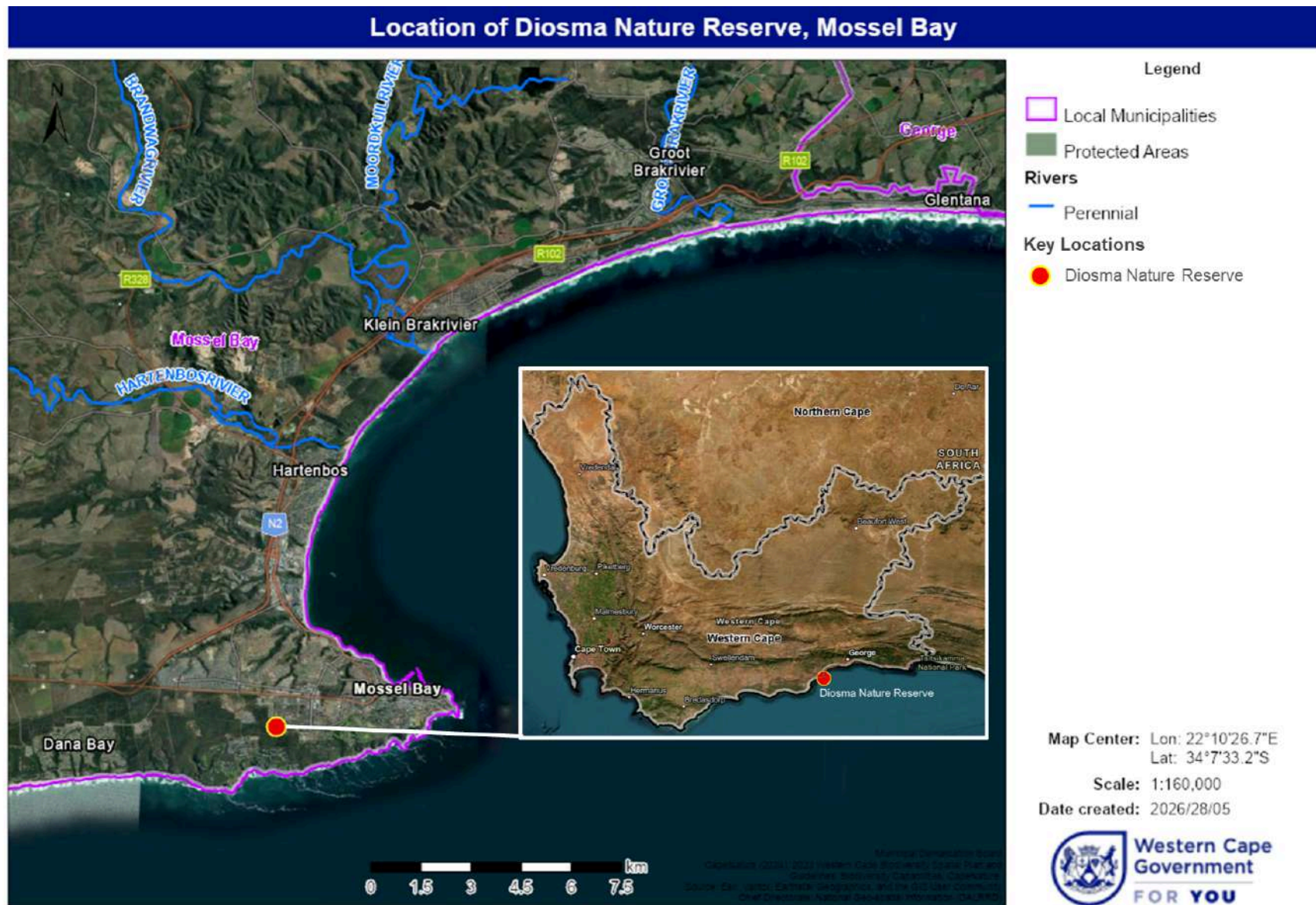


Figure 2.1 Regional location of Diosma Nature Reserve within the Mossel Bay Local Municipality in the Western Cape province.

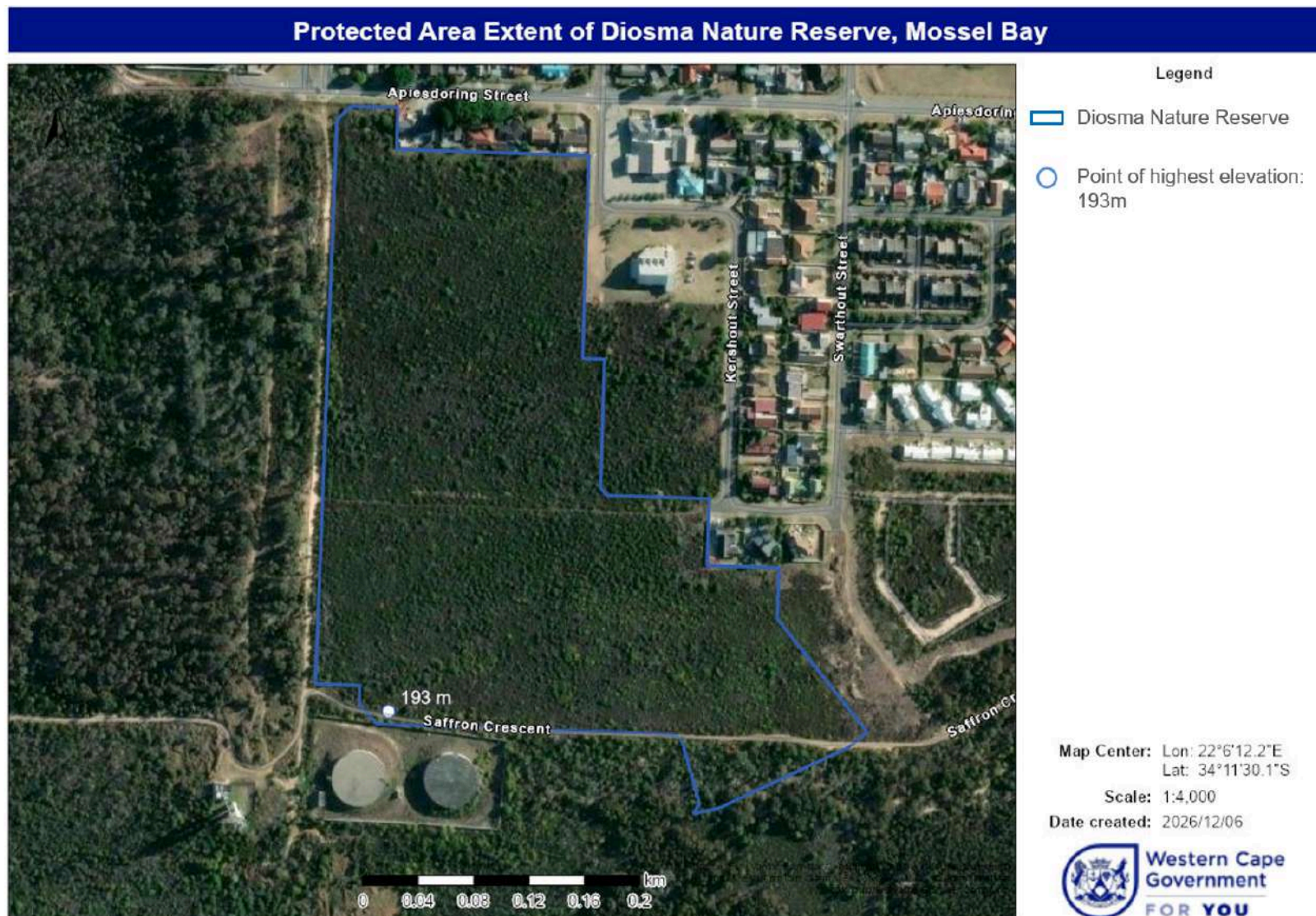


Figure 2.2 Protected Area Extent of Diosma Nature Reserve within Heiderand, Mossel Bay. The Reserve falls within the Core Zone of the UNESCO Gouritz Cluster Biosphere Reserve.

2.2 Management Authority Details

Table 2.1 Management authority details.

Management authority details	
Owner	Mossel Bay Municipality
Contact person	Senior Environmental Officer
Contact details – Tel.	044 606 5000
Contact details – email	admin@mosselbay.gov.za
Management Authority	Mossel Bay Municipality
Co-management agreements	N/A
Property descriptions	
Property details	Assigned name of nature reserve: Diosma Nature Reserve Declaration date: 2025-11-21 Reference no.: 134/2025 Deed of Transfer no.: T45993/2018
Total area	The total area covered by the declared protected area, DNR, is 10.7664 hectares.
Highest point	The highest point within DNR is located on the south-western corner at an elevation of approximately 193 m or 633 feet (as shown in Figure 2.2). In terms of Section 47 of the Act, the protected area includes the airspace above the area to a height of 2 500 feet above the highest point in the area. Thus DNR will include the airspace up to an elevation of 3 133 feet above the reserve.
Location	The DNR is located within Mossel Bay, which is situated along the Garden Route, in the Western Cape of South Africa. Refer to Figure 2.1 for a map of the regional location of the reserve in relation to neighbouring towns.
Municipal areas in which the area falls	DNR falls within the Mossel Bay Local Municipality, under the Garden Route District Municipality. The management plan will be informed by these IDPs and Spatial Development Framework (SDF).
International listings where relevant	The Gouritz Cluster Biosphere Reserve (GCBR) was officially approved and designated as a UNESCO Biosphere Reserve on June 9, 2015 due to the globally significant biodiversity value within this area. The GCBR has a domain of 3 187 893 hectares, which is located in the southern portion of South Africa, including areas within the Eastern and Western Cape provinces. The DNR is included as a Core Zone of the GCBR, as highlighted in Figure 2.13. Although not within the DNR itself, the Pinnacle Point complex is just south of the reserve (between 1 to 2km) which forms part of the UNESCO World Heritage Site: The Pleistocene Occupation Sites of South Africa. This site was designated in 2024 at the 46th session of the World Heritage Committee (46.COM).

2.3 Administrative Structure

The landowner is appointed as the Management Authority for the Nature Reserve as agreed to in the Management Agreement concluded between CapeNature and the landowner. In the case of the DNR, the Management Authority is Mossel Bay Municipality. Management decisions will be made according to the following organogram for Mossel Bay Municipality, outlined in Figure 2.3 below.



Figure 2.3 Organogram outlining the management structure for Diosma Nature Reserve by Mossel Bay Municipality.

Where applicable, management decisions can be made collaboratively between the Management Authority and CapeNature, however, the Management Authority is responsible for the management of the reserve and carries the ultimate decision-making responsibility. The Management Authority is required to submit a copy of their Annual Plan of Operation to CapeNature.

2.4 Key Attributes

The values of a site are those remarkable attributes that led to it being identified as a priority for conservation. The values are important in planning and management, as they highlight the reasons behind the site being declared as a protected area. Summarising these key attributes into specific biodiversity targets then enables measurable goals to be generated and aimed at conserving and enhancing the reasons for the site being recognised as a priority for conservation. These targets are designed to ensure that protected areas effectively contribute to the overall conservation of biodiversity and the sustainable use of natural resources.

The values of DNR include:

Table 2.2 Values of Diosma Nature Reserve.

Value	Description
Natural values	The National Vegetation Map (Vegmap 2024 Beta) classifies the reserve as Hartenbos Dune Thicket which falls within the Albany Thicket biome. The NEM:BA Revised National List of Ecosystems that are Threatened and in need of Protection (No. 2747 of 2022) classified Hartenbos Dune Thicket as having a threat status of Endangered, in accordance with SANBI's Red List of Terrestrial Ecosystems (2021). Hartenbos Dune Thicket has a narrow distribution with an estimated extent of around 59 629 ha (SANBI, 2024), with around 16.54 % of the existing area already transformed (Grobler et al., 2018). This vegetation type has a conservation target of 19 % (Grobler et al., 2018), however, the National Biodiversity Assessment (NBA) undertaken in 2025 found that Hartenbos Dune Thicket was Endangered, but also that it was Poorly Protected, making this a high-risk coastal ecosystem type (DEA&DP, 2025). Finer scale assessments classify the area as comprising Dune Sandplain habitat within the Fynbos biome (Vlok Vegmap - Biomes) with the specific variant identified as Heiderand Sandplain Fynbos (Vlok Vegmap - Variant). The reserve is home to many threatened endemic species according to those listed on The South African Red List, including the Critically Endangered <i>Diosma aristata</i>, and Endangered species such as <i>Euchaetis albertiniana</i>, <i>Lampranthus pauciflorus</i>, <i>Muraltia knysnaensis</i>, and <i>Nanobubon hypogaeum</i>, as well as a number of Vulnerable and Near Threatened plant species. This is one of three locations where <i>D. aristata</i> occur, and this reserve safeguards the largest sub-population of this species. The DNR is also home to several important wildlife species. The reserve is classified as a Protected Area (CapeNature, 2024). Many of the properties immediately adjacent to and surrounding the reserve have been classified as Critical Biodiversity Areas (CBAs), which on the south lead down towards the Coastal Habitat Ecological Support Areas (ESAs) along the St Blaize Hiking Trail. This may provide an excellent opportunity for future reserve expansion and corridor development opportunities. There are no river systems or Wetland Freshwater Priority Areas within the reserve.
Ecosystem service values	Habitat Provision: provides a critical habitat for many indigenous plant and animal species, contributing towards the conservation of locally endemic and often extremely range-restricted species. The reserve provides a safe habitat for species of special conservation concern and threatened species such as <i>D. aristata</i>. Further it provides refuge for wildlife and animals in the rapidly developing Mossel Bay area. It enables crucial pollination services by pollinators (e.g. birds, bees, wasps, etc.). Expansion and the development of ecological corridors linked to this reserve would further enhance these, providing opportunities to improve local scale ecological processes and movement of fauna. Regulation and Stabilisation: maintaining intact natural vegetation helps contribute towards erosion control, regulation of rainfall and water supply, climate regulation, mitigation of storms and floods. Purification and Detoxification: help with filtration, purification and detoxification of air, water and soils. Cycling Processes: nutrient cycling, nitrogen fixation, carbon sequestration, soil formation
Tourism values	Provides an excellent ecotourism opportunity contributing towards the continued economic and conservation benefits for Mossel Bay, and the DNR.
Cultural and heritage values	Contributes towards human well-being, spiritual enrichment, and people's sense of place and cultural value.

Socio-Economic values	Contribution to the local economy through ecotourism opportunities. Provide an opportunity for recreational activities such as walks through nature, connecting people with nature and contributing towards mental and physical health, enjoyment, relaxation and well-being. Provides an opportunity for public learning and education on the importance of conservation and protection of biodiversity. It can also be used to develop mutually beneficial scientific and research opportunities with educational centres such as universities. Provides social value by bringing people together in this shared space and providing an opportunity for the development of community networks and collective participation for ensuring the continued conservation of this and surrounding areas.
------------------------------	---

In accordance with Section 41(2)(a) of NEM:PAA, the PAMP must contain conditions applicable to any Biodiversity Management Plan (BMP) under NEM:BA. There are currently no applicable BMPs in place for DNR. BMPs may be developed for managing threatened species across this reserve if this is required.

2.5 Summary of Management Challenges and Opportunities

A summary of the key management challenges and opportunities, addressed in the management plan are highlighted in the table below.

Table 2.3 Management challenges and opportunities.

BIODIVERSITY & ECOLOGICAL COMPONENTS

Challenges and Opportunities of Management Focus Areas
Management Focus Area: Integrated Wildfire Control
Challenges Fynbos vegetation (such as in this reserve) requires periodic burning to enable fire-dependent species to reproduce and to prevent them from becoming moribund and their biomass forming large, uncontrollable fuel loads. There is a challenge of balancing the need for the Fynbos biome to burn with the safety risks that fires pose in an urban area. • Negative impacts on biodiversity if fire is excluded or not appropriately managed. • Potentially dangerous uncontrolled and unplanned fires resulting from moribund plant biomass if burns are not implemented at the correct frequency. • Altering of natural fire regime which may be exacerbated by presence of woody IAPs. • Safety and damage risks to neighbouring people, properties and infrastructure during burns. • Loss of biodiversity and disturbance to an already small reserve through the creation and maintenance of firebreaks.
Opportunities • Implementing a controlled fire programme at appropriate intervals and intensities will help ensure a more natural fire regime. • Promote biodiversity within the Fynbos biome. • Reduced risks of uncontrolled wildfires. • Firebreak creation and maintenance preventing uncontrolled fire spread and protecting people, neighbouring properties and infrastructure. • Preparedness and fire response protocols, staff trained and equipped to manage wildfires. • Monitor the extent of wildfires and establish thresholds of potential concern. • Joining the local Fire Protection Association to fulfill legal obligations and for assistance in case of an emergency. • Emerging IAP seedlings can be targeted post burns to help reduce infestations.

Challenges and Opportunities of Management Focus Areas

Management Focus Area: Integrated Invasive Alien Species Control

Challenges

- Damage to threatened or endangered species resulting from clearing activities, herbicides used or accessing sites.
- Prolific seedling emergence after fires.
- Incorrectly applied methods may be ineffective and waste resources.
- Certain methods will be destructive in this sensitive environment and should be avoided.
- If follow up treatments are not implemented, previous resource investments will be lost.
- As an open reserve there are risks of IAS spread, as well as of IAS spreading from neighbouring properties.

Opportunities

- Treating and controlling IAS will help protect biodiversity and enhance conservation efforts.
- Reduced combustible material from woody IAPs to reduce intensity and spread of wildfires.
- Replacement of IAPs with indigenous species.
- Small scale IAP biomass opportunities such as use for firewood.
- Job creation and skills development opportunity for clearing teams.
- Opportunities for monitoring to prevent further introductions of invasive aliens.
- Opportunity to inform and educate home and property owners in the area on IAP species to avoid in gardens and to promote indigenous species for replacement.
- Community engagement potential for “hackathons” or IAP removal.

Management Focus Area: Aquatic and Riparian Systems

N/A - No challenges or opportunities related to aquatic or riparian systems within this reserve.

Management Focus Area: Rehabilitation and Restoration

Challenges

- Disturbed areas such as dumping sites and old roads pose risks of degradation and erosion.
- Disturbance from fires and IAP clearing may leave those areas cleared open to increased degradation or erosion risks and may require passive or active restoration.
- Development of firebreaks or trails may result in habitat disturbance, degradation or transformation and areas may require restoration or rehabilitation.
- Developments or construction on neighbouring properties may negatively affect the ecosystems in the reserve.

Opportunities

- Opportunity to limit the loss of biodiversity and disruption to ecological processes due to degraded habitat.
- Restore and rehabilitate areas that have been previously damaged or degraded to promote habitat conservation and biodiversity protection.
- Determine the extent and causes of degradation, and identification of appropriate restoration/rehabilitation measures.
- Opportunity to replace treated IAPs with indigenous species.
- Long term monitoring of habitat disturbance, degradation or transformation or soil erosion in the reserve and its recovery after application of rehabilitation/ restoration techniques.
- Education and public awareness raising on conservation value of the area and anti-dumping.
- Skills development training for restoration or rehabilitation teams.

Management Focus Area: Species of Special Concern

Challenges

- Major threat to the survival of threatened species of special concern in the event of any harmful activities being undertaken, disasters or accidents on the reserve.
- These species are restricted to such a small area that further developments in surrounding areas may heavily negatively impact the survival of these important species.
- Species of special concern may be at risk when creating trails or firebreaks, constructing or maintaining infrastructure such as signs, or fences.
- Threats of poaching and illegal harvesting of species of special concern.

Challenges and Opportunities of Management Focus Areas

Opportunities

- Major opportunity for the protection and enhancement of threatened species and species of special conservation concern such as *D. aristata*.
- Opportunity to raise public awareness about conservation of the many threatened species in this area.
- Opportunity to partner with research institutions such as universities to study these rare species.
- Opportunity to create an iNaturalist Project where people can add observations specifically for the DNR.
- Linking this reserve with other areas may provide an opportunity for the conservation of other species of conservation value such as the endangered *Lepidochrysops littoralis* butterfly in the Butterfly Reserve outside of the Mossel Bay Municipal Cemetery.

Management Focus Area: Wildlife

Challenges

- Wildlife connectivity is currently fragmented, limiting ecological processes and the movement of wildlife, and would benefit from the development of further ecological corridors and the expansion of the Protected Area.
- Threats on wildlife, including:
 - Poaching, snares or traps and hunting
 - Threats of domestic dogs and cats on wildlife.
 - Land pollution and dumping in the reserve
 - Surrounding developments reducing habitats further or harming wildlife during construction
 - Injuries or roadkill resulting from surrounding busy roads

Opportunities

- Creates a habitat and provides refuge for wildlife in the rapidly developing Mossel Bay area.
- If ecological corridors are created there is an opportunity for improved ecological processes such as pollination services and movement of fauna.
- Opportunity for wildlife monitoring such as the installation of camera traps and evaluation of their impact on the ecosystem.
- Educational and awareness programmes for the importance of wildlife conservation and providing an opportunity for people to connect with wildlife and nature.
- Opportunity to educate neighbouring residents and the public on the importance of preventing domestic dogs and cats from placing a threat on wildlife.

SUSTAINABLE UTILISATION OF NATURAL RESOURCES

Challenges and Opportunities of Management Focus Areas

Management Focus Area: Grazing and Browsing of Wildlife

Challenges

- Given the limited size of DNR and its restricted ecological connectivity, opportunities for wildlife grazing and browsing are limited.
- No formal monitoring regarding wildlife impact

Opportunities

- Reserve expansion through protected area enlargement, natural area expansion, and the establishment of effective ecological corridors would increase and improve the availability of habitat for wildlife.
- Effective ecological monitoring to ensure wildlife populations remain within the ecological carrying capacity of the reserve and any associated areas of expansion.

Management Focus Area: Recreation and Tourism

Challenges

- Increased human traffic and movement through the site may threaten the species of special concern within the reserve.
- Development or installation of tourism infrastructure and operations including trails, signs or information boards, lighting systems, etc. may have a negative impact on the conservation objectives of the reserve.
- Safety and security of tourists or recreational users within the reserve.

Opportunities - There are a variety of good recreational and ecotourism opportunities within this reserve, including: - Botanising - Bird watching - Walking or running - Guided tours - Educational opportunities from installation of information boards - Citizen-science or volunteer programmes - Donations and potential income streams could help offset conservation management costs.
Management Focus Area: Sustainable Harvesting
Challenges Harvesting is unlikely to be sustainable in a reserve of this size. Challenges will include the damage to these endemic species and the possibility of their extinction given their greatly limited extent.
Opportunities No opportunities exist for sustainable harvesting, given the high risk of increased pressure on threatened species of special concern.

SOCIO-ECONOMIC & HERITAGE

Challenges and Opportunities
Management Focus Area: Environmental Awareness and Education
Challenges - Access to the reserve by focus groups and the public. - Availability of transport for various interest groups to the reserve and limited parking. - Illegal harvesting plants. - Illegal dumping. - Fear of runaway wildfires damaging property and presenting danger to local residents.
Opportunities - Educational walks with information boards and signs. - Guided informative tours or walks. - Awareness drives, talks and programmes for the public, such as on: - The value of functioning ecosystems and conservation land use - Invasive alien plants and control - Effects of littering and dumping, - Protecting threatened species and why it matters, - Eliminating poaching and use of snares, - Creating indigenous and pollinator friendly gardens - Interacting with indigenous wildlife safely. - Create awareness around illegal harvesting plants - Create awareness around illegal dumping - Create awareness on the benefits of ecological fires and the function they play in risk reduction - Engagement with other environmental organisations. - Engagement with school groups. - Career development training provided for employees such as on invasive species control or erosion control and rehabilitation and restoration techniques. - Citizen science programmes involved in tackling issues such as invasive species control and monitoring, litter collection and removal, snare removal, etc.
Management Focus Area: Socio-economic Development Initiatives
Challenges As the reserve is small and will be open-access, there will be small-scale economic and job creation opportunities resulting from this reserve.

Opportunities • Small scale employment for workers within the reserve. • Training and skills development for programmes such as invasive species control or rehabilitation and restoration. • Education and awareness opportunities for local communities and residents. • Ecotourism opportunities for informative tours, such as bird-watching, botanising, etc. • Development of positive relationships with key community role players and groups.
Management Focus Area: Heritage Features
Challenges • No significant heritage features have been identified on this reserve.
Opportunities • Identification and preservation of any archaeological or heritage features which are identified within the reserve and surrounding areas.

MANAGEMENT AUTHORITY EFFECTIVENESS & SUSTAINABILITY

Challenges and Opportunities
Management Focus Area: Legal Compliance
Challenges • Under NEM:BA, property owners are legally obligated to control invasive alien species on their land, and failure to do so constitutes non-compliance. The municipality has an Invasive Alien Species Monitoring, Control and Eradication Plan; not all objectives set out in this plan have been achieved within the stipulated time frames. • Non-compliance with the National Veld and Forest Fire Act (Act 101 of 1998): failure by the property owner to prepare and maintain adequate firebreaks on property boundaries, increasing the risk of uncontrolled fire spread to or from neighbouring land. • Illegal harvesting of indigenous flora: the unauthorised removal, picking, or collection of wild flowers within the Protected Area without a permit, in contravention of the National Environmental Management: Protected Areas Act (Act 57 of 2003).
Opportunities • Ensuring that the reserve is compliant with all the relevant legislation and has all declaration documentation in order. • Ensuring that all activities undertaken within this reserve are aligned to the relevant legislation governing them. • Undertake an Annual Plan of Operation (APO) Report and Review as well as a METT Assessment, and submission of a copy of the Annual Plan of Operation to CapeNature to ensure effective management and track progress in implementing this plan.
Management Focus Area: Employee Skills Development
Challenges • Ensuring appropriate, practical training is made available to all staff who require it prior to the undertaking of any associated works to prevent negative impacts.
Opportunities • Identification of beneficial training courses, and staff who will require training. • Provision of training and skills development opportunities creating socio-economic benefits. • Management support and mentorship to ensure the successful reserve management.
Management Focus Area: Management Infrastructure and Equipment
Challenges • If the necessary infrastructure and equipment are not in place, there will be limited ability to achieve the management objectives of this reserve.

Challenges and Opportunities
Opportunities • Identification and installation of necessary infrastructure and equipment to support personnel in implementing the management plan. • Maintenance and servicing requirements outlined and monitored regularly to ensure infrastructure and equipment is in safe working order.
Management Focus Area: Signage, Access Control and Security
Challenges • The open-access reserve faces large security or crime related threats, risks of squatting or land invasion, vandalism and illegal fires.
Opportunities • Signage, access control and security measures (such as CCTV cameras) put in place to effectively address related threats. • Increased control by managing entry points, restricting access elsewhere and preventing unauthorised vehicle entry into the site.
Management Focus Area: Research and Management Knowledge
Challenges • Any research methods that may be destructive, such as harvesting will cause negative impacts.
Opportunities • Address knowledge gaps through: ◦ Desktop studies and scientific research (non-destructive), ◦ Partnering with education institutions such as universities, organisations such as the Gouritz Cluster Biosphere Reserve, or citizen science initiatives such as the Custodians of Rare and Endangered Wildflowers (CREW), ◦ Engagement with experts. • Use increased knowledge and research findings to improve management effectiveness.

2.6 Historical and Current Landuse

Information on the history of this reserve was obtained from the previous Environmental Management Plan for the DNR (Du Plessis and Ranger, 2014). In 1986 Botanist Jan Vlok discovered a new population of *D. aristata* during the construction of the roads for the Heiderand development. The open space within this development was relocated to include this new population. In the late 1990s and 2000s this area became increasingly subdivided and fragmented as new large-scale developments were established in this area, including residential areas, golf courses and estates, a casino and a private school. Human activities resulted in the disturbance, degradation and the transformation of natural vegetation, as well as the destruction of these rare habitats. After a wildfire in 2005 CapeNature undertook a plant survey and identified species of special conservation concern. Following this, in 2007 several management interventions were implemented including: CapeNature and Mossel Bay Municipality implementing a controlled burn in March / April 2007, and the reserve being fenced off with funding from the Garden Route Casino Community Trust (GRCCT). In 2008 after CapeNature conducted a biodiversity site assessment it was confirmed that the Contract Nature Reserve status for the DNR would be supported (May), and this was communicated with Mossel

Bay Municipality. In 2009 CapeNature helped fund an IAP clearing team to control invasive vegetation within the DNR. Between 2011 to the present CapeNature have carried out several surveys within this reserve and surrounding areas to monitor the number and locations of *D. aristata* plants. In 2014 FOOTPRINT Environmental Services was appointed to develop an environmental management plan for the DNR. Since then, this plan was approved, and used as part of the Protected Area application process. In November 2025 this application was approved and the DNR was declared as a Protected Area. In 2026 Apex Conservation Services was appointed to develop a Protected Area Management Plan for the DNR.

As a Protected Area, DNR aims to contribute towards conservation and will be used as a green space by the community or for recreational activities. At present, the areas around DNR consist of a mix of developments and currently undeveloped land. These developments include residential housing, commercial and retail areas, as well as social, educational and community service areas which have been created to help meet the demands of the ever-growing population of Mossel Bay. Developments of note surrounding DNR include Pinnacle Point Golf Residential Estate and Course, the Garden Route Casino and Hotel, and Village on Sea. Developments in this area pose a particular challenge as they result in the degradation and transformation of natural areas and fragment these already highly limited and endangered habitats. There are utility services directly below the reserve, including a water tower and communication tower. The area around the reserve also has portions of open, vacant land, although many of these areas are infested with invasive alien plants such as *Eucalyptus conferruminata* (Spider gum), *Acacia saligna* (Port Jackson Willow) and *Acacia cyclops* (Rooikrans). There are frequent instances of illegal land use within this area, such as dumping of building rubble, general and green waste, which are also frequent challenges faced within DNR. Large portions of these undeveloped open space areas surrounding this reserve are identified as possible areas for inclusion as part of the proposed Louis Fourie Precinct Corridor mixed housing project and related infrastructure. This would entail the development of housing units, businesses and services, as well as the zoning of Nature Conservation Areas, where developments will not take place. These nature conservation areas will help ensure that land use within this area is not only focused on urban developments, but also the conservation of natural ecosystems and the protection of threatened indigenous species. This proposed plan is still being developed, and zonation is still in progress.

2.7 Ecological Context

This section describes the ecological factors that influence biodiversity and ecological processes on DNR.

2.7.1 Climate and Weather

The DNR is located in the coastal area of Mossel Bay, which typically has a temperate climate with warm summers and cool winters. The Mean Annual Temperature for Mossel Bay is between 16 - 18 °C (Ulwazi, 2019), with average daily high temperatures in summer above 23°C and average daily temperatures in winter below 20°C (Weather Spark (n.d.)). The mean monthly

maximum is 25.19 °C in February and the mean monthly minimum is 6.47 °C in July (Grobler et al., 2018). This region receives non-seasonal rainfall, throughout most of the year, with a Mean Annual Precipitation of between 261 mm and 666 mm (Grobler et al., 2018).

This region is typically windiest from the end of May to the beginning of March with average wind speeds of 17 kilometers per hour, while the calmer, less windy months include March, April and May, with an average hourly wind speed of 14 kilometers per hour (Weather Spark (n.d.)). As Mossel Bay lies along the coast it is largely unaffected by snow, however, frost may be present for approximately 3 days per year (Grobler et al., 2018). Altitude ranges from 0 - 273 masl.

2.7.2 Topography, Hydrology and Soils

Geology and soils predominantly occur in Wankoe and Strandveld Formations. The most important land types are Fc, Hb, Ha (Grobler et al., 2018). The soil type is classified as ED - Soils with limited pedological development. This includes greyish, sandy excessively drained soils with depths of ≥ 750 mm and $< 15\%$ clay. The Broad Soils Classification (ENPAT) describes the soil type as Grey regic sands dominant and the geology as mainly fixed dunes and dune rock with calcrete. The Geology Classification (1:250K) describes the area as having a Wankoe lithology (Bredasdorp Group), with grey-weathering, massive or large-scale cross-bedded calcarenite and calcareous sandstone.

This area has a mainly North (337.5-360) aspect, with very little curvature and a slope of 0 - 5 Degrees. The reserve has a highest elevation of around 193 m, with elevations lower in the North and increasing in the South.

There are no wetland areas (NFEPA), hydrological areas, or rivers (perennial or non-perennial) within this site, and Surface Flow Accumulation is classified as very low accumulation in the DNR. This area is identified as having a low susceptibility to the groundwater body being potentially contaminated by anthropogenic activities. This area has also been classified as having an Aquifer Vulnerability of “Least Vulnerable” which outlines that this region is only vulnerable to conservative pollutants in the long term when continuously discharged or leached.

Refer to Figure 2.4 for a map of the key features within DNR.

Topography, Hydrology and Soils within Diosma Nature Reserve, Mossel Bay

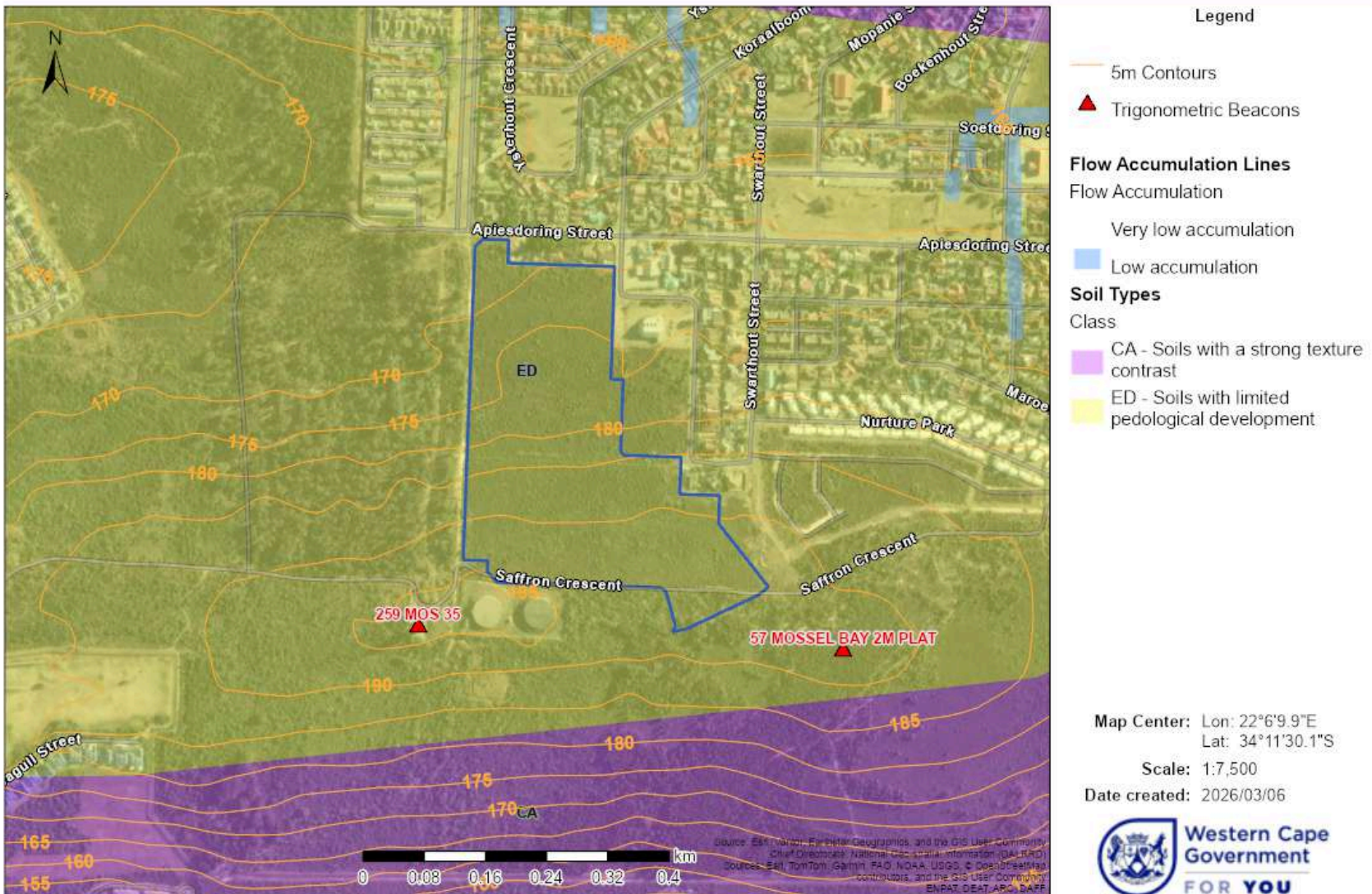


Figure 2.4 Topography and geology of Diosma Nature Reserve.

2.7.3 Vegetation

The Cape Floristic Kingdom, one of six world floral kingdoms, is internationally renowned for its special rich flora containing an estimated 9 000 species of vascular plants of which almost 69% are endemic (restricted to the region). This makes it one of the richest regions in the world in terms of botanical diversity. It is characterized by five endemic families and by the conspicuous presence of, amongst others, species belonging to the families Aizoaceae, Ericaceae, Fabaceae, Iridaceae, Orchidaceae, Proteaceae, Restionaceae, Rutaceae and Scrophulariaceae (Goldblatt & Manning, 2000).

This vegetation falls under the Gouritz planning domain, which is managed by the Gouritz Cluster Biosphere Reserve (GCBR), a UNESCO designated Biosphere Reserve. The vegetation within this area plays a crucial role in maintaining many finer-scale ecological processes and patterns such as faunal movement, pollination services and fire regimes. This area in and around the reserve forms part of the critically important ecological corridors, including the Coastal and Nectarivore Corridors (Lombard et al., 2004). This area is home to many plants of special conservation concern, which are often endemic and frequently have highly restricted ranges as a result of their link to the geology within the area.

2.7.3.1 National Vegetation Map

The vegetation within the DNR was previously classified as Canca Limestone Fynbos within the South Coast Fynbos bioregion (Mucina and Rutherford, 2006). In the updated versions of the National Vegetation Map of South Africa (2018 and 2024 editions) the vegetation for this area was mapped as Hartenbos Dune Thicket. Hartenbos Dune Thicket is found within the Western Cape Province, in coastal stretches from the Duiwenhoks River Mouth eastward to Glentana near the Great Brak River (Grobler et al., 2018). This vegetation type is typically found on flat to moderately undulating coastal dunes. The Hartenbos Dune Thicket is characterised by mosaics of low (1 - 3 m) thicket, found in small bush clumps dominated by small trees and woody shrubs, in a mosaic of low (1 - 2 m) asteraceous fynbos (Grobler et al., 2018). These thicket clumps tend to develop in the fire-protected dune slacks, while the fynbos shrubland is located on upper dune slopes and crests. Succulent karroid elements (*Aloe ferox*, *A. arborescens*, *Eriosephalus africanus*) are typically found along bands of mudstone and shale.

The NEM:BA Revised National List of Ecosystems that are Threatened and in need of Protection (No. 2747 of 2022) classified Hartenbos Dune Thicket as having a threat status of Endangered. Hartenbos Dune Thicket is described as being narrowly distributed with evidence of ongoing biotic disruption from invasive species. Hartenbos Dune Thicket has an extent of around 59 629 ha (SANBI, 2024). This vegetation type has a conservation target of 19 %, while around 16.54 % of the existing area of Hartenbos Dune Thicket has been transformed (Grobler et al., 2018). The National Biodiversity Assessment (NBA) undertaken in 2025 found not only that Hartenbos Dune Thicket was Endangered, but that it was also Poorly Protected, making this a high-risk coastal ecosystem type (DEA&DP, 2025). Refer to Figure 2.5 for the National Vegetation map for DNR.

Table 2.4 Vegetation units and their contribution to vegetation targets.

Vegetation Unit	Extent in the WC Province (ha)	WC Provincial Conservation Target (%)	Target Conserved Inside Diosma Nature Reserve (%)	Target Conserved Inside Diosma Nature Reserve (ha)	Ecosystem Status (2021)
Hartenbos Dune Thicket	59 629 ha	19 %	0.1%	10,7 ha	EN

2.7.3.2 Regional Fine-scale Vegetation Maps

Finer scale mapping has been undertaken for vegetation within this area (Vlok et al., 2005; Vlok and de Villiers, 2007; and Vlok et al., 2008). The Vlok Vegmaps (Biomes and Variants) classify the vegetation within DNR as falling within the Fynbos biome, under a Dune Sandplain habitat, in the Brakke region. The specific variant mapped for this vegetation is Heiderand Sandplain Fynbos.

In the Riversdale Coastal Plain area, Sandplain Fynbos is found within the Hessequa Municipal area (Albertinia Sandplain Fynbos, Buffelskop Sandplain Fynbos and Canca Thicket-Sandplain Fynbos) as well as in the Mossel Bay Municipal area (Heiderand Sandplain Fynbos) (Maree and Vromans, 2010). The Sandplain Fynbos habitat is restricted to deep sandy soils with no rock cover (Vlok et al., 2008). The Sandplain Fynbos vegetation is fire-driven, however, the natural disturbance regimes have frequently been altered, which has negatively impacted this habitat type (Vlok et al., 2008). Common threats to this habitat type include poor fire management regimes and suppression of fires, the presence of invasive alien plants, overharvesting, the removal and restriction of movement of large and small herbivores, the abstraction of groundwater, and the promotion of thatch species over other indigenous species for human use (Maree and Vromans, 2010; Vlok et al., 2008). One of the major threats highlighted for Sandplain fynbos, specifically in the Mossel Bay Municipal area, is coastal developments, which is an extremely relevant threat in the context of the DNR and surrounding areas.

The Heiderand Sandplain Fynbos typically includes a variety of species such as *Leucadendron salignum*, *Leucospermum praecox*, *Protea lanceolata* and *Protea repens* (Vlok and de Villiers, 2007). *Thamnochortus insignis* is present but not dominant in this unit, with other restioids such as *Mastersiella purpurea* also abundant. Annuals and geophytes (e.g. *Freesia alba*, *Gladiolus rogersii*, etc.) are prominent after a fire in this unit (Vlok and de Villiers, 2007). There are several ericoid-leaved shrubs found in this habitat, with prominent species including *Cliffortia falcata*, *Cliffortia stricta* and *Metalasia muricata* (Vlok and de Villiers, 2007). There are many threatened and endemic species found within this habitat, such as *Agathosma muirii* (Vulnerable) and *D. aristata* (Critically Endangered). For a full species list please refer to Appendix C - Species lists.

Please refer to Figure 2.6 (Vlok Vegmap - Biomes) and Figure 2.7 (Vlok Vegmap - Variants) for maps showing the finer-scale vegetation.



Figure 2.5 Vegetation types found on Diosma Nature Reserve classified according to the National Vegetation Map (Vegmap, 2024 Beta). Species lists are included as Appendix C.

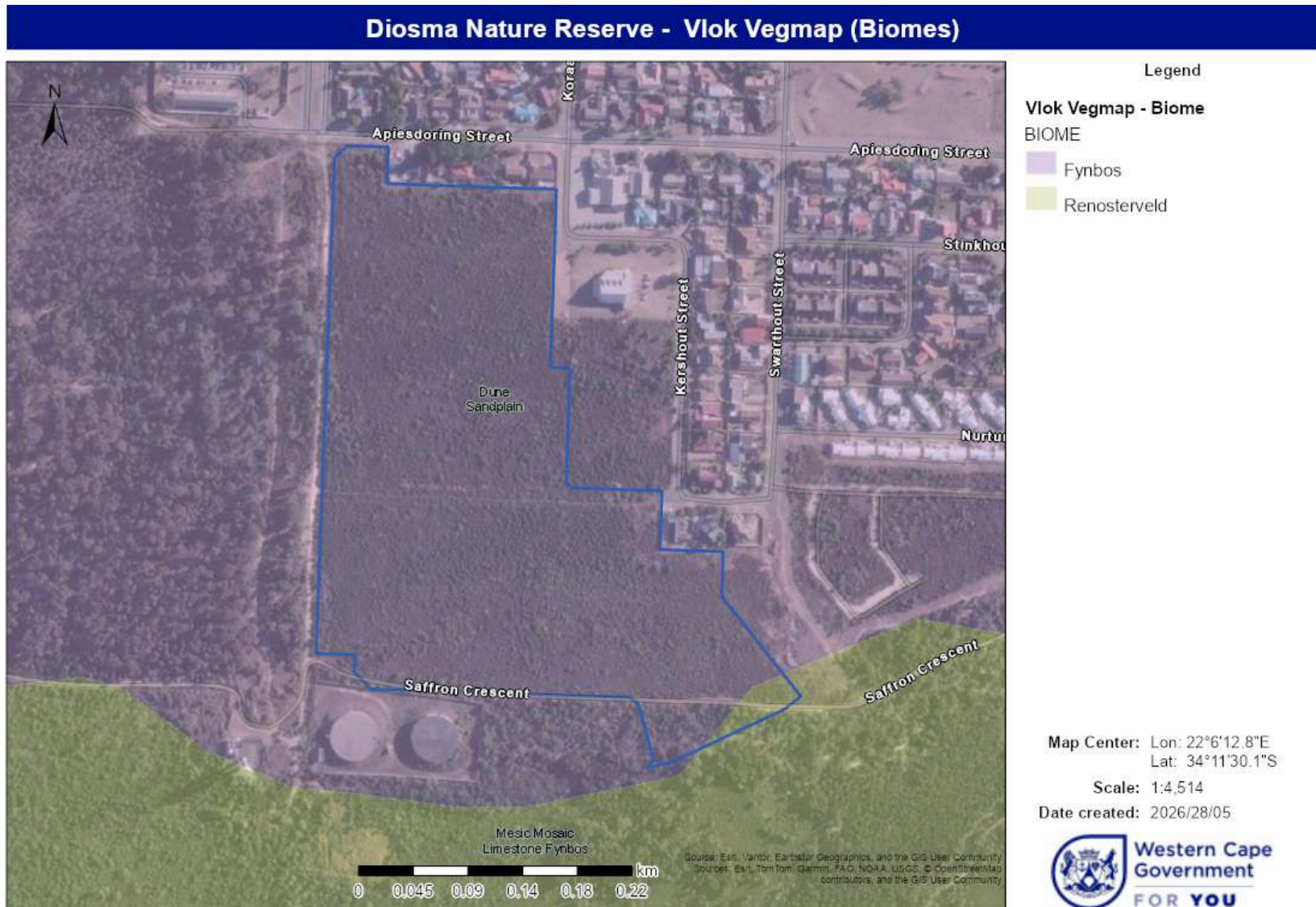


Figure 2.6 Biomes found on Diosma Nature Reserve classified according to the Vlok Veg maps (Biomes). Species lists are included as Appendix C.

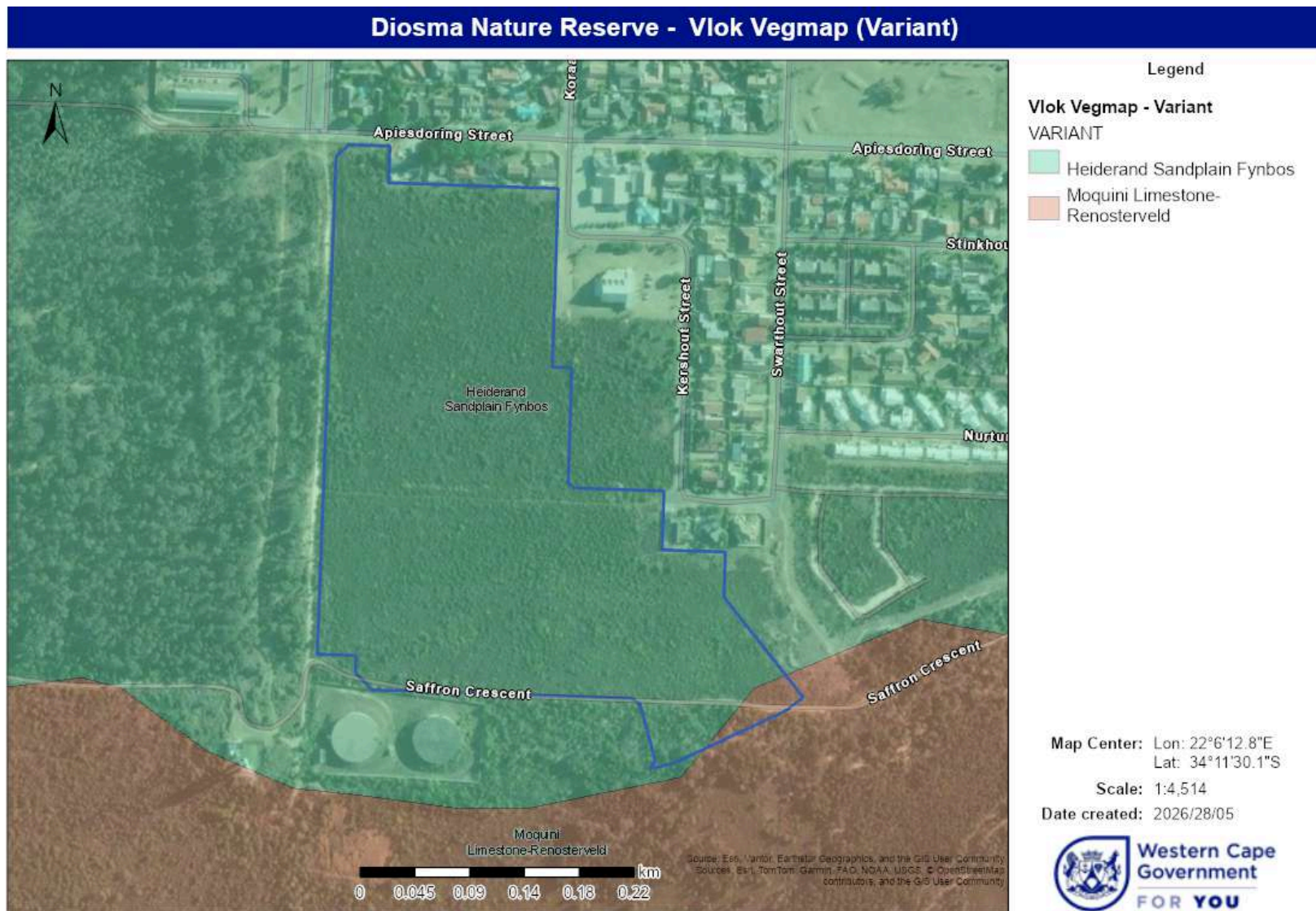


Figure 2.7 Vegetation variants found on Diosma Nature Reserve classified according to the Vlok Veg maps (Variants). Species lists are included as Appendix C.

2.7.4 Fire Regime

Fire is an essential ecosystem process in fynbos. It provides the disturbance and stimulus that has contributed to the unprecedented floristic response we experience in our landscape. Fire is an ecosystem process that is essential for the continued functioning of the ecosystem as well as the continued evolution of biota therein. Due to fragmentation of the natural landscape however, fire can no longer operate naturally on a landscape scale. We therefore need to facilitate the process within these smaller compartments to ensure persistence of biodiversity whilst ensuring the safety of persons and property.

Wildfires as well as the use of fire as a management tool pose serious potential risks. Consult the National Veld and Forest Fire Act (101 of 1998) to acquaint yourself with the legal obligations of landowners in fire-prone landscapes.

2.7.4.1 The Current Fire Management Regime

The National Vegetation Map of South Africa classified the vegetation within DNR as Hartenbos Dune Thicket. Thicket vegetation is generally not a fire prone or fire-driven system. Finer scale mapping (Vlok et al., 2005; Vlok and de Villiers, 2007; and Vlok et al., 2008), classified the vegetation as Heiderand Sandplain Fynbos, which is part of the Fynbos biome. Fynbos is a fire-adapted ecosystem and fire is an essential ecological process within this system. It is, however, critical to get the fire regime right, as too frequent or too infrequent burns will both cause serious biodiversity loss. One or two unsuitable fires at the wrong time of year, or no fires may cause the local extinction of species (CapeNature, n.d.). It is important to ensure that the fire management regime is adjusted to the specific context of the DNR, and is suitable for the size of this reserve, and its associated habitat, geology, climate and surroundings.

At present there is no formal fire management regime in place. Communication from CapeNature and a previously undertaken Environmental Management Plan (Du Plessis and Ranger, 2014) for DNR indicate that there has been one previous controlled burn in March/ April 2007. Local historic fire records are, however, limited for DNR. Global historic fire data was therefore mostly obtained using the NASA Fire Information for Resource Management System (FIRMS). The data for this reserve is outlined in Table 2.5 below for the past 25 years. These fire records show that as is characteristic of Fynbos, there are a number of runaway wildfires across this vegetation within this reserve and surrounding properties every few years. These wildfires are very likely opportunistic and frequently aseasonal. This poses risks to the biodiversity within these areas, as well as safety risks associated with these unplanned and uncontrolled fire events.

The available data suggests that the last significant fire took place on 7 June 2017, and burnt the entire reserve. The veld age for the vegetation within the reserve is therefore estimated to be approximately 9 years old. Refer to Figure 2.8 - Veld age map.

Table 2.5 Historic burn information for Diosma Nature Reserve.

Year	Month	Description
2017	June	Over the entire DNR area.
2013	May	Over the entire DNR area.
2010	June	Western portion of DNR and neighbouring ERF (RE2001).
2007	March/April	A controlled burn was carried out on approximately 1.4 hectares.
2005	July	Over the entire DNR area.
2004	February	Eastern section of DNR and neighbouring ERF (RE2001).

*Grey cells indicate fires that were recorded on the site.



Figure 2.8 Veld age map Diosma Nature Reserve.

2.7.4.2 Ecological Context of Fires in Diosma Nature Reserve

Fire regimes must be aligned to the ecological needs of this vegetation type, to ensure the continued protection and enhancement of biodiversity and the many threatened species which this reserve aims to conserve.

2.7.4.2.1 Fire Return Interval (Frequency)

The recommended burning interval for fynbos is generally 10–25 years, depending on vegetation type, climatic conditions, and the manner in which the veld has responded to previous fires. Under natural conditions it is recommended that the minimum fire return interval for moist mountain and lowland fynbos should be between 12 and 20 years

(CapeNature, n.d.). Intervals shorter than 6–8 years are particularly damaging to biodiversity. According to CapeNature the optimum frequency for burns on this reserve should be 13-15 years (du Plessis and Ranger, 2014).

It is important, however, that the fire intervals are determined by the growth rate of indigenous fynbos species native to that area. Fires should only be permitted when the Fynbos species have matured, as serotinous species (like Proteaceae) need sufficient time to build up a mature seed bank before the next fire. Capenature (n.d.) highlight that no fire should be permitted in fynbos systems until at least 50% of the population of the slowest-maturing species in the area have flowered for at least three successive seasons, or at least 90% of the individual plants of the slowest maturing species in the area have flowered and produced seed. A study by Geerts (2021) confirmed that for obligate seeder Protea species in the Cape Fynbos, the 50% rule is more conservative than the 90% rule, and is preferred. There are two main protea species which may be used as indicators within DNR, *Protea lanceolata* and *Protea repens*. Similarly, fire intervals can also be guided by the senescence of slow-maturing species, as fire is likely not necessary until at least a third or more of the slow-maturing plant species are senescent (CapeNature, n.d.). Species within DNR such as *Metalasia muricata*, *Cliffortia* spp., or *Erica discolor* can be assessed to determine if they are sufficiently old and moribund to help indicate that the veld is a suitable age and condition for burning, which will produce the heat and smoke triggers required for germination and resprouting of this vegetation.

2.7.4.2.2 Season

Late summer to early autumn fires (February to March or early April) are considered optimal (Bond et al., 1984; Cowling and Richardson 1995; Van Wilgen et al., 2010). Burning over this period gives the best recruitment response, as seedling survival is increased by the cooler and wetter months following the burn, giving the seedlings time to establish before the following summer. Spring fires are generally considered unfavorable for many species within the Fynbos. Aseasonal fires may contribute towards increased pressure on serotinous species, as they are exposed to rodent and bird predation for prolonged periods prior to their optimal germination conditions (Mucina and Rutherford, 2006). It is usually advised to avoid fires over the drier summer months in this area (December/ January) given the risk of runaway fires.

2.7.4.2.3 Fire Intensity

Fynbos requires high-intensity fires to effectively open serotinous cones, stimulate smoke- and heat-triggered germination, and clear standing senescent plant material (Bond et al., 1984; Cowling and Richardson 1995; Van Wilgen et al., 2010). High intensity fires are achieved by ensuring that the veld age is appropriate, with sufficient senescent plant biomass to act as fuel.

Low-intensity burns are, however, often favoured due to safety risks. This is not recommended by CapeNature, as this can have seriously detrimental effects on the biodiversity within these areas. Low intensity fires will likely not provide the conditions that many fynbos species require for successful germination, and will leave large amounts of biomass unburnt (CapeNature, n.d.).

High intensity fires are important within DNR, given the presence of the critically endangered *D. aristata*. This species is a reseeder, and as such, adult plants will likely die during fires, with future plants coming up from the existing seedbanks. If the intensity of the fire is too low to trigger the necessary germination cues, and open up the vegetation as required, the seedlings may not establish properly, placing the species at a serious risk of extinction.

Fire intensity is also strongly linked to the presence of woody invasive alien plant (IAP) species. The excessive plant biomass from IAPs causes a much greater fuel load than is typically found within the Fynbos biome. This massively increases fire intensity, past the temperatures which are conducive to seedling germination, and this results in damage to seeds and destroys the indigenous seed banks, further threatening the Fynbos species.

2.7.4.2.4 Fire Mosaic (Spatial Pattern)

Burning at a landscape-scale mosaic with different-aged patches helps support species diversity, provides refugia during fires, and maintains habitat for fauna at different life stages (Bond et al., 1984; Cowling and Richardson 1995; Van Wilgen et al., 2010). Within much smaller areas, however, CapeNature (n.d.) outlines that any areas of less than 50 ha should not be divided into smaller burn plots, but rather burnt in one fire event. This is due to the heightened risk of seed predation after fires in smaller areas, as well as the fire intensity, which may burn unevenly across small areas, as it does not have sufficient time to build up sufficient energy and momentum. Expanding the burn area will help ensure a more even burn and provide ecological benefits, as well as likely being more cost effective.

2.7.4.2.5 Invasive Alien Plants

Invasive species (particularly *Acacia* spp. and *Eucalyptus* sp.) fundamentally alter natural fire regimes, increasing the intensity, altering seasonality, and shortening the return intervals between fires. The increased plant biomass resulting from woody IAPs causes a build-up of fuel loads, which do not normally occur in such great densities within the Fynbos. These increased fuel loads cause hotter and more frequent fires, which is detrimental to biodiversity as it often damages or kills indigenous seedbanks, promoting the further establishment of IAPs, which are adapted to survive fires of greater intensities. IAPs are aggressive resprouters after fire and seedlings will likely come back densely. Emerging seedlings must be removed after fires before they are able to fully establish, after which they will be difficult to clear.

2.7.4.2.6 Post-Fire Recruitment

Many fynbos species rely on fire cues to germinate, such as smoke, heat, or ash-bed effects. Adequate soil seed banks and parent plant seed crops must be present before burning. Ecological monitoring efforts will enable more precise estimates of when vegetation is ready for the next burn.

2.7.5 Invasive Species

Invasive alien species (IAS) include both invasive alien plants (IAPs) and invasive alien animals (IAAs). IAPs are non-indigenous plants which have been introduced to South Africa from other countries (Huang and Asner, 2009). These plants have few natural enemies, and they reproduce rapidly, competing with the indigenous plants for resources (Allendorf and Lundquist, 2003; Kirichenko et al., 2013). Alien animal species are defined as non-indigenous species which have been deliberately or accidentally introduced through human intervention and that have subsequently established self-sustaining wild populations (Picker, 2013). This may include mammals, birds, reptiles, amphibians, fish (fresh-water and marine), invertebrates (terrestrial, fresh-water, and marine), and microbial species. If these alien species spread considerably past their point of introduction, these species are considered to have become invasive in that area (Picker, 2013).

Any land management programme in South Africa will inevitably include an alien species control programme. Alien species, especially invasive alien plant control programmes are essential to protect valuable resources such as surface and ground water, biodiversity and the landscapes of our country. In terms of Section 76 of the National Environmental Management: Biodiversity Act (No.10 of 2004), the management authority of a protected area must incorporate an invasive species control plan in the protected area management plan. An alien control programme requires a high level of commitment, coordination between landowners and authorities, professional planning and implementation and a good dose of common sense. Background to IAS and their ecological context within DNR is outlined below. The guidelines provided are compiled from a wide source and will hopefully provide insight to land managers in order for financial and human resources to be effectively used in an integrated control programme aligned to the Invasive Alien Species Monitoring, Control, and Eradication Plan (IASMC&EP) developed for Mossel Bay Municipality, which includes DNR.

2.7.5.1 Current IAP Management

The current management of IAPs within DNR is opportunistic, rather than a formal approach with scheduled initial and follow up treatments. This has led to insufficient resources being available to ensure the effective clearance of IAPs within the reserve. Previous clearing was observed on site, with mixed results. Clearing methods were not always undertaken in accordance with best principles, and resprouting was observed on several treated stumps (especially species such as *A. saligna*), and some stumps were cut too high, or hacked rather than cut smoothly, which creates a safety risk, as well as increased chances of IAP survival and resprouting.

An IASMC&EP was, however, recently developed for Mossel Bay Municipality which includes DNR, and this will guide any further IAP management.

2.7.5.2 Ecological Context of IAS in Diosma Nature Reserve

2.7.5.2.1 Introduction of IAPs

IAPs are highly adaptable, aggressive growers and prolific seeders (Robbins, 2004). IAPs spread easily and are able to rapidly invade areas, and once established these infestations become very difficult to fully eradicate. IAPs are frequently spread through a number of dispersal mechanisms, and the Convention on Biological Diversity (CBD) (2014) highlight the following common types of invasion pathways:

- Release in nature, e.g. for the stabilisation of dunes or landscaping.
- Escape from confinement, e.g. trees escaping and spreading from plantations.
- Transport - contaminant, e.g. contaminant nursery material.
- Transport - stowaway, e.g. unintentional transport of plant material, such as seeds, in vehicles.
- Corridor, e.g. transport of IAPs in waterways.
- Unaided, which includes the natural dispersal of already introduced IAPs.

Within DNR one of the major invasion pathways (ways in which IAPs enter a site) include the spread of IAPs from neighbouring properties, such as *Eucalyptus* spp. from dense stands to the west and south of the reserve, as well as *Acacia cyclops* (Rooikrans) and *Acacia saligna* (Port Jackson Willow) which are prevalent throughout Mossel Bay. Illegal dumping has also caused stands of IAPs to emerge, such as *Opuntia* spp. (Prickly pear), which are able to propagate from discarded plant fragments in garden waste. Some species have also escaped or been spread from surrounding properties and gardens, with species such as *Anredera cordifolia* (Madeira vine) and *Pennisetum clandestinum* (Kikuyu grass) spread from neighbouring gardens. Some IAPs such as *Schinus terebinthifolia* (Brazilian pepper tree) are also spread by birds.

IAPs are a long-term responsibility and after the site receives initial treatments, it is crucial that follow-up treatments are undertaken annually, to prevent previous time and resources invested in clearing from being wasted.

2.7.5.2.2 Major Challenges of IAPs

The major challenges that IAP species pose within the Fynbos biome include biodiversity loss, increased fire risks and alteration of natural fire regimes, increased erosion, and economic impacts. Woody IAP species, such as *Acacia cyclops*, *Acacia saligna*, and *Eucalyptus* sp., which are the dominant IAPs within DNR, pose serious fire risks, given the increased woody plant biomass they produce compared to natural Fynbos vegetation. These increased fuel loads increase the fire intensities and the risks of unplanned wildfires, which may cause damage to biodiversity, as well as threaten surrounding people, property and infrastructure. These higher intensity fires will damage indigenous species seeds, while favouring their own, ensuring a higher chance of their own survival and decreased competition when seedlings germinate at mass.

2.7.5.2.3 Disturbance

Although invasive species can invade most habitats, there are certain factors that make an area more prone to infestation. Invasive plants are more likely to be successful in disturbed habitats than in intact natural systems. Within DNR notable disturbances will include trampling by people, dumping, installation of infrastructure as well as creating firebreaks or trails. Fire is also a major driver within the Fynbos system, however, aseasonal, too frequent or incorrect intensity burns may cause disturbance that favours these IAPs (Baard and Kraaij, 2014).

2.7.5.2.4 IAP Treatment

It is critical to select an appropriate control method which is suitable for treating each species at their respective age class. The methods selected should be suitable for the receiving environment, to ensure that the least possible harm comes to the surrounding habitat and the indigenous flora and fauna. This is of particular importance within DNR, given the frequency of species of special concern, and the many endemic, threatened species within this area. Methods must as far as possible not damage indigenous species, and highly destructive control methods, such as mechanical bulldozing methods will not be suitable. Accessing the IAPs during treatment must be done carefully to avoid damage to indigenous and threatened vegetation, as well as protected tree species such as *Sideroxylon inerme* (White milkwood) and *Pittosporum viridiflorum* (Cheesewood). IAPs are frequent resprouters, and many species coppice after being cut. These species require the application of herbicide after being cut or lopped. Only registered, target-specific herbicides should be used. Integrated control approaches involve combining a variety of methods, such as manual, mechanical, chemical and or biological control to help effectively control IAPs. Integrated control will be useful within DNR to ensure the best outcomes. Currently biological control agents were observed on species such as *A. saligna* and *A. cyclops*.

IAPs create large amounts of biomass when treated, and this must be appropriately managed to reduce the likelihood of increased fire hazards, and prevent the chance of spreading of seeds, propagules or reproductive structures across this site or to new areas.

Please refer to the Mossel Bay IASMC&EP for further details on treating each of the IAP species present in DNR.

2.7.5.2.5 Post IAP Treatments

Where IAPs have not heavily infested areas, passive restoration techniques may be suitable for sites after clearing. However, where IAPs grow densely, or where their removal would open the system up to further invasions or degradation (such as soil erosion), rehabilitation and active restoration techniques may be required to help stabilize the soil surface and encourage the establishment and recruitment of indigenous vegetation which is natural to that area.

2.7.5.2.6 Invasive Alien Animals

As with IAP species, IA animal species can pose significant environmental impacts such as biodiversity loss, as well socio-economic impacts (Shivambu et al., 2020). IAA species often

compete with natural species for resources and habitats, contributing to increased pressure or even extinctions of these indigenous species (Bellard et al., 2016). These invasive animal species may also contribute to the spreading of pathogens and diseases to organisms (domestic or wild animals and humans), which in turn will have massive consequences for living organisms and their ecosystems, as well as the economies which rely on these ecosystems (van Helden et al., 2020). Invasive animal species often have a large influence on the receiving habitat, creating negative ecological impacts such as the competition driven displacement of indigenous species (Robinson et al., 2005).

There are many difficulties when attempting to manage invasive alien animal species, including logistical, contract and funding issues; stakeholder engagement, buy-in, and conflict; and perceptions involving animal ethics and animal rights (Van Wilgen et al., 2020). Collaborative efforts should be taken with appropriate stakeholders to control IAAs, including the relevant authorities and governmental agencies such as CapeNature, SANParks, SANBI and working groups, as well as the Society for the Prevention of Cruelty to Animals (SPCA).

2.7.5.3 IAS Assessment

The DNR was included as one of the properties assessed as part of the development of the Mossel Bay IASMC&EP. Therefore reference will be made to this document, and engagement with the management team implementing this IASMC&EP, to ensure the IAP control methods within the reserve are aligned to this plan.

A finer-scale IAS assessment was also undertaken during the development of this management plan, and details from this assessment are provided below. IAP species data are based on observations of IAP species made during the undertaking of fieldwork in May 2026. The IAA species are more challenging to assess, and therefore iNaturalist records have been used to supplement observations made in the field. Full IAS lists may also be obtained in Appendix C. The IAS within DNR are mapped in Figure 2.9 below. The IAP species, as well as their respective age classes and densities are outlined in Table 2.6. The estimated species densities are measured as % cover, and these are categorised into the following classes:

- Rare (0.01 % of the area covered by this IAP)
- Occasional (0.01 - 1 % of the area covered by this IAP)
- Very Scattered (1 - 5 % of the area covered by this IAP)
- Scattered (5 - 25 % of the area covered by this IAP)
- Medium (25 - 50 % of the area covered by this IAP)
- Dense (50 - 75 % of the area covered by this IAP)
- Closed (>75 % of the area covered by this IAP)

IAPs will be managed in two main MUs within DNR. Within these MUs there are a number of species which are fairly frequent, including *Acacia cyclops*, *Acacia saligna*, and *Eucalyptus* sp., as well as certain species which appear to rather be the result of dumping of green waste, or spreading from neighbouring gardens (see invasion pathways described above). See Figure 2.9 for IAS MUs and IAS densities for DNR.

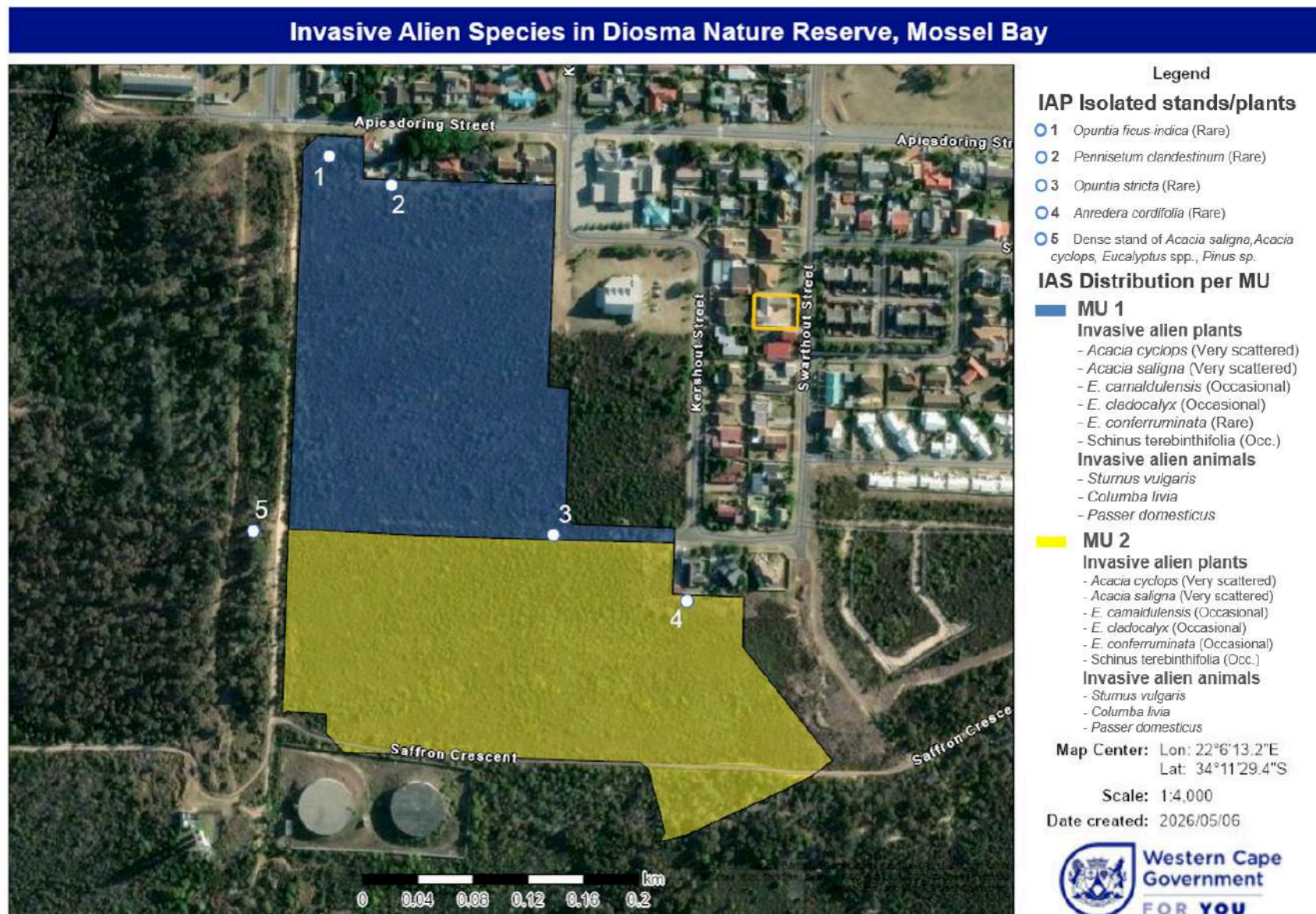


Figure 2.9 Invasive alien species map for Diosma Nature Reserve.

Table 2.6 Alien Species, Density and Age on Diosma Nature Reserve. Yellow cells indicate the dominant IAP species in each MU.

Species	Management Unit 1				Management Unit 2			
Plant Species and common name	Density	Age	Biocontrol	Comment	Density	Age	Biocontrol	Comment
<i>Acacia cyclops</i> (Rooikrans)	Very scattered	Adult	Present	Occurs throughout the whole area.	Very scattered	Adult	Present	Occurs throughout the whole area.
<i>Acacia saligna</i> (Port Jackson Willow)	Very scattered	Adult	Present	Occurs throughout the whole area.	Very scattered	Adult	Present	Occurs throughout the whole area.
<i>Anredera cordifolia</i> (Madeira vine)	N/A	N/A	N/A	N/A	Rare	Adult	Absent	Occurs on an isolated stand invading from a neighbouring residential garden.
<i>Pennisetum clandestinum</i> (Kikuyu grass)	Rare	Adult	Absent	Mainly occurs on the disturbed grass areas adjacent to neighbouring properties on the northern edge.	N/A	N/A	N/A	N/A
<i>Eucalyptus camaldulensis</i> (River red gum)	Occasional	Young	Absent	Occurs throughout the property, but is mainly on the western portion spreading from the dense infestation on the neighbouring property.	Occasional	Young	Absent	Occurs throughout the property, but is mainly on the western portion spreading from the dense infestation on the neighbouring property.
<i>Eucalyptus cladocalyx</i> (Sugar gum)	Occasional	Young	Absent	Occurs throughout the property, but is mainly on the western portion spreading from the dense infestation on the neighbouring property.	Occasional	Young	Absent	Occurs throughout the property, but is mainly on the western portion spreading from the dense infestation on the neighbouring property.
<i>Eucalyptus conferruminata</i> (Spider gum)	Rare	Young	Absent	Occurs throughout the property, spreading from the South and RE2001 area.	Occasional	Young	Absent	Occurs throughout the property, spreading from the South and RE2001 area.
<i>Opuntia ficus-indica</i> (Sweet prickly pear)	Rare	Adult	Absent	Occurs in one isolated stand.	N/A	N/A	N/A	N/A
<i>Opuntia stricta</i> (Australian Pest Pear)	Rare	Young	Absent	Occurs in a single stand likely from dumping.	N/A	N/A	N/A	N/A
<i>Schinus terebinthifolia</i> (Brazilian pepper tree)	Occasional	Young	Absent	Occurs throughout the whole area.	Occasional	Young	Absent	Occurs throughout the whole area.
Animal Species								
<i>Columba livia</i> (Rock dove)	Expected to occur on the whole property.							
<i>Passer domesticus</i> (House sparrow)	Expected to occur on the whole property.							
<i>Sturnus vulgaris</i> (European starling)	Expected to occur on the whole property.							

2.7.6 Species of Conservation Concern

Species of conservation concern include plant and animal species, these are outlined below.

2.7.6.1 Flora Species of Conservation Concern

The vegetation type within DNR was classified as Hartenbos Dune Thicket, which has been designated as an Endangered ecosystem that is threatened and in need of protection. This reserve is home to a wide variety of plant species of special conservation concern, including many threatened and protected species. A finer scale mapping by Vlok et al. (2005), Vlok and de Villiers (2007) and Vlok et al. (2008) classify the vegetation within DNR as falling within the Fynbos biome, with the specific variant mapped for this vegetation being Heiderand Sandplain Fynbos.

Threatened plant species are those which have been classified as threatened according to the Red List of South African Plants (SANBI, 2024). This makes use of the IUCN Red List Categories and Criteria, such as Critically Endangered (CR), Endangered (EN), Vulnerable (VU), or Near Threatened (NT). For the full list of plant species of special concern, please refer to Appendix C. This list should be updated as new species are observed and identified within the reserve. Some of these plant species present on DNR include:

- *Diosma aristata* (CR);
- *Euchaetis albertiniana* (EN);
- *Lampranthus pauciflorus* (EN);
- *Muraltia knysnaensis* (EN);
- *Nanobubon hypogaeum* (EN);
- *Agathosma muirii* (VU);
- *Gladiolus vaginatus* (VU);
- *Hermannia lavandulifolia* (VU);
- *Leucospermum praecox* (VU);
- *Selago glandulosa* (VU);
- *Thamnochortus muirii* (VU)

One of the key species for conservation within DNR, is *Diosma aristata*, after which the reserve is named. This critically endangered buchu species has an extremely restricted range, and is the most threatened species in the genus *Diosma* (Maree and Vromans, 2010). This species is shown in Figure 2.10 below. CapeNature has undertaken a number of assessments over the years of the locations of *D. aristata* within DNR and the surrounding areas. A recent assessment of these plants was undertaken by CapeNature and Apex Conservation Services in May 2026. Please refer to Figure 2.12 for the mapped locations of *D. aristata* populations collected from 2018 to 2026.



Figure 2.10 *Diosma aristata* plant observed within Diosma Nature Reserve, showing the entire plant, as well as the fine leaves and small white flowers.

Many of the plant species of conservation concern are threatened, and face many challenges. These may include:

- Inappropriate fire regimes, with fires introduced at incorrect frequencies, seasons and intensities, or exclusion of fires leading to moribund vegetation which poses further fire risks, and may result in increased biomass outcompeting these species of special concern.
- The development, transformation and fragmentation of natural areas resulting from the large-scale urbanisation and population growth within Mossel Bay, which further restricts and fragments the already extremely limited ranges of the habitats which these species rely on.
- Invasive alien plants outcompeting these species and altering fire regimes which harms these species. Figure 2.11 which demonstrates the *D. aristata* growing surrounded by *Eucalyptus conferruminata* (Spider gum) in a neighbouring property to the south, ERF RE2001, a proposed reserve expansion area.
- Uncontrolled access and misuse of the reserve, such as illegal dumping or trampling through the reserve which may damage plants, or livestock grazing or browsing, and harvesting of these species which reduces the small populations further.

A list of protected tree species within South Africa is published within Government Notice No. 4496 of 2024: Publication of the Annual List of All Tree Species Which are Protected Under Section 12 of the National Forests Act, 1998 (Act No. 84 of 1998). Protected trees within DNR include *Pittosporum viridiflorum* (Cheesewood) and *Sideroxylon inerme* (White Milkwood).

Many more species, including a several of these threatened Red List Species, and notably, a population of at least 139 *D. aristata* plants were noted in the adjacent property, ERF RE2001, south of the reserve and the addition of this land will be a valuable addition to the protection of

the local flora (Jan Vlok, pers. commun. May 2026). It is critical to the continued survival of this, and other species of conservation concern that the reserve is expanded to include the proposed reserve expansion areas such as RE2001. The development of ecological corridors will also prove highly beneficial for species diversity and the maintenance of ecological processes.



Figure 2.11 *Diosma aristata* growing in an area infested with *Eucalyptus conferruminata* (Spider gum) on ERF RE2001, adjacent to the reserve. The red arrow shows the IAPs, and the black arrow shows the *D. aristata*.

2.7.6.2 Fauna Species of Conservation Concern

There are a number of indigenous animals present in and around DNR, many of which are of considerable conservation concern. This may include species which have been identified as threatened according to the Red List of South African Species. This also includes species which are listed under Appendix I or II in the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Species in CITES Appendix I are species which have been identified as being in immediate danger of extinction and are severely threatened by international trade, while CITES Appendix II species are not currently threatened with extinction, but require strict regulation of international trade to prevent harm to wild populations. Provincial legislation such as the Nature and Environmental Conservation Ordinance (NCO) (Ordinance 19 of 1974) lists Protected Wild Animals, and this includes species which must be protected against unregulated hunting, poaching or trading. Some species of particular conservation concern within DNR include:

- *Chersina angulata* (Angulate Tortoise): Red List- LC; Cites-Appendix II; NCO-Schedule 2.
- *Homopus areolatus* (Parrot-beaked Tortoise): Red List- LC; Cites-Appendix II; NCO-Schedule 2.
- *Stigmochelys pardalis* (Leopard Tortoise): Red List- LC; Cites-Appendix II; NCO-Schedule 2.
- *Bubo africanus* (Spotted Eagle-Owl): Red List- LC; Cites-Appendix II; NCO-Schedule 2.
- *Falco peregrinus* (Peregrine falcon): Red List- LC; Cites-Appendix I; NCO-Schedule 2.
- *Turnix hottentottus* (Fynbos Buttonquail): Red List- EN; NCO-Schedule 2.

There are a number of protected birds of prey in this area which may be of conservation concern, including raptors (such as the Peregrine falcon and Rock Kestrel) and owls (such as the Spotted Eagle-Owl). There are also a number of species which are endemic to this area which may be of conservation concern, such as:

- *Bradypodion damaranum* (Knysna Dwarf Chameleon) - endemic to South Africa, specifically in Knysna and around the Garden Route.
- *Raphicerus melanotis* (Cape Grysbok) - endemic to South Africa, specifically the Cape Floristic Region.
- *Promerops cafer* (Cape Sugarbird) - endemic to South Africa, specifically in the Fynbos biome in the Western and Eastern Cape.
- *Pternistis capensis* (Cape Spurrow) - endemic to South Africa, specifically in the Western Cape and Eastern Cape.
- *Pycnonotus capensis* (Cape Bulbul) - endemic to South Africa, specifically in western and southern South Africa.
- *Apis mellifera capensis* (Cape Honey Bee) - endemic to South Africa, specifically in the Fynbos biome in the Western and Eastern Cape.
- *Dicaeum clytus* (Western Cape Autumn Widow) - endemic to South Africa, specifically in the Western Cape.
- *Pseudonympha magus* (Silver-bottom Brown) - endemic to the southern Cape.
- *Cassiopeina cassinii* (Rainforest Dancing Brown) - endemic to South Africa coastal areas.

For the full list of animal species, please refer to Appendix C. Any new observations of species should be added to this species list.

It is of great importance that ecological corridors are created and maintained to enable ecological processes, faunal movement, and pollination services, including nectarivores such as Cape Sugarbirds, which are key Protea species pollinators. These faunal species must be protected and not harmed. Common threats for these faunal species include:

- Illegal poaching, hunting, trapping (e.g. with snares), or trading.
- Restricted or limited movement resulting from fences, and no ecological corridors.
- Harm from surrounding busy roads or construction activities.
- Harm from domestic dogs and cats from neighbouring urban and residential areas.
- Decreasing available habitat and habitat destruction resulting from urban developments.

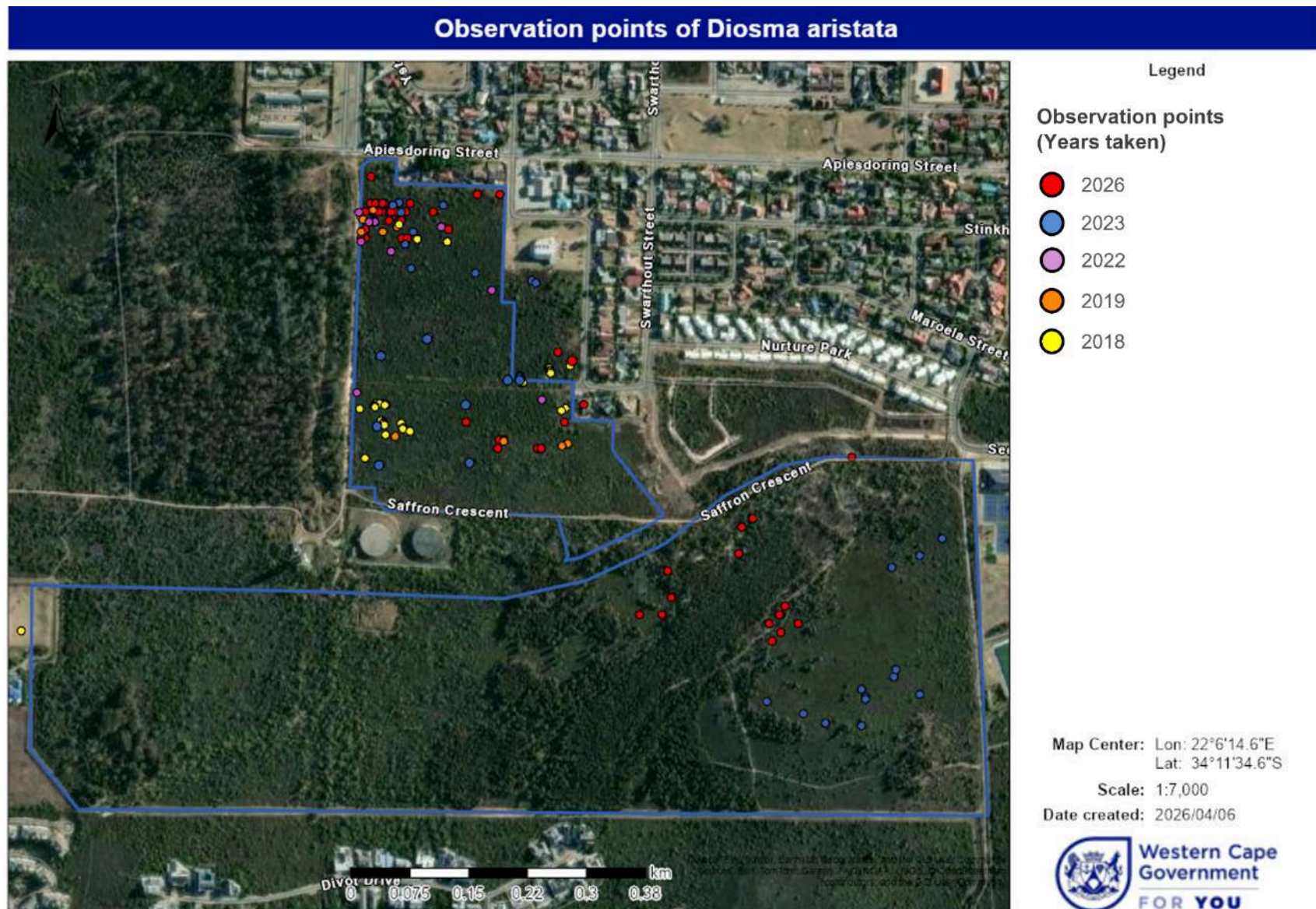


Figure 2.12 Locations of *Diosma aristata* plants collected as part of a variety of assessments over several years.

2.8 Cultural Heritage

2.8.1 Heritage Resources

Section 5 of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) outlines general principles for heritage resources management while section 9 outlines responsibilities of the state and supported bodies.

According to the Act, types of Heritage Resources include:

- Archaeology
- Built environment
- Palaeontology (fossils)
- Maritime
- Cultural Landscapes
- Natural Heritage (Geology, Meteorites)
- Places
- Monuments & Memorials

According to the DFFE Screening Tool, DNR has a mostly low Relative Archaeological and Cultural Heritage Theme Sensitivity with the southern portion including very high sensitivity which indicates that the site is in close proximity to a Heritage site. The reserve was also identified as having a medium Relative Paleontology Theme Sensitivity.

A basic heritage survey of the DNR was undertaken by Dr. Jan C. De Vynck on 16/09/2022 (De Vynck, 2022). During this survey there were no historical ruins or any other historical artefacts observed which could be classified as requiring Heritage protection legislation. However, it was concluded that human pre-historic presence is not entirely absent in this reserve, and they highlighted that more archaeological remains may be hidden below the surface. They therefore recommended that the site be preserved as an example of a terrestrial foraging habitat for pre-historic humans. To better understand the context of this reserve, it is important to consider the broader heritage resources within the surrounding areas.

DNR was also included as part of areas assessed for the Application for Environmental Authorisation for the Louis Fourie Precinct Corridor (NCC, 2024). This included a study to assess the archaeological (Agency for Cultural Resource Management, 2024) and palaeontological (Banzai Environmental, 2024) heritage resources within this area. These specialist studies did not identify any significant heritage resources. No in-situ archaeological resources were encountered during the survey, and resources were infrequent, isolated and in a disturbed state, and therefore the archaeological resources were graded as Not Conservation Worthy (NCW). Similarly, the Palaeontological assessment concluded that fossil heritage of scientific and conservational interest were relatively rare within this proposed development area, and that no additional palaeontological heritage studies, ground truthing or specialist mitigation are required unless any new fossils are discovered. For further details on the full Heritage Impact Assessment or the Palaeontological Impact Assessments please refer to these reports compiled for NCC (2024).

The Gouritz Cluster Biosphere Reserve (GCBR) domain includes the Mossel Bay area, and the DNR has been classified as one of the Core Zones of the GCBR. The GCBR was designated a UNESCO Biosphere Reserve due to the globally significant biodiversity value within this area. DNR therefore contributes to the overall aim of conserving areas of natural significance, providing a habitat for many rare and threatened species within the diverse Fynbos biome. The GCBR domain highlighting the Diosma Reserve within its boundary is provided in Figure 2.13.

Mossel Bay has notable archaeological, cultural and historically significant sites. This includes two Provincial Heritage sites, the St Blaize cave and the Diaz Museum. Mossel Bay is also home to archaeological sites which preserve early evidence of modern human behavior dating back over 160,000 years. These sites hold not only nationally significant heritage, but are of great importance to global human history and heritage. One of the most significant sites is the Pinnacle Point Site Complex. This has been designated as an UNESCO World Heritage site for the Emergence of Modern Human Behaviour: The Pleistocene Occupation Sites of South Africa. This forms part of the Cradle of Human Culture. The Pinnacle Point Site Complex is situated below the Pinnacle Point Estate. The core area of the Pinnacle Point Site Complex lies along the cliffs and caves of the Mossel Bay coast, while the buffer extends north, towards the DNR. This buffer area ends directly adjacent to one of the proposed reserve expansion areas, ERF RE2001. Figure 2.14 highlights the location of the Pinnacle Point Site Complex core and buffer zones in relation to DNR.

If any significant archaeological, heritage or palaeontological resources are discovered within DNR, Heritage Western Cape and the South African Heritage Resources Agency (SAHRA) must be immediately notified.

2.8.2 Living Heritage

This means the intangible aspects of inherited culture, and may include —

(a) cultural tradition; (b) oral history; (c) performance; (d) ritual; (e) popular memory; (f) skills and techniques; (g) indigenous knowledge systems; and (h) the holistic approach to nature, society and social relationships; in terms of the NHRA.

We recommend that management engage with Heritage Western Cape or a credible heritage practitioner to guide whether Living Heritage is applicable within DNR. The DNR requires a holistic socio-ecological approach, which recognises the conservation requirements and respects any living heritage needs of people. The reserve must be managed in a manner that promotes people's interconnectedness with nature and emphasises the importance of local cultures, beliefs and traditions as well as people's well-being, sense of place and identity, empowering people to help protect the biodiversity of their home.

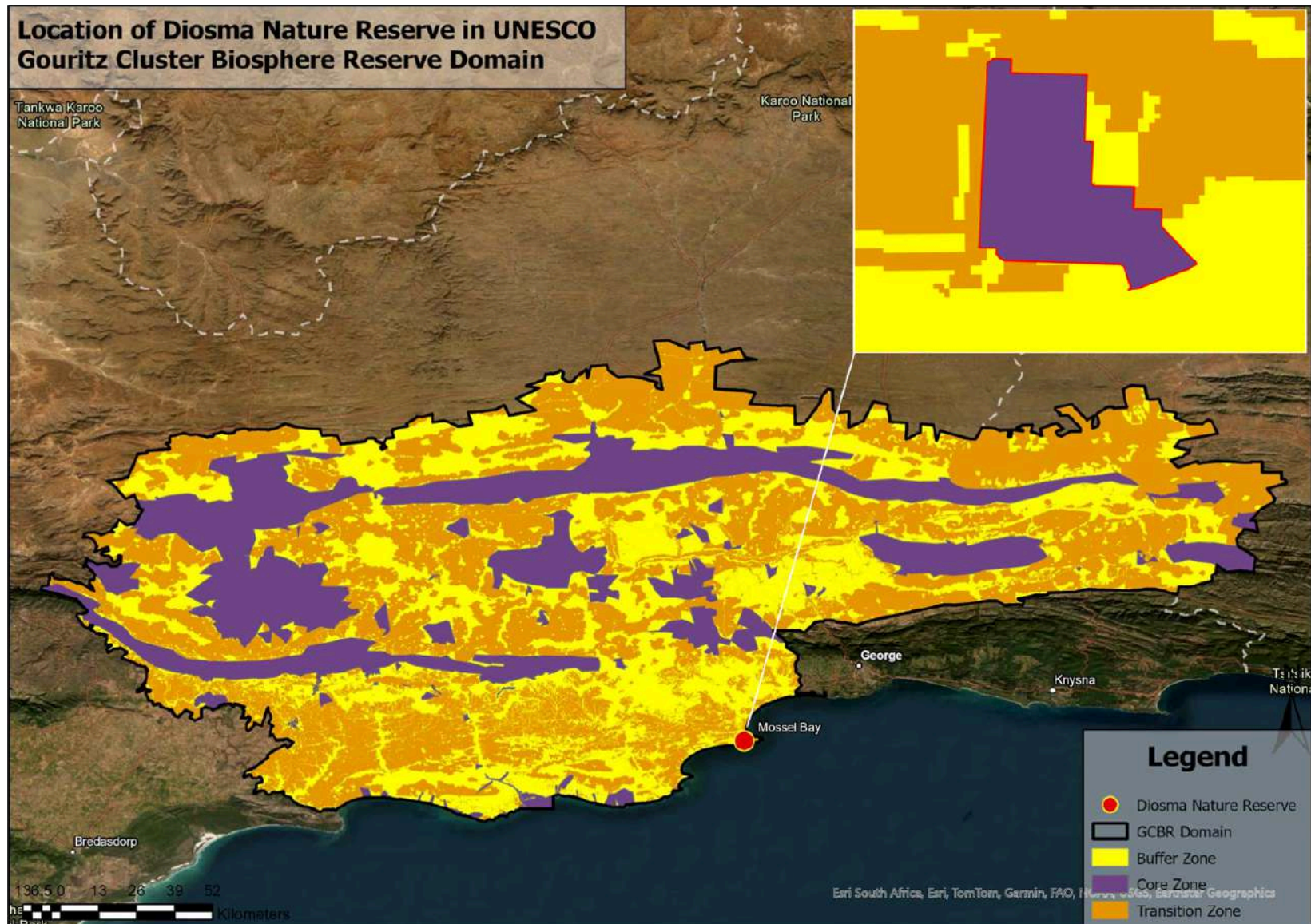


Figure 2.13 Location of Diosma Nature Reserve in UNESCO Gouritz Cluster Biosphere Reserve domain.

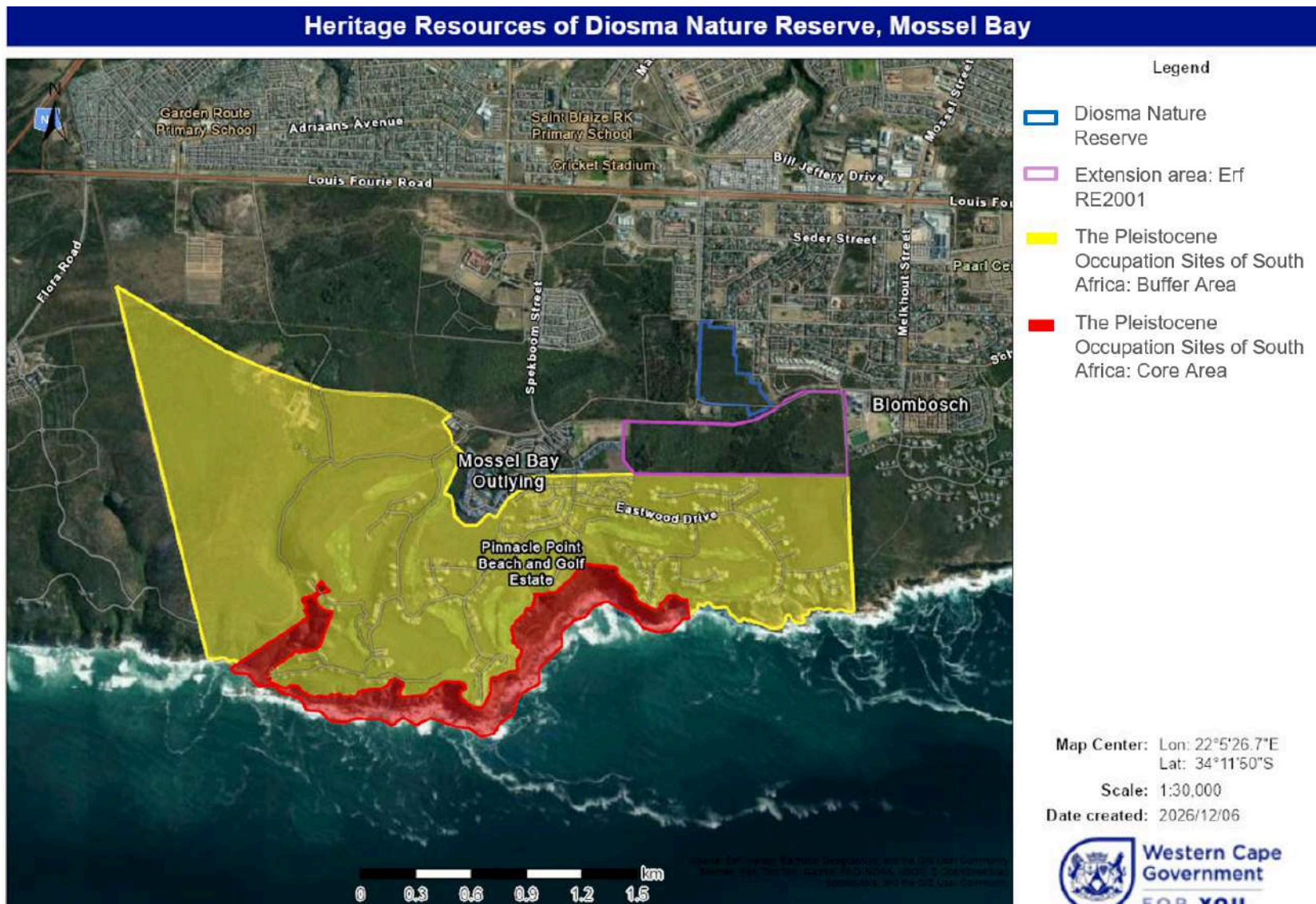


Figure 2.14 Heritage Resources: UNESCO World Heritage Site - The Pleistocene Occupation Sites of South Africa at Pinnacle Point Site Complex south of the Diosma Nature Reserve.

2.9 Regional and Local Planning Context

2.9.1 The Protected Area Expansion Strategy and Implementation Plan

The Protected Area Expansion Strategy and Implementation Plan is a response to the National Protected Area Expansion Strategy (NPAES) (SANBI & DEAT, 2010) which calls on Provinces to develop implementation plans in support of the NPAES and in support of provincial conservation efforts and priorities. The NPAES, which provides a broad national framework for Protected Area expansion in South Africa, also identifies areas of importance to be targeted for Protected Area expansion in the country, and mechanisms to achieve this. The DNR does not fall within a designated NPAES area (SANBI & DEAT, 2010).

The 2016 NPAES was used to inform the development of a finer, provincial-scale Western Cape Protected Areas Expansion Strategy (WC PAES). The 2025 WC PAES was developed to help provide a provincial strategy for expansion of the conservation estate within the Western Cape. The WC PAES addresses the formal declaration of priority natural habitats as protected areas to secure biodiversity and ecosystem services for future generations. This strategy is aligned with the concepts and goals of the NPAES. The WC PAES outlines fundamental principles of this strategy and identifies criteria which must be considered when selecting sites for protected area expansion, to ensure that as many biodiversity outcomes as possible are achieved. Firstly, the WC PAES sets out that all new protected areas must, as a minimum, be comprised of or contain Critical Biodiversity Areas (CBAs). Other criteria that must be considered includes: threatened ecosystems; under-protected ecosystems and strategic landscapes; essential habitat for priority species (including threatened and unprotected plant species hotspots); freshwater ecosystems; climate change and connectivity corridors; strategic water source areas; and marine, estuarine, and coastal systems. The WC PAES also highlights that collaboration and partnering with local municipalities to adopt stewardship mechanisms for municipal owned nature reserves, open space and conservation areas will contribute significantly to protected area expansion and the improved security and integrity of ecosystems.

The 2023 Western Cape Biodiversity Spatial Plan (WCBSP) and Guidelines (CapeNature, 2024) help to identify key areas which meet these WC PAES criteria throughout the Western Cape. The WCBSP helps guide the conservation of biodiversity and ecological infrastructure through the promotion of sustainable development within the biodiversity-rich Western Cape province. The WCBSP provides a map of terrestrial and freshwater areas that are Biodiversity Priority Areas which have been identified as being important for conserving biodiversity patterns and ecological processes. This includes the following: Critical Biodiversity Areas (CBAs); Ecological Support Areas (ESAs); Protected Areas (PAs); and Other Natural Areas (ONAs).

The area within DNR is classified as a PA. PAs are sites which have been formally proclaimed as protected areas and are NEM: PAA compliant. PAs should be kept in a natural state, with a management plan in place to help maintain or enhance biodiversity conservation. The areas surrounding DNR reserve consist mainly of Terrestrial CBAs (mostly Critical Biodiversity Area 1).

CBAs are defined in the WCBSP as “Areas in a natural condition that are required to meet biodiversity targets, for species, ecosystems or ecological processes and infrastructure”. The management objectives for these areas outline that they should be maintained in a natural or near-natural state, with further habitat loss prevented and rehabilitation of degraded areas. In these CBA 1 areas only low-impact biodiversity-sensitive land-uses are recommended, such as conservation. These PAs, CBAs, ESAs, and ONAs mapped in DNR and surrounding areas are provided in Figure 2.15.

WCBSP also highlights that the vegetation type within the DNR, Hartenbos Dune Thicket is classified as Endangered and that there provincial conservation target for this vegetation type in the Western Cape is 19%. This vegetation type must be further protected and the proposed reserve expansion areas for DNR will provide a great opportunity for reaching this target.

2.9.2 The Strategic Development Framework and Integrated Development Plan

This section outlines the relationship between the protected area and the broader municipal planning context, including the Integrated Development Plans (IDPs), Spatial Development Frameworks (SDFs), and Land Use Management Systems (LUMS) of the relevant district and local municipalities. Refer to Figure 2.16 for a spatial overview.

2.9.2.1 Demographics

DNR is located within Mossel Bay Local Municipality, which falls under the Garden Route District Municipality. Mossel Bay has a growing population, with the population of 140 075 people in 2022 predicted to increase to 147 220 people by 2027, which is an average annual growth rate of 1 % (Western Cape Provincial Treasury, 2023). There is a growing level of urbanisation in this area, with a growth from 48.3 people per square kilometer in 2023 to a predicted 49.1 people in 2025 (Western Cape Provincial Treasury, 2023). In Mossel Bay there is a notable population concentration, with a predicted population density of 52.8 individuals per square kilometer in 2026 (Western Cape Provincial Treasury, 2024). There are approximately 41 295 households in this area, including both formal (92.7 %) and informal dwellings (7 %) (Western Cape Provincial Treasury, 2024).

Within Mossel Bay there are conspicuous income disparities and a high prevalence of poverty. In 2023 73.8 % of Mossel Bay's population resided below the Upper Bound Poverty Line (UBPL), indicating that this portion of the population are unable to afford an adequate standard of living (Western Cape Provincial Treasury, 2024). These poverty rates often have extensive socio-economic implications, including reduced employment opportunities, increased crime rates, etc. Unemployment rates (narrow definition) were at 19.5% in Mossel Bay in 2022 (Western Cape Provincial Treasury, 2023). There is an increased demand for skilled labour and therefore skills development initiatives. Trade is an important sector in Mossel Bay, highlighting the significance of tourism to the local economy.

In Mossel Bay there was a crime rate of 3 253 total reported crimes per 100 000 people in 2023/24 (Western Cape Provincial Treasury, 2024). Major crimes in Mossel Bay include drug-related crime, burglaries at residential premises and common assault.

Mossel Bay Municipality was ranked as being fairly environmentally vulnerable, which represents the conflict between preserving the natural environment and growth pressures associated with population growth, urbanisation, and economic development. Mossel Bay's identified Hydro-meteorological Hazards to settlements include invasive alien plants, wildfires, coastal erosion, drought and floods (Western Cape Provincial Treasury, 2023).

2.9.2.2 Demographics in Relation to Diosma Nature Reserve

Mossel Bay is a relatively fast growing area, with high levels of urbanisation. Development of appropriate infrastructure, schools, homes, roads, etc. is required to meet the needs of this growing population. It is crucial, however, to ensure that these developments are carefully planned and spatially distributed, to ensure the best possible conservation outcomes and minimise loss of critical biodiversity areas and key threatened species. Key areas, such as that of DNR should be conserved, and where possible expanded on to ensure that biodiversity is maintained for future generations.

In areas with high growth rates and urbanisation it is important to ensure that green spaces are developed to help improve the quality of life for all local people. This reserve and other nature conservation areas surrounding it will help to ensure that communities have easy access to a green space where they are able to connect nature and undertake recreational activities promoting physical exercise and mental stress reduction. These green areas also provide ecosystem services such as improving air quality, strengthening climate resilience and disaster management, which support a growing population.

Social-economic context is also important to consider, as growing populations, with limited formal housing, poverty, unemployment, economic inequality and crime rates, will shape the way that this reserve must be managed. All of these issues above must be considered when managing this reserve. Issues such as squatting (which may lead to illegal dumping, wildfires, etc.) or crime (theft, mugging, assault) must, as far as possible be prevented within the reserve to ensure that visitors, and neighbouring residents within this residential area are protected and that the ecological integrity of this area remains intact.

With the existing unemployment rates, and income disparities, it is important to consider the job creation and skills development opportunities which this reserve may help create for local people. The contribution towards tourism in Mossel Bay is also important.

2.9.2.3 Integrated Development Plan and Strategic Development Framework

In accordance with the Municipal Systems Act, 2000 (Act No. 32 of 2000), municipalities are mandated to use integrated development planning to guide future development within their jurisdictions. The IDP serves as the strategic and financial blueprint for municipal development,

coordinating efforts across local and national government spheres. It also includes provisions for environmental management and protection, which are further supported by the SDF.

Both IDPs and SDFs are essential tools for integrating social, economic, and environmental priorities. Given that biodiversity is a cornerstone of sustainable development, these frameworks present valuable opportunities to embed biodiversity considerations into municipal planning through collaborative consultation. Furthermore, the inclusion of biodiversity-related projects in the IDP can contribute to local economic development and poverty alleviation.

The SDF provides a spatial representation of the IDP objectives and helps guide projects funded through the budget of the local Municipality. The IDP and SDF highlight a number of strategic issues which are critical in terms of future growth demands and conservation. The SDF (section A, 2022) recognises that the Fynbos Biome of Mossel Bay is part of an internationally recognised biodiversity hotspot, and highlights the unique presence of *D. aristata* which is found in Mossel Bay, and nowhere else in the world. The Mossel Bay SDF (Section B, 2022) outlines Spatial Strategies and Support Policies, highlighting that a key is to conserve and manage the natural environment in balance with the demands from urban growth and agricultural use. The SDF (Section C)/ EMF assists in ensuring that the areas with environmental significance are preserved and that development occurs in a sustainable manner.

The IDP and SDF indicate potential future long-term scenarios proposed for urban growth within Mossel Bay and adjacent towns. This Mossel Bay Spatial Development Proposal is mapped in Figure 2.16 below. DNR here is mapped as an Open Space Area, with surrounding areas including other Open Space Areas, Urban Expansion and Office Park areas. These are, however, proposed zonations, and the exact areas and boundaries of the expansion and open space areas will be determined via SPLUMA principles and expert reports and investigations undertaken during the development process.

2.9.2.4 Planning Environment

The DNR, as well as numerous surrounding properties have been identified as possible properties to be included as part of the Proposed Louis Fourie Corridor Precinct Project. This Precinct Project is still in application/draft format and being discussed on various platforms, with ongoing communication from key role-players such as the DEA&DP and CapeNature. This current proposed zonation designates DNR as a Nature Conservation Area aligned to the Declaration of this reserve. Surrounding areas are proposed to also include other Conservation Areas, as well as Residential (Group Housing), Utility/Authority uses and Public Open Space. The most recent concept Proposed Zonation Map developed by PLAN 4 SA (12 April 2025) is provided in Figure 2.17. This plan is still currently being developed, with potential revisions to the zonation taking place. As this plan and associated zonation is updated, the planning environment within this management plan will need to be updated to ensure that these are aligned. All developments and construction undertaken as part of this Precinct Area must prevent any negative impacts on DNR and all Nature Conservation Areas.

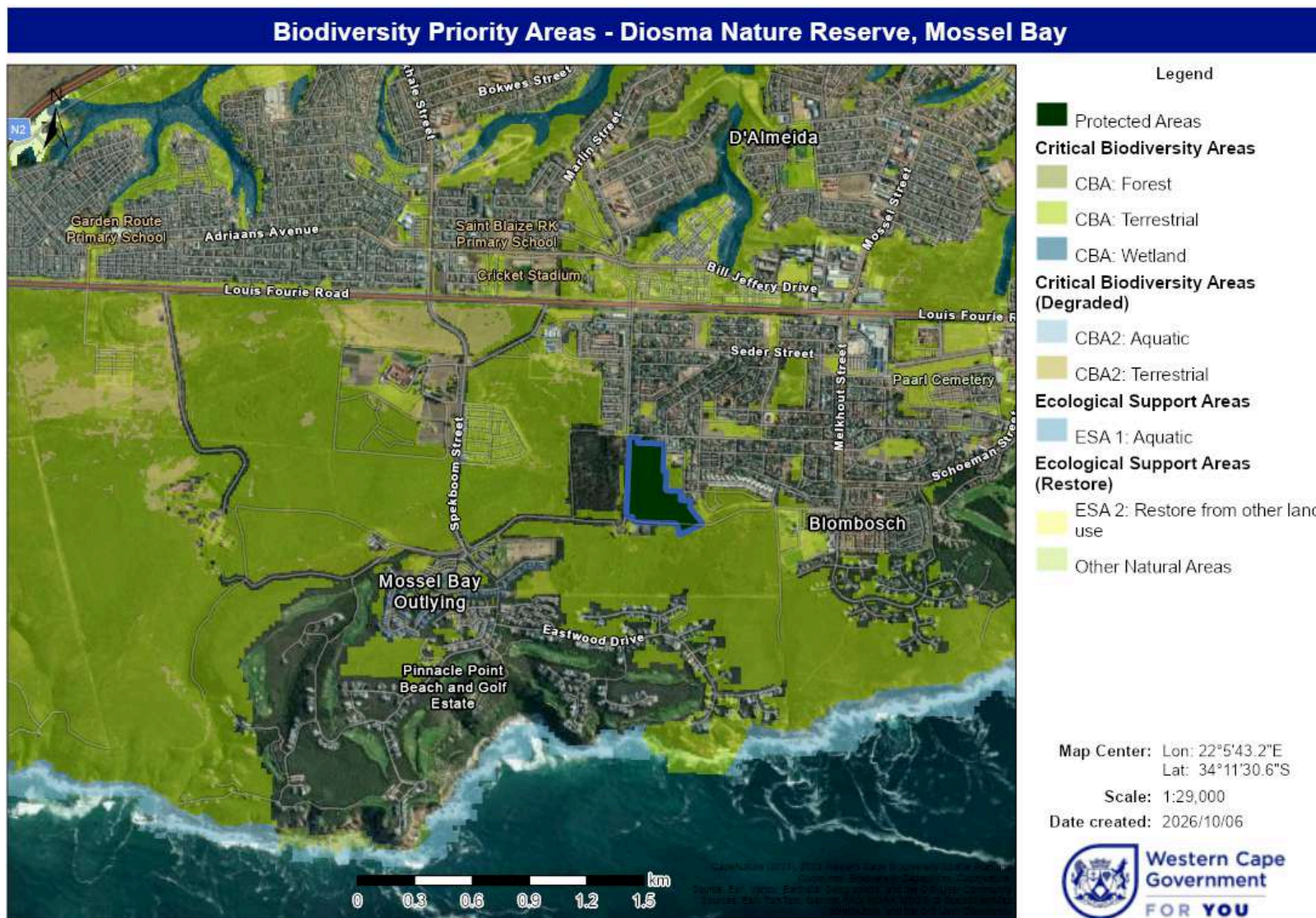


Figure 2.15 Planning context: Biodiversity Priority Areas in and surrounding Diosma Nature Reserve in accordance with the Western Cape Biodiversity Spatial Plan (2023).



Figure 2.16 Mossel Bay Spatial Proposal (screenshot taken from the Mossel Bay IDP 2026 and the SDF 2022).

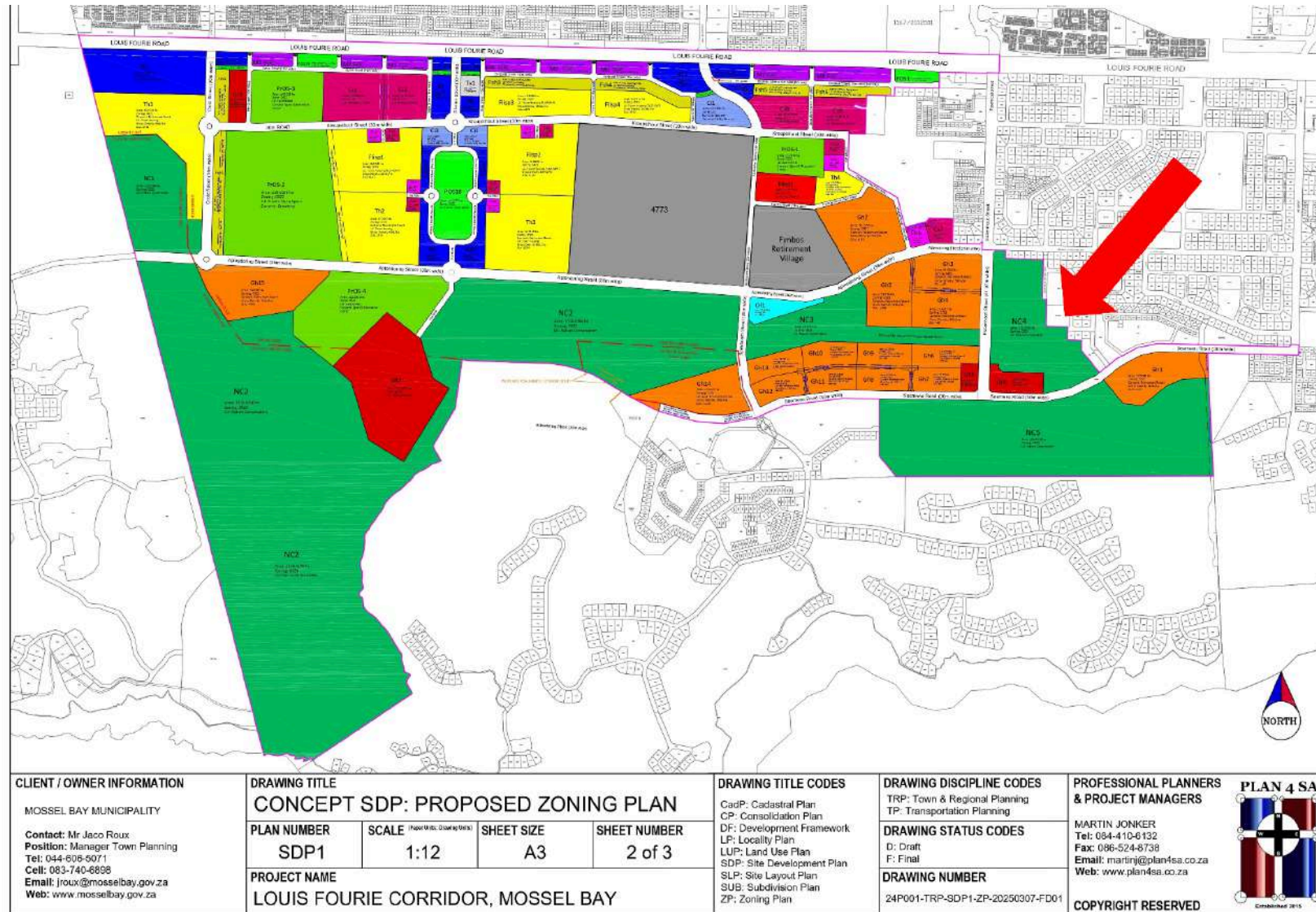


Figure 2.17 Louis Fourie Corridor Precinct Project: Proposed zoning and land use plan (Part 1). Diosma Nature Reserve is indicated using a red arrow.

LOUIS FOURIE CORRIDOR MIXED-USE DEVELOPMENT Proposed Land Use Information

ZONING	LAND USES	ZONING	ERF NUMBERS	NR OF	TOTAL AREA		DEVELOPABLE AREA		DENSITY	DWELLING UNITS
Colour	RESIDENTIAL	Code		ERVEN	Ha	%	Ha	%	Du / Ha	Estimated Number
	Residential (Group Housing)	GRZI	Gh1 - Gh15	15	46.3098	9.7	44.6187	28.2	25 & 30	1275
	Residential (Town Housing)	GRZII	Th1 - Th4	4	25.4823	5.4	24.9825	15.8	60	1499
	Residential (FLISP/GAP/Social)	GRZII	Flisp1 - Flisp4	4	21.4423	4.5	20.9712	13.3	100	2097
	Residential (Flats/Social)	GRZIII	Fsh1 - Fsh6	6	7.9263	1.7	7.0171	4.4	100	702
	SUB-TOTAL: RESIDENTIAL			29	101.1607	21.3	97.5895	61.7		5573
	NON-RESIDENTIAL (excl. Roads)									Flats
	Business Premises	BZI	B1 - B13	13	16.6485	3.5	14.3956	9.1	143	1212
	Offices	BZIV	Of1	1	1.4434	0.3	1.4434	0.9		0
	Light Industrial, Business Premises	MZII	M1 - M8	8	7.6705	1.6	4.3790	2.8	143	626
	Place of Instruction (Creche / School)	CZI	Cs1 - Cs10	10	13.4974	2.8	12.8878	8.1		
	Place of Worship (Church)	CZII	Ch1 - Ch6	6	2.0077	0.4	1.8896	1.2		
	Medical Offices	CZIII	Med1	1	2.2525	0.5	2.2525	1.4		
	Civic Facilities	CZIV	Ci1 - Ci3	3	3.2930	0.7	3.2930	2.1		
	Public Open Space	OSZI	POS1 - POS18	18	6.2522	1.3	0.0000	0.0		
	Private Open Space	OSZII	ProS1 - ProS4	4	38.1911	8.0	19.5723	12.4		
	Nature Conservation Area	OSZIII	NC1 - NC5	5	202.8305	42.7	0.0000	0.0		
	Public Transport Facility	TZI	Tx1	1	0.5248	0.1	0.5248	0.3		
	Utility / Authority Uses	UZ	Ui1 - Ui4	4	15.8249	3.3	0.0000	0.0		
	SUB-TOTAL: NON-RESIDENTIAL			74	310.4365	65.3	60.6380	38.3		1837
	ROADS									
	Public Street / Roads	TZII	Remainder	1	63.6944	13.4	0.0000	0.0		
	SUB-TOTAL: ROADS			1	63.6944	13.4	0.0000	0.0		
	TOTAL			104	475.2916	100.0	158.4614	100.0		7410

CLIENT / OWNER INFORMATION

MOSEL BAY MUNICIPALITY

Contact: Mr Jaco Roux
Position: Manager: Town Planning
Tel: 044-606-5071
Cell: 083-740-6896
Email: jroux@mosselbay.gov.za
Web: www.mosselbay.gov.za

DRAWING TITLE

CONCEPT SDP: LAND USE INFORMATION

PLAN NUMBER	SCALE	SHEET SIZE	SHEET NUMBER
SDP1	NTS	A3	3 of 3

PROJECT NAME

LOUIS FOURIE CORRIDOR, MOSSEL BAY

DRAWING TITLE CODES

CadP: Cadastral Plan
CP: Consolidation Plan
DF: Development Framework
LP: Locality Plan
LUI: Land Use Information
LUP: Land Use Plan
SDP: Site Development Plan
SLP: Site Layout Plan
SUB: Subdivision Plan
ZP: Zoning Plan

DRAWING DISCIPLINE CODES

TRP: Town & Regional Planning
TP: Transportation Planning

DRAWING STATUS CODES

D: Draft
F: Final

DRAWING NUMBER

24P001-TRP-SDP1-LUI-20250307-FD

PROFESSIONAL PLANNERS & PROJECT MANAGERS

MARTIN JONKER
Tel: 064-410-8132
Fax: 066-524-8738
Email: martin@plan4sa.co.za
Web: www.plan4sa.co.za

COPYRIGHT RESERVED



Figure 2.17 (continued) Louis Fourie Corridor Precinct Project: Proposed zoning and land use plan (Part 2).

2.9.3 Expansion Strategy

2.9.3.1 Current Goals of Reserve

DNR is a small reserve, an island in amongst the urban developments of Mossel Bay. The goal of DNR is to effectively manage and protect the indigenous species, endangered habitats and natural ecological processes which it supports. This reserve aims to achieve the long term conservation and management of the many rare and threatened species within it, such as the critically endangered *Diosma aristata*. This reserve aims to help provide an area that the public in the local community can connect with nature, undertake recreational activities in, and feel proud of, enhancing people's sense of place.

To achieve the long-term conservation goals of DNR, it is critical that the reserve is expanded on to increase the extent, as well as to ensure linkages through ecological corridors with other natural areas. This reserve expansion will include areas proposed to be included as part of the DNR extent, as well as areas which should be managed together with DNR and could be considered for the formation of Contract Nature Reserves, Stewardship Sites or Conservancies, and areas where ecological corridors could be formed. All potential new stewardship or protected area expansion (including private nature reserves) sites are presented to the Western Cape Stewardship and Protected Area Expansion Review Committee to determine the appropriate stewardship level as per the Western Cape Protected Area Expansion Strategy 2025. The proposed reserve expansion areas, ERF: RE/2001, was presented to this committee on 13 November 2023 and that Nature Reserve status was recommended (CapeNature: Carlo Van Tonder, pers. commun. 14 July 2026).

2.9.3.2 Reason for Proposed Expansion

The proposed reserve expansion areas will contribute towards achieving biodiversity conservation targets for DNR, as well as for Mossel Bay Municipality and the Western Cape as a whole. If natural areas are not managed appropriately there is a very real risk that these areas will be misused and become disturbed and degraded over time, losing their ability to provide the critical ecosystem services and habitats that these indigenous species require. Expanding the reserve footprint will help ensure that these areas are suitably managed to help achieve their conservation goals. Some key biodiversity targets that these proposed reserve expansion areas will help reach are outlined below, aligned to the 2025 WC PAES criteria which must be considered when selecting sites for protected area expansion.

2.9.3.2.1 Threatened and Under-protected Ecosystems and Strategic Landscapes

The National Vegetation Map of South Africa (2024) classified the vegetation type in DNR as Hartenbos Dune Thicket. The 2023 WCBSP (CapeNature, 2024) highlights that this vegetation type is classified as Endangered and that the provincial conservation target for this vegetation type in the Western Cape is 19%. Hartenbos Dune Thicket currently has an extent in the Western Cape of approximately 59 629 ha (based on the 2024 National Vegetation Map of South Africa). A 19% target would therefore be around 11 330 ha. The PAs (Sept 2025), including formally protected areas, gazetted Contract Nature Reserves and Protected Environments

include approximately 3 432 ha of vegetation that is classified as Hartenbos Dune Thicket. This is around 5.76% of the vegetation type, presuming that all areas mapped as this vegetation type have not been transformed or incorrectly mapped. It is therefore of importance to the provincial conservation planning that this vegetation type is further protected. This provides a great opportunity for the expansion of the DNR, which could contribute to reaching this target.

On a finer scale, the vegetation in this area includes Heiderand Sandplain Fynbos (Vlok et al., 2005; Vlok and de Villiers, 2007; and Vlok et al., 2008). This Fynbos habitat is home to many threatened and endemic species. Fynbos is key in facilitating many ecological processes such as pollination services, with species such as Cape Sugarbirds pollinating *Protea* species in DNR.

Common threats to this habitat type include poor fire management regimes and suppression of fires, the presence of IAPs, overharvesting, the removal and restriction of movement of herbivores, the abstraction of groundwater, and the promotion of thatch species for human use over other indigenous species (Maree and Vromans, 2010; Vlok et al., 2008). One of the major threats highlighted for Sandplain fynbos, specifically in the Mossel Bay Municipal area is coastal developments, which is a very relevant threat in the DNR and surrounding areas. Responsibly managing and mitigating these threats and reducing the impact of coastal developments in not only DNR, but also in surrounding areas is critical to the survival of these habitats.

2.9.3.2.2 Essential Habitat for Priority Species

DNR was established to help protect the many rare and threatened species within this area. This is a hugely important step towards conservation, and expanding this area would increase the number of threatened species as well as the size of these populations which can be protected. This is of critical importance, as species within this reserve are often endemic species, with highly restricted ranges.

One of the key species, the namesake of this reserve, *Diosma aristata* is a critically endangered plant species. This species is only known to occur in this area, and nowhere else in the world, with the Botanical Society of South Africa describing this plant as scarcer than rhinos. This is a major source of both pride to Mossel Bay, but also of concern. *D. aristata* only grows under very specific environmental conditions and cannot establish outside of its narrow environmental requirements (including soil, moisture regime, rainfall, and aspect). This species is therefore confined to an extremely limited locality. Areas where this species has been recorded represent highly specific and irreplaceable habitat conditions, and therefore these areas must be prioritised for strict protection.

The proclamation of DNR over 10 ha of this habitat was the first important step to protecting this species. However, neighbouring properties where populations of this species have also been identified are proposed for reserve expansion to help protect the populations of *D. aristata* and conserve Mossel Bay's unique biodiversity for future generations. Two of the proposed reserve expansion areas, ERF RE2001 to the south and ERF 11887 to the east of the reserve were assessed and found to have considerable populations of *D. aristata*. ERF RE2001

especially was noted as contributing significantly to the populations of this species, and inclusion of this area as part of the reserve will be crucial for the continued survival of this species. See Figure 2.12 for the locations of *D. aristata* in DNR and the surrounding properties.

Many more threatened species were also noted in the adjacent property (ERF RE2001) south of the reserve on the limestone outcrops. Here the vegetation type changes dramatically and the addition of this land will be a valuable addition to the protection of the local flora, increasing the number of species protected (Jan Vlok, pers. commun. May 2026).

2.9.3.2.3 Critical Biodiversity Areas (CBAs)

These 2023 WCBSP (CapeNature, 2024) outlines terrestrial and freshwater areas that are Biodiversity Priority Areas which have been identified as being important for conserving biodiversity patterns and ecological processes. This includes Protected Areas (PAs), Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs). The area within DNR is classified as a PA, and the areas surrounding the reserve consist mainly of Terrestrial CBAs (mostly CBA 1). See Figure 2.15 for the layout of these CBAs. This aligns with the criteria set up within the 2025 WC PAES for protected area expansion, which outlines that new protected areas must, as a minimum, be comprised of or contain CBAs. These CBAs are areas in a natural condition that are required to meet biodiversity targets, for species, ecosystems or ecological processes and infrastructure. The 2023 WCBSP outlines that these areas are only to be used for low-impact biodiversity-sensitive land-uses such as conservation, and proposes that management objectives should include the maintenance of these areas in a natural or near-natural state, with further habitat loss prevented and rehabilitation of degraded areas.

To achieve these objectives there needs to be clear management structures in place. Including these areas under the management of the DNR will ensure that these CBAs are able to meet their biodiversity targets for these species, ecosystems and ecological processes.

2.9.3.2.4 Climate Change and Connectivity Corridors

These areas fall under the GCBR and form part of the critically important Coastal and Nectarivore Corridors. In a report compiled for the Gouritz Initiative by Lombard et al. (2004) it was emphasised how important it is that these corridors along the coast are maintained for nectarivores (nectar-feeding birds, which are primary pollinators of the Protea species) and other ecological processes (migration of plant and animal genetic material).

A meeting was held between the Mossel Bay Municipality and CapeNature (10/02/2006), followed by formal written correspondence (06/03/2006), where CapeNature explained the critical importance of linking the DNR with the Pinnacle Point Conservation area via an ecological corridor. They highlighted that the establishment of ecological links is important to avoid a future scenario where the DNR becomes an isolated natural area surrounded by residential areas and infrastructure. This would limit ecological processes within this reserve and would reduce any significant ability of this reserve to provide habitats for wildlife.

The formation of these ecological corridors is also aligned to the 2023 WCBSP which highlights that it is essential to maintain the coastal corridor and establish ecological corridors. These proposed ecological corridors will provide an opportunity to retain functional local scale ecological processes and patterns such as wildlife movement, pollination services, and more natural fire regimes.

2.9.3.3 Areas Proposed for Expansion

Most areas that are proposed for reserve expansion are designated CBAs, with many of these areas zoned as Open Space Area according to the IDP 2026/2027, with a few exceptions. On a finer-scale, proposed zonations have been put forward as part of the Louis Fourie Precinct Corridor Project which is in the process of being developed in this area. Although it is important to note that these are only proposed zonations at this point, the areas proposed for reserve expansion are proposed to be aligned to these areas zoned as “Nature Conservation Areas”.

The areas proposed for reserve expansion include:

- Areas proposed to be formally included as part of the DNR Protected Area.
- Nature Conservation Areas which may be considered for Protected Area Expansion or which should be considered for the formation of a Contract Nature Reserve, Stewardship Site, or a Conservancy. These sites should be managed in conjunction with DNR.
- Areas for proposed ecological corridors consisting of mixed land ownership and use.

These proposed expansion areas are identified in Figure 2.18.

Field assessments and botanical surveys must be undertaken in proposed expansion areas, including reserve expansion areas, Nature Conservation areas and ecological corridors. This will allow any high priority areas for conservation to be identified, and these can be considered for inclusion as part of DNR.

Almost all areas proposed for expansion and inclusion are owned by Mossel Bay Municipality, with the exception of some of the ecological corridors. Engagement will need to be undertaken with these landowners to identify if there are opportunities for collaboration and partnerships to enable the development of ecological corridors. A memorandum of agreement (MOA) will need to be drawn up to outline how partners collaborate to ensure these areas are incorporated and managed effectively. Given that this land is largely already owned by Mossel Bay Municipality, or identified as an area for joint efforts with private owners, it is unlikely that there will be large costs such as the purchasing of land associated with this expansion. Other costs may include the installation of semi-permeable fences, signage, and increased operational costs associated with the management of this larger area.

DNR and the surrounding areas that have been proposed for reserve expansion are included as part of the proposed Louis Fourie Corridor Precinct Plan. The zonation for different areas resulting from this proposed precinct plan will likely impact the areas that are likely to be included as recommended reserve expansion areas. If areas are zoned as Nature Conservation

areas these will provide a good opportunity for possible future potential protected area expansion, however if areas are zoned for urban use, it will be unlikely that these areas will be used for nature conservation purposes. As this project is still under development, it is not possible to attach clear timeframes indicating when these sites will be included. Similarly, we are unable to provide the exact sizes of proposed areas to be included for reserve expansion, as this will be aligned to the areas designated as Nature Conservation Areas as per the finalised Louis Fourie Corridor Precinct Project zonation. Once the Precinct Plan and its associated zonation has been finalized, then these timeframes and sizes and locations of these areas for reserve expansion may be clarified. We, however, recommend that all proposed reserve expansion areas are included as part of the designated reserve area as soon as feasible to ensure their protection. We also encourage engagement with the relevant stakeholders for the establishment of ecological corridors on approval of this management plan. It is preferable that these corridors are established as soon as possible.

2.9.3.3.1 Proposed Areas for Formal Inclusion as part of Diosma Nature Reserve

One of the major areas that are proposed for reserve expansion to the Diosma Nature Reserve is the property directly south, ERF: RE/2001. This area borders the reserve, and contains many rare and threatened species, including populations of the critically endangered *D. aristata*. The addition of this area will help ensure survival of this and other important species and will allow for improved fire management and increased connectivity to coastal ecological corridors.

Another area proposed to be formally included as part of DNR is ERF 11913, which is east of the water tower, south of the reserve. This area will help connect the current reserve with the proposed reserve expansion area in RE2001. In accordance with the current proposed zonation as part of the Louis Fourie Corridor Precinct Plan there is a road (Seemeeu Road) proposed to be built directly south of DNR, between the reserve and the proposed reserve expansion area ERF RE2001. If, however, any updates are made to the proposed plan and the road is no longer zoned in this area, then it is proposed to include this strip of land as part of the formal DNR area to help ensure connectivity between these two portions of the reserve.

The final area proposed to be formally made part of DNR is ERF 11887 on the east side of DNR. This area also contains *D. aristata* populations and will help protect this endangered species. The sizes of reserve expansion areas are outlined in Table 2.7 below.

Table 2.7 Sizes of areas proposed for reserve expansion.

Property	Size (ha)
Existing protected area extent	
Diosma Nature Reserve	10.77
Areas proposed for reserve expansion	
ERF RE/2001	39.98
ERF 11913	0.52
ERF 11887	0.68
Total area of proposed reserve expansion	41.18
Total protected area after addition of proposed reserve expansion areas	51.95

2.9.3.3.2 Areas Managed by Diosma Nature Reserve

These are areas which may in the future be included as part of the DNR Protected Area. This includes most of the areas zoned as Nature Conservation Areas as part of the proposed Louis Fourie Corridor development, going south from the reserve towards Pinnacle Point, including the Pinnacle Point Conservation Area, and going west towards the Mossel Bay Cemetery. These areas should be physically connected to DNR to provide ecological corridors which will enable linkages and wildlife movement between natural areas and the reserve. These areas should, in the meantime, be managed under the DNR to ensure that they are sufficiently protected and appropriately managed. These areas may otherwise be protected in other manners, such as the formation of a Contract Nature Reserve, Stewardship Site, or a Conservancy.

Of particular interest is the butterfly reserve to the north-west of DNR near the Mossel Bay cemetery on Erf 2001/0. This reserve has been set aside as a conservation area, and aims to protect the endangered *Lepidochrysops littoralis* butterfly. An Environmental Management Plan for this Butterfly Reserve was developed in October 2015. During an Environmental Audit undertaken in 2026, it was highlighted that there was a critical need to demarcate this area and develop an updated Management Plan to ensure the continued protection of this threatened butterfly species. We propose that this reserve is managed together with DNR, and if future expansion allows, this butterfly reserve could be included as part of the DNR Protected Area.

2.9.3.3.3 Areas for Proposed Ecological Corridors

CapeNature has highlighted the importance of ensuring that DNR does not become an island cut off from other nature conservation areas. Linking the DNR with the natural areas surrounding Pinnacle Point will be highly useful, enabling wildlife movement and linkages for ecological processes.

Proposed ecological corridors areas extend south from DNR, and the proposed reserve expansion area ERF RE2001 will be crucial in connecting DNR with these proposed ecological corridor areas. These will include linkages to areas surrounding Pinnacle Point and Village on Sea, travelling along the coastline to the Mossel Bay Point in the east and to Dana Bay in the west, along the St Blaize trail. The Dana Bay area is part of a conservancy, and linking these areas would be highly beneficial. These ecological corridors would also connect to the Nature Conservation Areas, the proposed reserve expansion areas and the existing Protected Area. This would be a major step towards achieving conservation goals and would help allow wildlife movement through these natural areas, promoting the co-existence of wildlife and people.

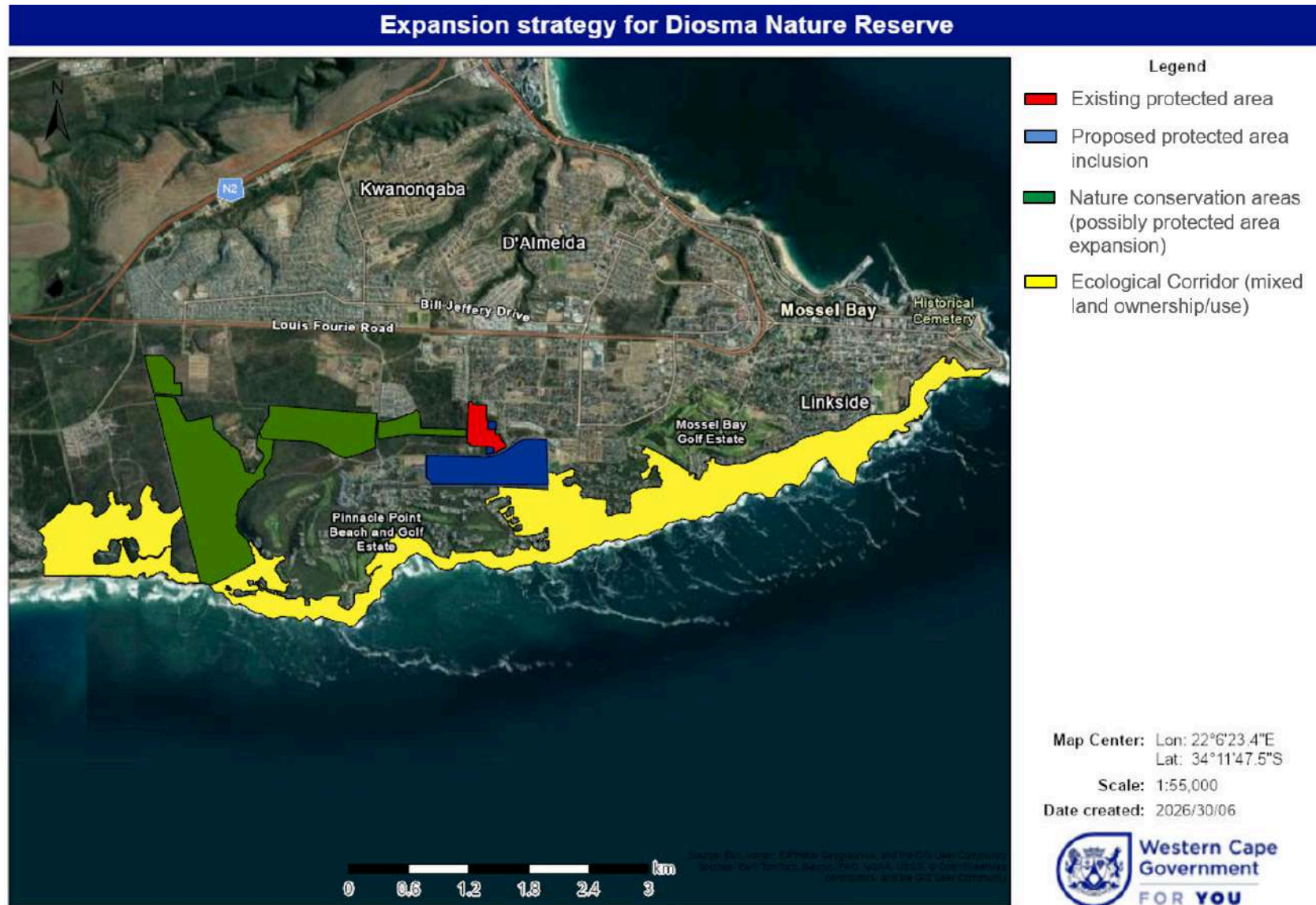


Figure 2.18 Proposed protected area expansion footprint.

3. Strategic Management Framework

The strategic management framework is aimed at providing the basis for the protection, development and operation of the protected area over a ten-year period. It consists of the vision, purpose and objectives of DNR. It has been prepared collaboratively through a process involving the management authority, site manager and CapeNature.

3.1 Purpose

Purpose

The purpose of Diosma Nature Reserve is to protect, manage, and restore its ecosystems and ecological processes, with priority given to the conservation of threatened vegetation and species of conservation concern, including *Diosma aristata*.

This is achieved through:

- the active stewardship and rehabilitation of natural habitats;
- the maintenance of ecological integrity and connectivity within the landscape; and
- the implementation of adaptive, science-based management practices in line with provincial conservation objectives.

While enabling appropriate environmental education and appreciation, the primary function of the reserve remains the long-term conservation of biodiversity as a protected area within the Mossel Bay municipal landscape.

3.2 Vision

Vision

Diosma Nature Reserve is secured and managed as a resilient, ecologically functional protected area that safeguards its unique biodiversity, threatened species, and natural processes for present and future generations.

3.3 Management Objectives under Key Performance Areas

The objectives that follow are intended to provide the basis for the achievement of the vision.

The objectives are derived from the Vision and Purpose and are grouped under Key Performance Areas (KPA's). Tables 3.1–4 below set out the key performance areas, the objective for each key performance area and the key deliverables of each objective.

In the Annual Plan of Operations (APO), the objectives below are prioritised in terms of importance and urgency and detailed management activities are described that will deliver the desired outcomes under each objective.

Table 3.1 Biodiversity and ecological components objectives and deliverables.

KPA: Biodiversity and ecological Components		
OBJECTIVE	OBJECTIVE STATEMENT	KEY DELIVERABLES
Integrated Wildfire and Invasive Alien Plants	To manage invasive alien plants and the risks associated with uncontrolled wildfire in an integrated way to limit negative impacts on biodiversity and ecosystem function as well as the risks to human safety and infrastructure from wildfire.	<u>Wildfire:</u> • Maintain local Fire Protection Association Membership. • Implement controlled burns aligned to natural fire processes • Reduce risk of uncontrolled wildfire. • Establish firebreaks (initial clearing) DNR only. • Staff trained and equipped to manage wildfires. • Inclusion of proposed reserve expansion areas (ERF RE2001, 11913, 11887) for controlled burns. • Education and awareness campaigns and collaboration with neighbouring landowners before controlled burns. • Monitor the indicator species and use these as thresholds of potential concern. <u>Invasive Aliens:</u> • Eradicate invasive alien species using advocated control methods. • Schedule and cost initial and follow-up clearing operations. • Use the Mossel Bay Municipality IASMC&EP to guide clearing activities. • Reduce combustible material to reduce intensity and spread of wildfires. • Undertake vocational, environmental awareness and site induction training for staff. • Awareness campaigns on IAPs, anti-green waste dumping and indigenous gardening. • Effective monitoring and early detection rapid response to prevent further introductions of invasive aliens. • Monitoring previous treatment effectiveness and impacts on the surrounding environment and vegetation.
Aquatic and riparian systems	To conserve the biodiversity and ecosystem function of aquatic and riparian systems on the reserve.	• This area does not include any aquatic zones, wetlands, rivers (perennial or non-perennial), or sensitive or vulnerable aquifers. It is therefore not an area requiring management attention. • If any proposed reserve expansion areas are included as part of DNR which include aquatic or riparian zones, this will need to be updated.

Rehabilitation and restoration	To identify areas of degraded ecosystems and/or habitat in the reserve, understand the causes of degradation and implement restoration/rehabilitation measures.	• Limit the loss of biodiversity and disruption to ecological processes due to degraded habitat. • Extent and cause of degradation determined, and restoration/rehabilitation measures planned. • Identify, map and evaluate all dumping sites and old roads. • Stop illegal dumping activities and entry into rehabilitation areas by fencing the reserve and erect signposts to create awareness. • Remove all dumped waste entirely. • Passive or active restoration of indigenous species after IAP clearance. • Prevention of unnatural soil erosion. • Degraded sites restored/rehabilitated. • Undertake soil erosion control and restoration and rehabilitation training for staff. • Minimise disturbance footprint when developing firebreaks, trails or infrastructure. • Monitor and restore areas after major events such as floods or fires or after major disturbances. • Long-term monitoring of degraded sites and restoration/rehabilitation effectiveness.
Species of special concern	To ensure the optimal long-term population health and ecological function of any plants and animals of special concern and indicator species.	• Monitoring of populations of species of special concern, threatened species and indicator species. • Undertake annual census of <i>Diosma aristata</i>, preferably in the month of May (flowering time). • Identify and implement specific management requirements. • Where threatened species such as <i>Diosma aristata</i> occur in areas where development or disturbance cannot be avoided, surveys must be conducted across the development footprint to identify affected individuals. A contingency plan must then be developed, outlining procedures for a botanist to translocate young plants to similar microhabitats and take cuttings from adult plants for nursery propagation and replanting within the reserve. • Expansion of the protected area aligned with expansion strategy. • Prevent harvesting, poaching, hunting or trapping of plant and animal species. • Protect species during construction, development or IAP clearing. • Partnerships with students, interns, citizen science initiatives and interested volunteer groups offer a practical, low cost avenue to expand on existing species lists and deepen the site's baseline ecological information over time. • Link to research institutions and tertiary academic institutions to obtain new research papers.

Wildlife	To ensure effective conservation of faunal species, populations and inter-relationships in order to enhance biodiversity and maintain and improve ecosystem functioning.	• Develop and maintain terrestrial fauna species list • Prevent hunting, trapping or poaching of wildlife. • Development of ecological corridors. • Installation of semi permeable fencing to allow for terrestrial wildlife movement. • Investigate viability of speed limit reduction and install signage on surrounding roads to make drivers aware of wildlife presence. • Ensure dogs are kept on a leash at all times. • Educational and awareness campaigns. • Link to research institutions, tertiary academic institutions and citizen science initiatives (Use ad-hoc opportunities as it presents itself). • Monitor and evaluate the faunal health and their impact on the ecosystem. • Monitor wildlife using camera traps. • Monitoring fencelines or animal paths to check for snares or trapped animals.
-----------------	--	--

Table 3.2 Sustainable utilisation of natural resources objectives and deliverables.

KPA: Sustainable utilisation of Natural Resources		
OBJECTIVE	OBJECTIVE STATEMENT	KEY DELIVERABLES
Natural grazing and browsing of wildlife	Wildlife should be allowed to utilise the natural environment in a sustainable manner, ensuring ecosystem health and functionality. Livestock are prohibited within the reserve.	• Semi-permeable, permeable perimeter fencing to allow wildlife access for browsing and grazing. • Monitor the impact of wildlife on vegetation. • Livestock prohibited from grazing or browsing in the reserve. • There are no intentions at this stage to introduce any antelope species as naturally occurring species are present eg. Cape Grysbok and Common Duiker.
Recreation and tourism	To create an open access system where people can connect with and experience nature.	• A range of appropriate eco-tourism products, activities and services are offered. • Ensure proposed activities, operations and infrastructure do not have a negative impact on any of the conservation objectives of the reserve. • Ensure tourism infrastructure design and construction complies with development planning requirements.
Sustainable harvesting	To prevent the use and harvesting of natural plant resources.	• Harvesting to be prohibited as the reserve is too small for this to be sustainable. • Signage prohibiting harvesting of any kind. • Awareness campaigns on the importance of preventing harvesting in this reserve.

Table 3.3 Socio-economic and heritage objectives and deliverables.

KPA: Socio-economic and heritage		
OBJECTIVE	OBJECTIVE STATEMENT	KEY DELIVERABLES
Environmental Awareness and Education	Stakeholders receive an increased awareness and understanding of the importance and value of functioning ecosystems and protecting biodiversity.	● Increase awareness about the value of functioning ecosystems and conservation land use. ● Address specific management issues such as: ○ The value of functioning ecosystems and conservation land use, ○ Wildfires and controlled burning ○ Invasive alien plants and control, ○ Creating indigenous and pollinator friendly gardens, ○ Effects of littering and dumping, ○ Threatened species, ○ Safely interacting and coexisting with wildlife, ○ Snake identification, ○ Eliminating poaching and use of snares, ○ The negative effects of livestock, harvesting and firewood collection in this reserve ○ Security and emergency preparedness. ● Education and awareness training for small school groups. ● Awareness drives, talks and environmental programmes for the public. ● Guided informative tours and walks. ● Assess the condition of current informative signage and install and replace as required. ● Engagement with environmental organisations, research institutes, universities and citizen science groups to facilitate knowledge sharing. ● Review research and restriction of destructive or potentially harmful research methods.
Socio-economic development initiatives	To work with relevant stakeholders to make a meaningful contribution towards the socio-economic development needs of local communities.	● Small scale economic and job creation opportunities for eco-tourism guides, IAP teams or restoration workers may be sourced from the local community. ● Training and skills development opportunities for eco-tourism guides, IAS or restoration and rehabilitation team workers. ● Positive relationships with key community role players and groups.
Heritage features	To locate, document, and conserve archaeological, paleontological and cultural heritage features on the reserve.	● To support the study of on-reserve features by experts and to share knowledge and insights gained. ● Make the reserve available for research and baseline studies for students in this field of expertise. ● If any significant archaeological, heritage or palaeontological resources are discovered within DNR, the Heritage Western Cape and the South African Heritage Resources Agency (SAHRA) must be immediately notified. ● Maintain the GIS database with the assistance from institutions like SAHRA, Dr. Nielsen & Jan de Vynck.

Table 3.4 Management authority effectiveness and sustainability objectives and deliverables.

KPA: Management Authority effectiveness and sustainability		
OBJECTIVE	OBJECTIVE STATEMENT	KEY DELIVERABLES
Governance and institutional arrangements	To meet the governance requirements to effectively manage the protected area.	• Effective governance structures in place. • Management team to review and revise proposed APO and estimated budgets, and indicate responsible persons for each management activity. • All evidence from implementing management actions or findings from monitoring should be carefully and consistently recorded, described (metadata) and shared. • Development of an Annual Monitoring Report reflecting the progress to date, results of monitoring and consolidated portfolios of evidence for implementation of this management plan. • Progress for each management action will be reflected in the APO tool. • Complete APO Annual Report. • The APO Annual Report will be submitted to the Minister, MEC, or a person designated by the Minister or MEC to annually report findings and indicate performance as required by section 43 of NEM:PAA. This annual report must also be supplied to CapeNature on an annual basis. • Complete the APO Annual Review of the management effectiveness. • Annually review performance of each person responsible for management activities. • Use the Management Effectiveness Tracking Tool (METT) to further assess management effectiveness and produce a METT-Intervention Report aligned to CapeNature Biodiversity Stewardship sites METTs. • Update the APOs, budgets, priorities and deadlines for the following year based on review findings. • All Annual Monitoring Reports, and APO Annual Reports and Reviews, must be well-organised, safely stored, backed up, easily accessible and shareable for any reviews or audits required. • Develop a policy containing the internal rules for DNR, outlining the conditions of use, prohibited activities, restricted areas and procedures for the enforcement of the rules, the reporting and documenting of illegal activities and penalties for non-compliance. • Develop a Safety and Security Plan which includes a risk assessment, communication strategies and contact details of all relevant persons, a contingency plan and an emergency evacuation plan in the event of accidents, crisis situations or other emergencies, with a specific focus on wildfires.

Legal Compliance	To ensure all reserve declaration documentation is in order and that all activities are compliant with relevant legislation and policies.	• Fully compliant with the Protected Area legislation. • Compliance with NEM:BA by controlling invasive alien species on the DNR. • Compliance with the National Veld and Forest Fire Act (Act 101 of 1998) through fire management. • Approval and acceptance of the DNR Management Plan. • Revision of the Strategic Management Plan (Part A) before the ten-year management period ends, or before if required. • Incorporate DNR into the proposed Spatial Development Framework of the Mossel Bay Municipality. • Update the zoning of DNR and surrounding Nature Conservation Areas. • Ensure all activities are undertaken aligned to the relevant legislation. • Reinstate the north-west portion of the proposed reserve expansion area ERF RE2001 which has been illegally included as part of the Pinnacle Point Golf Practice Range.
Employee skills development	Managers and staff are supported in the implementation of the management plan by ensuring they have the necessary knowledge and skills to perform their management responsibilities.	• Institute a skills development framework identifying training needs • Implementation of informal and/or formal training. • Implementation of management support and mentorship.
Management infrastructure and equipment	The reserve has the necessary infrastructure and equipment to enable the cost-effective achievement of the management objectives.	• Infrastructure needed to support personnel in implementing the management plan is in place. • Personnel have the necessary vehicles and equipment to carry out management activities. • Infrastructure is adequately maintained, and equipment serviced and kept in safe working order. • Maintain fenceline infrastructure and ensure a buffer of at least 1.5 m either side of the fence line is cleared. • Development of Trail Development Plan. • Planning, design and development of demarcated trail and interpretative walks. • Maintain trails to ensure they provide easy access to designated areas. • Install and place removable trail marker signs and species identification board signs. • Installation of wildlife-proof bins for waste management. • Identify a suitable area for future developments such as an interpretation centre or parking. • Develop infrastructure aligned to the relevant legislation, environmental authorisation requirements, and conservation goals of the reserve.

Signage, access control and security	Signage, access control and security measures are put in place that effectively address related threats.	● The perimeter boundary of the reserve is clearly marked with fencing and signage. ● Erect sign boards communicating the following minimum information: ○ Signage indicating conditions of use such as the prohibition of smoking, dogs without a leash, fires, picking of wildflowers, leaving pathways etc. ○ Signage at all access points detailing emergency response service contact details. ○ Signage indicating that this is a high fire risk area. ○ Signage providing informative and educational information about species and the environment. ○ Signage demarcating trails. ● Access is controlled with fences around the reserve, with limited entry points which provide open access to pedestrians and wildlife. ● All unauthorised vehicle access is restricted with locked service gates, with keys delivered and available to emergency services and key personnel (or gate codes). ● Maintain the existing track through the reserve to keep it functional for emergencies. ● All access points are equipped with CCTV cameras for safety and to deter criminal activities. ● Erect new wildlife fencing according to the new layout requirements, design and specifications listed. Replace identified sections of the existing fence with wildlife passage sections, and install semi-permeable gates to allow wildlife access, as well as access for management and emergency response teams. ● Conduct regular monitoring of the condition of fences and repair and maintain fences when needed. ● Regular law enforcement activities by CapeNature, SAPS and officials from the Mossel Bay Municipality. ● Engagement with neighbourhood watch groups to collectively address security risks.
Research and management knowledge	Knowledge on how to achieve management objectives is gathered, documented and shared with the team to increase management effectiveness.	● Address knowledge gaps through desktop research, scientific research and getting advice from experts. ● Use increased knowledge and research findings to improve management effectiveness.

3.4 Annual Costing Plan

The annual budget is detailed in the Annual Plan of Operation (APO), which serves as the primary financial planning document. A copy of the APO is provided in **Appendix E**.

Costing within this Strategic Management Plan serves as a critical reality check, helping to prioritize actions and allocate resources effectively. The current budget estimates, presented in the table below, offer a framework for tracking existing financial resources and to identify funding gaps which can lead to exploring alternative funding sources, as well as projecting future financial needs.

The estimated breakdown of management costs is aligned with each management objective for a one year cycle. These figures reflect estimated projections based on average pricing for key goods and services that were identified as being required to achieve each action. and are aligned to the Annual Plans of Operation. However, it is important to note that these estimates must be updated and aligned to the Management Authority's forecasted budget.

To ensure the effective implementation of the Protected Area Management Plan and the achievement of protected area objectives, the Management Authority will actively pursue strategies to secure adequate funding. These strategies can include: Soliciting donor funding for targeted projects and initiatives, Advocating for increased budget allocations from government or parent institutions, Deferring lower-priority activities until sufficient funding becomes available.

These approaches will be reviewed and adapted annually to respond to changing financial landscapes and emerging opportunities.

3.4.1 Funding and Financial Sustainability

The financial sustainability of DNR management will depend on a diversified funding approach:

1. Core municipal funding

Mossel Bay Municipality's operating and capital budget will be the primary funding base for DNR, covering routine management, natural resource management functions such as invasive alien plant control, rehabilitation, infrastructure maintenance and personnel costs, allocated annually through the APO.

2. Provincial and national grants/programmes

Additional support may be accessed through CapeNature's biodiversity stewardship framework, linked to compliance with this Management Plan and METT reporting. Alien clearing and fire management activities may also draw on national EPWP initiatives such as Working for Water and Working on Fire.

3. External and supplementary funding

Sustainability can be strengthened by NGO/conservation trust grants for restoration or species specific work (e.g. *Diosma aristata*), "Friends of DNR" community partnerships providing volunteer and fundraising support, and

biodiversity offset funding where linked to nearby development approvals. This reserve also is included as a core zone of the Gouritz Cluster Biosphere Reserve (GCBR) and funding or strategic partnering on key tasks may help ensure management activities are feasible.

4. Funding risk and diversification

Municipal reserves nationally face persistent funding constraints, often weighted toward salaries over maintenance. DNR should mitigate this by diversifying funding across municipal, grant, EPWP and community sources, with budget adequacy reviewed annually through the APO Annual Review. Engaging with citizen-science or volunteer programmes such as CREW could help contribute towards meeting management objectives at reduced costs.

It is very important to note that this is a newly declared protected area, and setting up this reserve to achieve the conservation and tourism goals will require fairly large initial resource investments. The budget will need to be larger during the development stage of this reserve, but this budget requirement will likely reduce after these initial developments. Once these initial developments are complete, and infrastructure is in place, the reserve will require more affordable maintenance and follow-up work rather than new developments. For example, trails will be developed with informative signage and trail markers, this will require a substantial initial cost, but once these are in place, it will likely only require maintenance costs in future years.

The estimated annual management cost breakdown (for the period of 2026/27) for each management objective under each of the KPAs is provided in Table 3.5. Where estimated annual costs are indicated with no value, this means that either there are no costs associated with achieving these management objectives per that KPA, such as for Aquatic and Riparian Systems, as no management actions are required. Alternatively, the management objective will be achieved through the implementation of other related management objectives, and the costs do not require duplication. For example, fencing that is designed to be semi permeable for wildlife will be costed for under the management objective “Management Infrastructure and Equipment”, however, in achieving this, the “Wildlife” as well as the “Natural grazing and browsing of wildlife” management objectives requiring this fencing will also be addressed.

Table 3.5 Estimated annual management cost breakdown for the 2026/27 period.

Key Performance Area	Management objectives	Estimated Annual Coast
BIODIVERSITY & ECOLOGICAL COMPONENTS	Integrated Wildfire Control	R 431,000
	Integrated Invasive Alien Species Control	R78,559
	Aquatic and Riparian Systems	R 0
	Rehabilitation and Restoration	R 39 000
	Species of Special Concern	R50,000
	Wildlife	R 0
SUSTAINABLE UTILISATION OF NATURAL RESOURCES	Natural grazing and browsing of wildlife	R 0
	Recreation and Tourism	R 0
	Sustainable Harvesting	R 0
SOCIO-ECONOMIC & HERITAGE	Environmental Awareness and Education	R 25,000
	Socio-economic Development Initiatives	R 65,000
	Heritage Features	R 0
MANAGEMENT AUTHORITY EFFECTIVENESS & SUSTAINABILITY	Governance and institutional arrangements	R22,500
	Legal Compliance	R 0
	Employee Skills Development	R 50,000
	Management Infrastructure and Equipment	R29,000
	Signage, Access Control and Security	R162,950
	Research and Management Knowledge	R 0
Estimated Annual Management Cost:		R953,009

*Note: Cost estimates are projected to increase annually, adjusted for inflation and other economic factors.

3.5 Management Authority Policy Frameworks

These are developed by the management authority (Mossel Bay Municipality) for use across all its sections. This includes relevant policies and plans which help guide and manage internal rules, finances, safety and security, resource use and biodiversity within Mossel Bay, as well as in Diomsa Nature Reserve. Some key Management Authority Policy Frameworks which already exist or are in place, as well as those still requiring development are outlined in Table 3.6 below.

Table 3.6 Management Authority Policy Frameworks.

Policy or Plan in Place	Policy or Plan Required for Development
Internal Rules	
No policies or plans are in place for the internal rules of DNR.	In terms of section 52 of NEM: PAA, as amended, the management authority of a nature reserve may, in accordance with the prescribed Norms and Standards, make rules for the proper administration of the protected area. A document containing the internal rules for DNR has not yet been developed. This document will be developed and will include the rules to be implemented in the reserve, as well as the procedures for the enforcement of the rules, the reporting and documenting of illegal activities, and fines or penalties for non-compliance.
Financial	
- Mossel Bay Municipality, in compliance with the Municipal Finance Management Act (MFMA) Act No. 56 of 2003, has a number of key policies to guide the income and expenditure of the municipality, which will include the financial management of DNR. These policies include: - Mossel Bay Municipality Preferential Procurement Policy (2026 - 2027) - Supply Chain Management Policy (2026 - 2027) - Expenditure Policy (2026 - 2027) - Budget Policy (2026 - 2027) - The required budget for DNR is provided in this Management Plan and the budget for the management of the reserve will be allocated annually by Mossel Bay Municipality aligned to the above-mentioned policies.	N/a
Safety and security	
Safety and security within Mossel Bay Municipality in general is the responsibility of The Directorate of Community Safety. The directorate is responsible for Community Safety, Fire, Rescue and Disaster Management Services and Environmental Management in the municipality. A specific safety and security plan for DNR has not yet been developed.	A safety and security plan has not been compiled for the reserve. Such a plan will be developed and will include a risk assessment to identify potential risks and hazards in the reserve, as well as measures to mitigate or avoid these risks. This plan will also define how DNR deals with emergency services and will include a contingency plan and an emergency evacuation plan for the reserve.
Resource use	
Strategic Development Framework / Environmental Management Framework (2022): Guides decision-making that will promote the sustainable management of the natural resources and improved spatial planning in the municipality, including DNR. Resource use will likely be unsustainable in a reserve this size and is therefore not recommended, this is outlined in this Management Plan.	N/a

Policy or Plan in Place	Policy or Plan Required for Development
Biodiversity management	
The following plans are in place for governing the management of biodiversity in Mossel Bay Municipality, which includes DNR: <u>Provincial</u> - Western Cape Biodiversity Spatial Plan (2023): The plan provides a guiding framework for conserving biodiversity and ecological infrastructure through the promotion of sustainable development throughout the Western Cape. <u>Municipal:</u> - Integrated Development Plan (2026 - 2027): The IDP provides for the management of biodiversity by making the conservation of natural areas a cornerstone of sustainable development in the municipality. - Strategic Development Framework / Environmental Management Framework (2022): The SDF/EMF guides the spatial distribution of current and future land uses, infrastructure investment, sustainable development, and protection of the natural environment. The document identifies and provides guidance on safeguarding biodiversity against development by protecting areas of high conservation value, including protected areas. - Invasive alien species monitoring, control and eradication plan for Mossel Bay Local Municipality (2026): The plan provides for the implementation of the control of invasive alien species throughout the municipality, including DNR, for the period of 2027 to 2031. - NCC Environmental Services (Pty) Ltd. 2024. Terrestrial Biodiversity Specialist Assessment Report. Louis Fourie Corridor, Mossel Bay, Western Cape. Unpublished report. This outlines the proposed land use and zonation in and around the DNR. <u>Diosma Nature Reserve:</u> - The management of biodiversity on the reserve will be governed primarily by this Protected Area Management Plan and accompanying APO.	N/a

3.6 Protected Area Zonation Plan

The purpose of the zonation of DNR is to control the intensity and type of land use within the reserve in efforts to ensure the main goal of biodiversity conservation is met. On this basis, within some zones, the permissible intensity of use will be relatively higher than in others.

CapeNature's zonation categories present within this reserve are illustrated in Table 3.7. These are derived from existing protected area zonation schemes worldwide, to develop a coherent scheme that provides for visitor experiences, access and conservation management needs.

Table 3.7 Guide to CapeNature conservation management zones within Diosma Nature Reserve. Further Information is provided in Appendix D.

Zonation Category	Explanation
Nature Access	Providing easy access to natural landscapes. Includes areas with roads and trails, and access to popular viewing sites and other sites of interest.
Species / Habitat / Cultural Protection	Areas for protection of species or habitats of special conservation concern.

DNR is a smaller reserve, surrounded by urban areas and developments. It has therefore been zoned as a Nature Access area. The purpose of this zonation is to ensure that visitors and their impacts are appropriately managed to reduce negative effects on this endangered vegetation type and the many threatened species, such as *Diosma aristata* within the reserve. This zonation allows for more intensive biodiversity management intervention to help protect, maintain, and restore the ecosystems within this reserve. This zonation will help provide easy access to natural landscapes for users, with low expectation of solitude.

Given the extremely important biodiversity features (threatened species and Endangered vegetation type) this area has been given a permanent Special Management overlay of Species/Habitat Protection throughout the reserve. This will help ensure additional protection for the sensitive and threatened habitat and species. Specific activities, facilities and infrastructure will be dependent on the effect that these have on these sensitive biodiversity features.

Refer to the zonation map, Figure 3.1, below which illustrates the zonation within DNR.

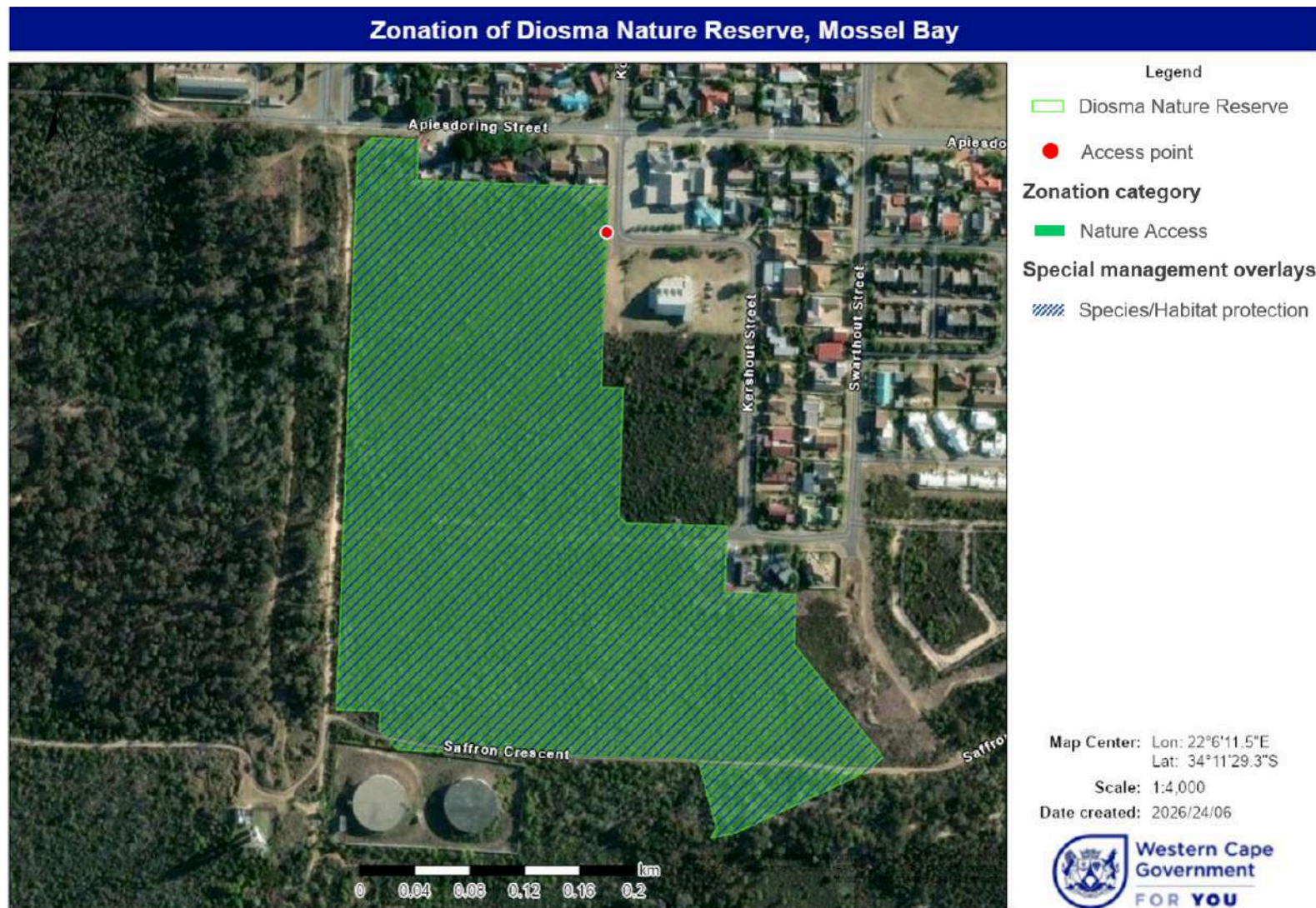


Figure 3.1 Zonation map of Diosma Nature Reserve.

3.6.1 Existing Infrastructure

DNR currently has one pedestrian, open access gate, and this access point is located on the corner of Koraalboom Street and Kershout Street. To the north and south of this entrance there are existing parking lots, which are used for the Shalom Mosselbay Pinkster Protestant Church and New Life Church. There is also one existing service gate located west of Rooipeer Street, which opens onto an existing road which runs horizontally through the middle of the reserve. This existing road will be useful in the event of fires or emergencies. This gate will remain having restricted access, and will be locked, with the key shared with key personnel and emergency services. There is existing fencing that surrounds the north and west border, and most of the eastern border of DNR. This existing fencing is in fairly good condition in some areas, however, there are a number of spots which have been damaged, and where required, the fencing must be maintained. There are utilities including water towers and a communication tower to the south-west of DNR, and this area has been previously fenced. There is an existing dirt road along the south of the reserve, which connects with these towers. Apart from these roads, gates and fencing, DNR contains no buildings or other major infrastructure.

The entire area within DNR holds great ecological significance and includes a threatened habitat type with many threatened species. Special care is required throughout the reserve area. The entire reserve has a Species/Habitat Protection Area zonation. There are no designated restricted areas in the reserve, however, we have outlined frequently observed locations of *D. aristata* populations, which should be avoided where possible. These areas must be approached with especial caution and will be mostly unsuitable for development footprints, with trails going around rather than through these populations.

There are a number of services which are present within and around DNR. These services must not disrupt the conservation function of this reserve. Access to these services should be undertaken with great care to ensure the least impact on the threatened habitat and species. This area includes services such as water, electricity and sewage service. Please refer to Figure 3.2 for locations of these services.

Where practical, and it does not pose a risk to infrastructure, *D. aristata* plants occurring in areas of existing infrastructure, servitudes or in maintenance buffers should be left in place. However, where disturbance or developments will negatively impact these plants, or where leaving them in place is not viable for their continued survival, a survey must be conducted across the affected footprint to identify individuals. A contingency plan must then be developed to guide the transplanting of young individuals (<15 cm) into a suitable area (similar microclimate) in the reserve, and the taking of cuttings from larger plants for nursery propagation and subsequent replanting. For example, over 100 *D. aristata* plants have been established along an existing water pipeline outside the fence on the northwestern boundary of DNR. These plants should be left to grow undisturbed, unless works are planned to unearth the pipeline which would damage or destroy them in which case a survey and search and rescue effort would be required.

3.6.2 Development Plans

Tourism products and infrastructure within protected areas need to be sensitive to their locations. Development should not negatively affect the purpose or any of the key determining factors of the protected area, and should be aligned to comply with prevailing zonation schemes and the protected area sensitivity analysis. Tourism services and related infrastructure developments on DNR are considered investments and are intended to help provide safe, informative and purpose-built access to protected areas. Wherever possible, tourism products, developments and services are intended to provide training and employment opportunities to communities within and surrounding the protected area.

Visitor activities aim to include guided or unguided nature observation tours, short walks along designated trails, bird watching, and non-destructive botanising. Visitor access will be open to the public and no special access control or permits will be required. Pedestrian access will be available, with parking located in adjacent areas outside of the reserve entrance. All visitor activities will require frequent monitoring to prevent degradation of the habitat or threatened species within the DNR.

There will be no accommodation or camping within the reserve. There are no airfields or facilities for vessels and none are proposed to be developed. There are no agreements in place for community or commercial use of this reserve, and all harvesting, firewood collection, wildflower picking, browsing/ grazing of livestock, mining activities, or use of any of the natural resources within this reserve are strictly prohibited due to this area's zonation as a Species/Habitat Protection Area. There will be a zero tolerance policy for any activities that will threaten the natural resources, sensitive habitat or threatened species in this reserve and penalties will be in place for offenders aligned to the internal rules developed for DNR.

The DNR is small and will only be able to accommodate a limited number of visitors at once. If the proposed reserve expansion areas, especially ERF RE2001, are accepted for inclusion, this will open up further tourism and recreational potential. The section below outlines potential future development plans for consideration under both the current DNR extent and the proposed expanded extent.

The DNR has been zoned as a Nature Access zone with an overlay of Species/Habitat Protection. Facilities and infrastructure will, as far as possible, be located on less sensitive or already disturbed/transformed sites. Where feasible, sites should avoid populations of threatened species such as *D. aristata*. Where this is not possible, and these plants will be destroyed or damaged by developments, a survey identifying these species must be undertaken, and a contingency plan developed. More information on the translocation of these species is outlined in section 4.1.4 Species of Special Concern. Proposed developments include infrastructure, visitor facilities, access, and security and fire management measures. These developments are proposed at this stage only, and

will require internal review to confirm approval and budget availability prior to implementation. No environmental authorisations have currently been granted in terms of the Environmental Impact Assessment Regulations, although the surrounding Louis Fourie Precinct application is in process. Where external approvals are required, these must be obtained from the relevant authorities prior to the commencement of any development activity. Any new development plans proposed internally or by an external developer may trigger a need to amend this management plan. Proposed development plans include, but are not limited to:

3.6.2.1 Interpretation Centre

A small Interpretation Centre is proposed for development to help support the educational function of this reserve. This area will include key information about the reserve and exhibitions of special plants, ecological processes, ecosystem drivers and threats. The Centre would allow the public, schools, and tertiary institutions access to information and provide a good platform for accessible environmental education. The proposed Interpretation Centre would include an exhibition space, parking and ablution facilities for visitor use, and would accordingly require supporting services such as water, electricity and sewage. This Interpretation centre is proposed to be developed in one of three potential locations. These proposed locations are outlined in Figure 3.3. These locations are considered due to:

- Development on existing footprints of disturbance or transformation.
- Avoidance of highly sensitive populations of critically endangered *D. aristata*.
- Accessibility - easy access using roads (existing or planned).
- Areas not yet zoned as urban areas as part of the Louis Fourie Precinct Plan.

The preferred option (Option 1) for the area of development for this proposed interpretation centre is below the existing parking lot, south of the corner of Koraalboom Street and Kershout Street. This proposed area would allow the Interpretation Centre to be situated near the existing pedestrian open access entrance, where there is already a parking lot available, reducing the immediate need to develop parking for this centre. This location would ensure that the proposed interpretive walk, which is planned to start at this pedestrian entrance, would be in close proximity to the interpretation centre, so visitors could easily access both. This proposed location will also ensure that the centre remains ideally located with or without the approval of the proposed reserve expansion areas and independent of the proposed Louis Fourie Precinct Project. If, however, another area is selected to develop this centre, infrastructure will need to be put in place to support this centre, such as roads, entrances, signage and fencing. Option 2 and Option 3 both rely on the proposed extension of Essenhout Street and Seemeeu Road to enable access into these areas.

Target dates for development of this Interpretation Centre are dependent on the approval of or amendment to the proposed Louis Fourie Precinct Plan zonation, as well as the acceptance or rejection of the inclusion of the proposed expansion areas for the

DNR. A set target timeframe can therefore not be attached as of yet, however, this is a medium term goal, and should be developed between one to five years if possible.

3.6.2.2 Interpretive Walks

There are three Interpretive Walks proposed for development through the existing DNR. Proposed locations for these are outlined in Figure 3.3. These are proposed locations, and prior to the development of these trails, a Trail Development Plan must be developed. Trail layout, design and construction must be done in a manner that limits destruction of the ecosystem and causes the least disturbance possible, making use of existing trails, roads or firebreaks where possible. Trails should be designed to loop into each other, reducing the need to develop completely separate trails. As far as possible trails will be routed away from the most sensitive areas (*D. aristata* populations). These walks will allow access through key portions of the reserve, by foot. Walks will include informative signage, and markers to indicate the directions for each walk. Signs and markers will be designed to be removable during controlled burns. Trail maintenance will be scheduled to ensure trails remain easy to move through and that all signs remain in place and in good condition.

The first proposed trail is the shortest walk (+0.5 km), with the purpose of providing a short walk for those who may struggle with access, such as elderly or disabled persons. This trail will be located on the flatter, northern section of the reserve, making use of the existing path and firebreaks. Special care must be taken during the development of this trail to ensure that it is suitably designed to enable wheelchair access. This area should also include benches along the walk. Along this interpretive walk, there will be signs with information available, such as identifying threatened or key plant or animal species.

The second and third trails will be designed for pedestrian use only, and will be narrower than the first trail. These walks will include markers designating the path, and signs with key information for species. The second trail (+1 km) will extend on this first trail and provide a medium length walk option, with the trail circling back to the entrance using the existing road running horizontally through the reserve. Similarly, the third trail (+2.5 km) would extend on the second, to create the longest walk option, which would go towards the south of the reserve, and back around to the entrance at the start.

It is critical that if visitors are going to access this area, that this is done in a controlled and sustainable manner. This requires developing trails to ensure that destructive paths are not created. The target dates for the development of a Trail Development Plan and trail development training for staff is within the first six months, while trail development is proposed to be within one year from the acceptance of this management plan. Once confirmation on the proposed reserve expansion areas is received, if approved, walking or cycling trails may be planned and developed in these expansion areas. The Parkrun may be continued, however, this must be properly managed together with Mossel Bay Municipality to reduce the environmental impact, and these routes may need to be adapted and aligned to the trails developed and fencing installed.

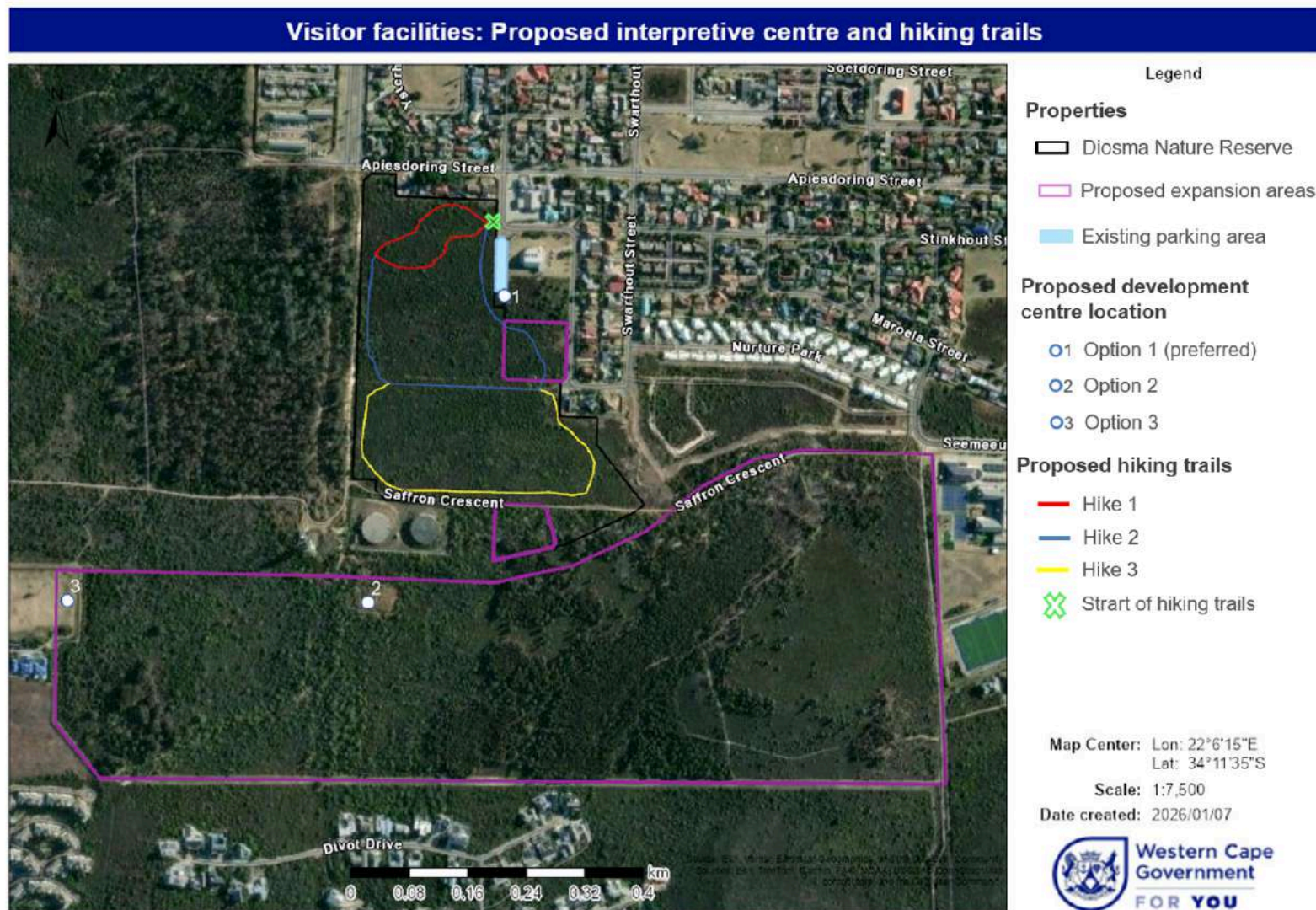


Figure 3.3 Visitor Facilities: Proposed Interpretive Centre, proposed Interpretive Walks and existing parking area for Diosma Nature Reserve.

3.6.2.3 Fences and Entrances

The design and location of fences and entrances is important to help control access into this reserve. It is critical that fencing and entrances in this area allow for the movement of animals to enable ecological corridors. Proposed designs for fences and service gates are provided in APPENDIX F - Proposed infrastructure design and specifications. All entrances should include signage to indicate that this area is demarcated as part of DNR. All service gates will be designed to allow wildlife easy movement through, but to prevent unauthorised vehicle access onto the reserve. For all locked gates, the keys will be provided to key personnel and emergency services that may need to access the track or dirt road. Operational CCTV cameras will be installed at all required entrances and parking areas to help dissuade criminal activities. Entrances will include appropriate signage.

All fences will have a 1.5 to 2 m maintenance buffer around them to prevent damage during fires and to enable easy access for maintenance. Where feasible and it will not create risks to the fences, threatened species such as *D. aristata* should be left in place within these maintenance buffers. If, however, these plants are likely to pose a risk to the infrastructure or functionality of the maintenance buffer, a survey will be required to identify these individuals over the maintenance buffers and a contingency plan will be required to guide search and rescue efforts to move small individuals and take cuttings from large plants. More information on the translocating of these species is outlined in section 4.1.4 Species of Special Concern. An important area to note is outside the fence along the current north-western boundary of DNR, where there are over 100 *D. aristata* plants growing, which must not be damaged or destroyed during the implementation of these fence maintenance buffers.

A number of areas have been proposed for the reserve expansion, however, the approval of these areas as part of DNR has not yet been confirmed. Planned developments for the fenceline and entrances are therefore outlined for the current reserve extent, as well as for if the proposed expansion areas are included. The Louis Fourie Precinct Project is still being developed and the exact development plans and zonations have not been finalised and made available. The proposed fencelines and entrances therefore also take the most recent proposed plan for this area, including the proposed Seemeeu Road between the reserve and ERF RE2001, south of the reserve into account. It is important to note, however, that these are only proposed fencing recommendations, and these fencelines must be developed with careful consideration of operational feasibility. Fences must be installed with the intention of controlling human access and enhancing wildlife movement and safety. If placing fencing in an area is identified as causing potential unnecessary obstructions, or if new developments (such as the development of an interpretation centre in ERF RE2001) render the placement of fences useless or problematic, these must be investigated and the layout revised in the management plan.

Some fences and entrances are already in place, however, several are still required for development to help control human access into the reserve. Target dates for development will include the existing fences and entrances to be assessed and maintained or fixed as required as a short term goal, within the first year following the approval of this management plan. No new fences and entrances are recommended to be built until confirmation is received of the acceptance or rejection of the inclusion of the proposed reserve expansion areas as part of DNR, and until once the Louis Fourie Precinct Plan zonation and development plans have been finalised. This is to prevent having to move these fencelines at a later stage if there are any changes to these plans, as this may result in unnecessary degradation or disturbance of natural areas. Once this information has been finalised, however, the target timeframes will be within six months to a year after receiving feedback. The proposed development plans for fences and entrances under each of these scenarios is outlined below:

The existing fences and official entrances along the northern, western and eastern borders should be left in place and maintained as required. Where existing fencing is not permeable to wildlife portions of this fence should be replaced with wildlife permeable fencing at intervals, aligned to where the ecological corridors are expected to have the most animal traffic (See Appendix F for proposed design and specifications). The existing pedestrian entrance gate in the north-western corner will remain open. This will provide open access to pedestrians. This entrance must be made wide enough and include any necessary ramps to allow wheelchair access aligned to the interpretive walk.

There is an existing, locked service gate, along Rooipeer Street, which opens onto the eastern portion of the existing track running east-west through the middle of DNR. A new entrance on the western portion of this road is proposed to allow access onto this road and through DNR for instances such as controlled burns or emergencies. This new entrance will include a locked service gate, which will prevent unauthorised vehicle access onto the reserve.

If no proposed reserve expansion areas are included, the fences and entrances required are outlined in Figure 3.4. The existing fence along the western boundary of the reserve will be continued along the southern boundary, making use of the existing fencing along the water towers. Fencing will continue along the reserve southern boundary, and connect with the existing fencing in the east. A locked service gate will be installed to restrict vehicle access into the reserve on the dirt road in the south.

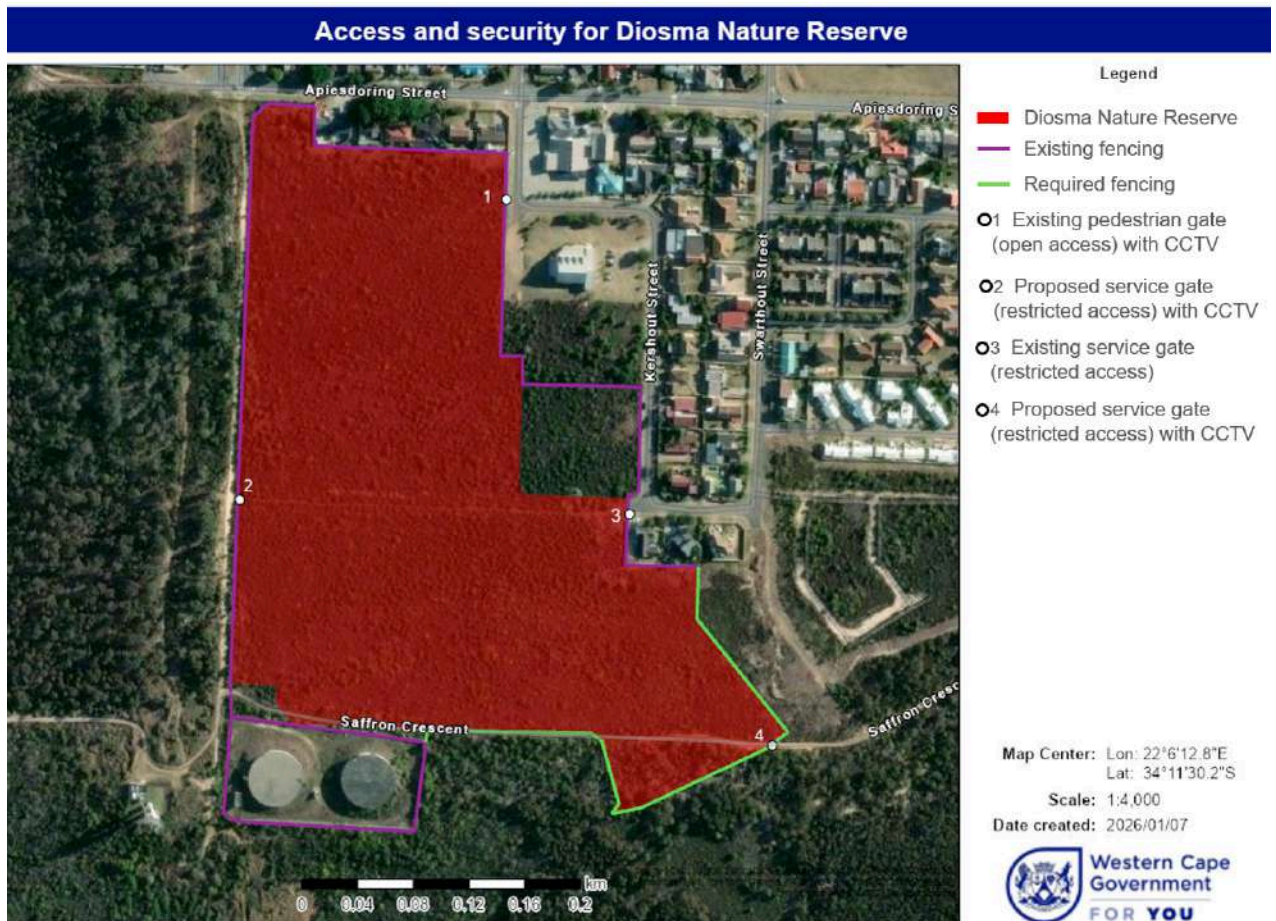


Figure 3.4 Proposed location of fencelines and entrances for Diosma Nature Reserve if expansion areas are not included.

If proposed reserve expansion areas are included and there is no development of the Seemeeu Road between the reserve and ERF RE2001, then the existing fence along the western boundary of the reserve will be continued, making use of the water towers fencing running vertically south towards ERF RE2001. New fences will be installed running to the west, along the north-western boundary of ERF RE2001, and then going south to join up with the existing fencing around Pinnacle Point Estate. On the eastern boundary of the reserve, the existing fenceline will be extended south, until the south-eastern corner of the reserve. Here the fence will be extended to the north-east corner of ERF RE2001, until it links up with the existing fencing that starts at the Curro School, and runs down south towards Pinnacle Point and Village on Sea. As outlined above, a locked service gate will be installed to restrict vehicle access onto the dirt road leading to the water towers in the south of DNR. A locked service gate will also be included in the north-eastern portion of proposed reserve expansion area ERF RE2001 to allow authorised vehicle access into this area if required for controlled burns or emergencies. An open-access pedestrian gate will be installed adjacent to this service gate to allow access into ERF RE2001. The proposed location of fencelines and entrances that are required if expansion areas are included and the Seemeeu Road is not accepted for development are outlined in Figure 3.5 below.

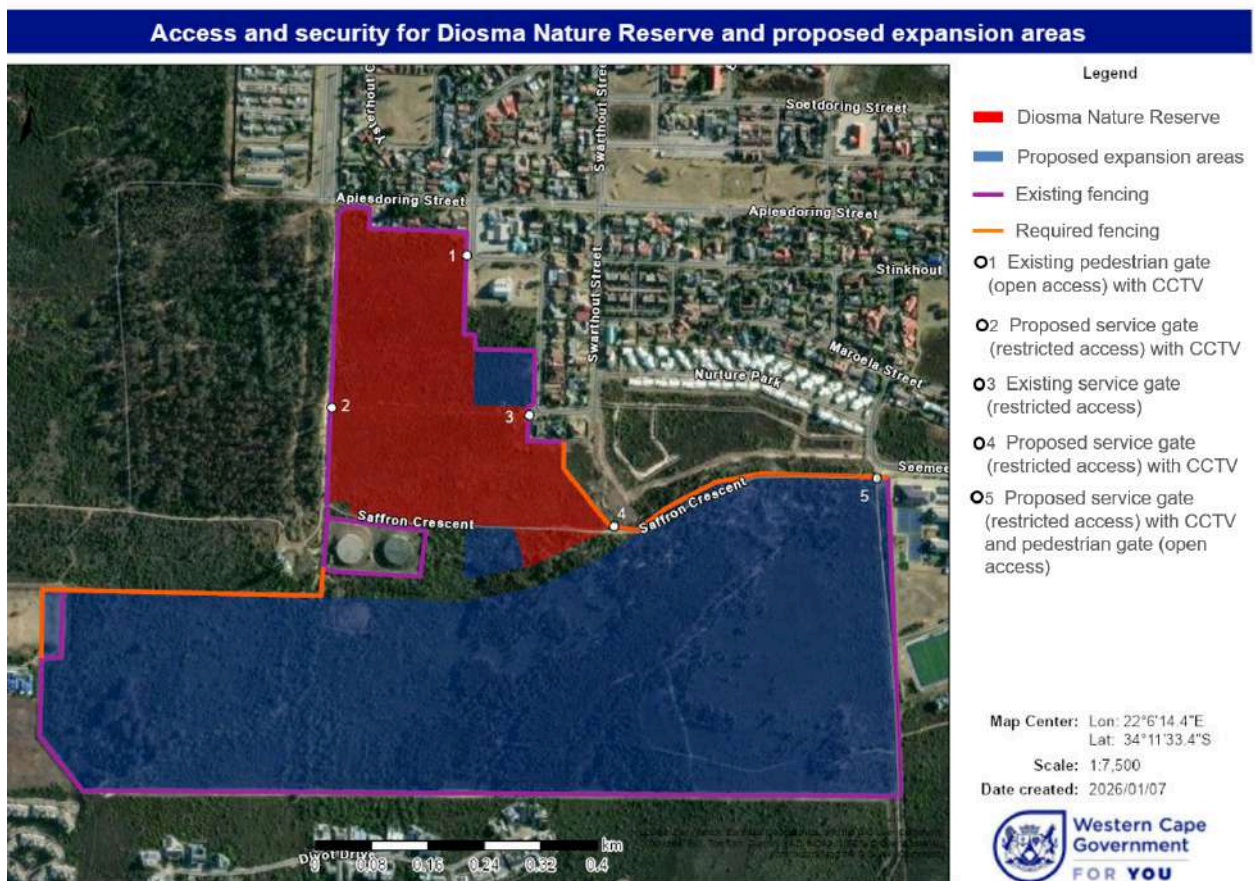


Figure 3.5 Proposed location of fencelines and entrances that are required if expansion areas are included and the Seemeeu Road is not accepted for development between the reserve and ERF RE2001.

If, however, the proposed reserve expansion areas are included and the development of the Seemeeu Road is approved between the reserve and ERF RE2001, the existing DNR fence on the western boundary will be extended east, along the southern boundary, using the existing water tower fencing where possible. The fencing will then extend to include the expansion area, ERF 11913. Where the fence then reaches the Diosma Reserve initial property, this south-western most portion that runs adjacent to the Seemeeu Road will be left as an entrance. The fencing will then continue northwards, connecting this area to the existing eastern boundary fencing. A locked service gate will be placed to prevent vehicle access into the reserve along the existing dirt road in the south of the reserve. Fencing will also be required along the northern boundary of ERF RE2001, connecting to the existing Pinnacle Point Estate fence in the west and the Curro School existing fence in the east. A locked service gate will also be included in the north-eastern portion of proposed reserve expansion area ERF RE2001 to allow authorised vehicle access into this area if required for controlled burns or emergencies. The Seemeeu entrances in the south of DNR, as well as in the north of ERF RE2001 will include strategically placed bollards, to restrict vehicle access into the sites. These will, however, allow for easy wildlife movement between ERF RE2001 and Diosma Reserve, ensuring ecological connectivity between these sites. The proposed location of

fencelines and entrances that are required if expansion areas are included and the Seemeeu Road is accepted for development are outlined in Figure 3.6.

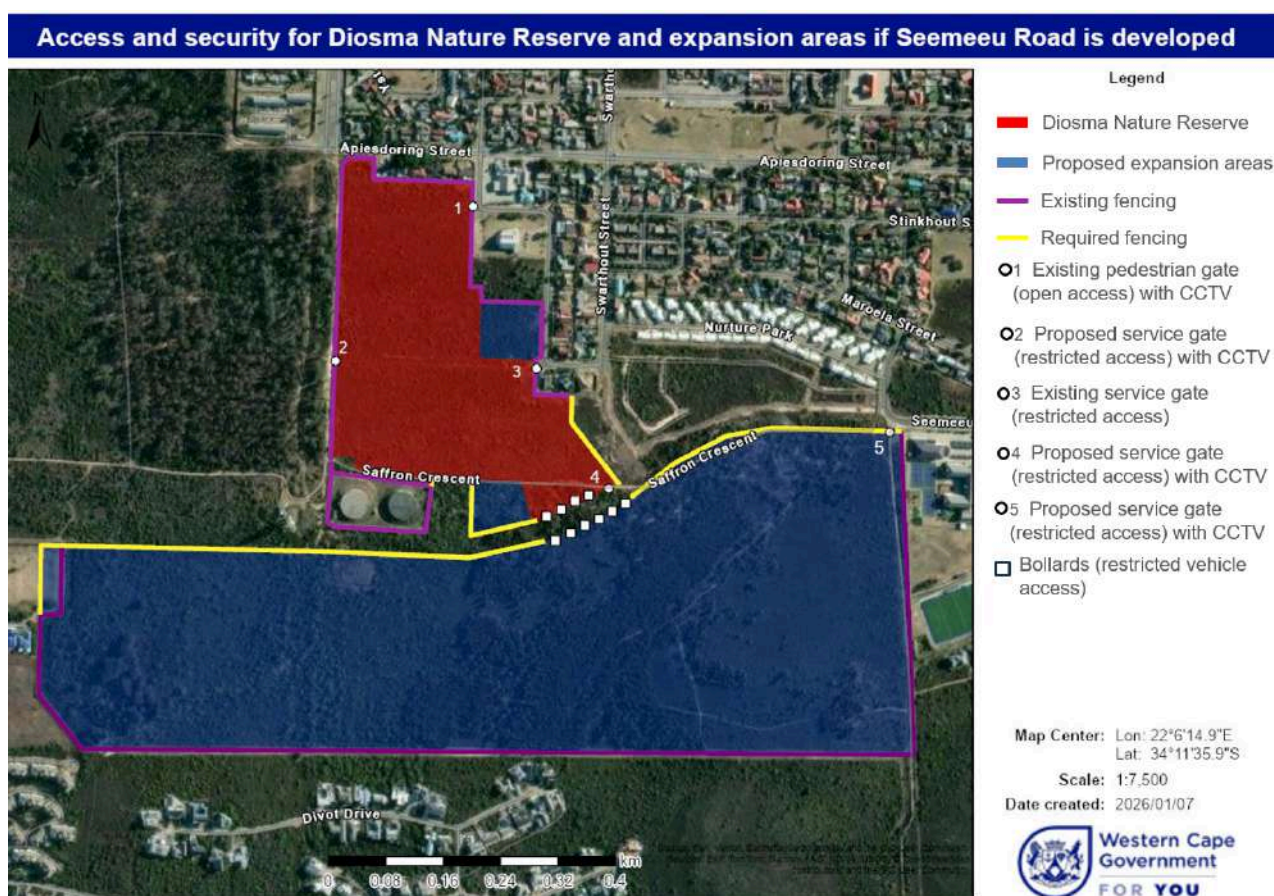


Figure 3.6 Proposed location of fencelines and entrances if expansion areas are included and the Seemeeu Road is accepted between the reserve and ERF RE2001.

3.6.2.4 Roads

Illegal dumping of general, building/construction and green waste is a frequent problem within DNR and the surrounding area, exacerbated by the access roads that allow vehicles into the reserve. Vehicle access also increases the risk of undesirable activities such as drinking and fire-lighting, and ecologically harmful activities such as wood collecting, path creation and trampling, all of which must be avoided. Roads are nonetheless essential for emergency response and management purposes such as controlled burning operations. Locked service gates will therefore be installed to restrict road access to authorised vehicles only. Existing roads will not require tarring or expansion, though periodic maintenance will be needed to keep them functional. This maintenance will be timed to align with the development of fences and entrances.

On any roads which surround this reserve or any reserve expansion areas, we recommend that speed limits are reduced and signs are installed at key positions around the outside of the reserve to inform motorists of wildlife presence in this area to help reduce wildlife mortalities and injuries. Investigations into speed limit reductions can begin upon approval of this plan for existing roads which border the reserve. For

proposed new roads that may be developed, communication can be made with the responsible persons to request this speed reduction for roads adjacent to the reserve once plans have been finalised for development of these roads. Installation of signs informing motorists of wildlife will be a short term goal, and should be installed within six months after the approval of this management plan.

3.6.2.5 Signage

Signs indicating that the property is part of DNR will be installed at all entrances, as well as all other relevant signs to communicate important information. Informative signs with information about the natural features and key species in this reserve will be installed along trails. Signs marking the directions to take for each of the three walks will also be included along trails. Signs that are installed within the reserve must be designed to be removable prior to controlled burns, and should otherwise include small maintenance buffers around them to protect them in the event of a wildfire. Proposed types of signs to be included:

- Existing main pedestrian entrance:
 - Entrance Sign for DNR indicating the management authority (Mossel Bay Municipality), key stakeholders, sponsors, etc as well as emergency contact details. This could also include a QR code to social media pages or donations or to iNaturalist to record observations.
 - Conditions of use and prohibited activities.
 - Warning sign for this “High Fire Risk Area” and wildfire emergency contact details.
 - Signs to pick up after dogs, possibly with plastic bags available.
- Other entrances or service gates: Small DNR signs with emergency contact details.
- Inside the reserve: Educational signs/boards for identification and information on key wildlife and bird species frequently spotted on the reserve, habitat features or important ecological processes or threats.
- Inside the reserve: Small species identification signs (for plants).
- Inside the reserve: Trail marking signs for each of the three walks.
- Outside the reserve along roads: “Slow Down - Wildlife Area” signs for along roads.

The signs required for the existing main pedestrian entrance into DNR should be installed immediately upon approval of this management plan, within a timeframe of six months. All existing entrances should also receive the necessary signage. Other signage requirements should be included as per the timeframes of the infrastructure they aim to support - e.g. trail markers and informative signage should be developed in conjunction with trail developments.

All signs should comply with a similar branding theme, be easy to read, clear, uncluttered, and communicate clearly. Signs should, wherever feasible, include information in English, Xhosa and Afrikaans, and in key areas along the shortest walking trail, Braille for people who are visually impaired. Proposed designs and types of signs are provided in APPENDIX F - Proposed infrastructure design and specifications.

3.6.2.6 Waste Disposal

Waste disposal must be carefully managed by the DNR to prevent pollution which may harm wildlife and negatively impact the aesthetic value of this reserve. Wildlife proof bins will be used in this area to prevent wildlife from accessing this waste. These bins should be robust to prevent falling over and waste being spread in this reserve. This could include partitions for recyclable as well as non-recyclable waste. These bins should be placed strategically at entrance points with signs indicating that visitors should hold onto their waste as there are no bins in the reserve. These dustbins should be installed at the existing pedestrian entrance as soon as feasible after the approval of this management plan, within a timeframe of six months. A proposed design is outlined in APPENDIX F - Proposed infrastructure design and specifications.

3.6.3 Fire Management Infrastructure

The DNR is too small to separate into smaller fire MUs. The reserve will therefore be burned as one area, with the entire extent included. The proposed reserve expansion areas, ERF RE2001 and ERF: 11887 are proposed to be included as part of this controlled burn to ensure that the burnt area is as large as possible, aligned to the recommendations of CapeNature in Fynbos biomes. ERF RE2001 includes sandplain as well as limestone Fynbos vegetation types, and the limestone Fynbos is unlikely to burn in any significant manner, due to a lack of plant biomass, however, this has also been included within the planned controlled burn area.

The entire area around Mossel Bay has been designated as having a High veldfire risk, and DNR is situated amongst an urban area, with neighbouring residential properties, housing complexes and a school. It is therefore critical that firebreaks are maintained where they already exist and developed where they are required to help mitigate the serious risks of fires (controlled or wildfires). Firebreaks within this reserve should be at least approximately 5 m wide, including the fence maintenance buffer where they are adjacent to fences. Firebreaks will be developed on existing footprints where possible. Where feasible and it will not increase the risks of fire spreading, threatened species such as *D. aristata* should be left in place. If however, these plants are deemed too great a risk to leave in place a survey identifying these species must be undertaken, and a search and rescue effort, aligned to a contingency plan must be undertaken. More information on the translocating of these species is outlined in section 4.1.4 Species of Special Concern. Firebreak locations are highlighted in Figure 3.7 below.

Along the northern section of the reserve, there is a previously created firebreak (Firebreak 1). Firebreak 1 should be maintained within this existing footprint to ensure it is functional. Firebreaks 2 and 3 will be implemented to help prevent fires from escaping in the east and western portions of this reserve. Although not within DNR, the property adjacent to the reserve in the west has a very dense stand of adult, woody IAPs. This poses a massive fire risk during fires and this risk must be mitigated. This area is zoned (according to the proposed Louis Fourie Corridor Plan) to have the existing Essenhout

Street extended into this area, which will act as a firebreak. If construction starts prior to the installation of the firebreak, this will be sufficient, however, if construction will not be immediate, then a large firebreak (Firebreak 4) will be installed. A firebreak (Firebreak 5) will also be installed around surrounding infrastructure such as the water and communication towers, south of the reserve to prevent damage during fires.

If the proposed reserve expansion areas are included, then Firebreaks 2 and 3 will be updated to allow for the movement of fires into and from these areas. Firebreak 6 around ERF RE2001 will also need to be installed and maintained. It is important to ensure that if these areas are approved for inclusion into the reserve, that firebreaks are installed to facilitate the movement of fires into these areas and to protect the fire from escaping out of them into neighbouring areas. Firebreaks should not cut off these reserve expansion areas if they are approved for inclusion. The areas between ERF RE2001 and DNR will also be included during this controlled burn to facilitate the movement of the fire.

The installation of firebreaks is one of the highest priority management activities to ensure that the serious risks associated with wildfires are mitigated. Of absolute immediate attention, even prior to the finalisation of this management plan, the Mossel Bay Municipality must join the local fire protection association (Southern Cape Fire Protection Association) for this reserve and ensure that these firebreaks are planned and funding is made available for their implementation once the plan is approved. The Mossel Bay Municipality must also consult internally with their Fire and Disaster Management Services to identify whether DNR forms part of a pre-existing fire management plan for the wider area. The northern and eastern firebreaks will be required under all scenarios of reserve expansion and surrounding developments, and these should be installed within three months of the approval of this plan. The inclusion of reserve expansion areas and finalisation of surrounding developments as part of the Louis Fourie Precinct will impact when the southern and western firebreaks are installed. If this management plan is approved prior to the development of the extension of Essenhout street, then this firebreak should be installed within three months of this approval. If reserve expansion areas are approved for inclusion, then upon this approval firebreaks should be installed and maintained around these areas within a three month timeframe.

The location of the controlled burn, as well as the firebreaks within DNR are outlined in Figure 3.7. Figure 3.8 highlights the areas for the controlled burn and firebreaks if the proposed reserve expansion areas are included as part of this fire management regime as recommended.

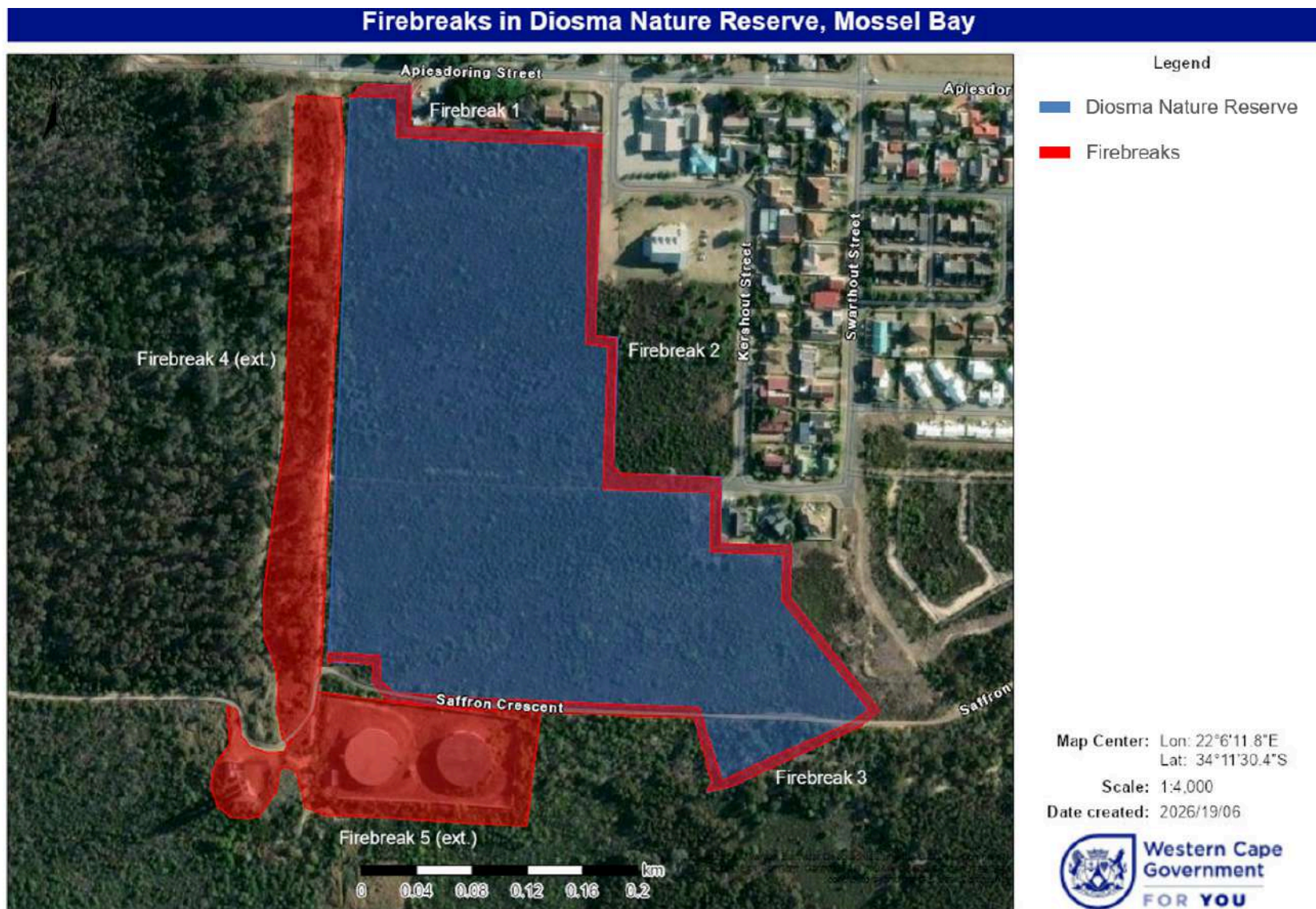


Figure 3.7 Firebreak locations for Diosma Nature Reserve.

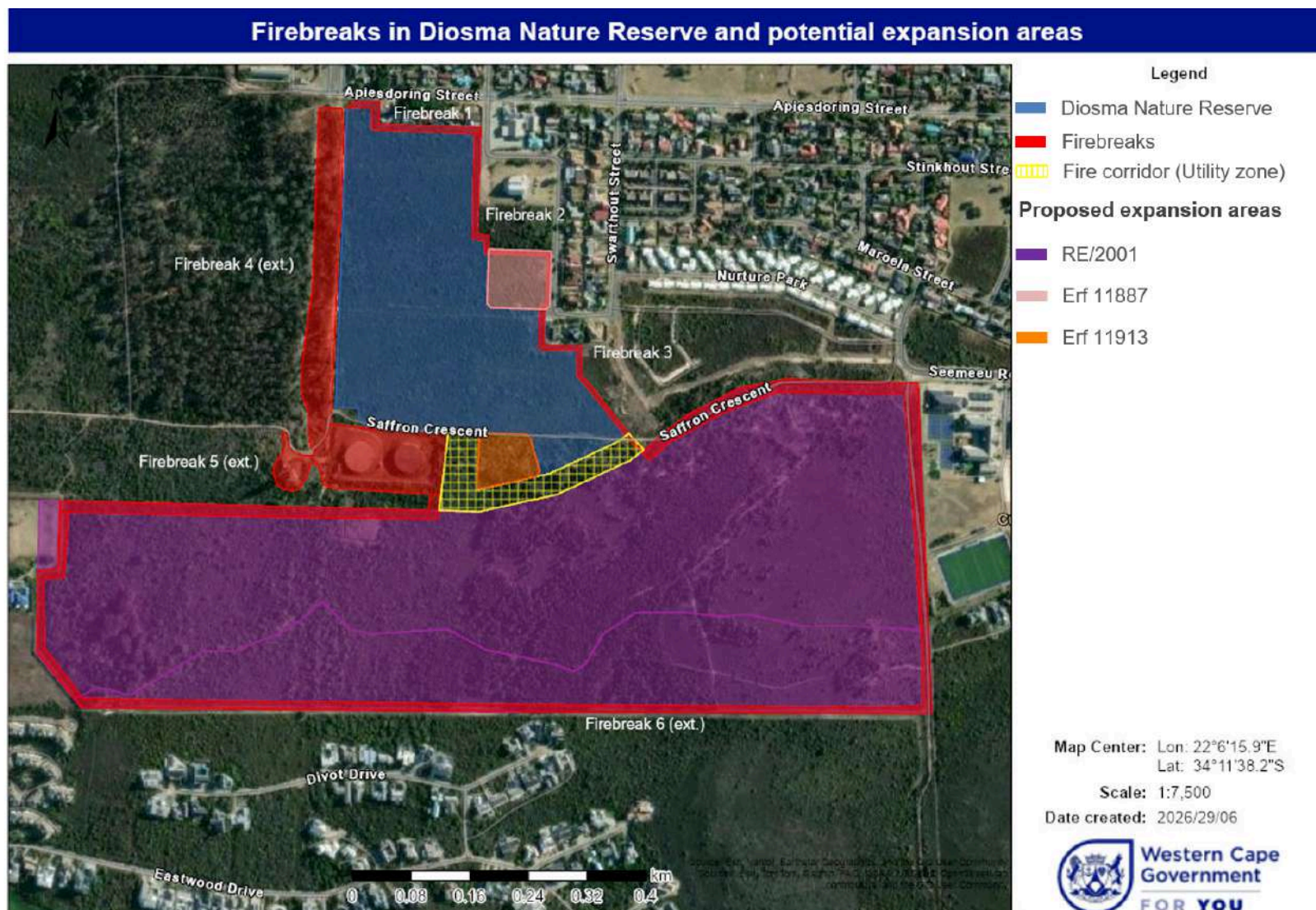


Figure 3.8 Firebreak locations for Diosma Nature Reserve and RE2001 showing fire connection points between the two properties.

3.6.4 Neighbouring Developments

The Louis Fourie Corridor Precinct Plan is being developed for areas surrounding DNR. These areas are proposed to be designated as a combination of development areas for urban uses, roads, and nature conservation areas.

Developments of particular significance will be the proposed extension of Essenhout Street along the western boundary of the reserve, as well as the proposed development of Seemeeu Street along the southern boundary between the reserve and proposed reserve expansion area ERF RE2001.

It is important to highlight here that specifically, the development of the Seemeeu Street between DNR and ERF RE2001 will significantly negatively impact these ecosystems and the wildlife movement and migration this reserve aims to support. This road will also likely cause negative impacts and the destruction of the critically endangered *D. aristata* populations in the north-east of proposed reserve expansion area, ERF RE2001. The extension of Essenhout Street will also place a threat on the existing *D. aristata* populations outside the fenceline on the north-western boundary of DNR, along the water pipeline. Where feasible the existing *D. aristata* plants must be left in place. However, if development activities threaten these plants and are likely to destroy them, then a survey within these areas must be undertaken to identify threatened species and a contingency plan must be used to guide the search and rescue operations. More information on the translocating of these species is outlined in section 4.1.4 Species of Special Concern. This road will also place a barrier between the proposed ecological corridors connecting natural areas to the reserve.

If these areas are approved for development, all infrastructure recommended for DNR should act to protect the reserve, and wildlife while enabling movement. Fencing should direct wildlife to specific corridors, where they will be able to move through, and any areas where these corridors cross with roads should ensure that these wildlife crossings are demarcated and that speed is reduced to prevent wildlife injuries and mortalities.

Where neighbouring areas are developed, it is of extreme importance that DNR, or other areas designated for nature conservation, are not negatively impacted. Where these activities take place, especially road development, these must be inspected by an ECO frequently and any negative impacts must be mitigated and rectified.

3.7 Management Units

For many protected areas, it makes sense to divide the area into management units to plan and facilitate the management of the area as typically different management actions are needed in different parts at different times of the year. This may also allow larger tasks to be broken up into smaller, more manageable tasks according to time and budget constraints.

DNR has a smaller extent, and therefore the proposed MUs have only been recommended as part of the IAP management strategy. These MUs are separated by an existing track which goes from east to west through the middle of DNR. The location of these MUs is indicated in Figure 3.9 below. If proposed reserve expansion areas are included, these MUs will need to be updated to incorporate these areas, with the proposed ERF 11887 being added as part of MU 1, and ERF 11913 added as part of MU2, while ERF RE/2001 should be added as a new MU 3.



Figure 3.9 Management Units on Diosma Nature Reserve.

4. Operational Management Guidelines

This section describes the best practice guidelines for each of the objectives under the key performance areas. The specific management actions for each objective can be viewed in the Annual Plan of Operations (APO).

4.1 Biodiversity and Ecological Components

4.1.1 Integrated Wildfire and Invasive Alien Plants

4.1.1.1 Integrated Wildfire

Fire plays an important role in southern African ecology, and has important effects on vegetation composition, regeneration, primary productivity and nutrient cycling. The most important use of fire for conservation management is to maintain viable populations of all existing plant and animal species. Fire regimes must be aligned to the ecological needs of this vegetation type, to ensure the continued protection and enhancement of biodiversity and the many threatened species which DNR aims to conserve. The Fynbos vegetation on this reserve requires well-managed fire regimes, which includes controlled burning operations.

It is critical to stress that controlled burning does not introduce fires as a new risk to the area. Fynbos vegetation is naturally a fire-driven ecosystem, and fires in this system are not an if, they are a when. Runaway fires have historically moved through this area, and fire will move through this system in both controlled or uncontrolled environments. It is therefore of critical importance that when fire moves through this area, that the DNR is appropriately prepared and equipped to deal with this. Controlled burns help ensure that burning is done under the correct conditions, which helps mitigate some of the very real risks associated with fires. When controlled burns are implemented, they can be undertaken at the correct frequency which ensures that fuel loads are appropriate, and at the correct intervals to prevent unnecessary seasonal or climatic risks (dry seasons, strong winds, etc.). Ensuring burning is done at an ecologically appropriate frequency, intensity, and season will help promote biodiversity. Controlling burns also allows the management authority to ensure that IAP species or excessive fuel loads are managed and that all firebreaks are in good working condition prior to burns. A major benefit of controlled burns is also the ability to plan and liaise with the correct authorities and emergency services, and inform residents and neighbours, as well as visitors or tourists in the reserve.

In developing a fire management strategy for the site, the following guiding principles will be adhered to:

Controlled Burns

- Burning and fire management will be undertaken in a safe manner that is legally compliant with the National Veld and Forest Fire Act (No.101 of 1998).

- Controlled burns will be undertaken to promote biodiversity conservation requirements of this site to protect the rare and endangered species which require fire at appropriate intervals.
- All mitigation measures, firebreaks, burn permits and communications will be put in place prior to controlled burns.

Fire Return Interval (Frequency)

- Controlled burns will be undertaken for DNR at intervals of roughly between 12 to 15 years aligned to the Fynbos species requirements. This will ensure that there has been sufficient time for the slower growing species (such as *Protea lanceolata* and *Protea repens*) to produce sufficient seedbanks. Indicator species will be observed prior to burning to ensure that the veld is sufficiently mature.
- Once the first burn is undertaken, the timeframes will be refined by monitoring.
- Burning intervals of shorter than 6-8 years will be avoided as this may result in a loss of species that have not matured and produced seeds.
- Since the last fires there has been a major build-up of biomass, and the Fynbos species have grown, reproduced, and largely become moribund. Given the vegetation condition at the time of this assessment, the estimated veld age is around 9 years.
- The current biomass and senesced vegetation is extremely fire-prone and will burn with great ease and intensity under the right conditions. Given the estimated age, and the proposed burning interval of 12 to 15 years, the next controlled burn will be planned, if possible, to take place within the next two years.

Season

- All controlled burning will take place in late summer to early autumn, from February to March (with the option for early April if required). This is aligned to vegetation requirements of the Fynbos species within DNR.
- Aseasonal burning during the drier summer months (December/January) will be avoided, to reduce the risk of runaway fires and negative impacts on biodiversity.

Fire Intensity

- The intensity of a fire is influenced by the fuel load, fuel moisture, relative humidity and wind speed. The intensity can be manipulated by either reducing the fuel load (i.e. burning more often) or by selecting the conditions that will lead to the desired type of fire.
- The Fynbos species in DNR require high intensity fires for survival. Burning at the correct high intensity is crucial, and low intensity burns will negatively impact the threatened plant species, and directly oppose the conservation purposes that this reserve aims to achieve.
- High intensity burns which move rapidly through the area will be undertaken, to mimic natural fire regimes within this vegetation.
- Woody invasive alien plants increase fuel loads above normal levels in Fynbos and this increases the risk to indigenous seed banks and to infrastructure. IAPs and associated biomass will be managed and removed as necessary prior to undertaking controlled burns to reduce excessive fire risks.

Fire Mosaic (Spatial Pattern)

- When burning Fynbos, the fire management blocks should be kept large and areas of less than 50 hectares should be burnt in one fire event and not subdivided into smaller burn blocks.
- DNR only has a small extent (10.7 ha), and therefore the reserve will not be subdivided into separate management units (MUs).
- This controlled burn will take place over the course of one day.
- Where possible burns will be done in conjunction with neighbouring properties.
- The property south of DNR, situated on ERF RE2001 will be proposed as a reserve expansion area for the reserve to be included as part of this burn. The addition of this larger property will help increase the available area for the burn. The RE2001 property, however, has dense stands of IAPs such as *Eucalyptus conferruminata* (Spider gum), as well as frequent instances of *A. saligna* and *A. cyclops*. No controlled burning will be undertaken in this area until these woody IAPs have been managed, biomass has been removed, and the area has started to rehabilitate. A focused and consistent management effort will be required to ensure the dense stands of IAPs are controlled after the initial treatments.

Wildfire Response

- Signage will be installed at all access points to prevent fires and any fire risk activities within the reserve, informing visitors that the area is a high fire risk zone and communicating how to report any wildfires.
- Emergency contingency policy and emergency evacuation plans will be developed to deal with the event of wildfires in the reserve.
- Emergency response training will be regularly undertaken aligned to the emergency plans developed to ensure that all role-players understand their duties.
- In the event of wildfires communication is crucial, and emergency services and the FPA will be notified, as well as neighbours and potential visitors to the reserve. A register of all persons to be notified must be assembled as part of the Emergency Contingency Plan.
- During and directly after any fires the reserve will be closed to the public and notices of the fire will be posted to prevent access.

Engagement, Collaboration and Communication

- Mossel Bay Municipality will join the local fire protection association (Southern Cape Fire Protection Association) and maintain its membership every year.
- For the successful implementation of controlled burns it is critical to engage with all stakeholders.
- All burns will be undertaken together with the local Fire Protection Agency, the local Fire Emergency Services and fire chief, conservation authorities such as CapeNature, and other relevant stakeholders such as Working on Fire teams.
- All fire management planning will be done in collaboration with neighbouring management authorities and landowners including Mossel Bay Municipality, Pinnacle Point estate and Village on Sea estate.

- Prior to any controlled burns, awareness campaigns will be run to inform the property owners in the adjacent areas, the public, and potential reserve visitors of when these burns will take place, as well as highlight the importance of these controlled burns, and what they can do to stay safe and protect their property during them.
- Before any burning takes place there will be careful checks that no one is inside the reserve to ensure the safety of any reserve users.
- During and directly after any fires the reserve will be closed off to the public and notices of the fire posted to prevent access.

Firebreaks

- Firebreaks will be prepared and maintained annually prior to the start of the fire season (around September/October), with mid-season maintenance if required (around February) and monitoring before any controlled burns.
- Firebreaks within this reserve will be at least 5 m wide, including the fence maintenance buffers.
- Firebreaks will be created using brushcutters, and will be implemented in a manner that is least damaging to the environment and aesthetics of the property.
- The installation of firebreaks will transform the areas in which they are implemented, however, threatened or protected species (such as *D. aristata*) will not be cleared if they occur in isolated clumps and do not present a fire risk, and will rather be left in place, even within fire breaks so that they may still produce seed for new plants outside of these firebreaks. If these plants do, however, pose too great a risk and require removal, a survey identifying these species and search and rescue efforts aligned to a contingency plan will be required to rescue small threatened plant species or take cuttings of larger plants, from which both can be planted into similar habitats in more protected areas within the reserve. More information on the translocating of these species is outlined in section 4.1.4 Species of Special Concern.
- To minimise effects on the natural vegetation, wherever possible, existing footprints of disturbance will be used to guide the placement of firebreaks, such as the existing firebreak in the northern section, as well as along the road in the southern section.
- Firebreaks will be developed where they do not exist but are required to ensure that fires from outside the reserve do not enter it, and that fires from inside the reserve do not spread to neighbouring properties.
- These firebreaks will include IAPs, which will be treated along with the other IAPs within these MUs to ensure that they receive the proper, effective treatments.

Infrastructure

- On each side of the fence, a maintenance buffer of approximately 1.5 to 2 m will be maintained, with vegetation kept short through brush cutting methods, to help protect fences from fires and to prevent vegetation from growing into the fence line.
- Should any protected species, such as *D. aristata*, occur within the fence line maintenance buffer, care should be taken to clear around these plants or clumps of plants to avoid damaging them, as they can contribute to populations outside the fence buffer and in the broader reserve.

- Infrastructure such as trail markers and species identification boards will be designed in a manner that allows them to be removed prior to burns and replaced afterwards. Alternatively, if feasible, a buffer around these signs can be cleared prior to the planned burn.

Monitoring Post Fires

- After fires the species composition within DNR may change, and emerging species may be different to those which were previously there. Resprouting and reseedling of species will be monitored after fires, and the flowering of indicator plants such as *Protea* spp. will be recorded to help inform future controlled burns and to contribute towards a more thorough understanding of the fire regime requirements within this reserve.
- Post-fire monitoring will be undertaken within 12 to 18 months after the fire on *Protea* species in the reserve, including *Protea lanceolata* and *P. repens*, to determine the recruitment ratios of the dead parent plants vs seedlings that have germinated since the fire (CapeNature: AnneLise Schutte-Vlok, pers. commun. May 2026). This will give an indication of whether old parent plants are being successfully replaced by new plants. After a period of around 4 to 5 years after the fire, a sample of around 100 protea plants will be marked and evaluated on an annual basis to record the plant growth and flowering success. Once 50 % of these marked protea plants have flowered three or more times, then this will indicate that the veld is likely ready to burn again.
- Senescence of other indicator species, such as *Metalasia muricata*, *Cliffortia* spp., or *Erica discolor*, will also be used to determine whether the veld is ready to burn. The presence of moribund plant biomass will be assessed annually through in-field observations undertaken at the same time as the marked protea plant assessments.
- Other ecological monitoring will include the survey and recording of any emerging rare or threatened plant species after fires.

Management actions:

See Annual Plan of Operation.

4.1.1.2 Invasive Alien Plants

Management authorities are under a legal obligation to control invading alien plants occurring on their properties. Planning this control is essential for the long-term success of the programme. A listed invasive species means any species, which is listed in terms of Section 70 of the Biodiversity Act, whose establishment and spread occurs outside of its natural distribution range. In undertaking invasive plant control, the following guiding principles will be adhered to:

IAS Control Programme

- Invasive plant control will require an ongoing programme that prioritises the control of invasive species to help ensure the protection of species of conservation concern.
- DNR was included as one of the properties assessed as part of the development of the Mossel Bay Invasive Alien Species Monitoring, Control, and Eradication Plan

(IASMC&EP). This IASMC&EP will guide the systematic control of IAS within the reserve.

- IAS are a long-term responsibility, and there will be a commitment to maintain the sites and follow up on initial clearing efforts. The ability and resources required for this will be made available to ensure follow up operations are possible.
- All follow-up requirements will be strictly adhered to otherwise the problem will be exacerbated and previous time and resource investments will be wasted.

IAP Treatment

- When clearing IAPs, care will be taken to ensure that clearing is done with appropriate methods that provide the most effective outcomes.
- Highly destructive methods, such as mechanical bulldozing will not be used in this sensitive environment.
- Integrated control methods will be utilised for IAP control, including manual, mechanical, chemical and biological control methods.
- Care will be taken to ensure that any positive impacts of IAP clearing are enhanced, and that any potential negative impacts are prevented or mitigated.
- Personnel will receive the necessary training prior to any clearing efforts with special focus on the implementation of suitable clearing methods within a sensitive environment (presence of *D. aristata* and other critically endangered species).
- Suitable, target-specific, registered herbicides will be responsibly used.
- Accessing the IAPs for treatment will be undertaken carefully to prevent disturbing the indigenous plants, especially threatened species, or interfering with wildlife.
- IAPs will be controlled prior to any controlled burns in the reserve.

IAP Biomass

- IAP biomass will be appropriately managed and woody biomass removed should it elevate the fire risks or threaten infrastructure.
- IAP biomass may be useful (such as firewood) for surrounding communities. However, collecting biomass within the reserve is not permitted. Once official teams have treated the IAPs, the biomass can be removed from the reserve and transported to a designated area close to the communities, from which it can be collected and used.
- IAP reproductive structures such as seeds or propagules will not be spread across this site or transported to new sites. To ensure this, clearing and transporting efforts are to take place outside of the plant's seeding cycle.

Collaborative Approach and Engagement

- It is also important to consider IAS at a landscape level, as clearing in one area without clearing neighbouring properties with dense infestations will likely result in the re-infestation of this area. Collaboration and collective efforts are important, and DNR should communicate with surrounding landowners, interested and affected parties, or relevant organisations.
- Creating public awareness on IAS is important to help address this problem. Awareness drives or public information sessions on related subjects such as the

importance of indigenous gardens or anti-green waste dumping will be useful in helping prevent or reduce the impact of these invasion pathways.

- Strategic partnerships (local conservancies, Gouritz Cluster Biosphere Reserve and citizen science initiatives) and poverty relief programmes such as the Working for Water programme should be utilised where possible.

IAA Species

- IAA species are highly mobile, and IAAs will be managed at a larger scale than simply within this reserve.
- DNR will collaborate with many stakeholders and landowners, authorities and governmental agencies such as CapeNature, SANParks, SANBI and working groups (such as CAPE Invasive Alien Animals Working Group) to manage these IAA species.

IAS Monitoring

- Frequent monitoring will be undertaken to ensure the early-detection and rapid response to any newly emerging IAPs, and identification of invasion pathways and how the impact of these can be reduced.
- Monitoring and evaluation techniques will be used to determine whether implemented treatments have been successful.
- Any impacts of IAP treatment methods on the surrounding environment or indigenous species will be monitored and rectified if required.
- All results from monitoring will be used to inform adaptive management to ensure the most effective outcomes of IAS treatments in this reserve.
- IAPs are prolific resprouters, and will often emerge prolifically after disturbances. Any activities that cause disturbances will be limited as far as possible. Where disturbance is unavoidable, such as from the installation of infrastructure or any fires, any emerging IAPs will be rapidly targeted before the new seedlings establish and spread. These emerging (or re-emerging) IAP species will be monitored after disturbances and targeted for control 6 to 12 months post-disturbance.
- Citizen science projects and community groups are particularly useful in helping identify any new IAPs in the reserve. Tools such as iNaturalist can be used to record observations by the public.

Management actions:

See Annual Plan of Operation.

4.1.2 Aquatic and Riparian Systems

The area within DNR does not include any aquatic zones, wetlands, rivers (perennial or non-perennial), or sensitive or vulnerable aquifers. For further ecological context, please see section 2.7.2 Topography, Hydrology and Soils. It is therefore not an area requiring management attention at present. If proposed reserve expansion areas are included as part of DNR which include any aquatic or riparian zones, this will need to be updated within this Management Plan and APOs will need to be developed to protect these areas.

Management actions:

See Annual Plan of Operation.

4.1.3 Rehabilitation and Restoration

Areas of the reserve that have been degraded due to past human activities (trampling, dumping, burnt), or are left exposed due to alien plant clearing activities, can have a negative impact on the biodiversity value of the protected area. The primary goal of restoration following degradation is to re-establish a structurally representative stand of indigenous vegetation that fulfills the major ecosystem functions and prevents any unnatural soil structure loss. Where soil structure and other ecological components are intact, the management objective is to restore the area back to a natural state. Where these components have been disturbed, the management goal is to rehabilitate the site so that vegetation resembles the structure and species composition of the naturally occurring vegetation type. It is important to note that disturbed areas that can only be rehabilitated to structurally resemble a natural state can still perform an important role in ecological connectivity.

In addressing rehabilitation and restoration, the following guiding principles will be adhered to:

- Aim to conserve what remains, i.e. minimise the loss of indigenous seed banks and soil, and in this way restoration costs may be kept to a minimum.
- Determine the extent and causes of degradation, and identification of appropriate restoration/rehabilitation measures.
- Areas susceptible to soil erosion or showing early signs of soil erosion such as loss of vegetation cover, will be rehabilitated to prevent soil erosion.
- Areas impacted by soil erosion will be stabilised using effective erosion control techniques, after which the natural indigenous vegetation will be left to revegetate the affected area. Should there be a lack of indigenous plant species within the affected area to naturally revegetate it, a selection of appropriate indigenous pioneer species will be used to stabilise the affected area. IAPs often establish in disturbed areas, and care should be taken within the stabilized area during the treatment of these IAPs.
- Due to the relatively light infestation of IAPs currently within the reserve, passive restoration techniques can be applied following IAP treatment. However, where IAP treatment is applied to dense stands of invasives, such as will be required within the expansion area (ERF RE2001), active restoration efforts will be required to stabilise the soil surface and speed up the recovery of indigenous species recruitment, before the area is outcompeted by aggressive pioneer IAPs responding to the disturbance. The rehabilitation effort will include removing the IAP biomass and replacing these invasive species with indigenous pioneer species.
- Where invaded or degraded sites are being restored records will be kept detailing the alien vegetation clearance methods and dates, restoration actions, and results of alien and indigenous vegetation monitoring.
- Where dumping has taken place on site, these areas will be cleared of dumped material, and the site rehabilitated. Further dumping will be restricted by enforcing

no dumping rules within the reserve, monitoring with CCTV cameras and restricting vehicle access into the reserve.

- Assessments will be undertaken one to two months after any extreme weather events or disasters, such as flooding or wildfires to identify any areas requiring soil erosion control, restoration or rehabilitation.
- Long term monitoring of habitat disturbance, degradation or transformation or soil erosion will be undertaken in the reserve and its recovery after restoration or rehabilitation techniques are applied.
- After any developments on the reserve (such as firebreak or trail creation) or after disturbances, such as fire, all areas will be monitored and restored or rehabilitated as required.
- After any disturbance on the reserve, such as a controlled burn, the establishment of firebreaks or trails, or the development of infrastructure such as fences, gates, roads or buildings, additional precaution should be taken to prevent soil erosion and IAP infestation within the disturbed areas. Affected areas will be monitored and restored or rehabilitated as required.
- Any degradation or soil erosion from neighbouring construction or developments will be reported and rectified.
- Awareness campaigns and education will be provided on the negative effects of soil erosion and habitat degradation, outline the activities that cause these (such as dumping) and why these are harmful, and highlight how restoration/rehabilitation efforts help combat this degradation.
- Skills development training will be provided for workers on combatting soil erosion and restoration and rehabilitation techniques.

Management actions:

See Annual Plan of Operation.

4.1.4 Species of Special Concern

There are a number of species of special concern in the DNR (see **Section 2.7.6** and **Appendix C** for species lists). These species of conservation concern must be protected and enhanced, which will require adhering to the following guiding principles:

- The species of special concern must be protected as far as possible, and all management decisions must be aligned to the overarching goal of biodiversity conservation within DNR.
- A controlled fire regime will be implemented, which mimics the natural fire requirements of this vegetation and these species, with burns at appropriate frequencies, seasons and intensities.
- Effective control of invasive alien plants and their biomass will help enhance the conservation of these species of conservation concern.
- These species' natural habitats will be conserved, with limited disturbance and transformation within the reserve.
- Key to the long-term survival and effective management of these species of conservation concern will be the expansion of DNR to include a larger area. This will

ensure protection of highly limited populations and conservation of their restricted habitats.

- Connecting DNR with the Butterfly Reserve near the Mossel Bay cemetery will help to conserve this endangered *Lepidochrysops littoralis* butterfly species.
- Functional ecological corridors will be developed to allow for ecological processes, wildlife movement and migration and fires.
- Restricted activities which are harmful will be prohibited and enforced within the reserve, these may include unsustainable harvesting, firewood collecting, illegal dumping, sand mining, building of fires, bringing in domestic dogs which are not on leashes, or the poaching, hunting or trapping of animals.
- Surveys will be undertaken of threatened or rare plant species, including yearly censuses of the *Diosma aristata* in the month of May, as this is when they are in flower.
- Species of special concern such as threatened plants or animals will be recorded and populations monitored, and the existing species lists will be updated if new species are identified.
- Citizen science initiatives such as iNaturalist, as well as partnerships with students, interns, or interested volunteer groups such as Custodians of Rare and Endangered Wildflowers (CREW) will help provide a low cost avenue to expand on existing species lists and deepen the site's baseline ecological information.
- Methods such as wildlife camera traps will be used to identify species of conservation concern present within this reserve.
- Locations of threatened species and protected tree species will be demarcated during any construction or development activities such as the creation of firebreaks, trails or installation of signs to protect these species.
- Wherever possible, disturbance to threatened species such as *D. aristata* should be avoided. Where threatened species such as *D. aristata* occur within areas of existing infrastructure or services (such the existing waterpipe on the north western boundary of DNR), maintenance paths (for firebreaks or fencelines), or footprints of planned developments (such as trails) these plants should be left in place and as far as possible not damaged. If disturbance is unavoidable, and developments or maintenance of services and infrastructure will negatively impact these plants, or if leaving them in place will limit the functionality of the infrastructures, then surveys to identify these threatened species will be required over this development footprint, as well as the development of a contingency plan. Juvenile *D. aristata* plants smaller than 15 cm may be considered for translocation to a similar microhabitat within the reserve, where these young plants must then be protected from further disturbance by erecting a barrier fence around them. Adult *D. aristata* plants will likely not be suitable for translocation due to the disturbance to their root systems and the change in microhabitat conditions. Rather, cuttings should be taken from adult plants, and these should be rooted in a nursery. The soil into which they are planted at the nursery must be Phytophthora-free, to avoid introduction of the fungus into the nature reserve. These Plants (nursery-rooted cuttings) should then be planted into a suitable, similar habitat within the reserve where they will be able to grow without further disturbance and where conditions will optimize the likelihood of successful establishment. Given the plant's status as critically

endangered, botanical search and rescue permits from CapeNature will be required prior to undertaking these activities. All search and rescue actions must be conducted by suitably qualified and experienced botanical experts, with engagement undertaken with local experts and organisations such as the Garden Route Botanical Garden or horticulturalist representatives from Kirstenbosch National Botanical Garden.

- Partnerships will be formed with interested research institutions such as universities to research these species. A better understanding of the species of conservation concern will allow for adaptive management to ensure that these species are managed appropriately.
- Awareness campaigns and educational talks or “engagement days” will be undertaken to identify the species of special concern in this reserve and highlight the importance of targeting key threats to these species.
- Within the reserve, along the interpretation walks, signs or information boards will be used to create awareness and help identify these species of special concern.

Management actions:

See Annual Plan of Operation.

4.1.5 Wildlife

Many wildlife species are indigenous to the Western Cape region, and the conservation of these species is an important contribution to maintaining ecosystem functioning. Any wildlife management programme must integrate the ecological and socio-economic objectives, so as to maximise the value to biodiversity and the protected area, but also to minimize the human-wildlife conflict. Please see **Section 2.7.6** and **Appendix C** for species lists of DNR.

In addressing wildlife, the following guiding principles will be adhered to:

- Restricted activities such as poaching, hunting, trapping (e.g. with snares), or trading will be prohibited and enforced with penalties.
- Visitors will be restricted from bringing unleashed dogs on hikes with penalties for non-compliance.
- Fences and gates will enable the movement of wildlife.
- Ecological corridors will be developed to enable the movement of wildlife and natural ecological processes.
- DNR and Nature Conservation or Open Space areas will be expanded and managed to prevent further habitat destruction and provide sufficient habitats for wildlife.
- No wildlife will be specifically introduced into this area.
- The viability of speed limit reduction will be investigated and signage will be installed on surrounding roads to make drivers aware of wildlife presence and any wildlife crossings that go over roads will be identified.
- Pollution will be prevented by highlighting the importance of using provided dustbins, and installing wildlife proof bins.
- The faunal health and their impact on the ecosystem and vegetation will be monitored and evaluated.

- Wildlife will be monitored and identified using camera traps to help understand what species are using this area and how they are using it, to get an understanding of the population dynamics, etc.
- iNaturalist will be used to allow visitors to upload observations that can help identify species observed within the reserve.
- A comprehensive terrestrial fauna species list will be maintained, which is updated as new species are identified.
- Regular monitoring of fencelines or animal paths will be undertaken to check for snares or traps.
- Educational and awareness campaigns will be provided on safely interacting with wildlife and on anti-poaching and snares.
- Signs and information boards outlining species that the visitors may encounter will be installed.
- Collaborative efforts with research or tertiary academic institutions may provide mutual benefits and opportunities to better understand and manage these species.

Management actions:

See Annual Plan of Operation.

4.2 Sustainable Utilisation of Natural Resources

4.2.1 Grazing and Browsing of Livestock and Wildlife

Vegetation (natural rangelands) has evolved with indigenous grazers and browsers and it is best to maintain or simulate this ecosystem process. Under natural conditions in which browsing and grazing mammals were not fenced in, one would encounter a high concentration of animals of mixed feeding habits (bulk, selective and concentrate feeders) exerting high pressure on the vegetation and when the quantity of forage decreased, they moved off. The veld then had a period in which to recover and because all plants had been utilised equally the composition was not altered.

Where grazers and browsers have been contained or where habitats have become limited, mismanagement of game numbers and game composition can not only alter vegetation species composition, reduce cover and cause erosion, but can also threaten biodiversity and the long-term financial viability of this production. The correct utilisation of vegetation by livestock and game is an essential tool to maintain vegetation health and composition.

In addressing grazing and browsing, the following guiding principles will be adhered to:

- Within the DNR the vegetation is endangered and there are several threatened plant species. This reserve is small, and it cannot feasibly sustain livestock grazing or browsing without habitat degradation and biodiversity loss, with threatened species facing the threat of extinction. The reserve will therefore prohibit any use of this area for livestock utilization.

- The reserve does, however, have an important role to play in providing habitat and refuge for wildlife, which will naturally use it for browsing and grazing.
- Fences will be designed to allow wildlife movement into and out of the reserve to access the vegetation.
- Wildlife grazing and browsing will be at low densities as many of these species typically regulate their populations through territorial behaviour, such as the Cape grysbok (*Raphicerus melanotis*).
- Long-term veld condition monitoring will be undertaken to ensure that wildlife grazing and browsing activities have the desired outcome and do not damage the ecosystem or vegetation.
- Reserve expansion opportunities would alleviate pressure from wildlife browsing or grazing, by making more areas available for wildlife utilisation.

Management actions:

See Annual Plan of Operation.

4.2.2 Recreation

Recreation in natural areas is an excellent tool for reconnecting people with the environment. Besides the important educational function it is also a possible income stream and there are several opportunities that can be developed without compromising the conservation integrity of the area.

In developing recreation within the protected area, the following guiding principles will be adhered to:

- A range of appropriate eco-tourism products, activities and services will be offered such as walking or running, bird watching, botanising, guided tours, etc.
- Proposed recreational activities, operations and infrastructure must be appropriate to the site's values and enhance the conservation objectives of the reserve. These recreational developments and infrastructure must not threaten biodiversity or ecological function of the reserve.
- Before any recreation opportunities are approved within the site, these must be carefully assessed to determine their viability.
- When developing infrastructure for recreational activities, such as trails, this must be designed in a way that reduces the impact of human movement through the reserve.
- All recreational infrastructure must be regularly maintained to ensure that it remains in good working order so that recreational activities can be undertaken.
- In developing recreational infrastructure/opportunities, requirements for environmental authorisation and development planning must be considered and adhered to.

Management actions:

See Annual Plan of Operation.

4.2.3 Sustainable Harvesting

DNR was created to help conserve biodiversity, and particularly to protect the many different threatened species that occur within it. These species often have extremely limited habitats, and the goal of this reserve is to prevent these habitats and their populations from further fragmentation and degradation. The reserve is very small, and it is likely that given the highly sensitive vegetation, endangered habitat and presence of critically endangered species, such as *D. aristata*, that any form of harvesting in this area will put this ecosystem and these species under pressure. Due to these risks, no forms of harvesting will be permitted in this reserve.

With regards to sustainable harvesting in this protected area, the following guiding principles will be adhered to:

- Harvesting will be prohibited within DNR and any proposed reserve expansion areas, with signage installed to communicate this restriction.
- Flower harvesting or picking, firewood harvesting, thatch grass and reed collection, medicinal and aromatic plant gathering, seed collection, or deliberately taking away any plant material (other than IAP biomass) from the reserve will not be allowed.
- Restricted activity should be monitored and reported if observed.
- Awareness campaigns on why harvesting is prevented in this reserve must be undertaken, highlighting the negative impacts it will have on this vegetation.

Management actions:

See Annual Plan of Operation.

4.3 Socio-economic and Heritage

4.3.1 Environmental Awareness and Education

The protected area provides the ideal practical learning space to teach people about the value of nature and conservation. Whilst a degree of awareness and knowledge is likely to flow outwards from the reserve through the engagement of employees with the broader community, a dedicated environmental awareness and education programme is far more effective. Such programmes can achieve specific educational goals and therefore help to address key threats relating to human behaviour.

When undertaking environmental awareness and education programmes, the following guiding principles will be adhered to:

- All environmental awareness drives, education programmes or informative infrastructure such as educational signs in the reserve should be designed to be easily understood by the public. Where possible, these must be provided in multiple languages (English, Xhosa and Afrikaans) and must be simple enough for the audience to understand.

- The focus for campaigns or programmes will be on topics that are relevant to this reserve and area, especially if they will help enhance people's understanding of this reserve and promote environmental awareness and environmentally-friendly behaviour. This may include topics such as:
 - The value of functioning ecosystems and conservation land use,
 - The importance of ecological fires and controlled burning to prevent wildfires
 - Invasive alien plants and control,
 - Creating indigenous and pollinator friendly gardens,
 - The negative effects of littering and dumping,
 - Protecting threatened species,
 - Safely interacting and coexisting with wildlife,
 - Snake identification,
 - Eliminating poaching and use of snares,
 - The negative effects of livestock and harvesting in this reserve
 - Security and emergency preparedness.
- The development of an interpretation centre with exhibitions on key species and important information will enable environmental education.
- The development of interpretive walks with educational signs and information boards will enable visitors to learn while out in nature.
- Environmental education and awareness training should be offered for small school groups.
- Guided informative tours and walks will enable visitors to also learn.
- Engagement with environmental organisations, research institutes, universities and citizen science groups will facilitate knowledge sharing.
- Any research proposed to be undertaken within the reserve must be reviewed and destructive or potentially harmful research methods will be restricted.
- Citizen science or community groups may be established or engaged with to help raise awareness and provide environmental education opportunities.

Management actions:

See Annual Plan of Operation.

4.3.2 Socio-economic Development Initiatives

This reserve has been proclaimed as a protected area to ensure the conservation of biodiversity. Wherever opportunities arise, this reserve must aim to add value to the surrounding communities. There will be small-scale economic, job creation and skills development opportunities resulting from this reserve. However, it is likely that the more prominent benefit for local communities will be to provide an accessible green space where people are able to connect with nature, undertake recreational activities and learn about the amazing biodiversity that surrounds them. This reserve aims to be a source of pride for people, and help reinforce people's sense of place and foster environmental stewardship.

With regards to socio-economic development initiatives in this reserve, the following guiding principles will be adhered to:

- Small scale economic and job creation opportunities will be created for eco-tourism such as guides offering informative tours (for example birding, botanising or ecological).
- Job opportunities may also be created from IAP control or restoration programmes.
- Economic opportunities may be created through developments and installation of infrastructure such as signs, fencing, firebreaks, trails, etc. and where possible, these should be sourced locally.
- Training and skills development opportunities will be created for: eco-tourism guides, IAS identification and control; combating soil erosion; or ecological restoration and rehabilitation team workers.
- These opportunities should, where possible, be sourced from the local community.
- Positive relationships must be built with key community role players and groups to help identify areas where the reserve could better serve the community.
- The reserve should be managed in a manner that helps foster pride in this area, and ensures that the reserve remains a safe space where people can connect with nature or each other, and enjoy this green space.

Management actions:

See Annual Plan of Operation.

4.3.3 Heritage Features

The Management Authority is not only a custodian of the reserve in space, but also in time. The landscape in which the reserve is located may have a number of paleontological, archaeological and cultural features that need to be discovered, understood and shared. Partnering with specialists in these fields is necessary to identify these features and ensure they are not damaged and that the sites are suitably preserved for further study.

A heritage assessment was previously undertaken in DNR, and archaeological and paleontological assessments have also been carried out for this and surrounding areas. These assessments did not find anything of immediate significance, however, highlighted the importance of being vigilant given the location of this area and its proximity to important heritage areas such as the Pinnacle Point Complex.

With regards to heritage features in this reserve, the following guiding principles will be adhered to:

- During any developments or construction within this area, care will be taken to monitor and report any suspected heritage resources.

- Any significant archaeological, heritage or palaeontological resources that are discovered within DNR or expansion areas will be reported immediately to the Heritage Western Cape and the South African Heritage Resources Agency (SAHRA).
- If required, a GIS database indicating the locations of any findings will be maintained with the assistance from institutions like SAHRA, or experts such as Dr. Nielsen and Jan de Vynck.
- The reserve will be made available for the study of on-reserve features by experts and for research and baseline studies for students in this field of expertise. Any knowledge and insights gained will be shared. Studies and research will, however, require approval to ensure that the design of these studies is aligned to the reserve's conservation goals and will not threaten biodiversity.
- This reserve must be managed in a manner that promotes people's interconnectedness with nature and respects local cultures, beliefs and traditions. It should enhance people's well-being, sense of place and identity, encouraging environmental stewardship and a passion for conservation of local biodiversity.

Management actions:

See Annual Plan of Operation.

4.4 Management Authority Effectiveness and Sustainability

The objectives within this key performance area are essential to the long-term success of protected area management plans. While they are sometimes assumed to be covered elsewhere within the Management Authority's operations, proactively addressing them within the plan ensures clarity, accountability, and sustained effectiveness. Active management is almost always required, and effectiveness can only be accurately assessed through consistent monitoring.

4.4.1 Governance and Institutional Arrangements

These governance and institutional arrangements aim to help ensure that this protected area is effectively managed. These include the policies, formal rules, laws, and organisational structures that help ensure responsibilities are outlined and resources are managed appropriately. This also includes the monitoring, evaluation, assessment and review procedures needed to ensure accountable and effective implementation of this protected area management plan.

With regard to governance and institutional arrangements for this reserve, the following guiding principles will be adhered to:

- Effective governance structures will be outlined and put in place.
- Applicable municipal bylaws are to be applied to DNR where relevant.
- An APO tool has been developed to guide the implementation of this management plan. This APO tool enables performance and progress to be tracked each month throughout the year, and any problems can be addressed at regular team meetings.

- The APOs and an estimated budget have been drafted as part of the development of this management plan; however, this will need to be reviewed and refined internally by the Mossel Bay Municipality management team to ensure that it meets their requirements. Persons responsible for each management activity will also need to be identified and assigned.
- All evidence from implementing management actions or findings from monitoring should be carefully and consistently recorded (using databases, images, registers, minutes, or reports), described (metadata) and shared with CapeNature and the relevant Stewardship partner. Monitoring records should include records for all the key strategic management sections outlined within the management objectives, key performance areas and operational guidelines. Examples of such monitoring include: fire indicator species, emerging IAPs for early detection, and populations of species of special concern.
- An Annual Monitoring Report will be developed to outline the progress of implementing this management plan to date and provide the collated results of monitoring for all management activities. This Annual Monitoring Report should be updated regularly throughout the year and will help to keep track of all monitoring and findings, and help provide updated portfolios of evidence required for each management activity in the APO.
- All progress for each management activity will be reflected in the APO tool for each quarter.
- The APO Annual Report will be completed each year. This annual report is a legal requirement in the terms of section 43 of NEM:PAA which outlines that the management authority of a protected area must - annually report its findings to the Minister or MEC, as the case may be, or a person designated by the Minister or MEC. This APO Annual Report will serve this purpose and act as a performance indicator for monitoring and supervision as required by the NEM:PAA. This report must be supplied to the Provincial Conservation Authority (CapeNature) on an annual basis, and can also be used to inform the protected area board, or donor organisations of progress on management of the protected area for the year.
- An APO Annual Review will be undertaken to assess management effectiveness. This can either be in the form of a self-assessment by the management team on the ground, a facilitated self-assessment carried out with the guidance and support of an extension officer, or an assessment carried out in the presence of a CapeNature official.
- Performance will be reviewed annually for all persons responsible for management activities.
- The Management Effectiveness Tracking Tool (METT) will be used to further assess management effectiveness and produce a METT-Intervention Report. CapeNature holds METT workshops for biodiversity stewardship sites wishing to participate, and these should be attended where feasible.
- The results from the APO Annual Report and Review will be used to assess challenges experienced and identify how these may be overcome, incorporating adaptive management techniques to enable more effective management. This will be used as the basis to update the APOs, budgets, priorities and deadlines for the

following year. If evidence used previously is found to be an ineffective indicator, new requirements should be specified.

- All Annual Monitoring Reports, as well as APO Annual Reports and Reviews, must be well-organised, safely stored and backed up, to ensure that these are easily accessible and shareable for any reviews or audits required.
- Policies containing the internal rules for DNR must be developed, outlining the conditions of use, prohibited activities, restricted areas, procedures for the enforcement of the rules, the reporting and documenting of illegal activities, and penalties for non-compliance.
- A safety and security plan must be developed, which includes a risk assessment, a contingency plan and an emergency evacuation plan in the event of accidents, crisis situations or other emergencies, with a specific focus on wildfires.

Management actions:

See Annual Plan of Operation.

4.4.2 Legal Compliance

The management authority has been mandated to enforce laws related to the conservation of the site, which prohibit particular activities. In fulfilling this role, the management authority of DNR will adhere to the following guiding principles:

- The management authority will comply with its legal and reporting commitments, according to the NEM:PAA.
- Compliance with NEM:BA will be achieved by controlling invasive alien species on the DNR according to the approved IASMC&EP.
- Compliance with the National Veld and Forest Fire Act (Act 101 of 1998) will be achieved through fire management and joining and maintaining membership with the FPA.
- The management authority will adhere to legislative requirements and permitting for all development, water management and biodiversity management activities.
- The development, approval and updating of the DNR Management Plan will be undertaken as required.
- This area, any approved proposed reserve expansion areas, and any areas designated as nature conservation or open space areas will be zoned accordingly and incorporated into the updated Spatial Development Framework of the Mossel Bay Municipality.
- The area at the north-west portion of the proposed reserve expansion area ERF RE2001 which has been illegally included as part of the Pinnacle Point Golf Practice Range will be addressed and reinstated as part of this reserve.

Management actions:

See Annual Plan of Operation.

4.4.3 Employee Skills Development

The addition of specialised protected area management activities to the existing operations of the Management Authority often requires the acquisition of new knowledge and skills by the existing employees and management team on the property. It is the responsibility of the Management Authority to assess the knowledge and skills of their human resources relative to the new/additional roles and responsibilities they are assigned and to identify and address knowledge and skills gaps.

With regards to employee skills developments in this reserve, the following guiding principles will be adhered to:

- A skills needs analysis will be instituted to identify training needs, which will inform a skills development framework designed to ensure these needs are met and staff are capacitated to manage the reserve.
- Personnel will receive the necessary vocational, environmental awareness and site induction training prior to undertaking any work on site.
- Vocational training for workers in this reserve may include:
 - Invasive Alien Plant Identification and Control
 - Herbicide Selection, Handling and Application
 - Combating Soil Erosion
 - Practical Techniques for Ecological Restoration and Rehabilitation
 - Hiking Trail Development and Maintenance
- Eco-tourism guide training may be provided to help set up potential guides and help them develop informative tours they can offer to visitors in reserve.
- Management support and mentorship must be provided for all employees to ensure that they are well-guided and supported to carry out their roles effectively.

Management actions:

See Annual Plan of Operation.

4.4.4 Infrastructure and Equipment

For the protected area to operate appropriately, adequate infrastructure needs to be developed and maintained both for management and tourism purposes. In addressing infrastructure needs at the site, the following guiding principles will be adhered to:

- Infrastructure will be made available and where relevant, developed to support personnel in implementing this management plan, such as storage facilities for tools and equipment, secure vehicle parking, and management access roads and tracks, as well as to support visitor activities such as guided or unguided nature observation tours, short walks along designated trails, bird watching, and non-destructive botanising.
- All vehicles and equipment required to carry out management activities will be identified and made available to personnel.

- Existing infrastructure must be maintained and repaired where required to ensure it remains effective (fences, gates and roads).
- All infrastructure should be developed aligned to conservation goals of the reserve and must aim to mitigate negative impacts and incur the least damage to biodiversity.
- Where possible, all infrastructure should be developed on existing footprints of disturbance or degraded areas, rather than on intact habitats where there will likely be a greater impact on biodiversity.
- If unavoidable developments or maintenance is required that may harm or destroy threatened species such as *D. aristata*, a survey identifying these species and search and rescue efforts aligned to a contingency plan will be required to remove these plants or take cuttings, and plant them into safer, similar habitats in the reserve.
- Infrastructure should be protected from the threat of wildfires with the use of firebreaks.
- All infrastructure and equipment should be regularly checked and maintained or serviced to ensure that they are effective and in safe working order at all times.
- All infrastructure should be developed in compliance with the relevant legislation and environmental authorisation requirements.
- The surrounding Louis Fourie Precinct Project is still being developed, if any updates to this development influence the design or location of infrastructure within the reserve, this must be updated in this management plan.

Interpretive Centre

- Locations for the development of the interpretation centre have been proposed, all of which are situated on transformed areas to minimise the footprint of disturbance. These areas require review and a formal risk assessment prior to any development proposal.
- The interpretation centre must be designed to be used as an educational tool to help create environmental awareness and foster an understanding of conservation for schools, the public and tourists.

Interpretive Walks

- Interpretive walks will be developed to provide pedestrian access through the reserve. These walks will include information boards and signs highlighting key species and relevant information along the trail.
- One of these proposed trails should provide easy access for the elderly or persons with disabilities into the reserve, including visually impaired visitors, and infrastructure must support and enable this (e.g. a wide entrance, wheelchair ramps, benches to provide resting points, and tactile or braille signage and guide ropes/rails to assist visually impaired visitors in navigating the trail safely).
- An assessment must be undertaken and a Trail Development Plan must be developed to determine the most suitable paths for trail creation, locations of markers, and information for informative signs along these walks.
- Trail maintenance will be scheduled to ensure trails remain easy to move through and that all signs remain in place and in good condition.

Waste Disposal

- Waste disposal must be carefully managed on the reserve to prevent pollution.
- Wildlife proof bins will be used in this area.
- These bins should be emptied regularly.

Management actions:

See Annual Plan of Operation.

4.4.5 Signage, Access Control and Security

For the protected area to operate safely, adequate signage, access control and security measures are required. In addressing these signage, access control and security needs in the reserve, the following guiding principles will be adhered to:

Signs

- All signs that are placed within the reserve should be removable during controlled burns to prevent them from being destroyed. They can then be re-installed after burns. Alternatively, where practical, vegetation may be cleared around the signs to prevent fires from damaging them. Any signs outside of the reserve may remain fixed in one place.
- All signs should comply with a similar branding theme, be easy to read, clear, uncluttered, and communicate clearly.
- All entrance points must be clearly marked with signage containing the following information:
 - The name of the reserve, the management authority (Mossel Bay Municipality), key stakeholders or sponsors, etc.;
 - Conditions of use;
 - Indicating the area to be a high fire risk area;
 - Emergency evacuation procedure and response service contact details;
 - Dogs must remain on leashes, and that all owners must clean up after their dogs.
- Trail marker signs will be placed to show the direction of each walk on the trails.
- Species identification signs will be installed to help identify key plant species.
- Informative signboards with information such as frequently observed wildlife species, ecosystems or conservation will be installed along trails.
- Where possible, signage should include information in English, Afrikaans and Xhosa to ensure a wide audience is able to benefit, as well as Braille signage on the first walking trail to aid visually impaired people.

Fences and Entrances

- Access is controlled with fences around the reserve, with limited entry points which provide open access to pedestrians and wildlife.
- Fencing must be effective in terms of demarcating the property boundary and performing a security function.

- Fencing must be installed aligned with the decisions on the proposed reserve expansion, as well as the development of the Louis Fourie Precinct area.
- Fencing should be semi-permeable and allow wildlife movement, or include breaks where wildlife are able to easily move through.
- All fences will have a 1.5 to 2 m maintenance buffer around them to prevent damage during fires and to enable easy access for maintenance. Where threatened plants such as *D. aristata* will not reduce the functionality of these maintenance buffers these plants may be left in place. If they require removal, however, then a survey and search and rescue efforts aligned to a contingency plan will be required to take cuttings of these plants and plant them in the reserve.
- Service gates will be installed with locks to restrict unauthorised vehicle access into the reserve.
- The keys for all locked gates will be provided for all required personnel and emergency services.
- Entrances will include appropriate signs to inform visitors adequately before they enter the reserve.
- On any roads which surround this reserve signs must be installed to notify drivers that this is a conservation area and that speed should be reduced to help prevent wildlife mortalities and injuries. If there are any ecological corridors that cross over roads, these must be marked as animal crossings to highlight this area for motorists to be vigilant.

Roads

- Access to the existing track and dirt road in the reserve will be restricted, to prevent unauthorised access and decrease the dumping challenges this area faces.
- No new roads will be developed in this reserve, and existing roads will be maintained to ensure they remain in working order for use in the case of emergencies or to control fires during burns.

Security

- Being an open access reserve within an urban centre, there are large risks of squatting or land invasion, vandalism, illegal fires and muggings or violent crimes. This will deter visitors and render the reserve unable to achieve its goal of providing a safe green space for people.
- Law enforcement efforts should be coordinated with the relevant authorities including CapeNature, the South African Police Service, and Mossel Bay Municipality Law Enforcement and Environmental Management Inspectors in addressing offences and breaches of the law.
- Patrols through this reserve, especially with assistance from the K9 unit, may be highly beneficial to help prevent or identify any criminal activities in this reserve.
- Law enforcement at the site will be undertaken through surveillance, monitoring and appropriate reaction in the event of an offence.
- CCTV cameras will be installed at all entrances and parking areas to help dissuade criminal activities.

- The reserve must not attract increased crime in this neighbourhood, and neighbourhood watch groups should be included when designing and implementing any security measures.
- Emergency and contingency plans must be developed to help guide responses to security threats.
- Emergency contact details will be communicated at all entrances.
- Any instances of illegal activities within the reserve must be reported.

Management actions:

See Annual Plan of Operation.

4.4.6 Research and Management Knowledge

To effectively achieve the intended outcomes of the management objectives, the Management Authority needs to apply sound knowledge and, at times, the findings of scientific research to determine the most effective management strategy. Much of this knowledge may historically reside with the management authority; however, some specialised insights may need to be gathered from partner organisations and/or subject matter experts. In some cases, specific research may be required to determine the best course of action to achieve a desired outcome. In addressing these research requirements, the following guiding principles will be adhered to:

- Compile a list of management problems that can be addressed by research projects which will help to grow the knowledge base through scientific research.
- Address knowledge gaps through desktop research, scientific research and getting advice from experts.
- Establish partnerships and collaborate with academic institutions such as universities (e.g. Nelson Mandela University), environmental organisations such as SANBI and the Gouritz Cluster Biosphere Reserve, or citizen science initiatives such as the CREW.
- Open the reserve for approved researchers, including students.
- Use the increased knowledge gained and research findings to improve management effectiveness.

Management actions:

See Annual Plan of Operation.

5. References

5.1 Reference List

- Acocks, J.P.H. (1975) Veld Types of South Africa. Memoir of the Botanical Survey of South Africa No.40. Department of Agricultural Technical Services, Pretoria.
- Allendorf, F.W. and Lundquist, L.L. (2003) Introduction: population biology, evolution, and control of invasive species. *Conservation Biology*, 17, 24-30.
- Baard, J.A. and Kraaij, T. (2014) Alien flora of the garden route National Park, South Africa. *South African Journal of Botany*, 94, 51-63.
- Bellard, C., Cassey, P. and Blackburn, T.M. (2016) Alien species as a driver of recent extinctions. *Biology letters*, 12(2), 20150623.
- Bond, W.J., Vlok, J. and Viviers, M. (1984) Variation in seedling recruitment of Cape Proteaceae after fire. *Journal of Ecology*, 72, 209–221.
- Carbutt, C. and Goodman, P.S. (2010) Assessing the Management Effectiveness of State-owned, Land-based Protected Areas in Western Cape. CapeNature unpublished report, Pietermaritzburg, 1-67.
- Camp, K.G.T. (1998) The bioresource units of Western Cape. Cedara report N/A95/32, KZN Department of Agriculture, KwaZulu-Natal.
- CapeNature. (2010) KZN Protected Area Expansion Strategy and Action Plan (2009-2028). CapeNature unpublished report, Pietermaritzburg, 1-63.
- CapeNature. (2024) 2023 Western Cape Biodiversity Spatial Plan and Guidelines, CapeNature.
- CapeNature. (n.d.) What a landowner needs to know about Fire Management. Available at: <https://www.capenature.co.za/uploads/files/Engage-Nature/Fire-Prevention-images/Landowners-Guide-to-Fire-Management-Fact-Sheet-English-1.pdf>. (Accessed: 4 June 2026).
- Convention on Biological Diversity (CBD). (2014) Pathways of introduction of invasive species, their prioritization and management. Available at: <https://www.cbd.int/doc/meetings/sbstta/sbstta-18/official/sbstta-18-09-add1-en.pdf>. (Accessed: 05 June 2026).
- Cowan, G.I. (2006) Guidance for the development of management plans in terms of the National Environmental Management: Protected Areas Act (Act 57 of 2003). Department of Environmental Affairs and Tourism, Pretoria.
- Cowling, R.M. and Richardson, D.M. (1995) Fynbos: South Africa's Unique Floral Kingdom. Fernwood Press, Vlaeberg, Cape Town, 156.
- Dayaram, A., Harris, L.R., Grobler, B.A., Van der Merwe, S., Ward Powrie, L., Rebelo, A.G., et al. (2019) Vegetation Map of South Africa, Lesotho and Swaziland 2018: A description of changes since 2006. *Bothalia - African Biodiversity & Conservation*, 49(1), 2452.
- Department of Environmental Affairs and Tourism. (2008) The National Protected Area Expansion Strategy 2008-2012. Department of Environmental Affairs and Tourism, Pretoria.

- Du Plessis, C. and Ranger, S. (2014) Environmental Management Plan - Diosma Nature Reserve. Prepared for Mossel Bay Municipality, Mossel Bay.
- Esler, K.J., Pierce, S.M. and de Villiers, C. (2014) Fynbos: Ecology and Management. Briza Publications, Pretoria.
- Geerts, S. (2021) Protea maturation rates and fire return intervals in a mediterranean ecosystem: testing the rules of thumb at a local scale. *International Journal of Wildland Fire*, 30(12), 971-977.
- Goodman P.S. (2011) CapeNature Norms and Standards: Surveillance and Monitoring Plans for Biodiversity. CapeNature unpublished report, Pietermaritzburg.
- Grobler, A., Vlok, J., Cowling, R., van der Merwe, S., Skowno, A.L. and Dayaram, A. (2018) Technical Report: Integration of the Subtropical Thicket Ecosystem Project (STEP) vegetation types into the VEGMAP national vegetation map 2018.
- Hardy, M.B., Barnes, D.L., Moore, A. and Kirkman, K.P. (1999) The management of different types of veld. In Tainton, N.M. (ed) Veld Management in South Africa, University of Natal Press, Pietermaritzburg.
- Harris, L.R., Besseling, N., Sink, K.J., Skowno, A.L. and Van Niekerk, L. (2026) Overview: Coastal zone. National Biodiversity Assessment 2025. South African National Biodiversity Institute, Pretoria. Available at: https://nba.sanbi.org.za/content/coast/cst_synthesis.html. (Accessed: 12 June 2026).
- Huang, C.Y. and Asner, G.P. (2009) Applications of remote sensing to alien invasive plant studies. *Sensors*, 9(6), 4869-4889.
- Kirichenko, N., Péré, C., Baranchikov, Y., Schaffner, U. and Kenis, M. (2013) Do alien plants escape from natural enemies of congeneric residents? Yes but not from all. *Biological invasions*, 15, 2105-2113.
- Lombard, A.T., Wolf, T. and Strauss, T. (2004) GIS Specialist Services, Gouritz Initiative. Final Report, CapeNature, Cape Town, 138.
- Maree, K.S. and Vromans, D.C. (2010) The Biodiversity Sector Plan for the Hessequa and Mossel Bay Municipalities: Supporting land-use planning and decision-making in Critical Biodiversity Areas and Ecological Support Areas. Produced by CapeNature as part of the C.A.P.E. Fine-scale Biodiversity Planning Project, Kirstenbosch, Cape Town.
- Mucina, L. and Rutherford, M.C. (2006) The vegetation of South Africa, Lesotho and Swaziland. Strelitzia 19, South African National Biodiversity Institute, Pretoria.
- NCC Environmental Services (NCC). (2024) Notice Of Application For Environmental Authorisation in terms of the National Environmental Management Act (NEMA) 107 of 1998, Water Use Licence in terms of the National Water Act 36 Of 1998, and Heritage Permit in terms of National Heritage Resources Act No. 25 of 1999 for the Proposed Louis Fourie Precinct Corridor Mixed Housing Project on Various Properties within the Jurisdiction of the Mossel Bay Local Municipality, Western Cape Province. Available at: <https://ncc-group.co.za/public-participation/louis-fourie-precinct-corridor-2/>. (Accessed: 17 June 2026).
- O'Connor, T.G. and Bredenkamp, G.J. (1997) Grassland. In Cowling, R.M., Richardson, D.M. and Pierce, S.M. (eds) Vegetation of Southern Africa, Cambridge University Press, United Kingdom.

- O'Connor, T.G. (2005) Influence of land use on plant community composition and diversity in Highland Sourveld grassland in the southern Drakensberg, South Africa. *Journal of Applied Ecology*, 42, 975-988.
- Picker, M. (2013) Alien and invasive animals: A South African perspective. Penguin Random House, South Africa.
- Pool-Stanvliet, R., Duffell-Canham, A., Pence, G. and Smart, R. (2017) The Western Cape Biodiversity Spatial Plan Handbook. CapeNature, Stellenbosch.
- Robbins, P. (2004) Comparing invasive networks: cultural and political biographies of invasive species. *Geographical Review*, 94(2), 139-156.
- Robinson, T.B., Griffiths, C.L., McQuaid, C.D. and Rius, M. (2005) Marine alien species of South Africa—status and impacts. *African Journal of Marine Science*, 27(1), 297-306.
- Shivambu, T.C., Shivambu, N. and Downs, C.T. (2020) Impact assessment of seven alien invasive bird species already introduced to South Africa. *Biological Invasions*, 22(6), 1829-1847.
- South African National Biodiversity Institute (SANBI). (2021) Ecosystem Guidelines for the Albany Thicket Biome. South African National Biodiversity Institute, an entity of the Department of Environment, Forestry and Fisheries, Pretoria.
<http://hdl.handle.net/20.500.12143/7456>.
- South African National Biodiversity Institute (SANBI) and the Department of Environmental Affairs. (2010) National Protected Areas Expansion Strategy for South Africa; Priorities for expanding the protected area network for ecological sustainability and climate change adaptation. Published by the Government of South Africa, Pretoria, 2010. ISBN 978-1-919976-55-6.
- South African National Parks (SANParks). (2022) Fire as friend and foe: what the public needs to know. Available at:
<https://www.sanparks.org/conservation/scientific-services/stories/fire-as-friend-and-foe-what-the-public-needs-to-know>. (Accessed: 15 June 2026).
- Scott-Shaw, C.R. (1999) Rare and threatened plants of Western Cape and neighbouring regions. Western Cape Nature Conservation Services, Pietermaritzburg.
- Snyman, H.A. (2004) Short-term influence of fire on seedling establishment in a semi-arid grassland of South Africa. *South African Journal of Botany*, 70(2), 215-226.
- Stolton, S., Hockings, M., Dudley, N., MacKinnon, K., Whitten, T. and Leverington, F. (2007) Management Effectiveness Tracking Tool: reporting progress at protected area sites (2nd edition). World Bank and WWF Forest Alliance.
- Trollope, W.S.W. (1999) Veld Burning. In Tainton, N.M. (ed) Veld Management in South Africa., University of Natal Press, Pietermaritzburg.
- Turner, A. A. (2012) Western Cape Province State of Biodiversity 2013. CapeNature Scientific Services, Stellenbosch.
- van Helden, L., van Helden, P.D. and Meiring, C. (2020) Pathogens of vertebrate animals as invasive species: insights from South Africa. *Biological Invasions in South Africa*, 14, 249.
- Van Wilgen, N.J., Bell, J.A., Stafford, L., Wood, J., Mabin, C., Turner, A.A., Davies, S.J., Rhoda, C., Wilson, J.R., Tafeni, M. and Impson, D. (2020) Coordinating invasive alien species management in a

biodiversity hotspot: The CAPE Invasive Alien Animals Working Group. *Bothalia-African Biodiversity & Conservation*, 50(1), 1-24.

Van Wilgen, B.W., Forsyth, G.G., De Klerk, H., Das, S., Khuluse, S. & Schmitz, P. (2010). Fire management in Mediterranean-climate shrublands: a case study from the Cape fynbos, South Africa. *Journal of Applied Ecology*, 47(3), 631–638.

5.2 Data and Information Sources

Vegetation Types

National Vegetation Map

Mucina, L. & Rutherford, M.C. (eds). (2006) The Vegetation of South Africa, Lesotho and Swaziland. Strelitzia 19. South African National Biodiversity Institute, Pretoria.

South African National Biodiversity Institute. (2006- 2024) The National Vegetation Map 2024 [Online], <https://bgis.sanbi.org/vegmap>, Version 2024.

Vlok Veg maps - Biomes and Variants

Vlok, J.H.J., Cowling, R.M. and Wolf, T. (2005) A vegetation map for the Little Karoo. Gouritz Cluster Biosphere Reserve.

Vlok, J.H.J. and de Villiers, M.E. (2007) Vegetation map for the Riversdale domain. CAPE FSP/CapeNature.

Vlok, J.H.J., Euston-Brown, D.I.W. and Wolf, T. (2008) A vegetation map for the Garden Route Initiative. SANBI BGIS.

SANBI Red List of Ecosystems: Original

National Environmental Management: Biodiversity Act (10 of 2004): Revised national list of ecosystems that are threatened and in need of protection (No. 2747 of 2022). Department of Forestry, Fisheries and the Environment, Pretoria.

Skowno, A. L., and Monyeke, M. S. (2021) South Africa's red list of terrestrial ecosystems (RLEs). *Land*, 10(10), 1048.

Threatened and Protected Species

Government Notice No. 4496 of 2024: Publication of the Annual List of All Tree Species Which are Protected Under Section 12 of the National Forests Act, 1998 (Act No. 84 of 1998).

iNaturalist Project: South African Red List: Plants and Animals.

NEM:BA (Act 10 of 2004): Republication of the Draft List of Threatened or Protected Terrestrial Species And Freshwater Species, Restricted Activities that are Proposed to be Prohibited, and Restricted Activities that are Proposed to be Exempted for Public Comment.

SANBI. 2024. Statistics: Red List of South African Plants version 2024.1. Available at: <https://redlist.sanbi.org/stats.php>. (Accessed: May 2026).

SANBI. (n.d). Red List of South African Species. Available at: <https://speciesstatus.sanbi.org/taxa/list/?search=>. (Accessed: 08 June 2026).

The Nature and Environmental Conservation Ordinance (NCO) (Ordinance 19 of 1974).

UNEP-WCMC. (2026) The Checklist of CITES Species Website. CITES Secretariat, Geneva, Switzerland. Compiled by UNEP-WCMC, Cambridge, UK. Available at: <https://checklist.cites.org>. (Accessed: 08 June 2026).

Heritage Assessment

Agency for Cultural Resource Management. (2024) Heritage Impact Assessment: Proposed Louis Fourie Precinct Corridor Mixed Housing Development, Mossel Bay Local Municipality Mossel Bay, Western Cape. (Compiled for NCC Environmental Services (Pty) Ltd).

Banzai Environmental. (2024) Palaeontological Impact Assessment: Louis Fourie Precinct Corridor Mixed-Use Housing Project on Various Properties within the Jurisdiction of the Mossel Bay Local Municipality, Western Cape Province. (Compiled for NCC Environmental Services (Pty) Ltd).

De Vynck, J. C. (2022) Diosma Reserve Heritage survey.

Regional and Local Planning Context

Critical Biodiversity Areas (CBAs), Ecological Support Areas (ESAs), Other Natural Areas (ONAs) and Protected Areas (PAs)

CapeNature. (2024) 2023 Western Cape Biodiversity Spatial Plan and Guidelines. Biodiversity Capabilities, CapeNature. Available at: <https://www.capenature.co.za/western-cape-biodiversity-spatial-plan>.

National Protected Area Expansion Strategy

NPAES Focus Areas 2010 [vector geospatial dataset] (2010). <https://bgis.sanbi.org/SpatialDataset/Detail/145> (Accessed: 10 June 2026).

Strategic Development Framework

Mossel Bay Municipality. (2022) Mossel Bay Spatial Development Framework / Environmental Management Framework: Section A - Status Quo and Review Report (May 2022). Mossel Bay: Mossel Bay Municipality. Available at: <https://www.mosselbay.gov.za/storage/documents/eee9b311a47de4484364d493e54791c6.pdf>. (Accessed: 10 June 2026).

Mossel Bay Municipality. (2022) Mossel Bay Spatial Development Framework / Environmental Management Framework: Section B - Spatial Development Framework Proposals and Environmental Management Framework (May 2022). Mossel Bay: Mossel Bay Municipality. Available at: <https://www.mosselbay.gov.za/storage/documents/a65a015b24cdf05eb58fe8e4bd71628.pdf>. (Accessed: 10 June 2026).

Mossel Bay Municipality. (2023) Spatial Development Framework / Environmental Management Framework: Section C - Environmental Vision, Objectives, Policy and Strategies (2023). Available at: <https://www.mosselbay.gov.za/storage/documents/43687b3ee1b3a71ca3678cdf06564967.pdf>. (Accessed: 10 June 2026).

Integrated Development Plan

Mossel Bay Municipality. (2026) Final review of the fifth-generation integrated development plan (IDP) 2026/2027. Mossel Bay: Mossel Bay Municipality. Available at: <https://www.mosselbay.gov.za/storage/documents/15a5e2ddba671b8774ee4fac61618927.pdf>. (Accessed: 10 June 2026).

Louis Fourie Corridor Precinct Plan

Mossel Bay Municipality. (2019) Mossel Bay Corridor Precinct Plan: Local Spatial Development Framework for the Western Precinct of Mossel Bay Draft (2019). Available at: https://www.mosselbay.gov.za/storage/documents/documents/louis_fourie_corridor_precinct_plan_0.pdf.

NCC Environmental Services (NCC). (2024) Notice Of Application For Environmental Authorisation in terms of the National Environmental Management Act 107 of 1998, Water Use Licence in terms of the National Water Act 36 Of 1998, and Heritage Permit in terms of National Heritage Resources Act No. 25 of 1999 for the Proposed Louis Fourie Precinct Corridor Mixed Housing Project on Various Properties within the Jurisdiction of the Mossel Bay Local Municipality, Western Cape Province. Available at: <https://ncc-group.co.za/public-participation/louis-fourie-precinct-corridor-2/>. (Accessed: 17 June 2026).

Demographics

Western Cape Provincial Treasury. (2023) Socio-Economic Profile: Mossel Bay Municipality, 2023. Cape Town: Western Cape Government. Available at: <https://www.westerncape.gov.za/treasury/files/wcg-blob-files?file=2025-03/mossel-bay-municipality-sep-lg-2023.pdf&type=file>. (Accessed: 10 June 2026).

Western Cape Provincial Treasury. (2024) Socio-Economic Profile: Mossel Bay Municipality, 2024. Cape Town: Western Cape Government. Available at: <https://www.westerncape.gov.za/treasury/socio-economic-profiles-2024>. (Accessed: 10 June 2026).

Climate Data

Grobler, A., Vlok, J., Cowling, R., van der Merwe, S., Skowno, A.L. and Dayaram, A. 2018. Technical Report: Integration of the Subtropical Thicket Ecosystem Project (STEP) vegetation types into the VEGMAP national vegetation map 2018.

South African National Biodiversity Institute (SANBI). (2006-2018) The Vegetation Map of South Africa, Lesotho and Swaziland, Mucina, L., Rutherford, M.C. and Powrie, L.W. (Editors), Online, <http://bgis.sanbi.org/Projects/Detail/186>, Version 2018.

Ulwazi, K. (2019) Mean Annual Precipitation (mm). Available at: <https://gisportal.saeon.ac.za/portal/home/item.html?id=f8951c15962840719d0bd3fecbf2b072>. (Accessed: 01 June 2026).

Ulwazi, K. (2019) Mean Annual Temperature (C). Available at: <https://gisportal.saeon.ac.za/portal/home/item.html?id=db20c3f913314980b768d3f3543f4002>. (Accessed: 01 June 2026).

Weather Spark. (n.d.) Climate and Average Weather Year Round in Mossel Bay. Available at: <https://weatherspark.com/y/87786/Average-Weather-in-Mossel-Bay-Western-Cape-South-Africa-Year-Round>. (Accessed: 01 June 2026).

Topography, Hydrology and Soils

Aquifer Susceptibility (2013) (Department of Water & Sanitation). CapeFarm Mapper3 (Accessed: 29 June 2026).

Aquifer Vulnerability (2013) (Department of Water & Sanitation). CapeFarm Mapper3 (Accessed: 29 June 2026).

Aspect (SUDEM) (Stellenbosch University, WCDOA). CapeFarm Mapper3 (Accessed: 02 June 2026).

Broad Soils Classification: Soil descriptions for the Western Cape (ENPAT). CapeFarm Mapper3 (Accessed: 02 June 2026).

Curvature (80m DEM) (WCDOA). CapeFarm Mapper3 (Accessed: 02 June 2026).

Geology Classification (1:250K): Geological Series maps of the RSA(1974 - present) (Council for Geoscience). CapeFarm Mapper3 (Accessed: 02 June 2026).

Grobler, A., Vlok, J., Cowling, R, van der Merwe, S., Skowno, A.L., Dayaram, A. 2018. Technical Report: Integration of the Subtropical Thicket Ecosystem Project (STEP) vegetation types into the VEGMAP national vegetation map 2018.

Hydrological Areas (NGI) (Chief Directorate: National Geo-spatial Information (DALRRD)). CapeFarm Mapper3 (Accessed: 02 June 2026).

Rivers: Non-Perennial (NGI) (Chief Directorate: National Geo-spatial Information (DALRRD)). CapeFarm Mapper3 (Accessed: 02 June 2026).

Rivers: Perennial (NGI) (Chief Directorate: National Geo-spatial Information (DALRRD)). CapeFarm Mapper3 (Accessed: 02 June 2026).

Slope Degrees (20m SUDEM) (Stellenbosch University, WCDOA). CapeFarm Mapper3 (Accessed: 02 June 2026).

Soil Types: Soil types and descriptions for the Western Cape (Department of Agriculture, Forestry and Fisheries). CapeFarm Mapper3 (Accessed: 02 June 2026).

Surface Flow Accumulation (20m SUDEM) (Western Cape Department of Agriculture). CapeFarm Mapper3 (Accessed: 02 June 2026).

Wetlands (NFEPA) (CSIR). CapeFarm Mapper3 (Accessed: 02 June 2026).

Fire Data

NASA: Fire Information for Resource Management System (FIRMS). Available at: <https://firms.modaps.eosdis.nasa.gov/map/#d:24hrs:@0.0,0.0,3.0z>. (Accessed: 08 June 2026).

Veldfire Risk (2010) (Department of Agriculture, Forestry and Fisheries). CapeFarm Mapper3 (Accessed: 03 June 2026).

Coastal Zones

The Department of Environmental Affairs and Development Planning (DEA&DP). (2025) Coastal Management Line Datasets for the Garden Route District. Available at: <https://gis.westerncape.gov.za/portal/home/item.html?id=4e1b5c603268465084e95d8c686338dc>. (Accessed: 12 June 2026).

iNaturalist Species Lists

Floral Species List:

Available at:

https://www.inaturalist.org/observations?place_id=220936&quality_grade=research&subview=map&verifiable=any&view=species

Query: *quality_grade=research&identifications=any&place_id=220936&spam=false*

Accessed: May 2026

Projects: CREW Contributors; NEMBA Alien Species (South Africa); South African Red List: Plants and Animals

Faunal Species List:

Available at:

https://www.inaturalist.org/observations?nelat=-34.182998067&nelng=22.12649934896876&quality_grade=research&subview=map&swlat=-34.197424689854905&swlng=22.092252899165054&verifiable=any&iconic_taxa=Aves,Mammalia,Amphibia,Reptilia,Actinopterygii,Mollusca,Arachnida,Insecta

Query:

quality_grade=research&identifications=any&iconic_taxa[]=Actinopterygii&iconic_taxa[]=Aves&iconic_taxa[]=Reptilia&iconic_taxa[]=Amphibia&iconic_taxa[]=Mammalia&iconic_taxa[]=Arachnida&iconic_taxa[]=Insecta&iconic_taxa[]=Mollusca&swlat=-34.197424689854905&swlng=22.092252899165054&nelat=-34.182998067&nelng=22.12649934896876&spam=false

Accessed: June 2026

Projects: NEMBA Alien Species (South Africa); South African Red List: Plants and Animals.

UNESCO Site

UNESCO World Heritage Convention. The Emergence of Modern Human Behaviour: The Pleistocene Occupation Sites of South Africa. Available at: <https://arcg.is/0KfTrO>. (Accessed: 28 May 2026).

6. Appendices

6.1 APPENDIX A - List of Statutes to Which the Nature Reserve is Subject

Biodiversity and Cultural Resource Management and Development:

- Animals Protection Act [No. 71 of 1962]
- Atmospheric Pollution Prevention Act [No. 45 of 1965]
- Conservation of Agricultural Resources Act (CARA) [No. 43 of 1983]
- Constitution of the Republic of South Africa [No. 108 of 1996]
- Criminal Procedures Act [1977]
- Environment Conservation Act [No. 73 of 1989]
- Forest Act [No. 122 of 1984]
- Hazardous Substances Act [No. 15 of 1973]
- Western Cape Heritage Management Act [No. 10 of 1997]
- Western Cape Nature Conservation Management Act [No. 9 of 1997]
- National Environmental Management Act [No. 107 of 1998]
- National Environmental Management: Biodiversity Act [No. 10 of 2004]
- National Environmental Management: Protected Areas Act [No. 57 of 2003]
- National Forests Act [No. 84 of 1998]
- National Heritage Resources Act [No. 25 of 1999]
- National Water Act [No. 36 of 1998]
- National Water Amendment Act [No. 45 of 1999]
- National Veld and Forest Fire Act [No 101 of 1998]
- Nature Conservation Ordinance [No. 15 of 1974]

General Management:

- Companies Act [No.71 of 2008]
- Promotion of Access to Information Act [No. 2 of 2000]
- Occupational Health and Safety Act [No. 85 of 1993]

- Western Cape Planning and Development Act [No. 5 of 1998]
- Development Facilitation Act [No. 67 of 1995]
- Disaster Management Act [No. 57 of 2002]
- Fire Brigade Services Act [No. 99 of 1987]
- Local Government: Municipal Systems Act [No. 32 of 2000]
- National Road Traffic Act [No. 93 of 1996]
- National Building Standards Act [No. 103 of 1977]
- Water Services Act [No. 108 of 1997]

Human Resource Management:

- Basic Conditions of Employment Act [No. 75 of 1997]
- Broad-Based Black Economic Empowerment Act [No. 53 of 2003]
- Compensation for Occupational Injuries and Diseases Act [No. 130 of 1993]
- Employment Equity Act [No. 55 of 1998]
- Labour Relations Act [No. 66 of 1995]
- Occupational Health and Safety Act [No. 85 of 1993]
- Pension Funds Act [No. 24 of 1956]
- Skills Development Act [No. 97 of 1998]
- Skills Development Levies Act [No. 9 of 1999]
- Unemployment Insurance Act [No. 63 of 2001]

6.2 APPENDIX B - Copy of Diosma Nature Reserve Declaration



Western Cape Government • Wes-Kaapse Regering • URhulumente weNtshona Koloni

PROVINCE OF THE WESTERN CAPE

PROVINSIE WES-KAAP

Provincial Gazette

Provinsiale Koerant

9164

9164

Friday, 21 November 2025

Vrydag, 21 November 2025

Registered at the Post Office as a Newspaper

As 'n Nuisblad by die Poskantoor Geregistreer

CONTENTS

(*Reprints are obtainable at Room M12, Provincial Legislature Building, 7 Wale Street, Cape Town 8001.)

No.	Page
Provincial Notices	
131 George Municipality: By-Election in Ward 27: 21 January 2026.....	874
132 George Municipality: By-Election in Ward 17: 21 January 2026.....	875
133 Department of Environmental Affairs and Development Planning: Declaration of Silflay Renosterveld Nature Reserve	876
134 Department of Environmental Affairs and Development Planning: Declaration of Diosma Nature Reserve	878
135 Notice of applications for liquor licences in terms of Section 37(1) of the Western Cape Liquor Act, 2008— [Reg. 10(1)]	880

Tenders:

Notices.....	881
--------------	-----

Local Authorities

City of Cape Town: Closure of a Public Place	881
City of Cape Town: Removal of Conditions	881
George Municipality: Removal of Restrictive Title Conditions	881
Mossel Bay Municipality: Closure of Public Place	883
Mossel Bay Municipality: Inspection of the First Supplementary Valuation Roll 2025/2026 and Lodging of Objections	889
Notice of Application for Rehabilitation	883
Overstrand Municipality: Removal of Restrictive Title Deed Conditions and Departure	882
Swellendam Municipality: Closure of a Portion of Erf	881
Western Cape Gambling and Racing Board: Official Notice	887
Western Cape Gambling and Racing Board: Official Notice	884
Western Cape Gambling and Racing Board: Official Notice	886
Western Cape Government: Office of the Consumer Protector	889

INHOUD

(*Herdrukke is verkrygbaar by Kamer M12, Provinsiale Wetgewing-gebou, Waaistraat 7, Kaapstad 8001.)

Nr.	Bladsy
Provinsiale Kennisgewings	
131 George Munisipaliteit: Tussenverkiesing in Wyk 27: 21 Januarie 2026	874
132 George Munisipaliteit: Tussenverkiesing in Wyk 17: 21 Januarie 2026	875
133 Departement van Omgewingsake en Ontwikkelingsbeplanning: Verklaring van Silflay Renosterveld Natuurreservaat	876
134 Departement van Omgewingsake en Ontwikkelingsbeplanning: Verklaring van Diosma Natuurreservaat	878
135 Kennisgewing van aansoeke om dranklisensies ingevolge Artikel 37(1) van die Wes-Kaapse Drankwet, 2008— [Reg. 10(1)]	880

Tenders:

Kennisgewings	881
---------------------	-----

Plaaslike Overhede

Stad Kaapstad: Sluiting van 'n Openbare Plek	881
Stad Kaapstad: Opheffing van Voorwaardes	881
George Munisipaliteit: Opheffing van Beperkende Titel Voorwaardes	881
Mossel Bay Munisipaliteit: Closure of Public Place (Slegs Engels).....	883
Mosselbaai Munisipaliteit: Inspeksie van die Eerste Aanvullende Waardasierrol 2025/2026 en Indiening van Besware	889
Notice of Application for Rehabilitation (Slegs Engels)	883
Overstrand Munisipaliteit: Opheffing van Beperkende Titelakte Voorwaardes en Afwyking	882
Swellendam Munisipaliteit: Sluiting van 'n Gedeelte van Erf ...	881
Wes-Kaapse Raad op Dobbelaar en Wedrenne: Amptelike Kennisgewing	888
Wes-Kaapse Raad op Dobbelaar en Wedrenne: Amptelike Kennisgewing	885
Wes-Kaapse Raad op Dobbelaar en Wedrenne: Amptelike Kennisgewing	886
Western Cape Government: Office of the Consumer Protector (Slegs Engels)	889

PROVINCIAL NOTICE

P.N. 134/2025

21 November 2025

**DEPARTMENT OF ENVIRONMENTAL AFFAIRS AND DEVELOPMENT PLANNING
NATIONAL ENVIRONMENTAL MANAGEMENT: PROTECTED AREAS ACT, 2003 (ACT 57 OF 2003)**

DECLARATION OF DIOSMA NATURE RESERVE

I, Anton Wilhelm Bredell, Provincial Minister of Local Government, Environmental Affairs and Development Planning in the Western Cape, under section 23(1)(a)(i) of the National Environmental Management: Protected Areas Act, 2003 (Act 57 of 2003) (the Act), declare a nature reserve on—

Erf 19274 Mossel Bay, situated in the Mossel Bay Municipality, Division of Mossel Bay, Western Cape Province; in extent: 10,7664 (Ten comma Seven Six Six Four) hectares; held by Deed of Transfer No. T45993/2018.

Under section 23(1)(b) of the Act, I assign the name "Diosma Nature Reserve" to the nature reserve, the boundaries of which are reflected on the map set out in the Schedule. The Surveyor-General Diagram 753/2016 of the property may be viewed at <https://www.capenature.co.za/protected-areas-and-stewardship>.

Signed at Cape Town on this 30th day of October 2025.

AW BREDELL

PROVINCIAL MINISTER OF LOCAL GOVERNMENT, ENVIRONMENTAL AFFAIRS AND DEVELOPMENT PLANNING

PROVINSIALE KENNISGEWING

P.K. 134/2025

21 November 2025

**DEPARTEMENT VAN OMGEWINGSKE EN ONTWIKKELINGSBEPLANNING
NATIONAL ENVIRONMENTAL MANAGEMENT: PROTECTED AREAS ACT, 2003 (WET 57 VAN 2003)**

VERKLARING VAN DIOSMA NATUURRESERVAAT

Ek, Anton Wilhelm Bredell, Provinsiale Minister van Plaaslike Regering, Omgewingsake en Ontwikkelingsbeplanning in die Wes-Kaap, kragtens artikel 23(1)(a)(i) van die *National Environmental Management: Protected Areas Act, 2003* (Wet 57 van 2003) (die Wet), verklaar 'n natuurreservaat op—

Erf 19274 Mosselbaai, geleë in die Mosselbaai-munisipaliteit, Afdeling Mosselbaai, Provinsie Wes-Kaap; groot: 10,7664 (Tien komma Sewe Ses Ses Vier) hektaar; gehou kragtens Transportakte Nr. T45993/2018.

Kragtens artikel 23(1)(b) van die Wet, ken ek die naam "Diosma Natuurreservaat" toe aan die natuurreservaat, waarvan die grense weergegee word op die kaart in die Bylae uiteengesit. Die Landmeter-generaaldiagram 753/2016 van die eiendom kan by <https://www.capenature.co.za/protected-areas-and-stewardship> gevind word.

Geteken te Kaapstad op hierdie 30ste dag van Oktober 2025.

AW BREDELL

PROVINSIALE MINISTER VAN PLAASLIKE REGERING, OMGEWINGSKE EN ONTWIKKELINGSBEPLANNING

ISAZISO SEPHONDO

I.S. 134/2025

21 kweyeNkanga 2025

**ISEBE LEMICIMBI YOKUSINGQONGILEYO NOCWANGCISO LOPHUHLISO
UMTHETHO WOKULONDOLOZWA KWENDALO YESIZWE: UMTHETHO WEENDAWO ZOLONDOLOZO
EZIKHUSELWEYO, 2003 (UMTHETHO 57 KA-2003)**

ISIBHENGEZO NGENDAWO YOLONDOLOZONDALO IDIOSMA

Mna, Anton Wilhelm Bredell, uMphathiswa wePhondo wooRhulumente beeNgingqi, iMicimbi yokuSingqongileyo noCwangciso loPhuhliso eNtshona Koloni, ngaphantsi kwecandelo 23(1)(a)(i) loMthetho wokuLondolozwa kweNdalo yeSizwe: UMthetho weNdawo zoLondolozo eziKhuselweyo, 2003 (uMthetho 57 ka-2003) (uMthetho), ndibhengeza ulondolozondalo—

kwi-Erf 19274 Mossel Bay, emi kuMasipala waseMossel Bay, iCandelo laseMossel Bay, iPhondo leNtshona Koloni; kubungakanani: 10,7664 (iShumi khoma iSixhenxe isiThandathu isiThandathu isiNe) behekthare; ephantsi kweSiqinisekiso soNikezelo loMhlaba esinguNombolo T45993/2018.

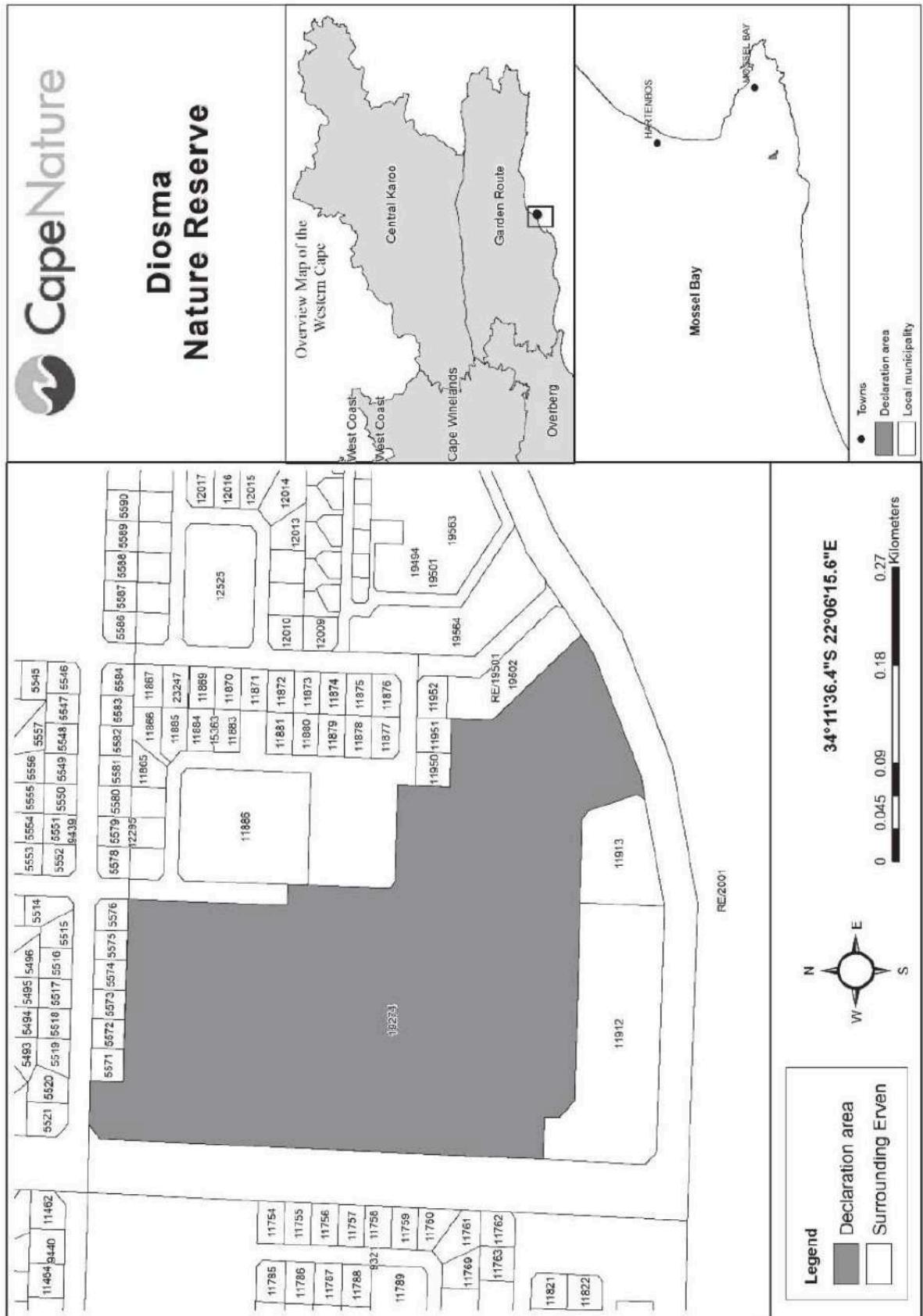
Phantsi kwecandelo 23(1)(b) loMthetho, ndinika igama elithi "iNdawo yoLondolozondalo iDiosma" kwindawo yolondolozondalo, leyo imida yayo iboniswe kwimephu echazwe kwiShedyuli. Umzobo kaNocanda-Jikelele wepropathi ongunombolo 753/2016 unokubonwa ku-<https://www.capenature.co.za/protected-areas-and-stewardship>.

Sityikitywe eKapa ngalo mhla wama30 kweyeDwarha 2025.

AW BREDELL

UMPHATHISWA WEPHONDO WOORHULUMENTE BEENGINGQI, IMICIMBI YOKUSINGQONGILEYO NOCWANGCISO LOPHUHLISO

**SCHEDULE/BYLAE/ISHEDYULI
MAP/KAART/IMEPHU**



6.3 APPENDIX C - Species Lists

Available species lists for the Diosma Nature Reserve are included in this appendix. These include:

- Plant species lists
- General fauna lists (e.g. mammals, herpetofauna, invertebrates)
- Bird lists
- Specific lists of listed threatened and protected species
- Specific lists of invasive alien species

These species lists were compiled after consulting with a number of reliable resources and experts, including:

- Specialist observations by Jan Vlok undertaken on 14 May 2026.
- Species list of observations made by the Apex Conservation Services team on 08 May and 14 May 2026.
- Species list collected by CREW Outramps group of the species recorded on the reserve over several years, provided by Sandra Falanga.
- CapeNature records for this reserve, provided by Carlo van Tonder.
- iNaturalist records (Research Grade) made within Diosma Nature Reserve boundary for plant species, as well as observations for faunal species made for a larger area surrounding Diosma Nature Reserve, given the movement of animal species. These species from iNaturalist included observations from specific projects such as NEMBA Alien Species (South Africa) and South African Red List: Plants and Animals.

All species lists should be regularly updated to include any observations made to ensure that the list is current and as comprehensive as possible.

6.3.1 Plant Species Lists

Table C.1 Full Faunal Species List for Diosma Nature Reserve.

NO.	Species	Common Name
1	<i>Acacia cyclops</i>	Rooikrans
2	<i>Acacia saligna</i>	Port Jackson Wattle
3	<i>Achyranthemum paniculatum</i>	Sewejaartjie Chafflower
4	<i>Acmadenia heterophylla</i>	Limestone Porcelainflower
5	<i>Agathosma apiculata</i>	Garlic Buchu
6	<i>Agathosma capensis</i>	Spicy buchu
7	<i>Agathosma imbricata</i>	Tile Buchu
8	<i>Agathosma muirii</i>	Heart Buchu
9	<i>Aizoon rigidum</i>	Hard Baconfig
10	<i>Aloe ferox</i>	Cape Aloe
11	<i>Aloe maculata</i>	Soap Aloe
12	<i>Amphithea violacea</i>	Violet False Indigo
13	<i>Anredera cordifolia</i>	Madeira Vine
14	<i>Anthospermum aethiopicum</i>	Tall Flowerseed
15	<i>Anthospermum spathulatum</i>	Jackal's Tail
16	<i>Arctotheca calendula</i>	Cape dandelion
17	<i>Aspalathus alopecurus</i>	Foxtail Capegorse
18	<i>Aspalathus crassiseppala</i>	Limestone Capegorse
19	<i>Aspalathus opaca opaca</i>	Shady Capegorse
20	<i>Aspalathus quinquefolia</i>	Fiveleaf Capegorse
21	<i>Asparagus aethiopicus</i>	Wild Asparagus
22	<i>Asparagus africanus</i>	Bush Asparagus
23	<i>Athanasia trifurcata</i>	Trifid-leaf Athanasia
24	<i>Avena fatua</i>	Common Wild Oat
25	<i>Berkheya carlinoides</i>	Mountain Capethistle
26	<i>Bobartia robusta</i>	Giant Rushiris
27	<i>Brassica tournefortii</i>	Saharan Mustard
28	<i>Bulbine frutescens</i>	Wild Kopieva
29	<i>Capparis sepiaria</i>	Hedge Caper-bush
30	<i>Carissa bispinosa</i>	Forest Num-num
31	<i>Carpobrotus acinaciformis</i>	Sour Fig
32	<i>Carpobrotus edulis</i>	Cape Fig
33	<i>Carpobrotus muirii</i>	Lime Sourfig
34	<i>Cassytha ciliolata</i>	Devil's Tresses
35	<i>Cenchrus/Pennisetum clandestinum</i>	Kikuyu Grass
36	<i>Centella tridentata litoralis</i>	
37	<i>Chaenostoma revolutum</i>	Fineleaf Skunkbush
38	<i>Chasmanthe aethiopica</i>	Small Chasmanthe
39	<i>Chironia baccifera</i>	Christmas Berry
40	<i>Chrysocoma ciliata</i>	Bitter Bush
41	<i>Cissampelos capensis</i>	Cape Moonseed Vine
42	<i>Cliffortia falcata</i>	Curly Caperose
43	<i>Cliffortia stricta</i>	Staid Caperose
44	<i>Clutia daphnoides</i>	Grey Clut
45	<i>Colchicum eucomoides</i>	Green Men-in-a-Boat
46	<i>Colpoon compressum (Osyris compressa)</i>	Cape Sumach
47	<i>Corymbium africanum</i>	Plampers
48	<i>Cotyledon orbiculata</i>	Pig's Ear
49	<i>Crassula expansa</i>	Fine Stonecrop
50	<i>Crotalaria capensis</i>	Cape Rattlepod
51	<i>Cullumia cf. carlinoides</i>	Coastal Spikedaisy
52	<i>Cynanchum ellipticum</i>	Monkeyrope Buckhorn
53	<i>Cynodon dactylon</i>	Couch Grass
54	<i>Delosperma litorale</i>	White Trailing Iceplant
55	<i>Dicerotheramnus rhinocerotis</i>	Rhinoceros Bush

NO.	Species	Common Name
56	<i>Diosma aristata</i>	Fine Bitterbuchu
57	<i>Diospyros dichrophylla</i>	Poison Starapple
58	<i>Dischisma ciliatum ciliatum</i>	Common Fringe Falseslugwort
59	<i>Disparago tortilis</i>	Tortured Desperado
60	<i>Drimia capensis</i>	Maerman Squill
61	<i>Drosanthemum intermedium</i>	Purple Carpet
62	<i>Ehrharta villosa</i>	Pipe Grass
63	<i>Elegia stipularis</i>	Cushion Goldreed
64	<i>Eragrostis curvula</i>	Weeping Lovegrass
65	<i>Eragrostis plana</i>	Fan Love Gras
66	<i>Erica axillaris</i>	Ridgeseed Heath
67	<i>Erica discolor discolor</i>	Coppice Discolorous Heath
68	<i>Erica dispar</i>	Stillbay Minor Heath
69	<i>Erica lasciva</i>	Salt-and-Wind Heath
70	<i>Erica pulchella</i>	Beauty Heath
71	<i>Erica uberiflora</i>	Over Heath
72	<i>Erica versicolor</i>	Twotone Heath
73	<i>Eriocephalus racemosus</i>	Coast Wild Rosemary
74	<i>Eucalyptus camaldulensis</i>	Red river gum
75	<i>Eucalyptus cladocalyx</i>	Sugar gum
76	<i>Eucalyptus conferruminata</i>	Spidergum
77	<i>Euchaetis albertiniana</i>	Albertinia Beard Buchu
78	<i>Euclea polyandra</i>	Kersbos
79	<i>Euclea racemosa</i>	Dune Gwarrie
80	<i>Euryops virgineus</i>	Virgin True-Eye
81	<i>Falkia repens</i>	Pink Ear
82	<i>Ferraria crispa</i>	Black Flag
83	<i>Ficinia bulbosa</i>	Bulbous Sedge
84	<i>Ficinia dunensis</i>	Sedge
85	<i>Ficinia indica</i>	Knoppiesbiesie
86	<i>Ficinia laevis</i>	Sedge
87	<i>Ficilna lateralis</i>	Sedge
88	<i>Freesia leichtlinii subsp. alba</i>	Coast White Freesia
89	<i>Freesia refracta</i>	Little Karoo freesia
90	<i>Gladiolus rogersii</i>	Riversdale Bluebell
91	<i>Gladiolus vaginatus</i>	
92	<i>Gnidia chrysophylla</i>	Gold Capesaffron
93	<i>Gnidia nodiflora</i>	Scruffy Capesaffron
94	<i>Gnidia squarrosa</i>	Saffron Bush
95	<i>Grewia occidentalis</i>	Cross-berry
96	<i>Gymnosporia buxifolia</i>	Spike-thorn
97	<i>Harpephyllum caffrum</i>	Wild Plum
98	<i>Helichrysum cymosum</i>	Gold Carpet
99	<i>Helichrysum patulum</i>	Honey Everlasting
100	<i>Helichrysum rosum</i>	Rose Everlasting
101	<i>Helichrysum teretifolium</i>	Dune Scrub Everlasting
102	<i>Hellmuthia membranacea</i>	Helmet Sedge
103	<i>Hermannia angularis</i>	Angular Dollsrose
104	<i>Hermannia decumbens</i>	
105	<i>Hermannia flammula</i>	Blazing Dollsrose
106	<i>Hermannia holosericea</i>	Kwaaiman Dollsrose
107	<i>Hermannia hyssopifolia</i>	Fat Dollsrose
108	<i>Hermannia joubertiana</i>	
109	<i>Hermannia lavandulifolia</i>	Lavender Dollsrose
110	<i>Hermannia saccifera</i>	Cumin Hermannia
111	<i>Hermannia salviifolia</i>	Sage Dollsrose
112	<i>Hermannia sp. nov.</i>	
113	<i>Hermannia trifoliata</i>	Tooth Dollsrose
114	<i>Hibiscus pusillus</i>	Bladderweed

NO.	Species	Common Name
115	<i>Indigofera priorii</i>	Squashed Indigo
116	<i>Lampranthus laxifolius</i>	
117	<i>Lampranthus pauciflorus</i>	Beach Brightfig
118	<i>Leonotis leonurus</i>	Lion's Ear
119	<i>Leonotis ocymifolia</i>	Rock Lionspaw
120	<i>Lessertia frutescens</i>	Cancer Bush
121	<i>Leucadendron salignum</i>	Common Sunshine Conebush
122	<i>Leucospermum praecox</i>	Mossel Bay Pincushion
123	<i>Lobelia tomentosa</i>	Woolly Lobelia
124	<i>Mastersiella purpurea</i>	Purple Mastreed
125	<i>Mesembryanthemum aitonis</i>	Coast Solfig
126	<i>Metalasia acuta</i>	Pointy Blombush
127	<i>Metalasia densa</i>	Fynbos Blombush
128	<i>Metalasia muricata</i>	White bristle bush
129	<i>Muraltia knysnaensis</i>	Garden Route Purplegorse
130	<i>Muraltia spinosa</i>	Tortoise Berry
131	<i>Nanobubon hypogaeum</i>	Rubber-Root Firecarrot
132	<i>Nidorella ivifolia</i>	Ivy-leaved Nidorella
133	<i>Oedera imbricata</i>	Scaly Perdekaroo
134	<i>Opuntia ficus-indica</i>	Indian fig opuntia
135	<i>Opuntia stricta</i>	Shell Mound Pricklypear
136	<i>Osteospermum moniliferum</i>	Bietou
137	<i>Osteospermum polygaloides</i>	Boneseed
138	<i>Oxalis ciliaris</i>	Fringe Sorrel
139	<i>Oxalis pes-caprae</i>	Bermuda Buttercup
140	<i>Oxalis polyphylla polyphylla</i>	Finger Sorrel
141	<i>Oxalis purpurea</i>	Purple Woodsorrel
142	<i>Panicum deustum</i>	Reed Panicum
143	<i>Passerina corymbosa</i>	Gonna Bush
144	<i>Passerina falcifolia</i>	Outeniqua Gonna
145	<i>Passerina rubra</i>	Red Gonna
146	<i>Pelargonium betulinum</i>	Camphor Storksbill
147	<i>Pelargonium candicans</i>	Velvet Storksbill
148	<i>Pelargonium capitatum</i>	Rose-scented Geranium
149	<i>Pelargonium dipetalum</i>	Bunny-ear Storksbill
150	<i>Pelargonium grossularioides</i>	Coconut Geranium
151	<i>Pentameris colorata</i>	
152	<i>Phylica axillaris</i>	Axil Hardleaf
153	<i>Phylica axillaris maritima</i>	Flowery Hardleaf
154	<i>Phylica imberbis</i>	Hairy Hardleaf
155	<i>Phylica imberbis eriophoros</i>	Woolly Hairy Hardleaf
156	<i>Phyllopodium rustii</i>	Milk-and-honey Capewort
157	<i>Pittosporum viridiflorum</i>	Cheesewood
158	<i>Polygala ericaefolia</i>	Butterfly Bush
159	<i>Polygala myrtifolia</i>	September Bush
160	<i>Prismatocarpus cf. campanuloides</i>	
161	<i>Protea lanceolata</i>	Lanceleaf Sugarbush
162	<i>Protea repens</i>	Common Sugarbush
163	<i>Psoralea laxa</i>	Lax Fountainbush
164	<i>Pterocelastrus tricuspidatus</i>	Candlewood
165	<i>Putterlickia pyracantha</i>	Bastard Spikethorn
166	<i>Restio triticeus</i>	Wheat Capereed
167	<i>Rhoicissus digitata</i>	Baboon Grape
168	<i>Rhynchosia caribaea</i>	Caribbean Snoutbean
169	<i>Roepera flexuosa</i>	Spekbossie
170	<i>Romulea dichotoma</i>	
171	<i>Romulea rosea</i>	Froetang
172	<i>Salvia aurea</i>	Brown Sage
173	<i>Scabiosa columbaria</i>	Wild Scabious

NO.	Species	Common Name
174	<i>Schizaea pectinata</i>	Toothbrush Fern
175	<i>Schoenus megacarpus</i>	Bignut Veldrush
176	<i>Schinus terebinthifolia</i>	Brazilian Pepper Tree
177	<i>Searsia crenata</i>	Dune Crow-berry
178	<i>Searsia glauca</i>	Blue Kunibush
179	<i>Searsia incisa effusa</i>	Rub-rub Currant
180	<i>Searsia laevigata</i>	Dune Curranthus
181	<i>Searsia laevigata villosa</i>	Hairy Dune Curranthus
182	<i>Searsia lucida</i>	Glossy Curranthus
183	<i>Searsia rosmarinifolia</i>	Rosemary Currenthus
184	<i>Selago glandulosa</i>	Sticky Bush
185	<i>Senecio angulatus</i>	Creeping Groundsel
186	<i>Senecio elegans</i>	Purple Groundsel
187	<i>Senecio ilicifolius</i>	Sprinkaanbos
188	<i>Seriphium plumosum</i>	Silver Stoebe
189	<i>Sideroxylon inerme</i>	White Milkwood
190	<i>Stachys aethiopica</i>	African Stachys
191	<i>Stenotaphrum secundatum</i>	St. Augustine Grass
192	<i>Strelitzia nicolai</i>	Giant Bird-of-paradise Flower
193	<i>Stipagrostis zeyheri</i>	Blinkaargras
194	<i>Struthiola striata</i>	Ribbed Capespray
195	<i>Tarchonanthus littoralis</i>	Coastal Camphorbush
196	<i>Tenaxia stricta</i>	Cape Wire Grass
197	<i>Tetraria capillacea</i>	Ridge Tetrar
198	<i>Thamnochortus insignis</i>	True Thatchreed
199	<i>Thamnochortus muirii</i>	
200	<i>Themeda triandra</i>	Red Grass
201	<i>Tribolium hispidum</i>	Haregrass
202	<i>Trichocephalus stipularis</i>	Dogsface
203	<i>Ursinea anthemoides</i>	Mountain Marigold
204	<i>Ursinia dentata</i>	Needletooth Paraseed
205	<i>Ursinia discolor</i>	
206	<i>Veltheimia bracteata</i>	Forest Lily
207	<i>Wahlenbergia capensis</i>	Cape Bluebell
208	<i>Wahlenbergia desmantha</i>	
209	<i>Yucca gloriosa</i>	Mound Lily Yucca

6.3.2 General Fauna Lists (e.g. Mammals, Herpetofauna, Invertebrates)

Table C.2 Faunal Species lists - including Arachnida, Insecta, Reptilia and Mammalia.

Taxonomic class	Species	Common name
Arachnida	<i>Aceria aloinis</i>	Aloe Gall Mite
	<i>Argiope australis</i>	Common Garden Orbweb Spider
	<i>Argiope trifasciata</i>	Banded Garden Spider
	<i>Badumna longinqua</i>	Grey House Spider
	<i>Cyclosa oculata</i>	Oculate Garbage-line Web Spider
	<i>Eriophyes inermis</i>	White Milkwood Gall Mite
	<i>Latrodectus geometricus</i>	Brown Widow
	<i>Opisthophthalmus macer</i>	Fynbos Burrowing Scorpion
	<i>Parabuthus planicauda</i>	Drab Thicktail Scorpion
	<i>Uroplectes lineatus</i>	Striped Lesser-Thicktail Scorpion
Insecta	<i>Acanthacris ruficornis</i>	Garden Locust
	<i>Anisorrhina flavomaculata</i>	Zigzag Fruit Chafer
	<i>Anthea definita definita</i>	Grey Hairtail
	<i>Apis mellifera capensis</i>	Cape Honey Bee
	<i>Aptera fusca</i>	Cape Mountain Cockroach
	<i>Ascetotettix capensis</i>	
	<i>Autographa circumflexa</i>	Essex Y moth
	<i>Bicyclus safitza safitza</i>	Common Bush Brown
	<i>Cassionympha cassius</i>	Rainforest Dancing Brown
	<i>Cerocala vermiculosa</i>	Vermiculous
	<i>Cheilomenes lunata</i>	Lunate Lady Beetle
	<i>Crematogaster peringueyi</i>	Black Cocktail Ant
	<i>Cyligramma latona</i>	Creamstriped Owl
	<i>Cyrtacanthacris tatarica</i>	Brown-Spotted Locust
	<i>Dasineura dielsi</i>	Rooikrans Gall Midge
	<i>Deropeltis erythrocephala</i>	Red-headed Cockroach
	<i>Dira clytus clytus</i>	Western Cape Autumn Widow
	<i>Eristalinus taeniops</i>	Stripe-eyed Lagoon Fly
	<i>Eristalis tenax</i>	Common Drone Fly
	<i>Ernstia nanus</i>	Dwarf Sandman
	<i>Helicoverpa armigera</i>	Cotton Bollworm Moth
	<i>Hesperiinae</i>	Grass Skippers
	<i>Hypolimnas misippus</i>	Danaid Eggfly
	<i>Junonia hierta cebrene</i>	African Yellow Pansy
	<i>Junonia orithya madagascariensis</i>	African Blue Pansy
	<i>Lampides boeticus</i>	Pea Blue
	<i>Leptotes pirithous</i>	Common Zebra Blue Complex
	<i>Lophyrus candida</i>	Southern Sanddune Tiger Beetle
	<i>Mausoleopsis amabilis</i>	White-spotted Fruit Chafer
	<i>Mylothris agathina agathina</i>	Eastern Dotted Border
	<i>Myrina silenus</i>	Figtree Blue
	<i>Neurosymploca concinna</i>	Orangespot Belted Burnet
	<i>Nudaurelia cytherea</i>	Pine Emperor
	<i>Pheidole megacephala</i>	African Big-headed Ant
	<i>Philanthus histrio</i>	
	<i>Phymateus leprosus</i>	Leprous Milkweed Locust
	<i>Polistinae</i>	Paper Wasps
	<i>Pontia helice</i>	African Meadow White
	<i>Pseudonympha magus</i>	Silver-bottom Brown
	<i>Rhodogastria amasis</i>	Brown Tricolour Tiger Moth
	<i>Sympetrum fonscolombii</i>	Nomad
	<i>Tarucus thespis</i>	Vivid Pierrot
	<i>Temnora pylas</i>	Barred Yellow-wing Temnora
	<i>Vanessa cardui</i>	Painted Lady
	<i>Xylocopa flavorufa</i>	Big Red Large Carpenter Bee

Taxonomic class	Species	Common name
	<i>Zizeeria knysna</i>	African Grass Blue
	<i>Zizeeria knysna knysna</i>	African Grass Blue
Reptilia	<i>Afrogecko porphyreus</i>	Marbled Leaf-toed Gecko
	<i>Bradypodion damaranum</i>	Knysna Dwarf Chameleon
	<i>Chersina angulata</i>	Angulate Tortoise
	<i>Duberria lutrix</i>	Common Slug-eater
	<i>Elaiophis inornatus</i>	Olive House Snake
	<i>Gerrhosaurus flavigularis</i>	Yellow-throated Plated Lizard
	<i>Hemidactylus mabouia</i>	Tropical House Gecko
	<i>Homopus areolatus</i>	Parrot-beaked Tortoise
	<i>Lygodactylus capensis</i>	Common Dwarf Gecko
	<i>Pelomedusa galeata</i>	Cape Terrapin
	<i>Psammophis crucifer</i>	Cross-marked Sand Snake
	<i>Psammophis notostictus</i>	Karoo Sand Snake
	<i>Psammophylax rhombeatus</i>	Rhombic Skaapsteker
	<i>Stigmochelys pardalis</i>	Leopard Tortoise
Mammalia	<i>Herpestes pulverulentus</i>	Cape Grey Mongoose
	<i>Lepus saxatilis</i>	Scrub Hare
	<i>Oryctolagus cuniculus domesticus</i>	Domestic Rabbit
	<i>Procavia capensis capensis</i>	Cape Rock Hyrax
	<i>Raphicerus melanotis</i>	Cape Grysbok
	<i>Sylvicapra grimmia</i>	Common Duiker
	<i>Tragelaphus sylvaticus</i>	Southern Bushbuck

6.3.3 Bird lists

Table C.3 Bird Species list.

Taxonomic class	Species	Common name
Aves	<i>Alopochen aegyptiaca</i>	Egyptian Goose
	<i>Anas undulata</i>	Yellow-billed Duck
	<i>Andropadus importunus</i>	Sombre Greenbul
	<i>Apalis thoracica</i>	Bar-throated Apalis
	<i>Ardea ibis</i>	Western Cattle-Egret
	<i>Ardea melanocephala</i>	Black-headed Heron
	<i>Bostrychia hagedash hagedash</i>	Southern Hadada Ibis
	<i>Bubo africanus</i>	Spotted Eagle-Owl
	<i>Burhinus capensis capensis</i>	Southern Spotted Thick-Knee
	<i>Centropus burchellii burchellii</i>	Burchell's Coucal
	<i>Cinnyris afer</i>	Greater Double-collared Sunbird
	<i>Cinnyris chalybeus</i>	Southern Double-collared Sunbird
	<i>Colius striatus</i>	Speckled Mousebird
	<i>Colius striatus striatus</i>	Cape Speckled Mousebird
	<i>Columba guinea</i>	Speckled Pigeon
	<i>Columba guinea phaeonota</i>	Southern Speckled Pigeon
	<i>Columba livia</i>	Rock dove/pigeon
	<i>Corvus albicollis</i>	White-necked Raven
	<i>Corvus albus</i>	Pied Crow
	<i>Crithagra albogularis albogularis</i>	White-throated Canary
	<i>Crithagra flaviventris</i>	Yellow Canary
	<i>Crithagra flaviventris flaviventris</i>	Yellow Canary
	<i>Crithagra sulphurata sulphurata</i>	Cape Brimstone Canary
	<i>Dessonornis caffer</i>	Cape Robin-Chat
	<i>Dessonornis caffer caffer</i>	Southern Cape Robin-Chat

Taxonomic class	Species	Common name
	<i>Dicrurus adsimilis adsimilis</i>	Coastal Fork-tailed Drongo
	<i>Emberiza capensis</i>	Cape Bunting
	<i>Estrilda astrild</i>	Common Waxbill
	<i>Euplectes capensis</i>	Yellow Bishop
	<i>Falco peregrinus</i>	Peregrine falcon
	<i>Falco rupicolus</i>	Rock Kestrel
	<i>Fulica cristata</i>	Red-knobbed Coot
	<i>Gallinula chloropus meridionalis</i>	African Common Moorhen
	<i>Laniarius ferrugineus</i>	Southern Boubou
	<i>Lanius collaris</i>	Southern Fiscal
	<i>Lanius collaris collaris</i>	Cape Southern Fiscal
	<i>Monticola rupestris</i>	Cape Rock-Thrush
	<i>Motacilla capensis capensis</i>	Common Cape Wagtail
	<i>Numida meleagris coronatus</i>	Southern Helmeted Guineafowl
	<i>Passer diffusus stygiceps</i>	Eastern Southern Grey Sparrow
	<i>Passer domesticus</i>	House sparrow
	<i>Passer melanurus</i>	Cape Sparrow
	<i>Ploceus capensis</i>	Cape Weaver
	<i>Prinia maculosa</i>	Karoo Prinia
	<i>Prinia maculosa maculosa</i>	Shrub Karoo Prinia
	<i>Promerops cafer</i>	Cape Sugarbird
	<i>Pternistis capensis</i>	Cape Spurfowl
	<i>Pycnonotus capensis</i>	Cape Bulbul
	<i>Saxicola torquatus</i>	African Stonechat
	<i>Sigelus silens</i>	Fiscal Flycatcher
	<i>Sphenoeacus afer</i>	Cape Grassbird
	<i>Sphenoeacus afer afer</i>	Fynbos Grassbird
	<i>Spilopelia senegalensis</i>	Laughing Dove
	<i>Spilopelia senegalensis senegalensis</i>	Southern Laughing Dove
	<i>Streptopelia semitorquata</i>	Red-eyed Dove
	<i>Sturnus vulgaris</i>	European Starling
	<i>Tchagra tchagra</i>	Southern Tchagra
	<i>Telophorus zeylonus</i>	Bokmakierie
	<i>Telophorus zeylonus zeylonus</i>	Southern Bokmakierie
	<i>Turnix hottentottus</i>	Fynbos Buttonquail
	<i>Tychaemon coryphoeus coryphoeus</i>	Common Karoo Scrub-Robin
	<i>Upupa epops africana</i>	African Hoopoe
	<i>Vanellus coronatus</i>	Crowned Lapwing
	<i>Vanellus coronatus coronatus</i>	Cape Crowned Lapwing
	<i>Zosterops virens capensis</i>	Grey Cape White-Eye

6.3.4 Specific Lists of Listed Threatened and Protected Species

This includes plant species which are threatened according to the Red List of South African Plants (SANBI, 2024). The IUCN Red List Categories include the following criteria: Critically Endangered (CR), Endangered (EN), Vulnerable (VU), or Near Threatened (NT).

Table C.4 Plant species threatened according to the South African Red List of Species.

Species	Threat Status	Status Notes
<i>Agathosma muirii</i>	Vulnerable	Confirmed VU A4abc – SANBI 2024
<i>Carpobrotus muirii</i>	Near Threatened	Confirmed NT – SANBI 2024
<i>Cullumia cf. carlinoides</i>	Near Threatened	Confirmed NT – SANBI 2024
<i>Diosma aristata</i>	Critically Endangered	Confirmed CR – SANBI 2024
<i>Erica dispar</i>	Near Threatened	Confirmed NT – SANBI 2024
<i>Euchaetis albertiniana</i>	Endangered	Confirmed EN – SANBI 2024
<i>Freesia leichtlinii</i> subsp. <i>alba</i>	Near Threatened	Confirmed NT – SANBI 2024
<i>Gladiolus vaginatus</i>	Vulnerable	Confirmed VU – SANBI 2024
<i>Gnidia chrysophylla</i>	Near Threatened	Confirmed NT – SANBI 2024
<i>Hermannia lavandulifolia</i>	Vulnerable	Confirmed VU – SANBI 2024
<i>Lampranthus pauciflorus</i>	Endangered	Confirmed EN – SANBI 2024
<i>Leucospermum praecox</i>	Vulnerable	Confirmed VU – SANBI 2024
<i>Muraltia knysnaensis</i>	Endangered	Confirmed EN – SANBI 2024
<i>Nanobubon hypogaeum</i>	Endangered	Confirmed EN – SANBI 2024
<i>Protea lanceolata</i>	Least Concern (decreasing)	LC (population decreasing) – SANBI 2024
<i>Selago glandulosa</i>	Vulnerable	Confirmed VU – SANBI 2024
<i>Thamnochortus muirii</i>	Vulnerable	Confirmed VU – SANBI 2024

These protected trees include trees listed as protected tree species within South Africa as published within Government Notice No. 4496 of 2024: Publication of the Annual List of All Tree Species Which are Protected Under Section 12 of the National Forests Act, 1998 (Act No. 84 of 1998).

Table C.5 Protected Tree Species.

Species	Common Name
<i>Pittosporum viridiflorum</i>	Cheesewood
<i>Sideroxylon inerme</i>	White Milkwood

Faunal species which are threatened or protected in accordance with the following:

- SANBI: Red List of South African Species (Red List).
- UNEP-WCMC: Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- The Nature and Environmental Conservation Ordinance (NCO) (Ordinance 19 of 1974)
- NEM:BA (Act 10 of 2004): Republication of the Draft List of Threatened or Protected Terrestrial Species And Freshwater Species, Restricted Activities that are Proposed to be Prohibited, and Restricted Activities that are Proposed to be Exempted for Public Comment (TOPS). No species were, however, tops listed.

Table C.6 Faunal species which are threatened or protected.

Species	Common name	RED LIST	CITES	NCO	TOPS
Reptiles					
<i>Afrogecko porphyreus</i>	Marbled Leaf-toed Gecko	Least Concern (LC)	-	SCHEDULE 2	-
<i>Bradypodion damaranum</i>	Knysna Dwarf Chameleon	Least Concern (LC)	-	SCHEDULE 2	-
<i>Chersina angulata</i>	Angulate Tortoise	Least Concern (LC)	Appendix II	SCHEDULE 2	-
<i>Duberria lutrix</i>	Common Slug-eater	Least Concern (LC)	-	SCHEDULE 2	-
<i>Elaiophis inornatus</i>	Olive House Snake	-	-	SCHEDULE 2	-
<i>Gerrhosaurus flavigularis</i>	Yellow-throated Plated Lizard	Least Concern (LC)	-	SCHEDULE 2	-
<i>Hemidactylus mabouia</i>	Tropical House Gecko	Least Concern (LC)	-	SCHEDULE 2	-
<i>Homopus areolatus</i>	Parrot-beaked Tortoise	Least Concern (LC)	Appendix II	SCHEDULE 2	-
<i>Lygodactylus capensis</i>	Common Dwarf Gecko	Least Concern (LC)	-	SCHEDULE 2	-
<i>Pelomedusa galeata</i>	Cape Terrapin	Least Concern (LC)	-	SCHEDULE 2	-
<i>Stigmochelys pardalis</i>	Leopard Tortoise	Least Concern (LC)	Appendix II	SCHEDULE 2	-
Mammals					
<i>Raphicerus melanotis</i>	Cape Grysbok	Least Concern (LC)	-	SCHEDULE 2	-
<i>Sylvicapra grimmia</i>	Common Duiker	Least Concern (LC)	-	SCHEDULE 2	-
<i>Tragelaphus sylvaticus</i>	Southern Bushbuck	-	-	SCHEDULE 2	-
Birds					
<i>Alopochen aegyptiaca</i>	Egyptian Goose	Least Concern (LC)	-	SCHEDULE 2	-
<i>Anas undulata</i>	Yellow-billed Duck	Least Concern (LC)	-	SCHEDULE 2	-
<i>Andropadus importunus</i>	Sombre Greenbul	Least Concern (LC)	-	SCHEDULE 2	-
<i>Apalis thoracica</i>	Bar-throated Apalis	Least Concern (LC)	-	SCHEDULE 2	-
<i>Ardea ibis</i>	Western Cattle-Egret	-	-	SCHEDULE 2	-
<i>Ardea melanocephala</i>	Black-headed Heron	Least Concern (LC)	-	SCHEDULE 2	-
<i>Bostrychia hagedash hagedash</i>	Southern Hadada Ibis	Least Concern (LC)	-	SCHEDULE 2	-
<i>Bubo africanus</i>	Spotted Eagle-Owl	Least Concern (LC)	Appendix II	SCHEDULE 2	-
<i>Burhinus capensis capensis</i>	Southern Spotted Thick-Knee	Least Concern (LC)	-	SCHEDULE 2	-
<i>Centropus burchellii burchellii</i>	Burchell's Coucal	Least Concern (LC)	-	SCHEDULE 2	-
<i>Cinnyris afer</i>	Greater Double-collared Sunbird	Least Concern (LC)	-	SCHEDULE 2	-
<i>Cinnyris chalybeus</i>	Southern Double-collared Sunbird	Least Concern (LC)	-	SCHEDULE 2	-
<i>Columba guinea</i>	Speckled Pigeon	Least Concern (LC)	-	SCHEDULE 2	-
<i>Columba guinea phaeonota</i>	Southern Speckled Pigeon	-	-	SCHEDULE 2	-
<i>Crithagra albogularis albogularis</i>	White-throated Canary	Least Concern (LC)	-	SCHEDULE 2	-
<i>Crithagra flaviventris</i>	Yellow Canary	Least Concern (LC)	-	SCHEDULE 2	-

Species	Common name	RED LIST	CITES	NCO	TOPS
<i>Crithagra flaviventris flaviventris</i>	Yellow Canary	-	-	SCHEDULE 2	-
<i>Crithagra sulphurata sulphurata</i>	Cape Brimstone Canary	-	-	SCHEDULE 2	-
<i>Dessonornis caffer</i>	Cape Robin-Chat	Least Concern (LC)	-	SCHEDULE 2	-
<i>Dessonornis caffer caffer</i>	Southern Cape Robin-Chat	-	-	SCHEDULE 2	-
<i>Dicrurus adsimilis adsimilis</i>	Coastal Fork-tailed Drongo	-	-	SCHEDULE 2	-
<i>Emberiza capensis</i>	Cape Bunting	Least Concern (LC)	-	SCHEDULE 2	-
<i>Estrilda astrild</i>	Common Waxbill	Least Concern (LC)	-	SCHEDULE 2	-
<i>Falco peregrinus</i>	Peregrine falcon	Least Concern (LC)	Appendix I	SCHEDULE 2	-
<i>Falco rupicolus</i>	Rock Kestrel	Least Concern (LC)	-	SCHEDULE 2	-
<i>Fulica cristata</i>	Red-knobbed Coot	Least Concern (LC)	-	SCHEDULE 2	-
<i>Gallinula chloropus meridionalis</i>	African Common Moorhen	-	-	SCHEDULE 2	-
<i>Laniarius ferrugineus</i>	Southern Boubou	Least Concern (LC)	-	SCHEDULE 2	-
<i>Lanius collaris</i>	Southern Fiscal	Least Concern (LC)	-	SCHEDULE 2	-
<i>Lanius collaris collaris</i>	Cape Southern Fiscal	-	-	SCHEDULE 2	-
<i>Monticola rupestris</i>	Cape Rock-Thrush	Least Concern (LC)	-	SCHEDULE 2	-
<i>Motacilla capensis capensis</i>	Common Cape Wagtail	Least Concern (LC)	-	SCHEDULE 2	-
<i>Numida meleagris coronatus</i>	Southern Helmeted Guineafowl	-	-	SCHEDULE 2	-
<i>Passer diffusus stygiceps</i>	Eastern Southern Grey Sparrow	-	-	SCHEDULE 2	-
<i>Prinia maculosa</i>	Karoo Prinia	Least Concern (LC)	-	SCHEDULE 2	-
<i>Prinia maculosa maculosa</i>	Shrub Karoo Prinia	Least Concern (LC)	-	SCHEDULE 2	-
<i>Promerops cafer</i>	Cape Sugarbird	Least Concern (LC)	-	SCHEDULE 2	-
<i>Pternistis capensis</i>	Cape Spurfowl	Least Concern (LC)	-	SCHEDULE 2	-
<i>Saxicola torquatus</i>	African Stonechat	Least Concern (LC)	-	SCHEDULE 2	-
<i>Sigelus silens</i>	Fiscal Flycatcher	Least Concern (LC)	-	SCHEDULE 2	-
<i>Sphenoeacus afer</i>	Cape Grassbird	Least Concern (LC)	-	SCHEDULE 2	-
<i>Sphenoeacus afer afer</i>	Fynbos Grassbird	-	-	SCHEDULE 2	-
<i>Spilopelia senegalensis</i>	Laughing Dove	-	-	SCHEDULE 2	-
<i>Spilopelia senegalensis senegalensis</i>	Southern Laughing Dove	-	-	SCHEDULE 2	-
<i>Streptopelia semitorquata</i>	Red-eyed Dove	Least Concern (LC)	-	SCHEDULE 2	-
<i>Tchagra tchagra</i>	Southern Tchagra	Least Concern (LC)	-	SCHEDULE 2	-
<i>Telophorus zeylonus</i>	Bokmakierie	Least Concern (LC)	-	SCHEDULE 2	-
<i>Telophorus zeylonus zeylonus</i>	Southern Bokmakierie	-	-	SCHEDULE 2	-
<i>Turnix hottentottus</i>	Fynbos Buttonquail	Endangered (EN)	-	SCHEDULE 2	-
<i>Tychaodon coryphoeus coryphoeus</i>	Common Karoo Scrub-Robin	-	-	SCHEDULE 2	-
<i>Upupa epops africana</i>	African Hoopoe	-	-	SCHEDULE 2	-
<i>Vanellus coronatus</i>	Crowned Lapwing	Least Concern (LC)	-	SCHEDULE 2	-
<i>Vanellus coronatus coronatus</i>	Cape Crowned Lapwing	-	-	SCHEDULE 2	-
<i>Zosterops virens capensis</i>	Grey Cape White-Eye	-	-	SCHEDULE 2	-

6.3.5 Specific Lists of Invasive Alien Species

Table C.7 List of Invasive Alien Species - Plants and Animals.

Species	Common name	Relevant NEM:BA Category
Plant Species		
<i>Acacia cyclops</i>	Rooikrans	1b
<i>Acacia saligna</i>	Port Jackson Wattle	1b
<i>Anredera cordifolia</i>	Madeira vine	1b
<i>Cenchrus/Pennisetum clandestinum</i>	Kikuyu grass	1b in Protected Areas and wetlands in which it does not already occur.
<i>Eucalyptus camaldulensis</i>	Red river gum	a) Category 1b within- (i) riparian areas; (ii) a Protected Area declared in terms of the Protected Areas Act; or, (iii) within a Listed Ecosystem or an ecosystem identified for conservation in terms of a Bioregional Plan or Biodiversity Management Plans published under the Act.
<i>Eucalyptus cladocalyx</i>	Sugar gum	
<i>Eucalyptus conferruminata</i>	Spider gum	
<i>Opuntia ficus-indica</i>	Indian Fig Opuntia	1b
<i>Opuntia stricta</i>	Shell Mound Prickly pear	1b
<i>Schinus terebinthifolia</i>	Brazilian pepper tree	3 in Free State, Gauteng, North-West, Northern Cape and Western Cape.
Animal Species		
<i>Columba livia</i>	Rock dove/pigeon	a. 3 b. 2 for all restricted activities relating to racing and showing of pigeons.*
<i>Passer domesticus</i>	House sparrow	3
<i>Sturnus vulgaris</i>	European Starling	3

*SCOPE OF EXEMPTION FROM THE PROVISIONS OF SECTION 71(3) / PROHIBITION IN TERMS OF SECTION 71A(1): Any person undertaking pigeon racing or pigeon showing registered with the relevant industry Association is exempted from requiring a permit for all restricted activities, provided such Association is in possession of a valid permit in terms of the Act or the Alien and Invasive Species Regulation, 2014 for any restricted activity relating to pigeon racing or pigeon showing and provided such person complies with all permit conditions in the relevant Association's permit. The above exemption does not apply to restricted activity "a" in Notice 1: "Importing into the Republic, including introducing from the sea, any specimen of a listed invasive species" and any person engaging in this activity must apply for a permit from the Issuing Authority.

6.4 APPENDIX D – Zonation and Special Management Overlay Categories

6.4.1 Zonation Categories

Zone	Zone Objective	Characteristics	Visitor Activities	Facilities / Infrastructure	Visitor Access	Management Guidelines
Wilderness / Wilderness (declared)	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 Users: To provide an experience of solitude in pristine landscapes with minimal evidence of human presence or use.	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 discernable 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, unserviced 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 unserviced 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	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 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	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 and if specifically considered and noted. Only allows for non-hiking accommodation node if specifically considered and noted.	Deviation from the natural and/or pristine state to be minimised¹ No visible infrastructure in Wilderness viewsheds. May provide isolated, small, unobtrusive accommodation facilities for up to 16 guests on restricted footprints, particularly for overnight hiking trails. May have defined or beacons hiking routes, management access roads, tracks and firebreaks. Roads for visitor use may only be existing roads or new routes that also allow access for essential management needs. All roads, tracks or trails should be located and constructed to reduce maintenance, visibility and erosion. Where unsurfaced tracks will result in erosion, use double 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. Avoid full width tarred or surfaced roads or roads and tracks wider than required for a single vehicle.²	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, or by bicycle, 2x4 or 4x4 vehicle on designated routes. 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. 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.

¹ CapeNature should embark on a work shopping exercise to determine more explicit thresholds for development, including road infrastructure in this and other zones. Until this time, take a precautionary approach to maintain the zone objective and characteristics.

² But do consider the safety requirements for access of more than one vehicle at a time for fire-fighting or rescue operations. Where a dedicated escape route might be required for tourism infrastructure, consider whether the additional road impact now or in the future is warranted.

Zone	Zone Objective	Characteristics	Visitor Activities	Facilities / Infrastructure	Visitor Access	Management Guidelines
Nature Access	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 sensitive or threatened habitats, species or other features by Special Management Overlays Users: To provide easy access to natural landscapes with low expectation of solitude at all times. Can buffer wilderness or Primitive Zone.	Areas with extensive lower sensitivity habitats: Areas able to accommodate higher numbers of visitors regularly, with no identified sensitive or regionally rare biodiversity. 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 beacons 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. Unsurfaced 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	Visitor Management: More frequent monitoring of these areas are 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
Develop ment – Low Intensity	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 Users: To provide access to adjacent natural landscapes with little expectation of solitude. To provide primarily self-catering accommodation or camping. Can provide for Environmental Education accommodation and access into surrounding landscapes.	Areas with extensive degraded or transformed footprints. Natural or semi-natural habitats only when use of these areas is essential to minimise infrastructure/use 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 not visible from Primitive or Wilderness Zones. Areas where new infrastructure can be located with low visibility from the surrounding landscape. 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 time³ No more than 6-8 beds per unit. 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 wherever possible 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 built and infrastructure solutions to such as railings, hard surfacing and boardwalks to manage undesirable visitor impacts. Accept some impact 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 mitigated Conservation Management: Provide access and generate revenue. Management should aim to mitigate the impacts of the high number of visitors. L largely transformed habitats with lower management requirements. Usually fire exclusion areas. Prevent or restore 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.

³ Although this sounds high this is still in line with many CapeNature sites that would fall within this zone definition and E.g. configured as 10 x 4-sleeper self-catering units and 15 campsites this seems completely reasonable.

Zone	Zone Objective	Characteristics	Visitor Activities	Facilities / Infrastructure	Visitor Access	Management Guidelines
Development – High Intensity	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 Users: To provide access to adjacent natural landscapes with no expectation of solitude. To provide low and/or higher density accommodation.	Areas with extensive degraded or transformed footprints. Natural or semi-natural habitats only when use of these areas is essential to minimise infrastructure/use impacts over whole reserve. Areas able to accommodate very 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 not visible from Primitive or Wilderness Zones. Areas where new infrastructure can be located with low visibility from the surrounding landscape. 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 tourist development nodes Modern amenities incl restaurants & shops Self-catering accommodation and camping for over 100 guests in total at any time Lodges or small hotels. Roads in this zone should be surfaced wherever possible 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 no possibility of faunal disturbance.	Visitor Management: Management action will focus mostly on maintenance of facilities & providing high quality experiences. Use built and infrastructure solutions to 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 footpath and road maintenance must be scheduled for high impact routes. 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. Usually fire exclusion areas. Prevent or restore 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 & Conservation management facilities Not compatible with tourism	Areas with extensive degraded or transformed footprints. Natural or semi-natural habitats only when use of these areas is essential to minimise infrastructure/use impacts over whole reserve. Areas able to accommodate high disturbance, with no identified sensitive or regionally rare biodiversity. Areas not visible or audible from Development - Low / High Intensity zone, but in close proximity to any other Development Zones. Areas providing easy access to reserve and infrastructure. Areas where risk of fire damage to infrastructure is low or can be mitigated without unacceptable impacts on surrounding environment. Areas not visible from Primitive or Wilderness Zones. Areas where new infrastructure can be located with low visibility from the surrounding landscape. Areas with available potable water, and not sensitive to disposal of treated wastewater via soak away.	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.	none	Visitor Management: Accept some impact 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 mitigated Conservation Management: Management should aim to contain all activities within the smallest possible footprint. L 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 to the public without permission from landowner	Should have no negative impacts on the surrounding conservation area

6.4.2 Special Management Overlays

Additional forms of zonation that can overlap any of the above zones.

Special Management overlays	Objective of zone	Characteristics	Type of Activities	Facilities / Infrastructure	Type of Access	Management Guidelines
Cultural Feature protection	Protection of localised identified important Cultural Feature	Could overlap any other 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	Protection of localised identified important Biodiversity Feature	Could overlap any other 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
Visual protection	Protection of localised sensitive viewsheds and particularly for Wilderness Zone viewsheds	. Sensitive viewsheds and particularly for areas within Wilderness Zone viewsheds	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 plan	Areas with identified natural resources formally assessed as not sensitive to harvesting and provided with a sustainable harvesting plan.	Harvesting of identified resources	None	Specific access dependent on feature in question.	Feature specific – as required
Rehabilitation		This should fall under specific management objectives for any zone				

Research is permissible in all zones, except Species/Habitat protection or Cultural Protection where it may be considered on a case by case basis. Research that requires extensive destructive harvesting, or manipulation of more than a few square meters 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.

6.5 APPENDIX E – Annual Plan of Operation

Annual Plan of Operation

Diosma Nature Reserve

2026




Resp. Person

(blank)

Priority

High

Low

Medium

(blank)

Annual Stat...

(blank)

Objective	Objective Statement	This Years Plan	Budget		Management Activities	Evidence	Resp. Person	Priority	Annual Status	Q1 Jan-Mar	Q2 Apr-Jun	Q3 Jul-Sep	Q4 Oct-Dec		Notes									
KPA: BIODIVERSITY & ECOLOGICAL COMPONENTS																								
Integrated Wildfire Control	To manage invasive alien plants and the risks associated with uncontrolled wildfire in an integrated way to limit negative impacts on biodiversity and ecosystem function as well as the risks to human safety and infrastructure from wildfire.	Reduce risk of uncontrolled wildfire and undertake all preparation to implement controlled burns in the next two years.	R598,559	R431,000	R5,000	Maintain local Fire Protection Association Membership.	Confirmation email from SCFPA; membership certificate		High		J	F	M	A	M	J	J	A	S	O	N	D		
					R15,000	Implement controlled burns aligned to natural fire processes.	Obtain a burning permit; confirmation of burn; photos		High		J	F	M	A	M	J	J	A	S	O	N	D	SCFPA charges +_ R 9750/day for ecological burn. They estimated a 1 day burn time for DNR only. We have allowed for an additional R5000 just in case overtime is required. Burning permit must be in place prior to burns.	
					R0	Reduce risk of uncontrolled wildfire.	Register of amount of wildfires per year, reasons for wildfire and GPS locations		High		J	F	M	A	M	J	J	A	S	O	N	D		
					R242,000	Establish firebreaks (initial clearing) DNR only.	Photos; register of staff/contractor implementing and maintaining firebreaks		High		J	F	M	A	M	J	J	A	S	O	N	D	The cost for this line item was determined based on the area of the firebreak, multiplied by the current cost the SCFPA would charge to create the firebreak. From the second year, firebreak maintenance will be required around September, and depending on vegetation regrowth, again in February. Firebreaks can be undertaken by the municipality, or outsourced to the SCFPA or another provider.	

					R25,000	Staff trained and equipped to manage wildfires.	Attendance registers and certificates; equipment checklists		High		J	F	M	A	M	J	J	A	S	O	N	D	Training should align to the Safety and Security Plan for instances of emergencies such as wildfires. Required equipment and its location to be included as part of this plan.
					R144,000	Inclusion of proposed reserve expansion areas (ERF RE2001, 11913, 11887) for controlled burns.	Pamphlets; copy of content of campaigns; photos; attendance registers; meeting minutes		Low		J	F	M	A	M	J	J	A	S	O	N	D	This activity is unlikely to materialise in 2026, but steps to be taken to begin facilitating this process - including clearing dense IAPs stands.
					R0	Education and awareness campaigns and collaboration with neighbouring landowners before controlled burns.	Annual Monitoring Report; database; registers of attendance; meeting minutes		High		J	F	M	A	M	J	J	A	S	O	N	D	Ensure all parties understand why controlled burns are required, when they are happening and how they can prepare for these.
					R0	Monitor the indicator species and use these as thresholds of potential concern.	Annual Monitoring Report; databases; photos		Medium		J	F	M	A	M	J	J	A	S	O	N	D	No cost, make use of interns, students citizen science or volunteer groups or CapeNature teams to undertake monitoring.
Integrated Invasive Alien Species Control	To manage invasive alien plants and the risks associated with uncontrolled wildfire in an integrated way to limit negative impacts on biodiversity and ecosystem function as well as the risks to human safety and infrastructure from wildfire.	Implement first year IAS control according to Mossel Bay Municipality's IASMC&EP's five year clearing cycle running from 2026 to 2030.		R78,559	R13,559	Eradicate invasive alien species using advocated control methods.	Annual Monitoring Report; attendance register of team undertaking implementation		High		J	F	M	A	M	J	J	A	S	O	N	D	The cost for this line item was established based on the IAP field data collected, which was applied to the WfW Norms and Standards, and covers operational costs only.
					R40,000	Schedule and cost initial and follow-up clearing operations.	Updated spreadsheet with costs and scheduling		High		J	F	M	A	M	J	J	A	S	O	N	D	Cost allocation for PPE, equipment, herbicide.
					R0	Use the Mossel Bay Municipality IASMC&EP to guide clearing activities.	Copy of the IASMC&EP available		Medium		J	F	M	A	M	J	J	A	S	O	N	D	
					R0	Reduce combustible material to reduce intensity and spread of wildfires.	Annual Monitoring Report; photos		High		J	F	M	A	M	J	J	A	S	O	N	D	Control IAPs prior to burns and remove biomass if required. Biomass may be removed by IAP clearing teams from the reserve.
					R25,000	Undertake vocational, environmental awareness and site induction training for staff.	Attendance registers; completion certificates		High		J	F	M	A	M	J	J	A	S	O	N	D	
					R0	Awareness campaigns on IAPs, anti-green waste dumping and indigenous gardening.	Annual Monitoring Report; pamphlets; copy of content of campaigns; photos; attendance register		Low		J	F	M	A	M	J	J	A	S	O	N	D	
					R0	Effective monitoring and early detection rapid response to prevent further introductions of invasive aliens.	Annual Monitoring Report; updated IAP species database		High		J	F	M	A	M	J	J	A	S	O	N	D	

				R0	Monitoring previous treatment effectiveness and impacts on the surrounding environment and vegetation.	Annual Monitoring Report; photos	Medium		J	F	M	A	M	J	J	A	S	O	N	D	
Aquatic and Riparian Systems	To conserve the biodiversity and ecosystem function of aquatic and riparian systems on the reserve.	N/a	R0	R0	This area does not include any aquatic zones, wetlands, rivers (perennial or non-perennial), or sensitive or vulnerable aquifers. It is therefore not an area requiring management attention.	N/a	N/a		J	F	M	A	M	J	J	A	S	O	N	D	
				R0	If any proposed reserve expansion areas are included as part of Diosma Nature Reserve which include aquatic or riparian zones, this will need to be updated.	N/a	N/a		J	F	M	A	M	J	J	A	S	O	N	D	
Rehabilitation and Restoration	To identify areas of degraded ecosystems and/or habitat in the reserve, understand the causes of degradation and implement restoration/rehabilitation measures.	Remove all waste in the reserve, minimise future dumping and littering, and ensure that monitoring is undertaken for degradation and restoration implemented where required.	R39,000	R0	Limit the loss of biodiversity and disruption to ecological processes due to degraded habitat.	Annual Monitoring Report	High		J	F	M	A	M	J	J	A	S	O	N	D	
				R0	Extent and cause of degradation determined, and restoration/rehabilitation measures planned.	Annual Monitoring Report; database	Medium		J	F	M	A	M	J	J	A	S	O	N	D	
				R0	Identify, map and evaluate all dumping sites and old roads.	GIS database of areas	Medium		J	F	M	A	M	J	J	A	S	O	N	D	
				R0	Stop illegal dumping activities and entry into rehabilitation areas by fencing the reserve and erect signposts to create awareness.	Photos	High		J	F	M	A	M	J	J	A	S	O	N	D	
				R9,000	Remove all dumped waste entirely.	Annual Monitoring Report; photos	Medium		J	F	M	A	M	J	J	A	S	O	N	D	Cost based off 3 days for a contractor to remove waste.
				R0	Passive or active restoration of indigenous species after IAP clearance.	Annual Monitoring Report; attendance register of team undertaking rehabilitation; photos; records of date, techniques used and GPS locations of areas treated	Medium		J	F	M	A	M	J	J	A	S	O	N	D	
				R0	Prevention of unnatural soil erosion.	Annual Monitoring Report; attendance register of team undertaking implementation; photos	Medium		J	F	M	A	M	J	J	A	S	O	N	D	
				R0	Degraded sites restored/rehabilitated.	Annual Monitoring Report; attendance register of team undertaking implementation; photos	Medium		J	F	M	A	M	J	J	A	S	O	N	D	
				R30,000	Undertake soil erosion control and restoration and rehabilitation training for staff.	Attendance registers; completion certificates	Medium		J	F	M	A	M	J	J	A	S	O	N	D	

					R0	Minimise disturbance footprint when developing firebreaks, trails or infrastructure.	Photos; map of disturbance footprint of firebreaks, trails and infrastructure		High		J	F	M	A	M	J	J	A	S	O	N	D		
					R0	Monitor and restore areas after major events such as floods or fires or after major disturbances.	Annual Monitoring Report; photos; attendance register of team undertaking implementation		High		J	F	M	A	M	J	J	A	S	O	N	D		
					R0	Long-term monitoring of degraded sites and restoration/rehabilitation effectiveness.	Annual Monitoring Report		Medium		J	F	M	A	M	J	J	A	S	O	N	D		
					R0	Monitoring of populations of species of special concern, threatened species and indicator species.	Annual Monitoring Report; species database		High		J	F	M	A	M	J	J	A	S	O	N	D		
					R0	Undertake annual census of <i>Diosma aristata</i> , preferably in the month of May (flowering time).	Kml with points; excel spreadsheet; Annual Monitoring Report		High		J	F	M	A	M	J	J	A	S	O	N	D		
					R0	Identify and implement specific management requirements.	Annual Monitoring Report		High		J	F	M	A	M	J	J	A	S	O	N	D		
					R50,000	Where threatened species such as <i>Diosma aristata</i> occur in areas where development or disturbance cannot be avoided, surveys must be conducted across the development footprint to identify affected individuals. A contingency plan must then be developed, outlining procedures for a botanist to translocate young plants to similar microhabitats and take cuttings from adult plants for nursery propagation and replanting within the reserve.	Contingency Plan; permits from CapeNature; appointment letter of an experienced botanist; proof of communication with Garden Route Botanical Garden or similar institution to nursery grow adult cuttings; records of number of species moved and planted; GPS locations of developments and locations of translocated plants; images of plants before and after being moved to a new area.		High		J	F	M	A	M	J	J	A	S	O	N	D		These actions and associated costs will only be applicable if <i>D. aristata</i> plants have to be moved as a result of implementation or maintenance of services, or unavoidable disturbances. Budget includes costs for: Botanist (R25 000 - R 30 000); S&R for seedlings (R 5 000); Cuttings from adults (R 5 000); Propagating (Botanical Garden) (R 5 000 to R 10 000); Planting (R 5 000). Volunteers could be enlisted to help assist with this process which would reduce costs.
					R0	Expansion of the protected area aligned with expansion strategy.	Declaration of expanded area		Low		J	F	M	A	M	J	J	A	S	O	N	D		
					R0	Prevent harvesting, poaching, hunting or trapping of plant and animal species.	Photos of signs; records of patrols; register of instances of harvesting, poaching, hunting or trapping of plant and animal species.		High		J	F	M	A	M	J	J	A	S	O	N	D		
					R0	Protect species during construction, development or IAP clearing.	Annual Monitoring Report; photos of species and populations demarcated during developments		High		J	F	M	A	M	J	J	A	S	O	N	D		Demarcation can be done using danger tape or painted droppers and these must be removed after developments.
Species of Special Concern	To ensure the optimal long-term population health and ecological function of any plants and animals of special concern and indicator species.	Monitor and protect species of special concern.		R50,000																				

					R0	Partnerships with students, interns, citizen science initiatives and interested volunteer groups offer a practical, low cost avenue to expand on existing species lists and deepen the site's baseline ecological information over time.	Attendance registers; updated species lists; kml's and database of information collected; iNaturalist observations database for reserve		Medium		J	F	M	A	M	J	J	A	S	O	N	D		Engagement with these types of partners to collaborate on collecting information for this reserve.
					R0	Link to research institutions and tertiary academic institutions to obtain new research papers.	Emails or proof of communication		Low		J	F	M	A	M	J	J	A	S	O	N	D		
					R0	Develop and maintain terrestrial fauna species list	Annual Monitoring Report; updated species list		Medium		J	F	M	A	M	J	J	A	S	O	N	D		
					R0	Prevent hunting, trapping or poaching of wildlife.	Annual Monitoring Report; records of any instances of hunting, trapping, or poaching of wildlife; photos of signage; attendance registers or documents from awareness campaigns		High		J	F	M	A	M	J	J	A	S	O	N	D		
					R0	Development of ecological corridors.	Map of location of ecological corridors; meeting minutes and attendance registers from meetings with neighbouring landowners; MOUs or MOAs		Medium		J	F	M	A	M	J	J	A	S	O	N	D		
					R0	Installation of semi permeable fencing to allow for terrestrial wildlife movement.	Invoice of fencing; photos; GPS locations of installed fencing		Medium		J	F	M	A	M	J	J	A	S	O	N	D		Estimated costs for materials and establishment of a semi-permeable wildlife fence, allocated under Signage, Access Control and Security.
					R0	Investigate viability of speed limit reduction and install signage on surrounding roads to make drivers aware of wildlife presence.	Emails to confirm investigation and outcomes; photos of signs		Low		J	F	M	A	M	J	J	A	S	O	N	D		
					R0	Ensure dogs are kept on a leash at all times.	Register of any instances or complaints of dogs in reserve without leashes; photos of signage		Medium		J	F	M	A	M	J	J	A	S	O	N	D		
					R0	Educational and awareness campaigns.	Attendance registers; pamphlets created for campaigns; photos		Low		J	F	M	A	M	J	J	A	S	O	N	D		
					R0	Link to research institutions, tertiary academic institutions and citizen science initiatives.	Emails/ proof of communication		Low		J	F	M	A	M	J	J	A	S	O	N	D		Use ad-hoc opportunities as it presents itself.
					R0	Monitor and evaluate the faunal health and their impact on the ecosystem.	Annual Monitoring Report; fixed point photos		Medium		J	F	M	A	M	J	J	A	S	O	N	D		
Wildlife	To ensure effective conservation of faunal species, populations and inter-relationships in order to enhance biodiversity and maintain and improve ecosystem functioning.	Monitor, protect and allow for movement of wildlife in the reserve.		R0																				

					R0	Monitor wildlife using camera traps.	Annual Monitoring Report; photos		Medium		J	F	M	A	M	J	J	A	S	O	N	D		
					R0	Checking fence lines or animal paths for snares or trapped animals.	Patrol registers; date and GPS locations of trapped animals and record of actions taken		Medium		J	F	M	A	M	J	J	A	S	O	N	D		
KPA: SUSTAINABLE UTILISATION OF NATURAL RESOURCES																								
Natural grazing and browsing of wildlife	Wildlife should be allowed to utilise the natural environment in a sustainable manner, ensuring ecosystem health and functionality. Livestock are prohibited within the reserve.	Allow wildlife to browse and graze in reserve, monitor the impact of browsing and grazing on the reserve, and prohibit livestock access to reserve.	R0	R0	Semi- permeable fencing to allow wildlife access to browsing and grazing.	Photos		Medium		J	F	M	A	M	J	J	A	S	O	N	D		Estimated costs for materials and establishment of a semi-permeable wildlife fence, allocated under Signage, Access Control and Security.	
				R0	Monitor the impact of wildlife on vegetation.	Annual Monitoring Report; fixed point photos		Medium		J	F	M	A	M	J	J	A	S	O	N	D			
				R0	Livestock prohibited from grazing or browsing in the reserve.	Photo of signage; register of any instances of livestock grazing or browsing in the reserve and where livestock accessed the reserve.		High		J	F	M	A	M	J	J	A	S	O	N	D			
				R0	There are no intentions at this stage to introduce any antelope species as naturally occurring species are present eg. Cape Grysbok and Common Duiker.	N/a		J	F	M	A	M	J	J	A	S	O	N	D					
Recreation and Tourism	To create an open access system where people can connect with and experience nature.	Plan and implement a range of eco-tourism products, activities and services.		R0	A range of appropriate eco-tourism products, activities and services are offered.	List of products and services offered.		Low		J	F	M	A	M	J	J	A	S	O	N	D			
				R0	Ensure proposed activities, operations and infrastructure do not have a negative impact on any of the conservation objectives of the reserve.	Annual Monitoring Report		High		J	F	M	A	M	J	J	A	S	O	N	D			
				R0	Ensure tourism infrastructure design and construction complies with development planning requirements.	All development plans, reports or permits		High		J	F	M	A	M	J	J	A	S	O	N	D			
Sustainable Harvesting	To prevent the use and harvesting of natural plant resources.	Prevent harvesting in the reserve.		R0	Harvesting to be prohibited as the reserve is too small for this to be sustainable.	Register of any instances of harvesting in reserve		High		J	F	M	A	M	J	J	A	S	O	N	D			
				R0	Signage prohibiting harvesting of any kind.	Photos of signage; invoices for signs		High		J	F	M	A	M	J	J	A	S	O	N	D		Budgeted for in section: Signage, Access Control and Security.	
				R0	Awareness campaigns on the importance of preventing harvesting in this reserve.	Attendance registers; pamphlets created for campaigns		Low		J	F	M	A	M	J	J	A	S	O	N	D			

KPA: SOCIO-ECONOMIC & HERITAGE																									
Environmental Awareness and Education	Stakeholders receive an increased awareness and understanding of the importance and value of functioning ecosystems and protecting biodiversity.	Increase awareness about conservation and develop the reserve as a focal point for environmental awareness and education.	R90,000	R25,000	R0	Increase awareness about the value of functioning ecosystems and conservation land use.	Attendance registers; pamphlets created for campaigns		Low		J	F	M	A	M	J	J	A	S	O	N	D			
					R25,000	Address specific management issues such as: - The value of functioning ecosystems and conservation land use - Wildfires and controlled burning - Invasive alien plants and control - Creating indigenous and pollinator friendly gardens - Effects of littering and dumping - Threatened species - Safely interacting and coexisting with wildlife - Snake identification - Eliminating poaching and use of snares - The negative effects of livestock, harvesting and firewood collection in this reserve - Security and emergency preparedness	Pamphlets created for campaigns; summary of content of campaigns		Low		J	F	M	A	M	J	J	A	S	O	N	D			Costs for awareness campaigns have been allocated here and costs have been excluded under individual objectives.
					R0	Education and awareness training for small school groups.	Attendance registers; pamphlets created for campaigns; photos		Low		J	F	M	A	M	J	J	A	S	O	N	D			
					R0	Awareness drives, talks and environmental programmes for the public.	Attendance registers; pamphlets created for campaigns; photos		Low		J	F	M	A	M	J	J	A	S	O	N	D			
					R0	Guided informative tours and walks.	Attendance register; training certificates for guides		Low		J	F	M	A	M	J	J	A	S	O	N	D			
					R0	Assess the condition of current informative signage and install and replace as required.	Photos; records of signs and condition during assessment		High		J	F	M	A	M	J	J	A	S	O	N	D			Budgeted for in section: Signage, Access Control and Security.
					R0	Engagement with environmental organisations, research institutes, universities and citizen science groups to facilitate knowledge sharing.	Email to confirm engagement; documents received		Low		J	F	M	A	M	J	J	A	S	O	N	D			
					R0	Review research and restriction of destructive or potentially harmful research methods.	Summary of review findings for any proposed research		Low		J	F	M	A	M	J	J	A	S	O	N	D			

Socio-economic Development Initiatives	To work with relevant stakeholders to make a meaningful contribution towards the socio-economic development needs of local communities.	Provide employment and skills development opportunities to local communities.		R65,000	R0	Small scale economic and job creation opportunities for ecotourism guides, IAP teams or restoration workers may be sourced from the local community.	Register of staff undertaking work; annual summary of jobs created; Annual Monitoring Report		Medium		J	F	M	A	M	J	J	A	S	O	N	D	
					R65,000	Training and skills development opportunities for eco-tourism guides, IAS or restoration and rehabilitation team workers.	Completion certificates; attendance registers		Medium		J	F	M	A	M	J	J	A	S	O	N	D	
					R0	Positive relationships with key community role players and groups.	Database of role players and interested groups; minutes or attendance registers of any meetings; MOUs or any agreements established		Medium		J	F	M	A	M	J	J	A	S	O	N	D	
Heritage Features	To locate, document, and conserve archaeological, paleontological and cultural heritage features on the reserve.	Monitor for any heritage features on the reserve.		R0	R0	To support the study of on-reserve features by experts and to share knowledge and insights gained.	Expert reports or findings		Low		J	F	M	A	M	J	J	A	S	O	N	D	
					R0	Make the reserve available for research and baseline studies for students in this field of expertise.	Research reports or findings		Low		J	F	M	A	M	J	J	A	S	O	N	D	
					R0	If any significant archaeological, heritage or palaeontological resources are discovered within Diosma Nature Reserve, the Heritage Western Cape and the South African Heritage Resources Agency (SAHRA) must be immediately notified.	Emails; proof of communication		High		J	F	M	A	M	J	J	A	S	O	N	D	
					R0	Maintain the GIS database with the assistance from institutions like SAHRA, Dr. Nielsen & Jan de Vynck.	Link to GIS database		Low		J	F	M	A	M	J	J	A	S	O	N	D	
											J	F	M	A	M	J	J	A	S	O	N	D	

KPA: MANAGEMENT AUTHORITY EFFECTIVENESS & SUSTAINABILITY

Governance and institutional arrangements	To meet the governance requirements to effectively manage the protected area.	Develop outstanding policies and plans for the reserve.	R264,450	R22,500	R0	Effective governance structures in place.	Governance structure in protected area management plan		High		J	F	M	A	M	J	J	A	S	O	N	D	
					R0	Management team to review and revise proposed APO and estimated budgets, and indicate responsible persons for each management activity.	APO finalised; estimated budgets reviewed and finalised; Responsible persons identified in APO		High		J	F	M	A	M	J	J	A	S	O	N	D	
					R0	All evidence from implementing management actions or findings from monitoring should be carefully and consistently recorded, described (metadata) and shared.	Databases; images; reports; GPS locations/ GIS layers; attendance registers; minutes; etc.		High		J	F	M	A	M	J	J	A	S	O	N	D	
					R0	Development of an Annual Monitoring Report reflecting the progress to date, results of monitoring and consolidated portfolios of evidence for implementation of this management plan.	Annual Monitoring Report		High		J	F	M	A	M	J	J	A	S	O	N	D	
					R0	Progress for each management action will be reflected in the APO tool.	APO tool with Annual Status updated		High		J	F	M	A	M	J	J	A	S	O	N	D	
					R0	Complete APO Annual Report.	Completed APO Annual Report		High		J	F	M	A	M	J	J	A	S	O	N	D	
					R0	The APO Annual Report will be submitted to the Minister, MEC, or a person designated by the Minister or MEC to annually report findings and indicate performance as required by section 43 of NEM:PAA. This annual report must also be supplied to CapeNature on an annual basis.	Proof of annual submission to the Minister, MEC or designated person; proof of annual submission to CapeNature.		High		J	F	M	A	M	J	J	A	S	O	N	D	
					R0	Complete the APO Annual Review of the management effectiveness.	Completed APO Annual Review		High		J	F	M	A	M	J	J	A	S	O	N	D	
					R0	Annually review performance of each person responsible for management activities.	Review summary for each responsible person		High		J	F	M	A	M	J	J	A	S	O	N	D	

					R22,500	Use the Management Effectiveness Tracking Tool (METT) to further assess management effectiveness and produce a METT-Intervention Report aligned to CapeNature Biodiversity Stewardship sites METTs.	METT-Intervention Report		High		J	F	M	A	M	J	J	A	S	O	N	D	
					R0	Update the APOs, budgets, priorities and deadlines for the following year based on review findings.	Updated APO tool		High		J	F	M	A	M	J	J	A	S	O	N	D	APO tools must be updated aligned to the findings, progress and challenges/success areas of the previous year, adaptive management strategies, available budgets and priorities.
					R0	All Annual Monitoring Reports, and APO Annual Reports and Reviews, must be well-organised, safely stored, backed up, easily accessible and shareable for any reviews or audits required.	Clearly named, shareable, updated versions of all reports safely stored and back ups made		Medium		J	F	M	A	M	J	J	A	S	O	N	D	
					R0	Develop a policy containing the internal rules for Diosma Nature Reserve, outlining the conditions of use, prohibited activities, restricted areas and procedures for the enforcement of the rules, the reporting and documenting of illegal activities and penalties for non-compliance.	Copy of Internal Rules Policy document developed and finalised.		Medium		J	F	M	A	M	J	J	A	S	O	N	D	
					R0	Develop a safety and security plan which includes a risk assessment, communication strategies and contact details of all relevant persons, a contingency plan and an emergency evacuation plan in the event of accidents, crisis situations or other emergencies, with a specific focus on wildfires.	Safety and Security Plan developed and finalised.		High		J	F	M	A	M	J	J	A	S	O	N	D	Training should be undertaken together with emergency services to ensure that this plan is easily implemented and that all staff know their roles in the event of an emergency.

Legal Compliance	To ensure all reserve declaration documentation is in order and that all activities are compliant with relevant legislation and policies.	Undertake all activities aligned to relevant legislation; reinstate portion of RE/2001 being used as part of Pinnacle Point Golf Practice Range; and undertake annual review of reserve management.	R0	R0	Fully compliant with the Protected Area legislation.	Letter from CapeNature		High		J	F	M	A	M	J	J	A	S	O	N	D		
				R0	Compliance with NEM:BA by controlling invasive alien species on the DNR.	Approved IASMC&EP for MBM		High		J	F	M	A	M	J	J	A	S	O	N	D		
				R0	Compliance with the National Veld and Forest Fire Act (Act 101 of 1998) through fire management.	Letter from FPA; FPA membership certificate		High		J	F	M	A	M	J	J	A	S	O	N	D		
				R0	Approval and acceptance of the Diosma Nature Reserve Management Plan.	Letter from CapeNature		High		J	F	M	A	M	J	J	A	S	O	N	D		
				R0	Revision of the Strategic Management Plan (Part A) before the ten-year management period ends, or before if required.	N/A		Low		J	F	M	A	M	J	J	A	S	O	N	D		Not applicable for the first year.
				R0	Incorporate Diosma Nature Reserve into the proposed Spatial Development Framework of the Mossel Bay Municipality.	Copy of Spatial Development Framework		Low		J	F	M	A	M	J	J	A	S	O	N	D		
				R0	Update the zoning of Diosma Nature Reserve and surrounding Nature Conservation Areas	Map showing zonations		Medium		J	F	M	A	M	J	J	A	S	O	N	D		
				R0	Ensure all activities are undertaken aligned to the relevant legislation.	Register of any activities undertaken not in compliance with relevant legislation		High		J	F	M	A	M	J	J	A	S	O	N	D		
				R0	Reinstate the north-west portion of the proposed reserve expansion area ERF RE2001 which has been illegally included as part of the Pinnacle Point Golf Practice Range.	Legal notice/MOA		Low		J	F	M	A	M	J	J	A	S	O	N	D		
Employee Skills Development	Managers and staff are supported in the implementation of the management plan by ensuring they have the necessary knowledge and skills to perform their management responsibilities.	Ensure all staff receive necessary training.	R50,000	R0	Institute a skills development framework identifying training needs.	Annual Monitoring Report; findings summary of training needs analysis		High		J	F	M	A	M	J	J	A	S	O	N	D		
				R50,000	Implementation of informal and/or formal training.	Attendance registers/training planner		Medium		J	F	M	A	M	J	J	A	S	O	N	D		Allocated budget for skills development here.
				R0	Implementation of management support and mentorship.	Identification of management support and mentorship structures		Medium		J	F	M	A	M	J	J	A	S	O	N	D		

Management Infrastructure and Equipment	The reserve has the necessary infrastructure and equipment to enable the cost-effective achievement of the management objectives.	Plan and install all necessary infrastructure on reserve.	R29,000	R0	Infrastructure needed to support personnel in implementing the management plan is in place.	Register developed detailing all infrastructure available and required		High		J	F	M	A	M	J	J	A	S	O	N	D	
				R0	Personnel have the necessary vehicles and equipment to carry out management activities.	Inventory developed detailing all equipment and vehicles available and required		High		J	F	M	A	M	J	J	A	S	O	N	D	
				R0	Infrastructure is adequately maintained, and equipment serviced and kept in safe working order.	Vehicle and equipment checklists; Annual Monitoring Report		Medium		J	F	M	A	M	J	J	A	S	O	N	D	
				R0	Maintain fenceline infrastructure and ensure a buffer of at least 1.5 m either side of the fence line is cleared.	Photos; attendance register of team implementing maintenance; Annual Monitoring Report		High		J	F	M	A	M	J	J	A	S	O	N	D	Estimated costs for materials and maintenance of a semi-permeable wildlife fence, allocated under Signage, Access Control and Security.
				R0	Development of Trail Development Plan.	Trail Development Plan		High		J	F	M	A	M	J	J	A	S	O	N	D	
				R12,000	Planning, design and development of demarcated trails and interpretative walks.	Attendance registers of implementation teams; map of trails with KML/GIS layer showing locations; photos		Medium		J	F	M	A	M	J	J	A	S	O	N	D	Costa are approximately R 5000 to R 7500 /Km of trail.
				R0	Maintain trails to ensure they provide easy access to designated areas.	Attendance registers of implementation teams; photos; Monitoring report		Low		J	F	M	A	M	J	J	A	S	O	N	D	
				R10,000	Install and place removable trail marker signs and species identification board signs.	Photos		Medium		J	F	M	A	M	J	J	A	S	O	N	D	
				R7,000	Installation of wildlife-proof bins for waste management.	Invoices for bins; photos		Medium		J	F	M	A	M	J	J	A	S	O	N	D	
				R0	Identify a suitable area for future developments such as an interpretation centre or parking.	Map; meeting minutes and attendance registers		Low		J	F	M	A	M	J	J	A	S	O	N	D	Development of the Interpretation Centre is unlikely to be undertaken in the first year, however planning and location identification can begin
				R0	Develop infrastructure aligned to the relevant legislation, environmental authorisation requirements, and conservation goals of the reserve.	EA or permits if required		High		J	F	M	A	M	J	J	A	S	O	N	D	

Signage, Access Control and Security	Signage, access control and security measures are put in place that effectively address related threats.	Plan and install all signs, gates, and CCTV cameras; and ensure regular law enforcement patrols are undertaken.	R162,950	R17,200	The perimeter boundary of the reserve is clearly marked with fencing and signage.	Photos; map with locations		High		J	F	M	A	M	J	J	A	S	O	N	D		
				R17,200	Erect sign boards communicating the following minimum information: •Signage indicating conditions of use such as the prohibition of smoking, dogs without a leash, fires, picking of wildflowers, leaving pathways etc. •Signage at all access points detailing emergency response service contact details. •Signage indicating that this is a high fire risk area. •Signage providing informative and educational information about species and the environment. •Signage demarcating trails.	Photos; map with locations		High		J	F	M	A	M	J	J	A	S	O	N	D		
				R0	Access is controlled with fences around the reserve, with limited entry points which provide open access to pedestrians and wildlife.	Photos; map with locations		Medium		J	F	M	A	M	J	J	A	S	O	N	D		
				R0	All unauthorised vehicle access is restricted with locked gates, with keys delivered and available to emergency services and key personnel (or gate codes).	Photos; register of all personnel with access		Medium		J	F	M	A	M	J	J	A	S	O	N	D		
				R0	Maintain the existing track through the reserve when required to keep it functional for emergencies.	Photos of the track		Low		J	F	M	A	M	J	J	A	S	O	N	D		
				R15,000	All access points are equipped with CCTV cameras for safety and to deter criminal activities.	Photos; map with locations		High		J	F	M	A	M	J	J	A	S	O	N	D		

					R105,750	Erect new wildlife fencing according to the new layout requirements, design and specifications listed. Replace identified sections of the existing fence with wildlife passage sections, and install semi-permeable gates to allow wildlife access, as well as access for management and emergency response teams.	Photos; map with locations		Medium			J		F		M		A		M		J		J		A		S		O		N		D			Estimated costs for materials and establishment of semi-permeable wildlife fence approximately R 22 500-R 30 000/100 meters. Gates and wildlife passages to be costed separately. Depending on the three scenarios different costs will apply. 1. DNR – fencing only: R 105 750 2. DNR – expansion excluding new road planned for development: R 245 750 3. DNR – expansion including new road planned for development: R 355 500.
					R25,000	Conduct regular monitoring of the condition of fences and repair and maintain fences when needed.	Annual Monitoring Report		Medium			J		F		M		A		M		J		J		A		S		O		N		D			Repair existing fence section.
					R0	Regular law enforcement activities by CapeNature, SAPS and officials from the Mossel Bay Municipality.	Register of patrols; summary of areas of concern		High			J		F		M		A		M		J		J		A		S		O		N		D			
					R0	Engagement with neighbourhood watch groups to collectively address security risks.	Meeting minutes and attendance registers; database of key community representatives and contact details		Medium			J		F		M		A		M		J		J		A		S		O		N		D			
Research and Management Knowledge	Knowledge on how to achieve management objectives is gathered, documented and shared with the team to increase management effectiveness.	Ensure management team uses current research and engagement with experts to manage the reserve effectively.		R0	R0	Address knowledge gaps through desktop research, scientific research and getting advice from experts.	Annual Monitoring Report; report identifying research gaps and POA for addressing these gaps		Medium			J		F		M		A		M		J		J		A		S		O		N		D			
					R0	Use increased knowledge and research findings to improve management effectiveness.	APO Annual Report; APO Annual Review; METT-Intervention Report; updated APOs		Medium			J		F		M		A		M		J		J		A		S		O		N		D			
										J		F		M		A		M		J		J		A		S		O		N		D					
										J		F		M		A		M		J		J		A		S		O		N		D					
TOTAL BUDGET				R953,009								J		F		M		A		M		J		J		A		S		O		N		D			

6.6 APPENDIX F - Proposed Infrastructure Design and Specifications

6.6.1 Proposed Fence and Gate Designs

The proposed fencing and entrances will enable the movement of wildlife. The goal of these fences and entrances is to help control access into the reserve for people, but allow wildlife to move through unhindered. This will also help designate the boundaries of Diosma Nature Reserve and protect this area from illegal activities and undesired access.

A proposed fence design is provided in Figure F.1. These fences will enable the continuous movement of small wildlife through and under the fence. These fences should be at a height of at least 2.4 m, made using a combination of galvanised steel posts and Bonnox or standard large mesh fencing. These materials are durable under these conditions and will be partially resistant to fires and corrosion caused by the salty sea air in this area. All along the bottom of the fence, a gap of around 20 cm should be left to enable small wildlife, such as tortoises, to move through easily. Galvanised steel angle support poles should be used to help strengthen and support fences at key points (corners, gates and wildlife passages). At key intervals and along areas with frequent wildlife movement, permeable wildlife passage fencing sections should be installed. These should also be made of galvanised steel with large spacing between poles. These permeable wildlife passage sections will enable larger wildlife to move through these areas and ensure that ecological corridors are effective for larger animals such as game. At key locations along the fence line that require additional support such as gate points, wildlife passages and corners Galvanised steel posts should be concreted into the ground.

The proposed gate designs are provided in Figure F.2. These will be large service gates, and should be approximately 4 m wide, designed to allow access to large vehicles such as fire trucks in the event of emergencies. These gates should be around 2.4 m high to match the heights of surrounding fencing. These gates should be made of galvanised steel, with a locking mechanism to prevent unauthorised vehicle access into roads through the reserve. The keys for these gates will be shared with emergency services and key personnel who may require vehicle access into the reserve. The gates should be designed to be opened manually, swinging open, rather than mechanical gates. These gates will have large gaps for wildlife of all sizes to move through, and should also include a gap at the bottom to allow smaller wildlife access through.

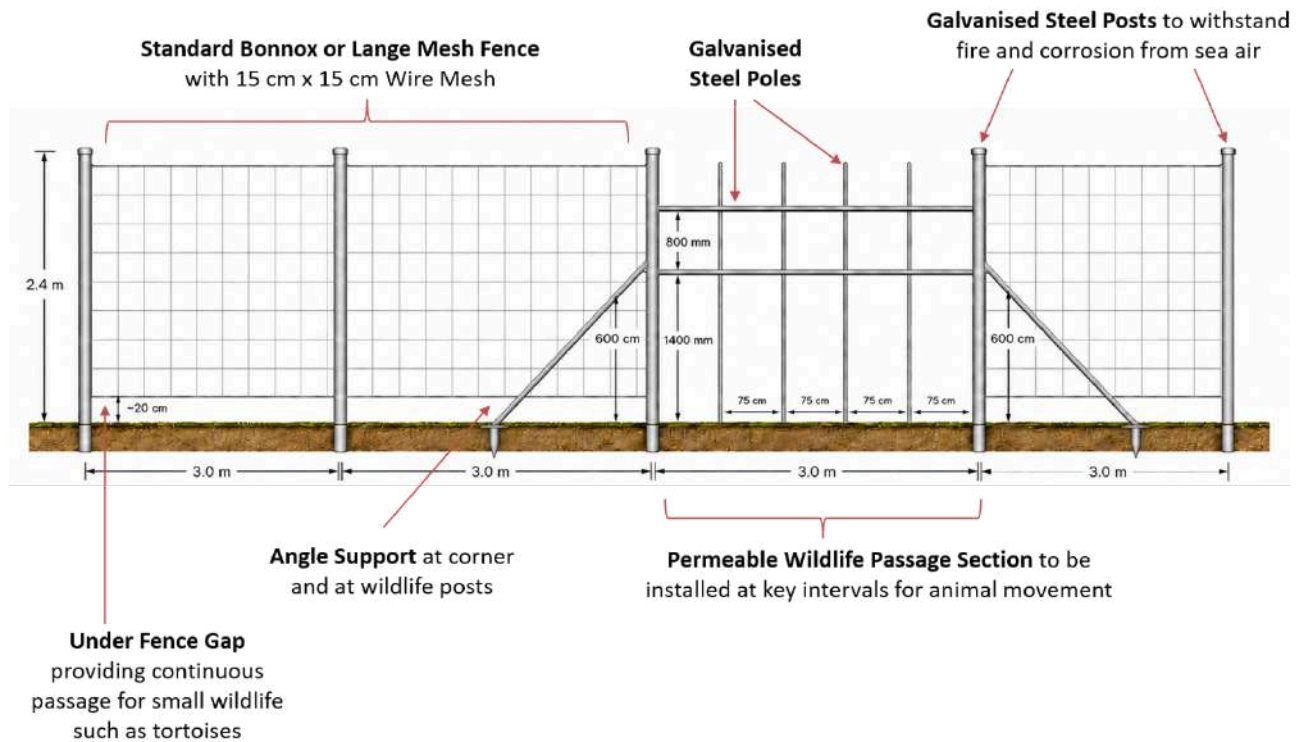


Figure F.1 Example of the proposed semi-permeable fence design.

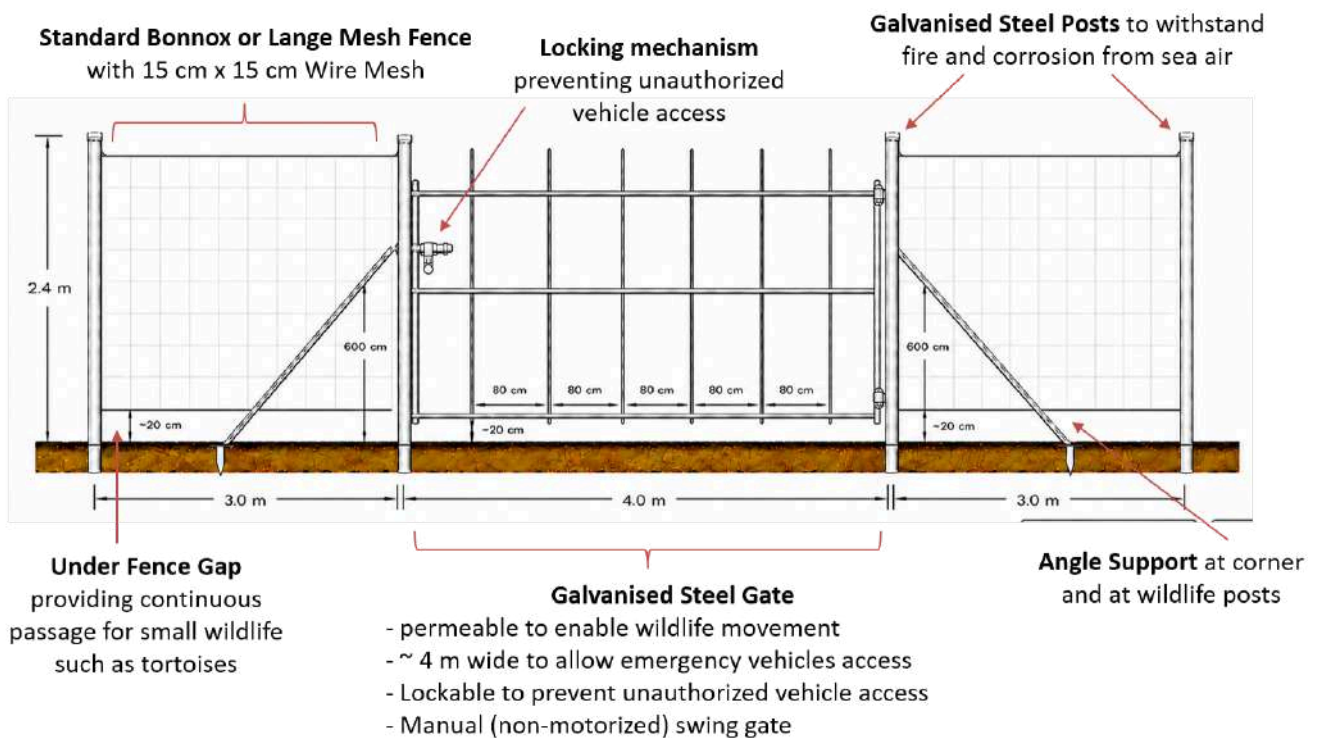


Figure F.2 Example of the proposed wildlife-friendly service gates.

6.6.2 Proposed Design of Signs

A number of signs have been proposed to be erected at the entrance and around Diosma Nature Reserve (DNR). These will include signs indicating the property is part of Diosma Nature Reserve, important information, rules, contact details, and notices. The signs will also include informative and educational information such as species names, common wildlife species in the areas, and signs marking the hiking trails. These signs should be designed to be durable and able to withstand the corrosive sea air and the outdoor conditions. These signs should create as little disturbance as possible, and should be easily installed and able to be removed prior to controlled burns. Where possible, informative signage should include information in English, Xhosa, Afrikaans and Braille. In Figure F.3 examples are provided of sign designs that could be considered for DNR. These examples are only provided as guidelines and the ultimate design and placement of the signs will depend on the DNR's management team. The costs of some of these signs (such as the signs signaling motorists to slow down) may be offset by sponsorships from local companies or donations from environmental organisations or volunteers.

Please refer to Section 3.6.2.5 for a full description of the proposed signage for DNR.



Figure F.3 Examples of sign designs that could be used for Diosma Nature Reserve.

6.6.3 Proposed Wildlife Proof Bins for Waste Disposal

To manage waste disposal in DNR, wildlife proof bins will be used. In Figure F.4 an example is provided of the proposed design for the dustbin. These bins must be robust and heavy to prevent the bins from being able to be pushed or falling over. The bin should have a rolling lid to avoid wildlife such as monkeys accessing the waste. These bins should be made of durable materials such as these, which are made from 100% recycled plastic. These bins will require daily servicing and therefore these bins should be placed where they are accessible at entrance points outside of the DNR. These bins should be put in place at the existing entrance point and if any other entrance points are established during the development of this reserve, bins may be placed at these as well. Signage should indicate that there are no dustbins within the reserve itself, but that visitors should hold onto their waste until they are back at the entrance/exit. The bin could include partitions for non-recyclable and recyclable waste.



Figure F.4 Proposed designs for dustbins: Double Monkey-Proof Recycling Bin (Quality Timber Plastic Furniture).