DRAFT SCOPING REPORT COMMENTS

AGRI WESTERN CAPE

DMR ref: WC30/5/1/2/2/10110MR

Greenmined Environmental (Pty) Ltd
Private Bag X15
SOMERSET WEST
7129

Attn: Ms Christine Fouché
christine.f@greenmined.co.za

Dear Ms Fouché

APPLICATION FOR MINING RIGHTS AND ENVIRONMENTAL AUTHORISATION BY BONGANI MINERALS (PTY) LTD: PROPOSED RIVIERA TUNGSTEN MINE, MOUTONSHOEK: COMMENTS BY AGRI WESTERN CAPE

Portion 1 of Farm 297 RD * Portion 6 (Rem Extent), Namaquasfontein 79 RD * Portion 21, Namaquasfonten 73 RD.

Thank you for providing Agri Western Cape (AWC) with the opportunity to comment on the Draft Scoping Report, dated January 2019, which was prepared by yourselves in support of the application by Bongani Minerals (Pty) Ltd ('BM') for the environmental authorisation of listed activities triggered by a mining rights' application with respect to a proposed Tungsten and Molybdenum mine in the Moutonhshoek valley in the upper reaches of the Verlorenvlei/Krom Antonies rivers in the Berg River Municipality, Western Cape.

1. AGRI WESTERN CAPE OBJECTS TO THE APPLICATION FOR MINING RIGHTS

Please record Agri Western Cape's objection to the above application for mining rights in terms of section 22 of the Minerals and Petroleum Resources Development Act 28 of 2002 ('MPRDA').

We wish to be immediately notified in writing once the objection has been referred to the Regional Mining Development and Environmental Committee in terms of section 10(2) of the MPRDA.

The reasons for our objection are set out below. They also serve as Agri Western Cape's comment on the draft scoping report.

2. IMPACTS ON GROUNDWATER[1]

The proposed Tungsten mine in Moutonshoek would be located in a catchment and groundwater system that has immense strategic significance for water users, aquatic ecosystems and biodiversity conservation in the central Sandveld.

In fact, mining-related contamination of aquifers could have a catastrophic effect on the natural environment, human health and the economic viability of farms that are overwhelming dependent on groundwater which originates from higher-lying areas such as the Piketberg and Moutonshoek valley.

According to the Department of Water and Sanitation, the proposed mining area is seated over a major, highly-yielding secondary aquifer system of good quality groundwater (EC <150 mS/m). It is also highly vulnerable to contamination, as is the aquifer that underlies the confluences of the Krom Antonies, Hol, Kruismans and Verlorenvlei rivers in the G30D quaternary catchment.

Our concerns are based on the understanding that the rock material to be mined at Moutonshoek contains pyrite, an iron sulphide which forms sulphuric acid and dissolved iron when it reacts upon exposure to air and water. Whereas acids are produced at a very slow rate during normal weathering of minerals, the rock mass is extensively fragmented during mining and mineral processing which dramatically increases the rock surface and consequent rate of acid production (McCarthy, 2011).

Mining-derived acid water that enters ground and surface water resources increases the solubility of heavy metals, which are highly toxic. In South Africa, acid mine drainage (AMD) is one of the largest potential liabilities faced by the mining industry due to the potential scale of its threat to water resources, human health and the environment (CSIR, 2013).

AMD is so persistent that contaminated sites and water resources may never be completely restored (Oelofse, 2008; Manders *et al.*, 2009; McCarthy, 2011).

Besides the concern that mining (particularly as a result of blasting) may change sub-surface flows and reduce the amount of water entering the Sandveld groundwater systems, there is a very worrying risk that mining-related contaminants which enter the secondary aquifer in Moutonshoek could eventually enter the primary aquifer system, thereby exposing groundwater-dependent ecosystems, crops and people to highly toxic acid mine drainage and dangerous chemical leachates.

3. CRITICAL AGRICULTURAL DEPENDENCY ON GROUNDWATER

The Sandveld is one of South Africa's most important regions for potato production which almost exclusively relies on groundwater for centre pivot irrigation. The potato sector is also a significant regional employer whose workforce and its dependents closely rely on good quality groundwater for

[1] See the *Draft Environmental Management Framework for the Sandveld* (DEADP, 2017) for further background material and analyses of the Sandveld environment, its socio-ecological characteristics, and management priorities.
https://www.westerncape.gov.za/eadp/files/atoms/files/Draft%20Sandveld%20EMF%20_%20November%202017.pdf

sustenance and health. About 7 000 people are permanently employed on Sandveld potato farms. Seasonal appointments account for another 3 500 posts.

Irrigation accounts for about 60% of South Africa's water use – in the Sandveld, irrigation accounts for more than 90% of the region's total water requirement (Archer *et al.*, 2009)

The groundwater table is typically shallow, but very little groundwater abstracted for agricultural and human use in the Sandveld is actually derived from direct rainfall.

The Sandveld region receives less than 250 mm of rainfall per annum and even the lowest evaporation exceeds the highest rainfall. In this context of limited rainfall and high levels of water loss due to evaporation, the groundwater recharge areas in the wetter, higher-lying areas (which receive ca. 500 mm of rainfall per annum) are absolutely key to agricultural production and ecological and human wellbeing in the Sandveld (Conrad *et al.*, 2004).

The high hydraulic head within these recharge zones in the Olifantsrivier and Piketberg mountains drives recharge water through the bedrock towards the coast and overlying, unconfined primary aquifers. Groundwater flow in the Sandveld generally traces block faulting and fracturing in a north-westerly direction, but there is also flow in the matrix of fractured rock (Conrad *et al.*, 2004).

Groundwater in the lower-lying regions of the Sandveld is pumped from primary (surface, porous, sandy) aquifers which are underlain by secondary, fractured-rock sandstone aquifers. There is good connectivity between the secondary and primary aquifers, and the secondary aquifer is significant throughout the Sandveld (Conrad *et al.*, 2004).

4. HIGH SOCIO-ECOLOGICAL VULNERABILITY TO CHANGES IN GROUNDWATER AVAILABILITY AND QUALITY

If the amount of water entering the sub-surface hydrological system in these recharge areas is reduced and/or its quality is compromised through contamination by, for example, AMD and other mining-related leachates, the resulting impacts on groundwater-dependent ecosystems, farms and communities could be extensive and may extend well beyond the recharge zone.

Such an eventuality is of immense concern when the impacts of climate change are added to the existing environmental vulnerability of the Sandveld to water scarcity and salinisation of groundwater.

Research findings by the CSIR (Archer *et al.*, 2009) point to a high likelihood of reduced winter rainfall and warmer monthly average minimum and maximum temperatures for the Sandveld. Less rain and increased heat – which may be attributed to global climate change – are liable to further diminish groundwater recharge, increase evaporation rates and cause die-back of indigenous vegetation which is crucial for stabilising soils and maintaining soil moisture. Increased wind erosion and a higher incidence of wildfires would even further compound these already adverse environmental conditions for farming and human livelihood security in the Sandveld.[2]

[2] Also see *Climate Change Response Framework for the Agriculture Sector of the Western Cape Province* (WCDA, 2016).

The preceding paragraphs have sketched, largely from an agri-environmental perspective, the groundwater context, and associated vulnerabilities, within which mining would take place. In short, mining in Moutonshoek must not be permitted as it holds an unacceptably high risk to human health and wellbeing due the potentially irreversible contamination and degradation of highly vulnerable groundwater resources.

5. IMPACT OF MINING ON ECOLOGICAL INFRASTRUCTURE AND BIODIVERSITY CONSERVATION PRIORITY AREAS

At a local scale, the mine would be located within one of the main, higher-lying groundwater recharge areas for the Sandveld. It would also, perversely, be situated within a proclaimed Protected Environment which coincides with the catchment of Ramsar wetland of international significance and Important Bird Area, namely the Verlorenvlei .

Protected Environments can have the crucial function of safeguarding ecosystems that are important for maintaining and generating a sustained supply of ecosystem goods and services which are crucial for human wellbeing. Moutonshoek is a case in point, particularly in terms of the indivisible relationship between healthily-functioning wetlands, groundwater recharge and water security for downstream users.

Please be reminded that it would in any event be premature for the state to authorise mining in the Moutonshoek Protected Environment until such time that a management plan has been prepared for this protected area. [3]

The proposed mining area contains threatened vegetation – including Critically Endangered renosterveld – and is interlaced with terrestrial Critical Biodiversity Areas (CBAs). The immense eco-hydrological significance of Moutonshoek and the upper reaches of the Krom Antonies/Verlorenvlei rivers and their tributaries is underscored by the presence of extensive ecological support areas and wetlands CBAs which must be managed in a natural or near-natural condition as national priorities for freshwater ecosystem conservation (Driver *et al.*, 2011; Cadman *et al.*, 2016; Pool-Stanvliet *et al.*, 2017).

In terms of the national *Mining and Biodiversity Guideline* (DEA *et al.*, 2013):

- Mining should be prohibited in Protected Environments;
- The confirmed presence of Critically Endangered and Endangered vegetation could be a fatal flaw for mining; and
- Biodiversity offsets may need to be considered as a condition of authorisation where significant residual loss of priority biodiversity cannot be avoided through strict, sequential and demonstrable implementation of the mitigation hierarchy.

Likewise, the guidelines accompanying the *Western Cape Biodiversity Spatial Plan* (Pool-Stanvliet *et al.*, 2017) state that CBAs in a natural condition must be managed to keep them in this state and, if

[3] cf. *Mining and Environmental Justice Community Network of SA & Others v Minister of Environmental Affairs & Other* (Davis J), North Gauteng High Court, [50779/2017], yet to be reported

not natural, rehabilitated to at least a near-natural condition. Mining would be fundamentally incompatible with these objectives, and likewise with respect to the ecological management objectives for FEPA wetlands and rivers.

6. AGRI WESTERN CAPE'S EXPECTATIONS WITH RESPECT TO SPECIALIST STUDIES

6.1 Coordination of specialist studies

The hydrogeological, aquatic and agricultural assessments need to be coordinated between the respective specialists in order to ensure an integrated approach to investigating and reporting on potential environmental impacts of mining operations on groundwater, wetlands and rivers, and farming.

6.2 Pollution of water resources as a result of AMD and other contaminants, etc

- What are the risks that acid mine drainage may occur during mining and after mine closure?
- What is the anticipated volume of mining tailings, and where and how will these be stored?
- How much overburden will be removed in order to reach the targeted ore reserves and where and how will it be stored?
- Which chemicals will be used during mining and mineral extraction?
- What is the chemical composition of the mined material and by-products?
- What is the volume of these by-products, including waste water?
- To what standard will waste water be treated?
- What are the impacts of mining-related blasting on the human and natural environments, including surface and sub-surface water resources?
- What are the environmental risks of using chemical processes to extract Tungsten from the ore?
- Which measures will be implemented to prevent groundwater contamination as a result of mining, the storage of tailings, mineral processing and mine dumps?

6.3 Hydrogeological assessment[4]

- The hydrogeologist must investigate potential changes to:
  - Groundwater quality (with particular reference to acid mine drainage);
  - The volume of groundwater in storage or entering storage; and
  - Groundwater flows, including exchanges between secondary and primary aquifers.

[4] Also see DEADP's *Guideline on involving hydrogeologists in EIA processes* (Saayman, 2005)

- It is particularly important that the groundwater assessment identifies hydrogeological pathways along which mining-related contaminants may be transported and reports on the health and ecological risks of exposure to such contaminants relative to distance from the mine.
- A hydrocensus must be undertaken.
- A conceptual model must be developed with describes the type/s of aquifer, aquifer recharge, flow and discharge.
- The conceptual model must be substantiated by well-referenced, supporting information.
- Assumptions, limitations and confidence levels underpinning the conceptual model must be made explicit.
- The hydrogeological assessment must include and describe the field work undertaken, and indicate linkages with other specialists.
- Key groundwater references must be cited.
- The terms of reference and geographical scope of the hydrogeological assessment needs to be finalised in consultation with the Department of Water and Sanitation (DWS), the Western Cape Department of Agriculture, CapeNature, irrigation boards and water user associations whose members rely on groundwater in the G30B, G30C, G30D and G30E quaternary catchments.

6.4 Mining-related impacts on biodiversity

The Applicant needs to demonstrate how it proposes complying with its Duty of Care towards the environment (NEMA section 28) with respect to the purpose and management objectives of:

- Protected Environments;
- Threatened ecosystems;
- Ramsar wetlands;
- CBAs;
- Freshwater Ecosystem Priority Areas; and
- Ecological Support Areas.

The same applies to the national environmental management principles insofar as they relate to the primacy of promoting human health and wellbeing in environmental management, the mitigation hierarchy, ecosystem conservation, the precautionary principle and the need for specific management measures to deal with environmental impacts affecting vulnerable, highly dynamic and sensitive ecosystems.

Further, the respective biodiversity assessments must be based on:

- The terms of reference for terrestrial (Appendix 3) and aquatic (Appendix 4) impact assessments provided by the *Fynbos Forum Ecosystem Guidelines for Environmental Assessment in the Western Cape* (Cadman (Ed), 2016);
- DEADP's *Guideline for involving biodiversity specialists in EIA processes* (Brownlie, 2005); and

– The IAIA guideline on *International Best Practice Principles for Biodiversity and Ecosystem Services in EIA* (Brownlie *et al.*, 2018) should also be closely consulted in order to ensure that scoping and impact assessment for this mining application correspond with international best practice.

We trust that these concerns will be objectively reported and that you will provide substantive, actionable responses to these comments (i.e. please avoid using 'none' as a substitute for a reasoned response).

Yours sincerely

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Louis Wessels
Bestuurder: Regsdienste en Administrasie / Manager: Legal Services and Administration

louis@awk.co.za +27 (0) 82 686 2618

Markstraat 11 Market Street, Paarl, 7646
Posbus / PO Box 227, Paarl, 7620
Tel / Phone: +27 (0) 21 860 3802
Faks / Fax: +27 (0) 86 512 8554

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DRAFT SCOPING REPORT COMMENTS

BARETTA, G

5 February 2019
Gretchen Baretta
4 Avenue de Mist
Rondebosch
7700
baretta@telkomsa.net

TO: Christine Fouche

Greenmined Environmental (Pty) Ltd
Unit MO1 Office No 36
AECI Site Baker Square
Paardevlei
De Beers Avenue
Somerset West
7130

Christine.f@greenmined.co.za

COMMENTS: DRAFT SCOPING REPORT FOR PUBLIC COMMENT WITH REGARDS TO MINING RIGHT APPLICATION BY BONGANI MINERALS (PTY) LTD OVER PORTION 6 (REMAINING EXTENT) OF THE FARM NAMAQUASFONTEIN, PORTION 1 OF THE FARM PIKETBERG RD AND PORTION 21 OF THE FARM NAMAQUASFONTEIN, SWARTLAND DISTRICT, WESTERN CAPE PROVINCE

I Gretchen Baretta would like to take this opportunity to object to the abovementioned mining right application lodged by Greenmined on behalf of Bongani Minerals.

Basis for objecting:

- I do believe that the intrinsic value of the unspoilt ecosystem and its biodiversity is surely more valuable to the Western Cape than a short-term mine that will alter the landscape for ever?" or "while the mine might provide short term economic gain for some, it will undoubtedly destroy this unique and threatened area and leave the Western Cape ecologically poorer in the long term

Further environmental concerns:

- Certain properties under consideration for this mining right application form part of the recently designated Moutonshoek Protected Environment. Other properties forming part of the application are directly adjacent to and bordering on the Protected Environment. The area's natural heritage and ecological sensitivity is part of the reason for this declaration as a Protected Environment.
- The area contains a number of threatened vegetation types, also part of its reason for declaration as a Protected Environment. These vegetation types include include: Critically

Endangered Swartland Shale Renosterveld, Piketberg Quartz Succulent Shrubland which qualifies as Critically Endangered according to the latest analysis conducted by CapeNature (only 11.7% of its original very small extent is remaining), Critically Endangered Cape Lowland Alluvial Vegetation, Endangered Leipoldtville Sand Fynbos, Vulnerable Piketberg Sandstone Fynbos, and Cape Lowland Freshwater Wetlands. These vegetation types are not only threatened in themselves, but provide essential habitat for a range of biodiversity present in this area. The presence of critically endangered vegetation types alone should preclude any mining developments from this area.

- The Moutonshoek Valley is estimated to supply 60% of the water volume and 90% of the water quality to the Verlorenvlei Estuary, which is listed as an Important Bird and Biodiversity Area and a Ramsar site, or wetland of international significance. The area is already highly water-stressed and the development of a mine will ultimately lead to the collapse of the freshwater and estuarine ecosystems within this area.
- The Moutonshoek Valley, including those sites indicated in the mining right application, contain the endangered fish species the Verlorenvlei Redfin (*Pseudobarbus verloreni*), previously undescribed, and genetically different from the Berg River Redfin (*Pseudobarbus burgi*). Cape Galaxias (*Galaxias zebratus*) and Cape Kurper (*Sandelia capensis*), both classified as Near Threatened, also occur within the river systems of this area.
- The Moutonshoek Valley supports several threatened bird species including, Ludwig's Bustard, Black Stork, Black Harrier and Secretary Bird. In addition the Verlorenvlei system of which the valley forms part supports globally threatened species such as Lesser Flamingo, Black Harrier, African Black Oystercatcher and Chestnut-banded Plover. Nationally threatened species include Caspian Tern, Great White Pelican, Greater Flamingo, African Marsh-Harrier and Ludwig's Bustard. Endemic species include Cape Spurfowl, Cape Bulbul and Southern Black Korhaan.
- The conservation of the above species and the Verlorenvlei Estuary is an obligation for South Africa as a signatory to the Convention on Biological Diversity, Convention on Migratory Species and African-Eurasian Waterbird Agreement. The commitments to these multilateral environmental agreements and the impact of the mining activities on these species and habitats must be taken into account.
- The scoping report states that *The RAMSAR status of Verlorenvlei takes president and accordingly directs the mining project proposal* (Table 2. Applicable legislation). If the applicant wishes to honour this statement, due to the Ramsar status, the mining applicant should be required to prove that all water flows to Verlorenvlei are maintained and even improved by the mining activities, whilst also not impacting on the water volumes available to agriculture. The detailed hydrological modelling study should provide clear evidence of the maintenance of water flows and improvements to water quality.

Further social concerns:

- The area provides essential job security to local communities through the agricultural production in the area, and also food security and economic opportunities through the production of wine, potatoes, race horses and citrus.
- The Scoping Report states that *the proposed labour component of the operation is approximately 211 employees including management.* (Page 26; Draft Scoping Report).

- While this figure is not insignificant, we await the outcomes of the socio-economic evaluation as it must be determined how many jobs will be AT RISK or LOST in the local agricultural sector as a result of the mining development. Further, the loss of potable water will lead to a decline in agricultural productivity and a loss of jobs throughout the entire Verlorenvlei catchment. We require a detailed study of these impacts which clearly illustrates the degree of threat to livelihoods associated with the agricultural sector in this area.

Kind regards,

Gretchen Baretta

DRAFT SCOPING REPORT COMMENTS

BIRDLIFE OVERBERG

25 January 2019
Dr Anton Odendal
Chairman - BirdLife Overberg
Box 256, Onrusrivier 7201
Email: birding@overberg.co.za

TO: Christine Fouche

Greenmined Environmental (Pty) Ltd
Unit MO1 Office No 36
AECI Site Baker Square
Paardevlei
De Beers Avenue
Somerset West
7130

Email: Christine.f@greenmined.co.za

COMMENTS: DRAFT SCOPING REPORT FOR PUBLIC COMMENT WITH REGARDS TO MINING RIGHT APPLICATION BY BONGANI MINERALS (PTY) LTD OVER PORTION 6 (REMAINING EXTENT) OF THE FARM NAMAQUASFONTEIN, PORTION 1 OF THE FARM PIKETBERG RD AND PORTION 21 OF THE FARM NAMAQUASFONTEIN, SWARTLAND DISTRICT, WESTERN CAPE PROVINCE

I, Anton Odendal object strongly to the abovementioned mining right application lodged by Greenmined on behalf of Bongani Minerals. I do so as Chairman of BirdLife Overberg, past Chairman of the Western Cape Birding Forum (representing all the bird clubs in the province) and having served on the Council of BirdLife South Africa for close on 20 years. Full endorsement of this objection will also be obtained from the members of BirdLife Overberg at our Annual General Meeting scheduled for 11 February 2019 and a quarterly meeting of the Western Cape Birding Forum scheduled for 2 March 2019. I will further to the best of my ability canvas opposition to this application through all like-minded individuals and organisations that I see fit.

Basis for objecting:

I agree in principle with the "further environmental concerns" described in the template below provided by the Advocacy Officer of BirdLife South Africa. It should however just be added that both the threatened Black Harrier and Southern Black Korhaan are dependent on Renosterveld habitats for their survival and that this itself makes the application questionable. Several ornithologists and bird-watching enthusiasts will probably object to this application and therefore my basis for objecting will not relate to conservation issues as such. The focus here is on the growing importance of birding tourism.

For many years I have been responsible for the marketing of the Western Cape Province as a top birding destination, to both domestic and international bird-watching fraternities. Brochures, information placards, birdfinder web pages and presentations have been developed in support of www.westerncapebirding.co.za – a quarter of the daily visitors to

this website are from overseas. Our clients and partners include Wesgrow, district and local municipalities and tourism offices, SANPARKS, CapeNature and private product owners. Internationally the birding tourism industry is one of the fastest growing tourism commodities. The Cape West Coast region attracts huge numbers of bird-watchers and Verlorenvlei (a recognised IBA and RAMSAR site) is one of the crown jewels in the region's birding portfolio. Many bird-watchers visit the site for an extended period and others stop over there when travelling between top birding sites such as the West Coast National Park and the Berg River estuary at Velddrif in the south and Lambert's Bay and the Olifant River estuary in the north. Several birds clubs visiting the Cederberg on weekend -, or longer outings have also included a visit to Verlorenvlei into their itineraries.

The economic benefits of bird-watchers visiting the region dare not be underestimated, both from direct financial benefits and job creation perspective. The proposed mining operations resulting from this application will certainly have a major negative and detrimental effect on birdlife both in the Moutonshoek Valley and at Verlorenvlei. The impact of this on local and regional tourism will be a disaster and this in itself should be enough reason to reject the application of mining rights out of hand.

Further environmental concerns:

- Certain properties under consideration for this mining right application form part of the recently designated Moutonshoek Protected Environment. Other properties forming part of the application are directly adjacent to and bordering on the Protected Environment. The area's natural heritage and ecological sensitivity is part of the reason for this declaration as a Protected Environment.
- The area contains a number of threatened vegetation types, also part of its reason for declaration as a Protected Environment. These vegetation types include: Critically Endangered Swartland Shale Renosterveld, Piketberg Quartz Succulent Shrubland which qualifies as Critically Endangered according to the latest analysis conducted by CapeNature (only 11.7% of its original very small extent is remaining), Critically Endangered Cape Lowland Alluvial Vegetation, Endangered Leipoldtville Sand Fynbos, Vulnerable Piketberg Sandstone Fynbos, and Cape Lowland Freshwater Wetlands. These vegetation types are not only threatened in themselves, but provide essential habitat for a range of biodiversity present in this area. The presence of critically endangered vegetation types alone should preclude any mining developments from this area.
- The Moutonshoek Valley is estimated to supply 60% of the water volume and 90% of the water quality to the Verlorenvlei Estuary, which is listed as an Important Bird and Biodiversity Area and a Ramsar site, or wetland of international significance. The area is already highly water-stressed and the development of a mine will ultimately lead to the collapse of the freshwater and estuarine ecosystems within this area.
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Galaxias (*Galaxias zebratus*) and Cape Kurper (*Sandelia capensis*), both classified as Near Threatened, also occur within the river systems of this area.

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- The conservation of the above species and the Verlorenvlei Estuary is an obligation for South Africa as a signatory to the Convention on Biological Diversity, Convention on Migratory Species and African-Eurasian Waterbird Agreement. The commitments to these multilateral environmental agreements and the impact of the mining activities on these species and habitats must be taken into account.
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- The Scoping Report states that *the proposed labour component of the operation is approximately 211 employees including management.* (Page 26 of the Draft Scoping Report).
- While this figure is not insignificant, we await the outcomes of the socio-economic evaluation as it must be determined how many jobs will be AT RISK or LOST in the local agricultural sector as a result of the mining development. Further, the loss of potable water will lead to a decline in agricultural productivity and a loss of jobs throughout the entire Verlorenvlei catchment. We require a detailed study of these impacts which clearly illustrates the degree of threat to livelihoods associated with the agricultural sector in this area.

Kindly note that a more comprehensive and detailed motivation could be produced for the "Basis for Objecting" described briefly in this objection. The presentation of a PowerPoint talk in this regard can also be considered if required.

Kind regards,

Anton

Dr. Anton Odendal

Chairman BirdLife Overberg

Manager: CleanMarine campaign

Email: birding@overberg.co.za

Manager: www.westerncapebirding.co.za

(c): +27 82 550 3347

DRAFT SCOPING REPORT COMMENTS

BIRDLIFE SOUTH AFRICA

BirdLife South Africa is a partner of BirdLife International, a global partnership of nature conservation organisations.
Member of IUCN (International Union for Conservation of Nature).
Reg No: 001 – 298 NPO
PBO Exemption No: 930004518

04 February 2019

TO: Christine Fouche

Greenmined Environmental (Pty) Ltd
Unit MO1 Office No 36
AECI Site Baker Square
Paardevlei
De Beers Avenue
Somerset West
7130

By email: Christine.f@greenmined.co.za

RE: Application for mining of tungsten in the Moutonshoek Valley on portions 1 of Farm 297 and portions 6 and 21 of Farm Namaquasfontein No. 76 – Background Information Document.

BirdLife South Africa would like to take this opportunity to object to the abovementioned mining right application lodged by Greenmined on behalf of Bongani minerals.

Procedural concerns:

Process followed in obtaining a Prospecting Right:

- The scoping report states that *the Applicant held a prospecting right (WC 30/5/1/1/2/10197 PR) over the proposed mining right application area for tungsten (W) ore, molybdenum (Mo) ore, rare earths, copper ore, zinc ore, gold ore and silver ore that lapsed in December 2018.*
- The prospecting right would have therefore been awarded in December 2013, and public consultation would have taken place in the months prior to this.
- It is apparent that conservation agencies and NGOs with a long standing interest in the area were not consulted with in the process, which raises procedural concerns with the process followed and questions the legal basis on which the prospecting right was awarded.
- BirdLife South Africa has requested that Bongani Minerals furnish us with a copy of the Prospecting Right and a record of the public participation process followed in the process of applying for the Right, however this has not been forthcoming. Should you not provide us with this information we will be forced to submit a PAIA request to DMR in order to obtain the documents?

- We also question whether sufficient prospecting actually took place in order to plan a mine and adequately account for environmental and social impacts in the EIA phase. Without a detailed understanding of the ore body and location of mining operations, it will not be possible to properly understand environmental impacts and how these could be avoided or mitigated. We request that Bongani Minerals provides I&AP's with evidence of sufficient prospecting having taken place in order to plan this mine and proceed with the Environmental Impact Assessment phase.

The declaration of the Moutonshoek Protected Environment:

- The applicant is aware of the proposed mining area being within the Moutonshoek Protected Environment.
- As required by by Section 33 of the National Environmental Management: Protected Areas Act 57 of 2003, a full public participation process was undertaken prior to the declaration of the Moutonshoek Protected Environment. The process was initiated on 15 January 2016 and advertised in the Provincial Gazette and the provincial notice was published in two national newspapers, as is required
- In addition, as required by Section 32 of the National Environmental Management: Protected Areas Act 57 of 2003, all of the necessary state departments were consulted and notified of the public participation process. These included the national Minister of Environmental Affairs, the Department of Mineral Resources, the Department of Water Affairs and Forestry, the Department of Environmental Affairs and Development Planning, South African Heritage Resources Agency, the Department of Agriculture, Berg River Municipality, the Regional Land Claims Commission and the South African National Biodiversity Institute.
- No comments were received from the Department of Mineral Resources in relation to this matter.
- The Moutonshoek Protected Environment was also presented by CapeNature officials to the Department of Environmental Affairs and Department of Mineral Resources Joint Planning Task Team on 29 September 2017. There were no objections received from the DMR at that meeting and the area was approved for Protected Environment status.
- There were no objections received during the public participation process and subsequently after getting all landowners of the Landowner Association to sign their notarial agreements and Memorandum of Agreements the Protected Environment was declared on 20 April 2018 with an erratum notice published on 25 May 2018 given that page 2 of the property list was omitted in the original declaration notice.

- The applicant therefore had ample opportunity to engage in the process of declaring the Protected Environment and oppose this if they were to see fit.
- The application should therefore be aware that mining is not permissible within the area, without the approval of the national Environmental Ministry. The protected status of Moutonshoek Valley should make the project a no go for this area.

Environmental concerns:

- Certain properties under consideration for this mining right application form part of the recently designated Moutonshoek Protected Environment. Other properties forming part of the application are directly adjacent to and bordering on the Protected Environment. The area's natural heritage and ecological sensitivity is part of the reason for this declaration as a Protected Environment.
- The area contains a number of threatened vegetation types, also part of its reason for declaration as a Protected Environment. These vegetation types include include: Critically Endangered Swartland Shale Renosterveld, Piketberg Quartz Succulent Shrubland which qualifies as Critically Endangered according to the latest analysis conducted by CapeNature (only 11.7% of its original very small extent is remaining), Critically Endangered Cape Lowland Alluvial Vegetation, Endangered Leipoldtville Sand Fynbos, Vulnerable Piketberg Sandstone Fynbos, and Cape Lowland Freshwater Wetlands. These vegetation types are not only threatened in themselves, but provide essential habitat for a range of biodiversity present in this area. The presence of critically endangered vegetation types alone should preclude any mining developments from this area.
- The Moutonshoek Valley is estimated to supply 60% of the water volume and 90% of the water quality to the Verlorenvlei Estuary, which is listed as an Important Bird and Biodiversity Area and a Ramsar site, or wetland of international significance. The area is already highly water-stressed and the development of a mine will ultimately lead to the collapse of the freshwater and estuarine ecosystems within this area.
- The Moutonshoek Valley, including those sites indicated in the mining right application, contain the endangered fish species the Verlorenvlei Redfin (*Pseudobarbus verloreni*), previously undescribed, and genetically different from the Berg River Redfin (*Pseudobarbus burgi*). Cape Galaxias (*Galaxias zebratus*) and Cape Kurper (*Sandelia capensis*), both classified as Near Threatened, also occur within the river systems of this area.
- The Moutonshoek Valley supports several threatened bird species including, Ludwig's Bustard, Black Stork, Black Harrier and Secretary Bird. In addition the Verlorenvlei system of which the valley forms part supports globally threatened species such as Lesser Flamingo, Black Harrier,

African Black Oystercatcher and Chestnut-banded Plover. Nationally threatened species include Caspian Tern, Great White Pelican, Greater Flamingo, African Marsh-Harrier and Ludwig's Bustard. Endemic species include Cape Spurfowl, Cape Bulbul and Southern Black Korhaan.

- The conservation of the above species and the Verlorenvlei Estuary is an obligation for South Africa as a signatory to the Convention on Biological Diversity, Convention on Migratory Species and African-Eurasian Waterbird Agreement. The commitments to these multilateral environmental agreements and the impact of the mining activities on these species and habitats must be taken into account.
- The scoping report states that *The RAMSAR status of Verlorenvlei takes president and accordingly directs the mining project proposal* (Table 2. Applicable legislation). If the applicant wishes to honour this statement, due to the Ramsar status, the mining applicant should be required to prove that all water flows to Verlorenvlei are maintained and even improved by the mining activities, whilst also not impacting on the water volumes available to agriculture. The detailed hydrological modelling study should provide clear evidence of the maintenance of water flows and improvements to water quality.

Social concerns:

- The area provides essential job security to local communities through the agricultural production in the area, and also food security and economic opportunities through the production of wine, potatoes, race horses and citrus.
- The Scoping Report states that *the proposed labour component of the operation is approximately 211 employees including management.* (Page 26; Draft Scoping Report).
- While this figure is not insignificant, we await the outcomes of the socio-economic evaluation as it must be determined how many jobs will be AT RISK or LOST in the local agricultural sector as a result of the mining development. Further, the loss of potable water will lead to a decline in agricultural productivity and a loss of jobs throughout the entire Verlorenvlei catchment. We require a detailed study of these impacts which clearly illustrates the degree of threat to livelihoods associated with the agricultural sector in this area.

BirdLife South Africa is a partner of BirdLife International, a global partnership of nature conservation organisations.
Member of IUCN (International Union for Conservation of Nature).
Reg No: 001 – 298 NPO
PBO Exemption No: 930004518

Please contact us should you have any questions about this objection.

Kind regards,

JWBooth

Jonathan Booth
Advocacy Officer

Isdell House, 17 Hume Road
Dunkeld West, Gauteng 2196
Private Bag X5000, Parklands
Johannesburg, Gauteng 2121, South Africa
Tel: +27 (0)11 789 1122
Fax: +27 (0)11 789 5188
Email: info@birdlife.org.za
www.birdlife.org.za

Christine Fouche

From: Lindsay Curran <lindsay@vivaline.co.za>
Sent: 12 February 2019 17:15
To: Christine Fouche
Subject: RE:
Attachments: Moutonshoek Protected Environment Management Plan 2018.pdf

Dear Christine,

As a representative of the ratepayers community of Elands Bay (EBRA) and a member of the Elands Bay Environmental and Development Action Group (EBEDAG), we hereby wish to stongly object to any mining activity and development in the Moutonshoek valley which may affect the quality of the environment of the area which includes the major and minor rivers that feed into the Verlorenvlei.
The Vlei is a RAMSAR protected area and is the major tourist attraction in the region. Over 150 bird species rely on the quality of water in the vlei. This diverse range of birdlife are part of an international ecosystem. The vlei is on the flight path of birds that commute between the Cape and Europe. In addition, the estuary of the vlei is the breeding ground for a whole range of fish.
If this national asset was ever affected by any slight pollution then the balance of minerals in the vlei would negatively affect fauna and flora, bird and animal like as well as fish stocks.
If this mining was to go ahead, then quality of water in the vlei would turn it into a cesspit of sludge and chemicals, the bird life would disappear and tourism would be gone. Fish stock would not be replenished and the local west coast fishing stocks would not be replenished.
To validate our claims we submit a copy of the Moutonshoek Protected Environment Plan.
We direct you to the number of interested and affected parties that are involved in this plan.

Please confirm receipt of these comments and that they were received on Tuesday 12th February 2019.
Many thanks

Yours Sincerely
Lindsay Curran
P O Box 5710
Helderberg
7130

From: Christine Fouche <Christine.F@greenmined.co.za>
Sent: Wednesday, 06 February 2019 11:28
To: Lindsay Curran <lindsay@vivaline.co.za>
Subject: RE:

Dear Me Curran

Greenmined Environmental (Pty) Ltd (hereinafter referred to as “Greenmined”) would like to thank you for your interest and herewith acknowledge receipt of your objection dated 5 February 2019 with regards to the mining right application (WC 30/5/1/2/2/10110 MR) submitted on behalf of Bongani Minerals (Pty) Ltd.

Greenmined, on behalf of the applicant, registered you as an interested and affected party (I&AP) on the project, and will henceforth keep you posted on the progress of the Environmental Impact Assessment (EIA) process, as well as provide you with an opportunity to comment on the EIA documentation. Your concerns were noted, will be included in the Final Scoping Report and assessed in the Draft Environmental Impact Assessment Report.

Moutonshoek Protected Environment

Western Cape, South Africa

Management Plan

Prepared by
BirdLife South Africa – Verlorenvlei Protected Areas Project

Citation
Moutonshoek Protected Environment: Management Plan. Version 1.0. 2018. S Schroder, P Huntly, D Wright

AUTHORISATION

This Integrated Management Plan for the Moutonshoek Protected Environment was drafted and recommended by the *Moutonshoek Landowners Association.*

Supported by:
CapeNature Conservation Services
BirdLife South Africa

Recommended and adopted by:

Name and Title	Signature and Date
Management Authority *Moutonshoek Landowners Association*	
CapeNature Area Manager *Insert Name*	

Approved by:

Name and Title	Signature and Date
Mr Anton Bredell Minister of Local Government, Environmental Affairs and Development Planning	

Review Date: (5 years from date of approval)

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS

BLSA	BirdLife South Africa
CAPE	Cape Action Plan for the Environment
CBA	Critical Biodiversity Area
CEO	Chief Executive Officer
CSIR	Council for Scientific and Industrial Research
DEA&DP	Department of Environmental Affairs and Development Planning
DEA	Department of Environmental Affairs
DAFF	Department of Agriculture, Forestry and Fisheries
DWS	Department of Water and Sanitation
EBEDAG	Elands Bay Environmental and Development Action Group
EIA	Environmental Impact Assessment
EMF	Environmental Management Framework
EMP	Environmental Management Plan
FEPA	Freshwater Ecosystem Priority Area
FPA	Fire Protection Association in terms of the National Veld and Forest Fire Act (No.1 of 1998)
FSP	Fine Scale Planning
GCBC	Greater Cederberg Biodiversity Corridor
GIS	Geographical Information System
IBA	Important Bird and Biodiversity Area
IDP	Municipal Integrated Development Plan
IUCN	International Union for the Conservation of Nature
LUMS	Land Use Management Systems
MCM	National Department of Marine and Coastal Management
MEC	Member of the Executive Council
MLOA	Moutonshoek Land Owners' Association
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MPE	Moutonshoek Protected Environment
NEMA	National Environmental Management Act
NFEPA	National Freshwater Ecosystem Priority Area
NPAES	National Protected Area Expansion Strategy
NSBA	National Spatial Biodiversity Assessment
PE	Protected Environment
SAHRA	South African Heritage Resources Agency
SOB	State of Biodiversity Report
SDF	Municipal Spatial Development Framework
SMME	Small, Micro and Medium Enterprises
SMP	Strategic Management Plan
SWOT	Strengths, weaknesses, opportunities and threats analysis
UNESCO	United Nations Educational, Scientific and Cultural Organisation
VEAF	Verlorenvlei Estuary Advisory Forum
WESSA	Wildlife and Environment Society of South Africa

WfW	Working for Water
WfWet	Working for Wetlands
WWF	World Wildlife Fund

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 landowners through to support staff within CapeNature and / or the actions of conservation NGOs. The purpose of the management plan is to:

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

1.2 Structure of the plan

Section 1:	Provides an introduction and background to the management plan and the Moutonshoek Protected Environment.
Section 2:	Sets out the vision and objectives for the Moutonshoek Protected Environment
Section 3:	Establishes the context of the Moutonshoek Protected Environment, providing the basis for the operational management framework that follows.
Section 4:	Sets out the zonation of the Moutonshoek Protected Environment, outlining the land uses in particular zones.
Section 5:	Describes the administrative structure that has been established for the Moutonshoek Protected Environment.
Section 6:	Operational Management Framework - Sets out the management targets that must be achieved in managing the Moutonshoek Protected Environment.
Section 7:	Annual Plan of Operation and Review

1.3 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.

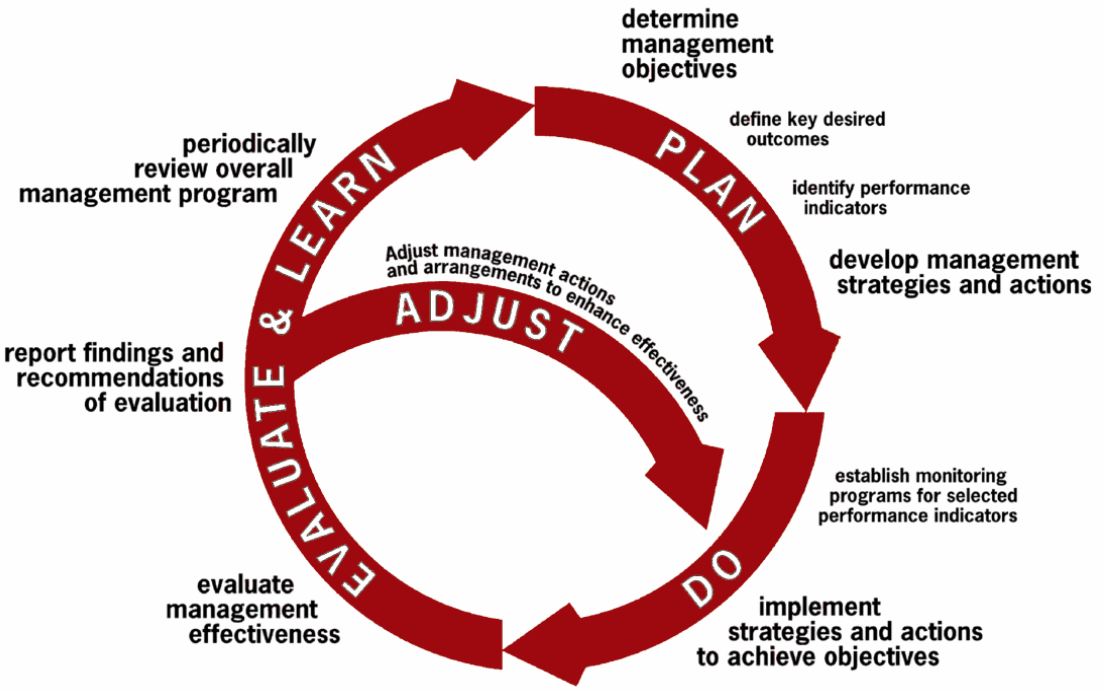

Figure 1.1 The adaptive management cycle (Management Strategy Evaluation, 2009)

Adaptive management enables landowners and managers to:

i) Learn through experience.

ii) Take account of, and respond to, changing factors that affect the Moutonshoek Protected Environment

iii) Develop or refine management processes.

iv) Adopt best practices and new innovations in biodiversity conservation management.

v) Demonstrate that management is appropriate and effective.

1.4 Introduction

All properties are located within the area of jurisdiction of the Berg River Municipality as the local authority. The site is approximately 60 km north of Piketberg within the Krom Antonies River Valley (also known as the Moutonshoek Valley). The nearest railway siding is Hetkruis located 5km to the north. The R366 is located approximately 2km north of the site and the N7 is located approximately 20 km to the east. The site is on the western slopes of the Piketberg Mountains between Piketberg and Elandsbaai, in the Western Cape.

The following threatened vegetation types occur within the protected environment namely; Swartland Shale Renosterveld (CE), Swartland Silcrete Renosterveld (CE), Leipoldtville Sand Fynbos (VU), Piketberg Sandstone Fynbos (VU), Piketberg Quartz Succulent Shrubland (VU) according to the Threatened Terrestrial Ecosystems for South Africa.

The CAPE Fine Scale Planning Critical Biodiversity Areas (CBAs) show that portions of the Moutonshoek valley and the Krom Antonies River as a whole have been identified as critical ecological support areas and buffers, and aquatic CBA and buffers respectively. This is a priority area due to future development threats, and presence of threatened vegetation types which are not currently in a protected area. Additionally, the area is of importance as the primary water catchment for the Verlorenvlei Estuary, a Ramsar site and an IBA.

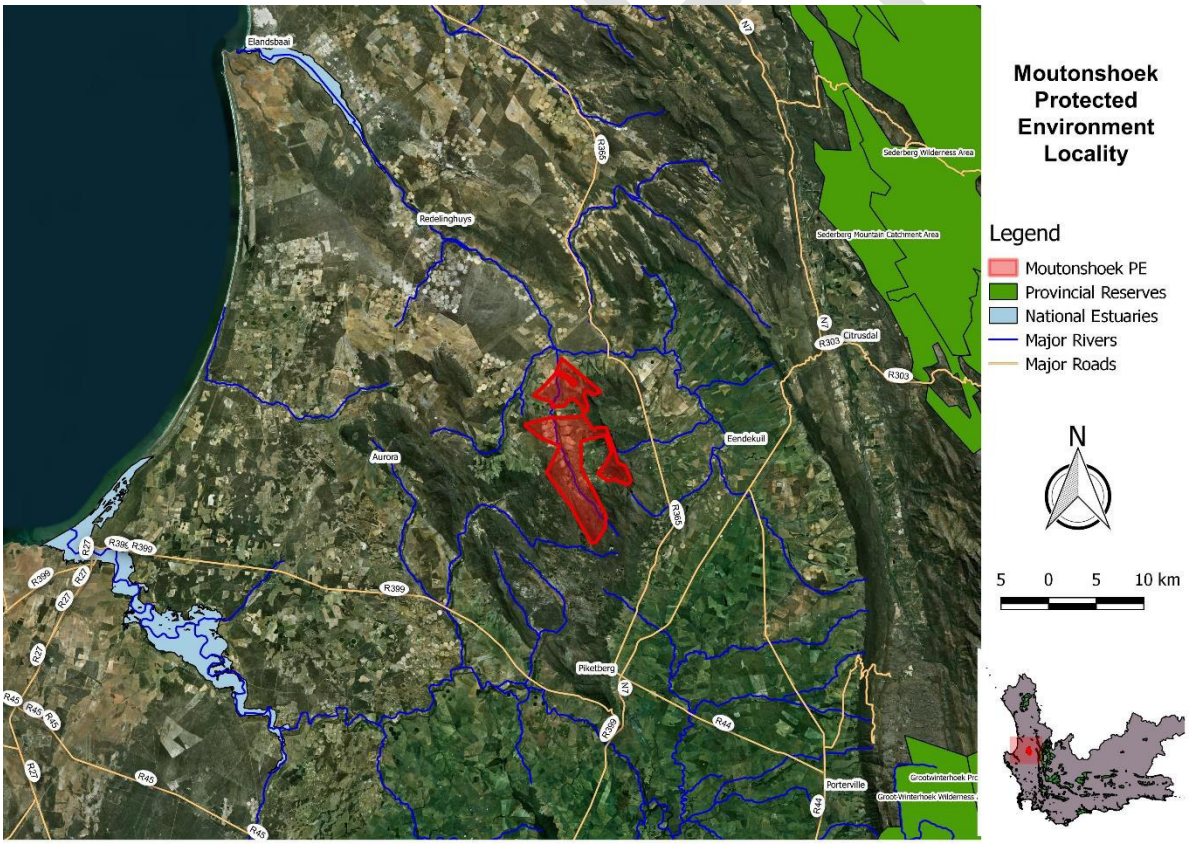

Figure 1.2 Regional location of Moutonshoek Protected Environment

1.5 The values of Moutonshoek Protected Environment

The values of a site are those remarkable attributes that led to it being identified as a priority for the Biodiversity Stewardship Programme. The values are important in planning and management, as they are the aspects of the place that must be protected. The values of Moutonshoek Protected Environment include:

Natural values	Vegetation types of conservation importance in the area include: Swartland Shale Renosterveld (CE), Swartland Silcrete Renosterveld (CE), Leipoldtville Sand Fynbos (VU), Piketberg Sandstone Fynbos (VU), and Piketberg Quartz Succulent Shrubland (VU) according to the Threatened Terrestrial Ecosystems for South Africa (2011). Piketberg Quartz Succulent Shrubland (VU) in small patches along the Krom Antonies River, Cape Lowland Freshwater Wetlands (LT) and Graafwater Sandstone Fynbos (LT). CAPE FSP Critical Biodiversity Areas: Portions of the Moutonshoek valley and the Krom Antonies River as a whole have been identified as critical ecological support areas and buffers, and aquatic CBA and buffers respectively. Specific species of conservation importance are listed in Appendix C.
Ecosystem service values	Purification and Detoxification: filtration, purification and detoxification of air, water and soils; Cycling Processes: nutrient cycling, nitrogen fixation, carbon sequestration, soil formation; Regulation and Stabilisation: erosion control, regulation of rainfall and water supply, climate regulation, mitigation of storms and floods; Habitat Provision: refuge for animals and plants, storehouse for genetic material. Pollination services. Provisioning: the Moutonshoek is major water catchment area for downstream users and ecosystems which includes Verlorenvlei, a Ramsar listed wetland of international importance and an IBA
Cultural and historic values	The area is historically rich in terms of cultural heritage, dating back to the stone age, evidence of which can be seen in numerous deflation hollows containing stone implements and rock art.
Socio-Economic values	Contribution to the local economy through job creation and recreational experiences.

1.6 Summary of management challenges and opportunities

Table 1.6.1 Management challenges and opportunities

Key performance area	Challenges and Opportunities
Fire management	Fires that occur outside the area, moving into the valley. There is an existing FPA of which most landowners are already members.
Invasive vegetation management	Controlling the spread of invasive vegetation and the cost involved. Access to herbicide is a long and complicated application process. Herbicide is available from Department of Agriculture and there are Working for Wetland programs in the area.
Wildlife management	The protection of indigenous animals, specifically Cape Leopard and the removal of invasive species. Cape Nature and Cape Leopard Trust are available to assist.
Sustainable harvesting	Monitoring the harvesting of wild Rooibos, buchu and wild flowers in the mountainous area subject to approval from Cape Nature. Management and Harvesting Protocol is available.
Erosion prevention and control	Need to prevent and control all forms of erosion especially along the river banks.
Monitoring and baseline data collection	Lack of baseline data, especially with regards to water and biodiversity resources
Biodiversity security	Loss of habitat due to agricultural expansion.
Development of tourism opportunities	Current lack of tourism activities. There are, opportunities for a range of tourism activities within the Protected Environment.
Legal compliance	Lack of an onsite law enforcement official. Good working relationships with SAPS and CapeNature to assist with law enforcement.
Management effectiveness	Will need an active Landowners Association. Up skilling of landowners will be needed to ensure effective management.
Infrastructure	Most current infrastructure is in use by the landowners and maintained.

2) 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 five-year period. It consists of the vision, purpose and objectives of the Moutonshoek Protected Environment. It has been prepared collaboratively through a process involving the Moutonshoek Landowners Association (Management Authority), BirdLife South Africa's Project Manager, and CapeNature.

2.1 Moutonshoek Protected Environment Vision and Purpose

The Vision

"Our vision is to ensure the long-term protection of the site through appropriate management actions. The management of Moutonshoek Protected Environment will strive to continually improve all aspects of the way in which the protected environment is managed - environmentally, socially and economically."

Purpose

The purpose is the foundation on which all future actions are based and is in line with the overall management philosophy of the protected environment.

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

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

Moutonshoek Protected Environment serves in the protection of South Africa's threatened and rare species, provides protection to ecosystems and preserves ecological integrity. Benefits of appropriate nature based economic activities may be utilised to promote human, social, cultural and economic development, while protecting ecosystems that are vulnerable and ecologically sensitive.

2.2 Objectives

The objectives were derived from the vision and purpose and are grouped into Key Performance Areas (KPA) in which achievement must be obtained in order to support the management intention. Objectives are then prioritised through the development of action plans which are set out in the Operational Management Framework.

Table 2.1 sets out the key performance areas, the objective for each key performance area and the key deliverables, required to realise the objectives.

Table 2.1 Objectives and Key Deliverables for Moutonshoek Protected Environment

Key Performance Area	Objective	Key Deliverable
Biodiversity Management		
Fire management	To ensure the conservation of species and processes by maintaining and improving ecosystem functioning. To allow for natural fire processes to occur without impacting on safety and infrastructure.	Reduce/Prevent the Spread of Fires. Maintain Partnerships to Improve Fire Management. Determine and Implement Thresholds of Potential Concern. Reduce Wildfires due to Human Negligence and implement an ecological burn programme (if applicable).
Catchment Management	To implement effective Integrated Catchment Management.	Active integration with the Water Users Association to improve Catchment Management.
Invasive vegetation management	To enhance biodiversity protection and conservation. To ensure conservation of species and processes by maintaining and improving ecosystem functioning.	Eradicate Alien and Invasive Species. Implement Biological Control. Prevent further Introduction of Alien species.
Wildlife management	To ensure effective conservation of species and processes by maintaining and improving ecosystem functioning. To enhance biodiversity protection and conservation.	Prevent the introduction of alien fauna species. Control invasive alien fauna. Manage the introduction of fauna on the Protected Environment. Evaluate and monitor impact of fauna on the Protected Environment.
Sustainable harvesting	To ensure the sustainable use of wild fynbos resources. To ensure the conservation of biodiversity where harvesting operations occur. To monitor the impact of harvesting on selected fynbos species.	Identify Management Zones. Classify Floral Species according to Vulnerability Index. Minimise Harvesting Impact. Monitoring and Record Keeping. Compliance with Relevant Legislation.

Erosion prevention and control	To ensure implementation of effective conservation management interventions. To enhance biodiversity protection and conservation.	Prevent and mitigate soil erosion. Restoration of soil erosion sites.
Monitoring and baseline data collection	To manage biodiversity knowledge to ensure effective conservation management. To implement measures to ensure resilience and persistence of biodiversity in light of climate change. To ensure the implementation of effective conservation management interventions. To ensure conservation of species and processes by maintaining and improving ecosystem functioning.	Create a Biodiversity Resource Inventory. Implement Monitoring Programme. Implement Research Programme. Protection of Flora of Conservation Concern. Conservation of Threatened and Endemic Fauna. Manage consumptive utilisation of biological resources. Insert Ecological plan of Operation into CapeNature Conservation Services Ecological Matrix for the Area.
Biodiversity security	To enhance biodiversity protection and conservation. To ensure conservation of species and processes by maintaining and improving ecosystem functioning.	Improved security and safety of the biodiversity assets on the Protected Environment.
Development		
Development of tourism opportunities	To evaluate potential tourism opportunities. To implement effective management systems. To ensure legal compliance and implementation of authorised development plans.	Development of tourism opportunities that generate revenue for the Protected Environment.
Operational Management		
Legal compliance	To ensure legal compliance to all relevant legislation and policies.	Ensure that all legal requirements are met.
Management effectiveness	To implement effective management systems.	Conduct annual audits. Auditing systems inform management and management plan revision.
Infrastructure	To ensure the implementation of effective management interventions.	All infrastructure on the Protected Environment is adequately maintained.

3) DESCRIPTION OF MOUTONHOEK PROTECTED ENVIRONMENT AND ITS CONTEXT

3.1 The legislative basis for the management of Moutonshoek Protected Environment

There is a large body of legislation that is relevant to the management of Moutonshoek Protected Environment, 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.

In the Western Cape, CapeNature is the Provincial Conservation Authority and its Biodiversity Stewardship Programme facilitates the establishment and management of protected areas on private land.

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

3.1.1 Proclamation status of Moutonshoek Protected Environment

Moutonshoek Protected Environment is proclaimed under Section 28 (1) of the National Environmental management: Protected Areas Act (Act 57 of 2003). See Appendix B.

3.1.2 Invasive species control in terms of the Biodiversity Act

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. This is addressed in Sections 6 and 8 below.

3.2 The regional and local planning context of Moutonshoek Protected Environment

3.2.1 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 CapeNature Protected Area Expansion Strategy addresses the formal proclamation of priority natural habitats as protected areas to secure biodiversity and ecosystem services for future generations. This strategy is aligned to the concepts and goals of the 2008 NPAES, but does identify some different spatial priorities.

The Moutonshoek Protected Environment is located within a listed threatened ecosystem and has been delineated as part of the CAPE Fine Scale Planning which includes an Aquatic CBA (Critical Biodiversity Area and Critical Biodiversity Area Buffer) and a Terrestrial CBA (Critical Biodiversity Area). The Moutonshoek Protected Environment site occurs within a planned Biodiversity Area within the West Coast SDF.

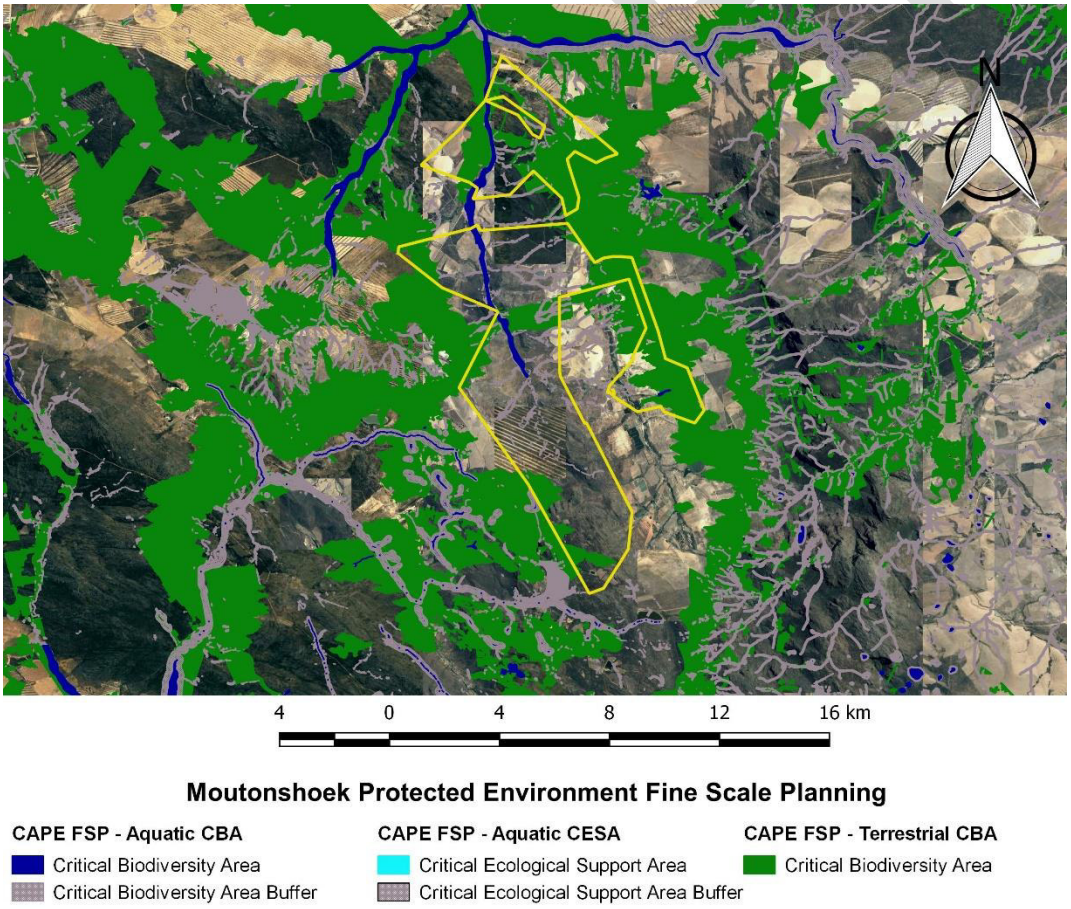

Figure 3.1 Critical Biodiversity Area map of Moutonshoek Protected Environment.

3.3 The history of Moutonshoek Protected Environment

The original farm was first given out as a loan farm in 1723 and was known as Namaquasfontein. The rent was £2 per year plus 10% of the profit. Due to the presence of a permanent water source, tenants began to settle in the area. The main agricultural practices were stock farming, and included the laying out of vegetable gardens and the sowing of wheat and rice. Later fruit trees were planted, in particular Citrus. Every head of a family, was issued a right to shoot one elephant, rhino, eland and a limited amount of small game per year.

The residents had to be self-reliant and had to rely upon one another extensively, which might clarify the following. Francois le Valliant, a French ornithologist who was travelling through the valley; said the inhabitants were so friendly, that he had to flee to be able to continue with his travels.

The first of the Smit family settled in the area in 1805. With the opening of the first school on the 1st of October 1891 in Moutonshoek, 24 of the 27 children were from Smit families.

3.4 Ecological context of Moutonshoek Protected Environment

This section reflects the ecological conditions of Moutonshoek Protected Environment.

3.4.1 Climate and weather

The West Coast climate is described by hot, dry summers, southerly winds and low rainfall. Strong southerly winds blow in spring and summer with strong north-westerly winds in winter. The Piketberg Mountain receives far more rain annually than the surrounding flats, although the flats alongside the Krom Antonies River generally benefit from the precipitation runoff. Piketberg Mountain is also generally a bit colder than the surrounding flats, while the soils on the mountain are also slightly less stressed for moisture over the year.

3.4.2 Topography

The Fynbos Biome is topographically diverse and this heterogeneity of habitats has been a major driving force in the creation of arguably the most diverse and unique of the temperate floras.

The gently undulating north/south valley-sides are well drained with streams that flow into the perennial Krom Antonies River in a trellis drainage pattern, indicating that the ground has a fairly uniform resistance to water.

3.4.3 Geology and soils

The Moutonshoek Protected Environment is bounded in the east, west and south by hills and mountains formed by quartzitic sandstones of the Table Mountain Super group, namely the Piekenier-, Graafwater- and Peninsula Formation (Belcher & Kisters, 2003 & Visser, 2009). Due to the high resistance to weathering, the Table Mountain Rocks builds up the topography and represents the highest peaks in the valley. The valley floor, which is overlain by unconsolidated alluvial and clay deposits, is composed out of the lithologies of the Malmesbury Group (Piketberg Formation), a low to medium-grade meta-sedimentary sequence alternating Chloride Schist, interbedded diverse calcareous rocks and altered marble (Rozendaal et al, 1994). The north-westerly trending faults in this basement induced the intruding of the Riviera Granite Pluton in at least one part of the valley (Rozendaal et al, 1994). The soils comprise 5 m to 20 m deep recent sandy to conglomeritic alluvial soil deposits in which colluvial quartzitic boulders, of Table Mountain Group origin (originating from the Piketberg Mountain complex) are found. These

alluvial soils sit over deeply weathered 1 m to 10 m of clay derived from *in situ* weathered Cape Granite which intruded metamorphosed Malmesbury Group substrate.

3.4.3.1 Soil interfaces

Where two soil types meet there is often a "tension zone". Different soils support different vegetation types and the meeting point of the vegetation types is known as an ecotone. The vegetation here is often a unique combination of both parent types. These ecotones are biologically important because they are often areas of active speciation. For this reason, disturbance in this zone must be avoided and it is preferable to buffer it with at least 30m of vegetation on either side.

3.4.4 Hydrology

The site is located in the Verloren River catchment. The study area includes several quaternary catchments that drain the major tributaries, namely:

- G30B - The Kruis River
- G30C - The Bergvallei River
- G30D - The Krom Antonies River which contains the proposed development, and the Hol River
- G30E - The Verlorenvlei River into which the above-mentioned tributaries flow.

Significant amounts of runoff are generated in the Krom Antonies River catchment. This small catchment produces a near natural mean annual runoff of 4.29 Mm/annum.

The flow in all the quaternary catchments, especially G30D and G30E is extremely seasonal with practically zero natural flow in the summer months. G30B and G30C experience a small but continuous low flow during the summer months (a mean monthly flow of 0.04 Mm^3 and 0.02 Mn^3 for February and March respectively).

The irrigation demand in this catchment can clearly not be met from surface water runoff as mean annual demand is more than double the mean annual runoff. While the irrigation demand is likely to be an overestimate, the irrigation shortfall indicates the substantial amount of irrigation that is supplied by groundwater.

The Krom Antonies River has a relatively low firm yield associated with a relatively large capacity as a result of the seasonality of flow (large winter spills) and high evaporation.

The Daily Flow Analysis at the Verlorenvlei Estuary shows that midsummer flow is mostly non-existent with zero flow occurring 90% of the time from February to April. The highest flows occur in August, when 10 m^3/s are exceeded 10% of the time.

3.4.5 Vegetation

The Cape Floristic Kingdom, one of six world floral kingdoms, is internationally renowned for its species 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).

The following vegetation types are recorded in the recent literature from the area namely, Swartland Shale Renosterveld, Leipoldtville Sand Fynbos, Piketberg Sandstone Fynbos, Piketberg Quartz Succulent Shrubland, and Cape Lowland Freshwater Wetlands.

All Swartland Shale Renosterveld areas are conservation priorities as they are "Critically endangered" nationally, but particularly important are the slopes around the northwest base of the Piketberg, which have produced a number of new species in the last few years.

The Leipoldtville Sand Fynbos vegetation type is classified as "Endangered" nationally, primarily as a result of it being heavily targeted for agriculture, as the deep, acid sandy soils are ideal for rooibos and potato cultivation. This vegetation type is exceptionally rich in special species, which is one of the primary reasons for concern about the high rate of habitat loss in the area. Given the exceptional concentration of rare, threatened and localised species in this unit, the ongoing and rapid transformation of this habitat by agriculture (along with the associated effects such as a drop in the water table, which can result in the death of entire groundwater dependant ecosystems) is of major national conservation concern, made worse by the fact that no formal conservation areas protect this vegetation type.

Most of the extent of the primarily montane vegetation type, namely Piketberg Sandstone Fynbos occurs outside the study area. Although classified nationally as "Least threatened" none is included in statutory conservation areas while only 4% occurs in private nature reserves, because overall transformation is low (17%).

Cape Lowland Freshwater Wetlands is a vegetation type found in a variety of different floodplain situations along major freshwater rivers (e.g. along the Verloren River). The topography is very flat, with silt-laden soils and occasional small depressions and flood channels, which may hold water into the dry season. It occurs above the level of tidal influence, and is usually seasonally inundated.

The lowland floodplains are not known to support many special plant species, but are of major importance for frogs and migratory birds. Verlorenvlei as a result has been listed as a Ramsar site and Important Bird and Biodiversity Area. All wetland areas are furthermore protected by the National Environmental Management Act (Act No. 107 of 1998) and by the Conservation of Agricultural Resources Act (Act No. 43 of 1983).

All activities must completely avoid the Piketberg Quartz Succulent Shrubland vegetation because of its extreme rarity and that river course modification without vegetation restoration is a recipe which encourages the dominance of alien invader species and causes dramatic movement of large volumes of sand during floods.

Swartland Shale Renosterveld

This vegetation type has also been called Coastal Renosterbosveld (Acocks 1953); West Coast Renosterveld (Acocks 1988, Low & Rebelo 1996) and Swartland Coast Renosterveld (Cowling & Heijnis 1999).

In the protected area, the Swartland Shale Renosterveld is present along the base of the Piketberg and in isolated patches where shales, shale derived clays and ferricretes are present at the surface, often along river banks and at the base of hills. It is restricted to the well-drained to seasonally waterlogged habitats. Heuweltjies (both active and eroded, inactive termite mounds) are commonly a feature.

The vegetation is a low, relatively open shrubland, with many deciduous elements. Succulents and annuals may be common, and geophytes are a particular feature of this unit, especially after fire.

Stunted trees are often associated with the heuweltjies. Restios may be present, but are never dominant. It is often very grassy in the first few years after a fire. This is usually a fire driven vegetation type.

Species diversity is high, and composition can be quite variable. Tall shrubs are common and succulents are conspicuous as are a few grasses. *Mohria caffrorum* is a very common fern. Bulbs are very common. Alien herbs and grasses can be a major problem, especially after fire.

Rare and threatened species are often recorded in the poorly documented Swartland Shale Renosterveld around the foothills of the Piketberg Mountain. All Swartland Shale Renosterveld areas are conservation priorities as they are "Critically endangered" nationally, but particularly important are the slopes around the northwest base of the Piketberg, which have produced a number of new species in the last few years.

Leipoldtville Sand Fynbos (Vegmap unit FFd 2)

The Leipoldtville Sand Fynbos vegetation type is classified as "Endangered" nationally primarily as a result of it being heavily targeted for agriculture, as the deep, acid sandy soils are ideal for rooibos and potato cultivation. Exposed rock is rare within this vegetation type, although there may be small sandstone inselbergs. The unit occupies the sandy coastal plain, plus areas of extensive, deep acid sands in the northern Swartland.

This is a medium to tall shrubland, with prominent Restionaceae, Proteaceae, Fabaceae (Aspalathus), Polygonaceae, relatively few succulents or deciduous species and many annuals.

Geophytes are fairly diverse, but not abundant. Indigenous trees are only present around sandstone outcrops.

This vegetation type is exceptionally rich in special species, which is one of the primary reasons for concern about the high rate of habitat loss in the area. Given the exceptional concentration of rare, threatened and localised species in this unit the ongoing and rapid transformation of this habitat by agriculture is of major national conservation concern, made worse by the fact that no formal conservation areas protect this vegetation type. Agricultural transformation, primarily for potatoes and rooibos, is by far the most important pressure on this habitat, along with the associated effects such as a drop in the water table, which can result in the death of entire groundwater dependant ecosystems.

No further transformation of good quality examples of this vegetation type should be authorised, unless offset by significant conservation gains, in accordance with the latest regional guidelines for biodiversity offsets (Department of Environmental Affairs and Development Planning 2007). These guidelines suggest that for every 1 ha of intact habitat lost at least 15ha of the same quality should be conserved. Overgrazing of certain areas is also a major problem, and alien invasive plants (primarily Acacia) are an issue in places, especially in wetlands. This is a fire driven system, but an appropriate fire frequency is likely to be once every 15-25 yrs, given the relatively dry climate and slow growth rates.

Piketberg Sandstone Fynbos (Vegmap Unit FFs 6)

As most of the extent of this primarily montane vegetation type occurs outside the study area, and in the interests of brevity, readers are referred to the account in Mucina & Rutherford (2006).

Piketberg Sandstone Fynbos is classified nationally as "Least threatened" although none is included in statutory conservation areas while only 4% occurs in private nature reserves, because overall transformation is low (17%). The erosion product from these sandstones is causal to the Cape Lowland Alluvial vegetation occurring in the Krom Antonies River valley.

Piketberg Quartz Succulent Shrubland (Vegmap Unit SKk 8)

This vegetation type is described from the farm Draaihoek between Piketberg and Eendekuil (eastern foothills of the Piketberg Mountain and also occurs near Het Kruis and Redelinghuys (north of Piketberg Mountain) as well as near Sauer at the south-western foot of Piketberg Mountain. It is clearly associated with quartzites in Malmesbury Group shales around the base of Piketberg Mountain.

The Piketberg Quartz Succulent Shrubland is a low relatively sparse shrubland dominated by a sturdy succulent undescribed *Sarcocornia sp*. (*S. mossiana* complex) and includes prostrate leaf succulents such as *Drosanthemum asperulum*, *D. zygop0hylloides*, *Diplosoma retroversum* and *Psilocaulon parviflorum*. An undescribed *Limonium sp*. is also present in this vegetation type. Geophytes present include *Albuca longipes*, *Drimia barkerae* and *Oxalis copiosa*.

None of this vegetation is located in a formal conservation area although the owner of Draaihoek Farm has left that on his property undisturbed. This vegetation is structurally and ecologically like that found on the Knersvlakte but is separated by a mountain range. This little-known vegetation occupies amongst the smallest area of any vegetation type in South Africa. It should be classified nationally as "Critically Endangered" because it occupies such a small area, yet the threat classification does not include this element.

Cape Lowland Freshwater Wetlands (Vegmap Unit AZf 1)

Synonyms for this vegetation type are floodplain; seepage areas; riparian vegetation.

This is a large category within the study area, found in a variety of different floodplain situations along major freshwater rivers (e.g. along the Verloren River) the topography is very flat, with silt-laden soils and occasional small depressions and flood channels which may hold water into the dry season. It occurs above the level of tidal influence, and is usually seasonally inundated.

The climate is not a major determinant of this vegetation type, although the winter floods are a function of the general climatic regime. Mid to late summer may see significant drying out of this habitat, but soil moisture levels are usually still high along the main rivers.

The floodplains mostly support a low grassy sedgeland and in occasional pools floating aquatics occur. Taller shrubs may occur on slightly better drained soils. Plant cover is generally high. Dense patches of *Typha capensis* and *Phragmites australis* regularly occur, usually in areas of permanent water.

On the floodplains, low to medium height sedges (< 0.4 m) are often dominant along with grasses, while reeds and bulrush are particularly common along the fringes of deeper waters. Halophytes may be present in slightly more brackish areas. Floating aquatics include waterblommetjies. Numerous alien invasive species are a feature, including red river gum, port jackson willow and other exotic legumes and even water hyacinth in the still areas of the more permanent deeper pools.

The lowland floodplains are not known to support many special plant species, but are of major importance for frogs and birds. The Verlorenvlei wetlands support an undescribed 3 m tall species of *Psoralea* that is endemic to the Sandveld, and is Red Data listed as Endangered.

This vegetation is often heavily grazed by cattle which trample vegetation if kept in an area for too long. It is prone to alien plant invasion, with everything from grasses to large trees being a problem. Channels dug into this habitat may divert water flow for agricultural uses, and in other cases may be designed to partly drain an area, both of which obviously have negative ecological consequences.

All wetland areas are protected by National Environmental Management Act (Act No. 107 of 1998) and by the Conservation of Agricultural Resources Act (Act No. 43 of 1983).

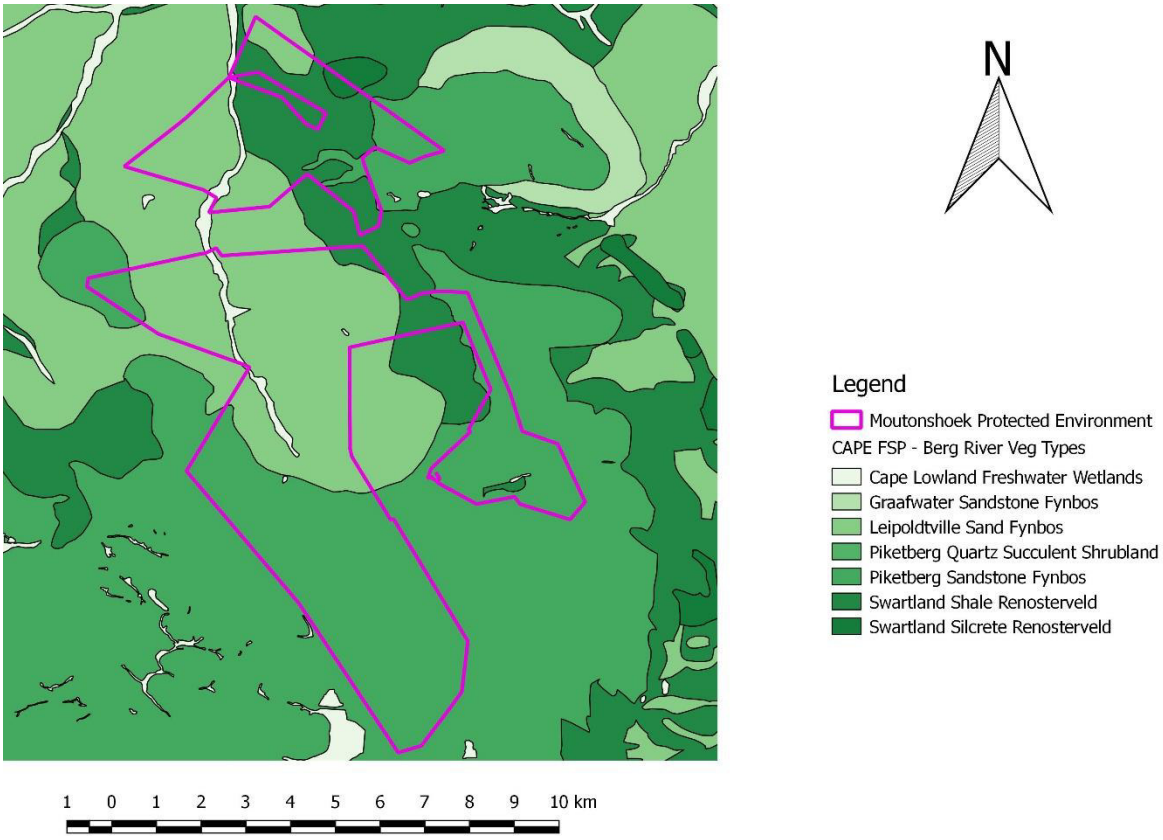

Figure 3.4 Vegetation types found in Moutonshoek Protected Environment

3.4.6 Fire regime

All Fynbos types are fire maintained systems and require fires to stimulate recruitment and retain maximum species richness. The different Fynbos types do, however, differ vastly in terms of appropriate fire frequency. Fire in Fynbos burns on a 5 to 50 year rotation, but usually in the order of 15 to 25 years. The fires naturally occur in late summer and early autumn, towards the end of the dry season, in the Western Cape. Fire intensity is also important, with only "clean" burns acceptable, where no fine material or unburned leaves remain after the fire.

Non-sprouting Proteas are the best indicators of an appropriate fire frequency. At least 50% of these Protea plants should be allowed to have flowered for a minimum of three times before they are burnt again.

Block burns should preferably not be smaller than 100 ha in size. This will ensure successful recruitment after the fire, grazing by stock or large numbers of gam should not be allowed within the first two years after a fire.

Block burns in areas which have a high infestation of woody alien plants will need special planning. This is due to the high fuel load which will be present and may need to be burnt under cool, moist conditions to prevent damage to both re-sprouting species and the soil seed banks.

Refer to Appendix E for the Krom Antonies Business Unit Fire Management Plan for the Krom Antonies Management Unit.

3.4.7 Invasive species

Most invasive flora is located along the banks of the water courses within Moutonshoek Protected Environment. There are a few small clumps of *Pinus spp*. on the southern end of the valley. Currently Working for Wetlands is removing these invasive species along the main waterways. Landowners will need to focus on the secondary streams to prevent these from re-infesting the cleared main waterways. Currently the only know invasive fauna are Fallow Deer who move through irregularly.

3.4.8 Mammalian fauna

Large mammals have largely been absent from fynbos for almost two centuries and we can only speculate as to their effects on the vegetation. Fynbos however has evolved with animals and is reliant on them for its fundamental processes such as pollination and dispersal.

Small antelope that are occasionally seen include; Common Duiker, Steenbok, Cape Grysbok and Klipspringer in the foothills. There are four species of Golden Mole, mainly in the coastal belt - all are listed in the Red Data Book. Another Red Data Book species is the White-tailed Rat. Although rarely seen, the Honey Badger and termite feeding specialists, Aardwolf and Aardvark are sparsely distributed in the area. In recent years the Large Grey Mongoose has extended its range into the area, probably as a result of land transformation which has increased the habitat for their preferred prey of rodents. The ongoing persecution of other larger predators such as Black-backed Jackal and Caracal may also have benefited these small predators. Cape Clawless Otters are also present. Since they rely on prevailing fresh water, their continued presence is threatened by lowering water tables and drying up of surface water due to increasing central pivot irrigation systems.

3.4.9 Avifauna

The Sandveld has a spectacular array of birds in its wide range of habitats. Robins, Larks, Titbablers and Martins are frequently seen in the Strandveld. The wetland areas host many Red

Data Book species including the Greater and Lesser Flamingos, Great White Pelicans and the small Chestnut-banded Plovers. The Verlorenvlei area alone boasts at least 177 bird species including the Pied Avocet, the elusive Little Bittern and the African Rail, while the reed beds are a refuge for Red Bishops and the Black-crowned Night Heron.

Migratory birds arrive in October and include the European Bee-eater and Yellow-billed Kite. Large raptors including Verreaux's Eagle, Martial Eagle, and African Fish Eagle. Other striking and uncommon birds are Ludwig's Bustard, Black Stork, Black Harrier and the Secretary Bird– all Red Data Book species. Species list included in Appendix C.

3.4.10 Herpetofauna (reptiles and amphibians)

The area boasts some very special reptiles and amphibians. Apart from species common to coastal lowlands - Angulate Tortoise, various Sandveld lizards and geckoes, the Namaqua Dwarf Chameleon, the Raucous Frog and the Sand Frog. This unique West Coast herpetological assemblage includes three legless lizards, two Red Data Book dwarf burrowing skinks, the Rough-scaled Girdled Lizard and Austen's Thick toed Gecko. Another unique species is the world's smallest tortoise, the Southern Speckled Padloper (a Red Data Book animal), and the Parrot-beaked Tortoise, both of which prefer sandstone koppie areas. The Cape Sand Snake is unique to the coastal areas and, in the east, the Black Spitting Cobra is occasionally seen in mountainous terrain. Two very special reptiles in the Sandveld are the Dwarf Plated Lizard (Perdewa) with its cobalt blue tail and two creamy white stripes down its back, and the well-armoured Armadillo Girdled Lizard (Skurwejantjie or Geelthysie) which, when threatened, rolls itself into a ball, gripping its tail in its jaws and thus protecting its soft belly. Environmentally friendly farming practices and the prevention of unplanned coastal urbanisation will ensure the protection of healthy habitats for the survival of these unique Sandveld creatures.

3.4.11 Invertebrates

A new order of insect, the Heelwalker / Mantophasmatidae is a family of carnivorous insects within the order Notoptera, which was discovered in Africa in 2001, and the Sandveld has a unique representative of this group. In a league of its own, the Sandveld Heelwalker is one of only 14 known species of this order! This unusual insect hides at the base of restio tussocks and is thus intolerant to ploughing or any other soil disturbance. Monkey beetles, including the Blue Monkey Beetle, are often seen feeding on the centres of daisies and vygies. The Bladder Grasshopper (Hekiejee, Gonna) is a well-known night visitor – attracted by lights and clinging to walls while emitting its distinctive, booming call. Other commonly seen insects include the Common Milkweed Locust (Rooibadjie), the Frantic Tortoise Beetle (Koffie-pit) that scuttles rapidly over the sands, Flightless Dung Beetles, the Striped Toktokkie and the Long-legged Darkling Beetle. Graafwater has its own, very localised and very rare Spoon Wing Lace Wing. As the larvae live in the soil, this species is intolerant to ploughing or other forms of disturbance. Species list included in Appendix C.

3.5 Socio-economic context

Moutonshoek PE falls within Ward 5 of the Berg River Municipality which is predominantly rural with a smattering of private settlements including Wittewater, Goedverwacht and Genadenberg which belong to the Moravian Church of South Africa. De Hoek, a private residential area situated on the premises of the Pretoria Portland Cement factory (PPC) a few kilometres to the south of Piketberg is also part of this ward. The agricultural sector is one of the largest employers in the region, with a few large companies employing the majority of the remaining employed workforce. Due to mechanisation of the agricultural sector a smaller workforce is now required

in this industry and this has led to a subsequent increase in the level of unemployment in the area.

4) ZONATION PLAN

The purpose of the zonation of Moutonshoek Protected Environment is to control the intensity and type of use within it, 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. Refer to individual farm zonation maps and area map of PE, Appendix H.

Table 4.1 Conceptual development guidelines:

Zone	Zone Objective	Characteristics	Activities	Visitor Access	Management Guidelines
Core Conservation	In the context of the MPE, this area is as close to 'wilderness' as one may find within the PE. It is a largely unmodified natural landscape, not easily accessible by road, mostly visually secluded, with very limited intermittent views of human activities and development outside of the PE. The Core Conservation Area is primarily defined by sensitive landscapes, including wetlands, rivers, steep slopes and ridge lines. As a result, the area is likely to include very high species diversity. The Core Conservation Area may also include Habitat Corridors, (small fragments of natural habitat within the transformed portions of the farms that connect the conservation areas). •Areas of extreme sensitivity (e.g. red data and endemic species). •Area of exceptional diversity, endemism and rarity. Includes wetlands and seeps in the MPE.	Farming: Grazing of livestock should be limited to periods of fodder shortage elsewhere, and at stocking rates of 60-80 % below the commercial stocking rate, relevant to present condition. **Tourism:** This zone is ideally suited for passive recreational pursuits, specifically nature appreciation (bird watching etc.) via non-motorized access (hiking, bridle and mountain bike trails.) Scientific and conservation activities only. Ploughing of any virgin rangeland to convert it to arable land is not permitted within this zone.	Rustic overnight trails camps could be developed in this zone, as well as discreet viewpoints and hides. No farming related infrastructure should be developed within this zone.	Access should be limited to non-motorized access (hiking, biking, horseback riding). Mainly for scientific and conservation measures, but some access for education and interpretation can be considered. Roads within this zone should be limited to existing roads and possible closing of roads within this zone should be considered.	The Core Conservation Area should be primarily managed as a conservation zone with specific focus on retaining habitat integrity and ecosystem functioning, and preserving the natural state and wilderness character of the area. In this regard, no additional roads or tracks, structures or cultivated lands should be developed within this zone. Where possible, existing human disturbances should be removed and rehabilitated over time. This should include degraded areas (alien infestations), and disturbed areas (erosion, excavations, mining scars). Farmers should aim to limit the grazing of this area by commercial livestock to period of extraordinary or emergency conditions (i.e. drought, fire).

Zone	Zone Objective	Characteristics	Activities	Visitor Access	Management Guidelines
Intensive Agricultural and Grazing Area	This is an accessible, modified landscape, largely defined by farmsteads, cultivated lands, which are used regularly for commercial crop production and are thus ploughed, irrigated, harvested and replanted on a regular basis and busy transportation corridors along main public through roads. This layer includes all areas that were previously ploughed and currently are not in production This landscape can absorb larger concentrations of people and can accommodate infrastructure necessary for the accessibility and management of the area.	Can generally accommodate an unrestricted range of tourism and farming activities, including high density, high impact activities, and cultivation of commercial crops production. Limited opportunities for species conservation. High impact grazing, cropping	Within the context of the MPE, this zone may include farmsteads, staff accommodation, workshops, sheds and barns, as well as tourist infrastructure such as lodges, B&B's, information centres, picnic sites etc. and Intensive Agricultural Activities	This is a highly motorized area including public through roads (tarred and gravel), and access roads to farmsteads and related infrastructure. This zone can therefore accommodate heavier and delivery vehicles. No specific restrictions.	Management of this zone should strike a compromise between resource utilization and conservation. Management of this zone should be focused on preserving the rural farmland appeal and character of the area. Cultivated lands should be keenly managed to ensure that they do not impact on the conservation of sensitive biodiversity features of the MPE (wetlands and seeps, riparian areas and rivers, etc.). These old lands can be available for high impact grazing, converted to pasture and brought back into crop production, or be allowed to rehabilitate and ultimately contribute to the grassland conservation effort.

Other zones which can overlap any of the above zones = Special Management overlays:

Special Management overlays	Objective of zone	Characteristics	Type of Activities	Facilities / Infrastructure	Type of Access	Management Guidelines
Water Protection	Protection of water ways (rivers, wetlands and associated buffers)	All rivers, streams, wetlands and associated buffers (river banks and riparian vegetation)	Restrict all agricultural activities and restrict all unnecessary disturbance.	None	Walking access only	Wetlands and Rivers Maintain adequate water quantity and quality (flow regimes) to allow for healthy functioning systems. Do not disturb (dig, plough or dump) or alter wetland and river systems. Remove alien vegetation and aquatic species.
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

Special Management overlays	Objective of zone	Characteristics	Type of Activities	Facilities / Infrastructure	Type of Access	Management Guidelines
Visual protection	Protection of localised sensitive view sheds and particularly for Wilderness Zone view sheds	Sensitive view sheds and particularly for areas within Wilderness Zone view sheds	Specific activities dependent on ability to manage activity and feature in question.	No roads, firebreaks or buildings. No visible infrastructure Trails may be appropriate	Walking access likely to be appropriate	Feature specific – as required
Natural Resource Access	Access to identified sustainable consumptive use resources as per a resource management plant	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

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

5) ADMINISTRATIVE STRUCTURE

The Moutonshoek Landowners Association is appointed as the management authority for the Protected Environment as agreed to in the Management Agreement concluded between CapeNature and the landowners.

Where applicable, Management decisions are made collaboratively between the Management Authority and CapeNature.

The role of the conservation agency, CapeNature, is to provide support, advice and to assist with the implementation of the management plan of the Protected Environment as agreed upon.

CapeNature is also responsible for conducting an annual audit of the Protected Environment and updating the Management Plan accordingly. CapeNature can appoint an external auditor as appropriate.

6) OPERATIONAL MANAGEMENT FRAMEWORK

This section translates the strategic framework described in Section 2 above into Key Deliverables and Management Activities, which will be used to inform annual plans of operation and the resources required to implement them. The management targets will form the basis for monitoring of performance in implementing the plan and are thus measurable.

6.1 Biodiversity management

6.1.1 Fire management

Fire plays an important role in southern African ecology, and has important effects on vegetation composition, primary productivity and nutrient cycling. In developing a fire management strategy for the site, the following guiding principles should be adhered to:

- Burning should be undertaken in such a way that it maintains spatial and temporal heterogeneity within the landscape.
- A patch mosaic of burnt and un-burnt areas should be maintained.
- The burning of areas should be undertaken in such a way that promotes patchy burns (i.e. within the block being burnt, some patches will remain un-burnt rather than aiming for a complete burn).
- Burning must be undertaken with consideration of the biodiversity conservation requirements of the site and the need to protect rare and endangered species.
- Burning and fire management must be undertaken in a safe manner that is legally compliant with the National Veld and Forest Fire Act (No.101 of 1998).
- The fire management plan as supplied by the Greater Cederberg Fire Protection Association must be adhered too.

Table 6.1 Operational Management Framework

FIRE MANAGEMENT			
Objectives	· To ensure conservation of species and processes by maintaining and improving ecosystem functioning. · To implement effective Integrated Catchment Management. · To allow for natural fire processes to occur without impacting on safety and infrastructure.		
Key Deliverables	**Management Activities**	**Responsibility**	**Timeframe**
Reduce/Prevent the Spread of Fires.	Construct Priority Firebreaks according to Schedule. Negotiate Firebreak Agreement with Neighbours. Fuel Reduction around Infrastructure to Minimise Risk. Conduct Pre-Fire Season Fire Audit. Mapping of all Fires and Capture on GIS.	MLOA All landowners	30 Sept 2018
Maintain Partnerships to Improve Fire Management.	Attend Local FPA Meetings. Maintain Firebreak Agreements with Neighbours. Attend Pre-Fire Season meetings with local Fire & Rescue Service.	MLOA Landowners	Is in process already
Determine and Implement Thresholds of Potential Concern.	Establish a series of Fixed Point Photography Monitoring Plots. Conduct Permanent *Protea spp.* Plot Monitoring. Conduct Post-Fire Regeneration Monitoring. Set and Monitor Thresholds of Potential Concern.	MLOA CapeNature	30 Sept 2018
Reduce Wildfires due to Human Negligence.	Create Fire Awareness Programme for Members and Staff Eradication and Control of Alien Vegetation Infestations where Necessary (see AVM management)	MLOA Greater Cederberg Fire Protection Association All Landowners and residents	Ongoing

6.1.2 Invasive vegetation management

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:

- Invasive plant control will require an ongoing programme that prioritises key infestations along water courses, drainage lines and upper catchment areas.
- Initial clearing efforts should focus on containing infestations that are most likely to spread into new areas.
- All follow-up requirements must be strictly adhered to otherwise the problem will be exacerbated.
- Strategic partnerships and poverty relief programmes such as the Working for Water and Working for Wetlands programs should be utilised.

INVASIVE VEGETATION MANAGEMENT			
Objectives	· To enhance biodiversity protection and conservation. · To ensure conservation of species and processes by maintaining and improving ecosystem functioning. · To implement effective Integrated Catchment Management.		
Key Deliverables	**Management Activities**	**Responsibility**	**Timeframe**
Eradicate Alien and Invasive Species	Identify and Map all Alien Invasive Flora Within or Threatening the Protected Environment. Compile a Management Unit Clearing Plan. Identify Areas in Maintenance Phase.	MLOA / CapeNature / WfW	31 Oct 2018
Prevent Further Introduction of Aliens	Ensure Surrounding Landowners are aware of Relevant Legislation.	CapeNature	Ongoing

6.1.3 Wildlife Management

To promote the conservation of indigenous fauna as an important component contributing to and maintaining ecosystem functioning.

Small antelope (Cape Grysbok, Common (Grey) Duiker, Steenbok and Vaal (Grey) Rhebok) occur naturally in the area, and move freely between farms. There is currently no need to manage these populations.

6.1.3.1 Reintroduction of Game

Before reintroduction the following points need to be considered:

- Was the desired species naturally resident in the area?
- Why did the animal become extinct in the area?
- Is that causal factor still a threat?
- Is the habitat still suitable for the species?
- What are the potential negative effects of the reintroduction?
- Where is the nearest existing population?

Commission a reintroduction policy and plan for species that used to occur in the area and the suitable carrying capacities. Investigate the potential for reintroductions, specifically small game, which may have previously occurred naturally in the area. Herbivores are essential for biodiversity and ecosystem processes to persist.

The careful reintroduction of species can enhance the conservation value of the area and increase the marketability of the Protected Environment. All reintroductions must be based on sound ecological principles. CapeNature must be consulted on the translocation and reintroduction of all fauna.

WILDLIFE MANAGEMENT			
Objectives	· To enhance biodiversity protection and conservation. · To ensure conservation of species and processes by maintaining and improving ecosystem functioning. · To implement effective Integrated Catchment Management.		
Key Deliverables	**Management Activities**	**Responsibility**	**Timeframe**
Prevent the Introduction of Alien Species	Formulate Policy regarding Domestic Animals in the Protected Environment. No Introduction of Alien Fish Species into River Systems.	MLOA	Ongoing
Control Alien and Invasive Species	Identify the Occurrence of Alien Fauna within the Protected Environment. Monitor Populations of Alien Fauna on the Protected Environment. Implement Control Measures where appropriate. Measure Success of Control Methods utilised.	MLOA / CapeNature	Ongoing
Manage the introduction of fauna on the Protected Environment	All possible introductions of game needs to be in accordance with all the necessary permits and permissions of CapeNature. This includes the construction of and maintenance of a fence according to the CapeNature policy, after which a Certificate of Adequate Enclosure (CoAE) certificate will be issued (Appendix F - Guidelines of CoAE).	MLOA / CapeNature	Ongoing
Evaluate and monitor the impact of fauna on the Protected Environment	Impact in the Protected Environment by large herbivores needs to be closely monitored. Monitoring is to be carried out by a mutually agreed third party, who will prescribe indicators of change to determine when management interventions will be necessary. Hunting of game is permitted under the hunting proclamation and rights obtained from the CoAE in the Protected Environment provided it is to manage the game population and remove surplus game	MLOA / CapeNature	Ongoing

6.1.4 Sustainable Harvesting

The Sustainable Utilization of Wild Fynbos Resources ensures that the use does not exceed the regenerative and/or productive capacity of the specific plant species. It is important, therefore, to make certain that species are harvested in a manner that minimizes harvesting impact on individual populations. These standards are as follows:

- A cautionary approach must be followed whereby an amount not exceeding 50 % of the flower heads produced on a yearly basis by a plant shall be removed.
- No harvesting may occur one year prior to a burn.
- No harvesting of seeding plants between one and five years after a burn.
- Correct harvesting equipment that is in good working condition must be used at all times.
- No cuts shall be made to old growth of the plant stem and cuts must be at an angle of 45° to the stem.
- No breaking or uprooting of plants is allowed.
- Binding twine must be transported in a closed container and it is the responsibility of pickers to remove binding twine from their harvesting location.
- No litter must be left in the harvesting location.

It is therefore important to ensure that Pickers, Supervisors or Contractors must have completed an accredited sustainable harvesting course. Skills development programs must be in place for all pickers that have not attended the course.

An exclusion block representative of all harvestable species utilized must be created to ensure population persistence. The block should be demarcated and included on the map incorporating the management zones. The exclusion block may be utilized further for research and monitoring purposes.

Refer to Appendix G – Best Practice Guidelines for the Suitable Management of Wild Rooibos Populations.

SUSTAINABLE HARVESTING			
Objectives	· To ensure the sustainable use of Wild Fynbos Resources. · To ensure the conservation of biodiversity where harvesting operations occur. · To monitor the impact of harvesting on selected Fynbos species.		
Key Deliverables	**Management Activities**	**Responsibility**	**Timeframe**
Identify Management Zones	Map the boundaries of the property Divide the property into management zones.	MLOA/CN	Annually
Classify Floral Species according to Vulnerability Index	Classify harvestable species according to Vulnerability Index Develop list of harvestable species as per floral licence on the property Classify harvestable species according to their distribution per management zone	MLOA/CN	Annually
Minimise Harvesting Impact	Harvesting and Best Practice Guidelines must be adhered to Pickers/Contractors must be accredited	MLOA	On-going
Record Keeping	Daily Harvesting Record Maintained Monthly Harvesting Records Submitted Invoice and Delivery Note System Maintained	MLOA	On-going
Compliance with Relevant Legislation	Possession of Valid CapeNature Flora License Understanding of legislation relevant to protected flora	MLOA	On-going
Monitoring	Identify and demarcate exclusion zones representative of harvestable species Monitoring Program in place to develop Thresholds of Potential Concern	CapeNature	On-going

6.1.5 Erosion Prevention and Control

In addressing soil erosion, the following guiding principles should be adhered to:

- Areas impacted by soil erosion should be stabilised and re-vegetated with indigenous plant species to prevent the spread of listed invasive plant species.
- Areas susceptible to soil erosion, or showing early signs of soil erosion such as loss of vegetation cover, must be managed to prevent soil erosion.

EROSION PREVENTION AND CONTROL			
Objectives	· To ensure the sustainable use of Wild Fynbos Resources. · To ensure the conservation of biodiversity where harvesting operations occur. · To monitor the impact of harvesting on selected Fynbos species.		
Key Deliverables	**Management Activities**	**Responsibility**	**Timeframe**
Prevent and Mitigate Soil Erosion	Conduct a Soil Erosion Assessment Map Erosion Sites and Ensure Photographs are available. Compile an Erosion Maintenance Plan. Monitor the effectiveness of the Erosion Control Mitigation. Monitor Cost Effectiveness of Maintenance. Monitor Site Recovery Conduct a Roads and Footpath Assessment.	MLOA	Annually

6.1.6 Monitoring and Baseline Data Collection

Information on the locality of Rare, Endangered and Endemic species is necessary to ensure effective management and monitoring of populations. This objective aims to improve the biological knowledge base through the implementation and promotion of effective baseline data collection and research opportunities.

MONITORING AND BASELINE DATA COLLECTION			
Objectives	· To manage biodiversity knowledge to ensure effective conservation management. · To implement measures to ensure resilience and persistence of biodiversity in light of climate change. · To ensure the implementation of effective conservation management interventions. · To ensure conservation of species and processes by maintaining and improving ecosystem functioning.		
Key Deliverables	**Management Activities**	**Responsibility**	**Timeframe**
Compile Ecological Plan of Operations (in APO) and insert into CapeNature Conservation Services Ecological Matrix	Collate all relevant Monitoring and Research Protocols and Data Sheets. Insert Moutonshoek Protected Environment into the CapeNature Conservation Services Ecological Matrix for the Area.	MLOA/CapeNature	Annually
Create a Biodiversity Resource Inventory	Prioritise Species for inclusion in the CapeNature Conservation Services Ecological Matrix. Collect Specimens and Submit to CapeNature Scientific Services.	MLOA/CapeNature	Annually
Implement Monitoring Programme	Review Monitoring Protocols. Identify Monitoring Needs of Protected Environment in consultation with CapeNature. Establish Indicators for Monitoring. Implement Monitoring Activities as per Ecological Matrix (see above). Report on Monitoring Activities as per Ecological Matrix (see above). Analyse data, re-assess and implement Adaptive Management Strategies.	MLOA/CapeNature	Annually

6.1.7 Biodiversity and security

Develop an integrated security strategy for the Protected Environment. Access to the Protected Environment needs to be controlled and conditions of entry for visitors into the Protected Environment should be clearly stipulated on signboards at access points.

BIODIVERSITY SECURITY			
Objectives	To enhance biodiversity protection and conservation. To ensure conservation of species and processes by maintaining and improving ecosystem functioning.		
Key Deliverables	**Management Activities**	**Responsibility**	**Timeframe**
Improved security and safety of the biodiversity assets within the Protected Environment	Ensure Notarial Deed with surveyor diagram and title deed restrictions are registered with the Notary and Surveyor General against the property Ensure appropriate signage at access points.	MLOA/CapeNature	Once off

6.2 Tourism development

The potential for well managed Eco-Tourism is recognised and should be guided by the e following principles Tourism products must be appropriate to the site's values and must not threaten its biodiversity or ecological function.

- In developing tourism products, requirements for environmental authorisation must be considered and adhered to.
- Tourism products should be designed to capitalise on the unique beauty and biodiversity features of the site.
- Tourism products should be developed in response to tourism market demands and opportunities within the site and should be carefully assessed to determine their viability.

6.3 Operational Management

6.3.1 Legal Compliance

Through the landowners of the biodiversity stewardship site, the MLOA has been mandated to enforce laws related to the conservation of the site, which prohibit particular activities. In fulfilling this role, the managers of Moutonshoek Protected Environment will adhere to the following guiding principles:

- Law enforcement efforts should be coordinated with the relevant authorities including CapeNature and the South African Police Service in addressing offences and breaches of the law.
- Law enforcement at the site will be undertaken through surveillance, monitoring and appropriate reaction in the event of an offence.

LEGAL COMPLIANCE			
Objectives	To ensure legal compliance to all relevant legislation and policies.		
Key Deliverable	**Management Activities**	**Responsibility**	**Timeframe**
Ensure that all legal requirements are met.	All development needs to be done according to the NEMA principles and follow the applicable legislation and procedures of all relevant stakeholders. All water management within the Protected Environment must comply with the National Water Act (No 36 of 1998). Abstraction of water from water sources originating in the Protected Environment must not affect the biodiversity of the Protected Environment	MLOA	Ongoing

6.3.2 Management Effectiveness

MANAGEMENT EFFECTIVENESS			
Objectives	· To implement effective management systems.		
Key Deliverable	**Management Activities**	**Responsibility**	**Timeframe**
Annual audit completed. Auditing systems inform management	Conduct annual audits. Implementation, annual review and update of management plan. Compile detailed work plan identifying specific targets for achieving management (APO).	MLOA/ CapeNature	Annually

6.3.3 Infrastructure development and management

In order for Moutonshoek Protected Environment 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 must be maintained to avoid any damage to the environment and ensure the safety of staff and visitors to the site.
- Infrastructure must be provided to ensure the effective management and operation of the protected environment.

INFRASTRUCTURE			
Objectives	· To ensure the implementation of effective conservation management interventions. · To enhance biodiversity protection and conservation. · To ensure conservation of species and processes by maintaining and improving ecosystem functioning.		
Key Deliverable	**Management Activities**	**Responsibility**	**Timeframe**
All infrastructures within the Protected Environment is adequately maintained.	Develop and implement a scheduled maintenance programme to maintain facilities and infrastructure in a condition that meet relevant environmental, health and safety requirements.	MLOA	Ongoing

7) ANNUAL PLAN OF OPERATION AND REVIEW

Monitoring and reporting enables the effective assessment of management interventions. If necessary it can be used to direct modifications of management in an effort to achieve the outcomes required.

7.1 Annual Plan of Operation

The Annual Plan of Operation (APO) gives life to the Operational Management Framework on an annual basis and allows for progress to be tracked.

See Table 7.1

7.2 Management Plan Review

The purpose of undertaking an annual review of implementation 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.

The annual audit 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 five-year plan. The Annual Plan of Operation (APO) is in a similar format to the Annual Audit See Appendix D below, allowing for a seamless transition of information from Audit to new APO.

Table 7.1 Annual Plan of Operation Moutonshoek Protected Environment

Management target	2018/19 Actions & Comments	Completion date	Responsibility
FIRE MANAGEMENT			
Reduce/Prevent the Spread of Fires:			
Construct Priority Firebreaks according to Schedule outlined in Krom Antonies Business Unit Fire Management Plan (Appendix E)	*Comment: An existing Fire Management Plan is in place and maintained by the Cederberg Fire Protection Association. Review fire breaks as per plan*	Ongoing maintenance of firebreaks. Review to be completed by 31 October 2018	Individual Landowners and MLOA
Negotiate Firebreak Agreement with Neighbours.	*Comment: As per Fire Management Plan*	Ongoing	Individual Landowner
Fuel Reduction around Infrastructure to Minimise Risk.	*Comment: As per Fire Management Plan*	Ongoing	Individual Landowner
Conduct Pre-Fire Season Fire Audit.	*Comment: All landowners to be involved*	Yearly at start of fire season	Individual Landowners, Fire Protection Association
Mapping of all Fires and Capture on GIS.	*Comment: Report all fires to the Fire Protection Association to allow for appropriate mapping*	Ongoing	Individual Landowners, Fire Protection Association
Maintain Partnership to Improve Fire Management:			
Attend Local FPA Meetings.	*Comment: FPA Representative to attend all meetings and give feedback at Landowners Association meeting*	As required	FPA
Maintain Firebreak Agreements with Neighbours.	*Comment: Work in conjunction with FPA to establish and maintain agreements*	Yearly	Individual Landowner and FPA
Attend Pre-Fire Season meetings with local Fire & Rescue Service.	*Comment:*	As required	MLOA Representative

Determine and Implement Thresholds of Potential Concern for indigenous vegetation:			
Establish a series of Fixed Point Photography Monitoring Plots.	To be determined in consultation with CapeNature Scientific Services	To be determined in consultation with CapeNature	CapeNature
Conduct regular monitoring of vegetation types and individual species of conservation concern	To be determined in consultation with CapeNature Scientific Services	A schedule to be established by 31 March 2018	CapeNature
Conduct Post-Fire Regeneration Monitoring.	To be determined in consultation with CapeNature Scientific Services	After a wildfire in the areas of natural vegetation	CapeNature
Set and Monitor Thresholds of Potential Concern.	To be determined in consultation with CapeNature Scientific Services	To be determined in consultation with CapeNature	CapeNature

Management target	**2018/19 Actions & Comments**	**Completion date**	**Responsibility**
INVASIVE ALIEN MANAGEMENT			
Control Alien Invasive Species:			
Identify and Map all Alien Invasive Flora Within or Threatening the Protected Environment.	Within the first year of operation the species, density and location of Invasive Alien Plants is to be recorded per farm.	31 October 2018	CapeNature, WfW, WfWet, MLOA
Compile a Management Unit Clearing Plan.	Clearing of invasive alien plants has previously been undertaken by individual farm owners. Document previous clearing as far as possible and include in Protected Area Invasive Alien Management Plan	31 October 2018	CapeNature, WfW, WfWet, MLOA
Prevent Further Introduction of Aliens:			

Ensure Surrounding Landowners are aware of Relevant Legislation.	Work with LandCare and CapeNature to support existing advocacy around IAS in and around the Protected Environment.	Ongoing	MLOA, LandCare, CapeNature

Management target	2018/19 Actions & Comments	Completion date	Responsibility
WILDLIFE MANAGEMENT			
Prevent the Introduction of Alien Species:			
Formulate Policy regarding Domestic Animals in the Protected Environment.	Mixed use farming with domestic animals is in process and accepted as part of the Protected Environment	Ongoing	MLOA
No Introduction of Alien Fish Species into River Systems.	Combine the advocacy about alien fish with that of alien plants and repeat frequently via a range of means e.g. at meetings, schools, on site visits	30 September 2018 and repeated thereafter	MLOA, CapeNature
Control Alien and Invasive Species:			
Identify the Occurrence of Alien Fauna on PE.	List and map locations	31 October 2018	CapeNature, MLOA
Monitor Populations of Alien Fauna on the PE.	Ongoing monitoring to be done via reports from landowners and farm workers	Initiate process 30 Sep 2018	MLOA
Implement Control Measures where appropriate.	Identify suitable control measures that are humane	To be scheduled by CapeNature	CapeNature
Measure Success of Control Methods utilised.	Document occurrence of alien invasive species and density of populations pre, and post control measures being implemented	31 October 2018	MLOA
Manage the introduction of fauna on the Protected Environment:			
All possible introductions of game needs to be in accordance with all the necessary permits and permissions of CapeNature. This includes the construction of and maintenance of a fence according to the CapeNature policy, after which a Certificate of Adequate Enclosure (CoAE) certificate will be issued	This will only be applicable should individual land owners seek to stock game / wildlife. Not currently applicable.	In accordance with CapeNature policy	Individual Landowners, MLOa, CapeNature

Evaluate and monitor the impact of fauna on the Protected Environment:			
Monitoring is to be carried out by a mutually agreed third party, who will prescribe indicators of change to determine when management interventions will be necessary.	Comment: Currently the stock of indigenous fauna in the PE is limited and a policy of protection should be applied Action: monitor existing indigenous fauna. Camera traps are available and being used. The data from these to be collated and recording methods streamlined. Historical data recorded into PE 'history'.	Monitoring methods streamlined by 31 October 2018	MLOa, CapeNature, Contractor
Hunting of game is permitted under the hunting proclamation and rights obtained from the CoAE in the Protected Environment provided it is to manage the game population and remove surplus game	Hunting policy with respect to 'surplus' fauna to be resolved in accordance with CapeNature policy.	31 March 2018	Individual Landowner, MLOa, CapeNature

Management target	**2018/19 Actions & Comments**	**Completion date**	**Responsibility**
SUSTAINABLE HARVESTING			
Identify Management Zones:	Only applicable if sustainable harvesting from the wild is going to be undertaken		
Map the boundaries of each property.	Action: refine existing maps	31 March 2018	MLOA
Divide each property into management zones.	Harvesting zonation to be included into existing farm map at the time that harvesting is proposed	As applicable	MLOA
Classify Floral Species according to Vulnerability Index:			
Classify harvestable species according to Vulnerability Index.	Comment: As needed	As applicable	MLOA, CapeNature
Develop list of harvestable species as per floral licence on the property.	Comment: As needed	As applicable	Individual Landowner, MLOA, CapeNature
Classify harvestable species according to their distribution per management zone.	Comment: As needed	As applicable	MLOA, CapeNature
Minimise Harvesting Impact:			

Harvesting Guidelines must be adhered to.	Action: random checks to assure no over harvesting	As applicable	CapeNature
Pickers/Contractors must be accredited.		As applicable	Landowner
Record Keeping:			
Daily Harvesting Record Maintained.	Comment: combine with record keeping as part of standard farming practice.	Daily one harvesting starts	Landowner
Monthly Harvesting Records Submitted.	Action: Submit records to CapeNature	Monthly once harvesting starts	Landowner
Invoice and Delivery Note System Maintained.	Action: retain records	Daily updates in season once harvesting starts	Landowner
Compliance with Relevant Legislation:			
Possession of Valid CapeNature Flora License.	Action: Obtain licence	Prior to commencing harvesting	Landowner CapeNature
Understanding of legislation relevant to protected flora.	Action: awareness raising and advocacy regarding harvesting of indigenous flora	Prior to commencing harvesting	Extension officer from Cape Nature and landowner
Monitoring:			
Identify and demarcate exclusion zones representative of harvestable species.	Action: Prior to harvesting commencing	Yearly	MLOA, CapeNature
Monitoring Program in place to develop Thresholds of Potential Concern.	Comment: To be determined in consultation with CapeNature Scientific Services. L	Annual once harvesting commences	CapeNature

Management target	**2018/19 Actions & Comments**	**Completion date**	**Responsibility**

EROSION PREVENTION AND CONTROL			
Prevent and Mitigate Soil Erosion:			
Conduct a Soil Erosion Assessment.	Comment: use existing data from previous and verify	31 October 2018	MLOA, Individual Landowner, CapeNature
Map Erosion Sites and Ensure Photographs are available.	Action: Map and photo record	31 Oct 2018 Annual updates thereafter	CapeNature WfWet
Compile an Erosion Maintenance Plan.	Action: consult WfWet	31 Oct 2018	MLOA, CapeNature
Monitor the affectivity of the Erosion Control Mitigation.	Action: use standard monitoring methods: consult with WfWet. Use photo records to supplement monitoring. Comment: A suitable project for a nature conservation student	Annual	MLOA and landowners
Monitor Cost Effectiveness of Maintenance.	Action: keep records	Yearly	MLOA
Monitor Site Recovery.	Action: keep records Comment: See above regarding using nature conservation students to monitor and record.	Yearly	MLOA, CapeNature
Conduct a Roads and Footpath Assessment.	Road and path erosion caused by previous 4x4 trail in the upper reaches of the valley is a concern. Rehabilitation plan needed.	31 October 2018	MLOA, CapeNature

Management target	**2018/19 Actions & Comments**	**Completion date**	**Responsibility**
MONITORING AND BASELINE DATA COLLECTION			
Compile Ecological Plan of Operations and Ecological Matrix:			
Compile an Ecological Plan of Operations and insert into the Conservation Services Ecological Matrix.	Comment: Suitable for nature conservation student	31 Oct 2018	CapeNature
Collate all relevant Monitoring and Research Protocols and Data Sheets.	Comment: adhere to CapeNature protocol	31 Oct 2018	CapeNature

Create a Biodiversity Resource Inventory:			
Prioritise Species for inclusion on the Ecological Matrix.	Comment: Suitable for nature conservation student	31 Oct 2018	CapeNature
Compile and Implement the Ecological Matrix.	Comment: Suitable for nature conservation student	31 Oct 2018	CapeNature
Collect Specimens and Submit to CapeNature Scientific Services.	Comment: Suitable for nature conservation student	31 Oct 2018	Landowner
Analyse data, re-assess and implement Adaptive Management Strategies.	Annual revision	Annual	CapeNature, MLOA, Landowner
Implement Monitoring Programme:			
Review Monitoring Protocols.	Action: Consult with relevant scientists and CapeNature	31 Oct 2018	CapeNature Relevant subject experts
Identify Monitoring Needs of Moutonshoek Protected Environment in consultation with CapeNature.	Action: Consult with relevant scientists and CapeNature	31 Oct 2018	MLOA
Establish Indicators for Monitoring.	Action: Consult with relevant scientists and CapeNature	31 Oct 2018	CapeNature Relevant subject experts
Implement Monitoring Activities as per Ecological Matrix.	Comment: Use researcher / student	31 Oct 2018	Landowner Student / Researcher
Report on Monitoring Activities as per Ecological Matrix.	Comment: use student under supervision	Annually	MLOA Student / Researcher
Analyse data, re-assess and implement Adaptive Management Strategies.	Comment: Subject expert to review data gathered	Annually	CapeNature Researcher under subject expert guidance

Management target	**2018/19 Actions & Comments**	**Completion date**	**Responsibility**
BIODIVERSITY SECURITY			

Improved security and safety of the biodiversity assets on the Protected Environment:			
Ensure Notarial Deed with surveyor diagram and title deed restrictions are registered with the Notary and Surveyor General against the property	Comment: In process as part of Verlorenvlei Protected Areas Project	In process, as of July 2018	BirdLife South Africa, MLOA, CapeNature, Legal team
Ensure appropriate signage at access points.	Comment: Once declaration is successful the supplied signage can be erected to indicate that the area has Protected Environment status.		MLOA, Landowners

Management target	2018/19 Actions & Comments	Completion date	Responsibility
LEGAL COMPLIANCE			
Ensure that all legal requirements are met:			
All development needs to be done according to the NEMA principles and follow the applicable legislation and procedures of all relevant stakeholders.	Comment: Ensure awareness of environmental legislation Action: implement awareness as part of ongoing environmental advocacy.	Ongoing	Individual landowners and potential 'developers'
All water management within the Protected Environment must comply with the National Water Act (No 36 of 1998).	Comment: Existing and active water user's association	Already in place	Krom Antonies Water Users Association, MLOA
Abstraction of water from water sources originating in the Protected Environment must not affect the biodiversity of the Protected Environment.	Comment: monitoring of impacts of abstraction on biodiversity could form part of monitoring and baseline data collection undertaken by research student (see above in section on Monitoring and Baseline Data collection section)	31 Oct 2018	Krom Antonies Water Users Association, MLOA
Creation of cooperative structures with law enforcement officials.	Comment: Water user's association is already in existence Action: Maintain open channels of communication	Ongoing	Water Users Association and DWS CapeNature PE Mgmt. Authority
Prosecution of any offender caught committing an offence.	Comment: Report non-compliance to relevant authority	As relevant	DWS CapeNature Dept. Agric

			Local Municipality wrt land use contraventions

Management target	2018/19 Actions & Comments	Completion date	Responsibility
MANAGEMENT EFFECTIVENESS			
Annual audit completed:			
Conduct annual audits.	Comment: Audit could be done by external auditor, funding dependant	31 Oct 2018	MLOA, CapeNature Independent external auditor for CapeNature
Auditing systems inform management:			
Implementation, annual review and update of management plan.	Comment: Implement any amendments to management plan in consultation with all participants of PE to ensure buy in.	Annual (due by 31 Oct annually)	MLOA
Compile detailed work plan identifying specific targets for achieving management.	Comment: Specify targets at Land Users Association AGM / regular meeting	Annual (due by 31 Oct annually)	MLOA

Management target	2018/19 Actions & Comments	Completion date	Responsibility
INFRASTRUCTURE			
All infrastructure in the Protected Environment is adequately maintained:	Comment: Health and Safety compliance responsibility of owner of equipment (if moveable). Roads, bridges, phone, electric, school buildings infrastructure responsibility of relevant authority	Ongoing	Relevant authority; Individual owner
Develop and implement a scheduled maintenance programme to maintain facilities and infrastructure in a condition that meet relevant environmental, health and safety requirements.	Comment: Health and Safety compliance responsibility of owner of equipment (if moveable). Roads, bridges, phone, electric, school buildings infrastructure responsibility of relevant authority	Ongoing	Relevant Authority; Individual Landowner

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LIST OF STATUTES TO WHICH THE MOUTONHOEK PROTECTED ENVIRONMENT 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 [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:

- 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]
- Occupational Health and Safety Act [No. 85 of 1993]
- Western Cape Planning and Development Act [No. 5 of 1998]
- Water Services Act [No. 108 of 1997]

Financial Management:

- Public Finance Management Act [No. 1 of 1999]

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]

A brief summary of the most applicable legislation:

Protected Areas are proclaimed under section 23(1) of the National Environmental Protected Areas Act, 57 of 2003, ("the Protected Areas Act").

- **Protected Areas Act (Act No. 57 of 2003)**

The *[Minister/MEC]* is empowered, under section 23(1) of the National Environmental Protected Areas Act, 57 of 2003, ("the Protected Areas Act") to declare an area as a Conservation Area if:

1 It has significant natural features or biodiversity;

2 Is in need of long-term protection for the maintenance of its biodiversity or for the provision of environmental goods and services.

Both of the above criteria pertain to the Moutonshoek Protected Environment and are discussed in detail under "Conservation Significance".

Biodiversity management agreements

The Minister may enter into a biodiversity management agreement with the

Person, organization or organ of state identified in terms of section 43(2), or any other suitable person, organization or organ of state, regarding the implementation of a biodiversity management plan, or any aspect of it.

- **Biodiversity Act (Act No. 10 0f 2004)**

Objectives of Act

(a) within the framework of the National Environmental Management Act, to

provide for—

(i) the management and conservation of biological diversity within the Republic and of the components of such biological diversity;

(ii) the use of indigenous biological resources in a sustainable manner; and

(iii) the fair and equitable sharing among stakeholders of benefits arising from bio-prospecting involving indigenous biological resources;

(b) to give effect to ratified international agreements relating to biodiversity which are binding on the Republic;

(c) to provide for co-operative governance in biodiversity management and conservation; and

(d) to provide for a South African National Biodiversity Institute to assist in achieving the objectives of this Act.

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

Purpose

"The purpose of the Act is to prevent and combat veld, forest and mountain fires throughout the Republic."

Firebreaks

In terms of section 12 and 14 every landowner must prepare and maintain a firebreak as determined in section 13. Failure to do so is an offence in terms of section 25(3), unless he has been exempted by the Minister in terms of section 15.

Fighting Preparedness

There is also a further duty on landowners to have equipment, protective clothing and trained personnel available in the eventuality that there may be fire on their property (section 17). Failure to meet this requirement is an offence in terms of section 25(4).

- **Conservation of Agricultural Resources Act, 1983 (No 43 of 1983)**

Purpose

CARA is an act of the National Department of Agriculture and makes provision for the conservation of the natural agricultural resources of South Africa through:

1. Maintaining the production potential of land;
2. Combating and preventing erosion;
3. Preventing the weakening or destruction of water sources;
4. Protecting the vegetation; and
5. Combating weeds and invader plants.

Applicable CapeNature policies

- Nature Conservation Ordinance (19/1974)
- Western Cape Nature Conservation Board Act No 15 of 1998
- Nature and Environmental Conservation Regulations (Provincial Notice 955/1975)
- CNC WC Fire Management Plan and Guidelines
- CNC Guidelines for the management of leopard management areas
- CNC Baseline and monitoring manual
- CNC guideline for river maintenance
- Policy on the re-establishment of Cape Mountain Zebra Populations
- Policy on the certificates of adequate enclosure
- Hunting Proclamation
- National Water Act, 1998 (No 36 of 1998)

Other Relevant Legislation:

- Municipal Systems Act
- National Water Act, 1998 (No 36 of 1998)
- Constitution of the Republic of South Africa Act, 1996 (No 108 of 1996)
- Environment Conservation Act No 73 of 1989
- Forest Act No 122 of 1984
- National Environmental Management Act, 1998 (No 107 of 1998)
- National Heritage Resources Act, 1999 (No 25 of 1999)

- World Heritage Convention Act, 1999 (No 109 of 1999)
- Western Cape Tourism Act, No. 3 of 1997
- Mountain Catchment Areas Act, 1970 (Act No. 63 of 1970)
- The administration of the Act has been assigned to the Board by virtue of Act 3 of 2000 as published in Provincial Gazette Extraordinary No. 5442 dated 24 March 2000
- Land Use Planning Ordinance 15/1985 (section 29)

(THERE MIGHT BE OTHER LEGISLATION APPLICABLE TO THE PROTECTED ENVIRONMENT AND IT IS THE LANDOWNERS' RESPONSIBILITY TO DETERMINE IF THIS NECESSARY.)

COPY OF MOUTONHOEK PROTECTED ENVIRONMENT PROCLAMATION

(NOTE: To be inserted following final declaration and prior to distribution).

APPENDIX C: SPECIES LISTS

Threatened Plant Species in the Moutonshoek Valley and Surrounds include the following:

Genus	Species	Status
Adenandra	*marginata*	Rare
Agathosma	*capitata*	VU
Agathosma	*latipetala*	EN
Agathosma	*trichocarpha*	CR PE
Albuca	*clanwilliamigloria*	EN
Antimima	*aristulata*	VU
Arctopus	*dregei*	VU
Aristea	*fimbriata*	Critically Rare
Aspalathus	*chrysantha*	VU
Aspalathus	*glossoides*	VU
Aspalathus	*pendula*	VU
Aspalathus	*pinguis*	VU
Aspalathus	*ternata*	VU
Aspalathus	*latifolia*	VU
Babiana	*angustifolia*	NT
Babiana	*inclinata*	EN
Babiana	*latifolia*	CR
Babiana	*longiflora*	CR
Babiana	*stricta*	NT
Babiana	*tubiflora*	Declining
Babiana	*longiflora*	CR
Bobartia	*orientalis*	Rare
Cadiscus	*aquaticus*	CR
Corymbium	*theileri*	Critically Rare
Diplosoma	*retroversum*	EN
Disa	*longifolia*	VU
Disa	*longipetala*	CR
Drosanthemum	*calycinum*	NT
Erepsia	*pillansii*	VU
Erica	*piquetbergensis*	CR
Erica	*wittebergensis*	Rare
Euryops	*pectinatus*	VU
Felicia	*josephinae*	EN
Ferraria	*crispa*	VU
Geissorhiza	*barkerae*	EN
Geissorhiza	*brevituba*	VU
Geissorhiza	*imbricata*	NT
Geissorhiza	*purpureolutea*	VU
Geissorhiza	*furva*	EN
Gladiolus	*insolens*	VU
Gladiolus	*watsonius*	NT
Helichrysum	*cochleariforme*	NT
Hermannia	*hispidula*	VU
Hesperantha	*spicata*	
Indigofera	*triquetra*	VU

Ixia	*aurea*	VU
Ixia	*splendida*	VU
Ixia	*lutea*	EN
Ixia	*maculata*	
Lachenalia	*orthopetala*	VU
Lachenalia	*pustulata*	NT
Lachenalia	*gillettii*	EN
Lachenalia	*pustulata*	NT
Lachnaea	*grandiflora*	VU
Lampranthus	*acrosepalus*	VU
Lampranthus	*peacockiae*	VU
Lampranthus	*dilutus*	EN
Lampranthus	*profundus*	VU
Lampranthus	*scaber*	VU
Lapeirousia	*fastigiata*	VU
Leucadendron	*discolor*	VU
Leucadendron	*procerum*	VU
Leucospermum	*arenarium*	CR
Leucospermum	*vestitum*	NT
Leucospermum	*profugum*	EN
Leucospermum	*rodolentum*	VU
Manulea	*annua*	NT
Metalasia	*capitata*	VU
Monsonia	*speciosa*	EN
Moraea	*cooperi*	VU
Moraea	*linderi*	CR
Moraea	*versicolor*	VU
Moraea	*villosa*	VU
Moraea	*miniata*	LC
Muraltia	*arachnoidea*	VU
Nemesia	*acornis*	Rare
Ornithogalum	*thermophilum*	DD
Ornithoglossum	*gracile*	NT
Otholobium	*bolusii*	NT
Phylica	*agathosmoides*	VU
Phylica	*cuspidata*	VU
Phylica	*retrorsa*	VU
Phylica	*strigulosa*	VU
Polycarena	*subtilis*	EN
Psoralea	*peratica*	EN
Pterygodium	*inversum*	EN
Rafnia	*inaequalis*	EN
Ruschia	*cupulata*	VU
Serruria	*fucifolia*	VU
Skiatophytum	*tripolium*	VU
Sorocephalus	*capitatus*	NT
Sparaxis	*grandiflora*	EN
Tetragonia	*spaerocarpa*	VU
Tritonia	*lancea*	EN
Watsonia	*versfeldii*	NT

Bird species of the Moutonshoek Valley and surrounds include the following:

Alopochen aegyptiacus	Egyptian Goose	
Anas undulata	Yellowbilled Duck	
Anthropoides paradiseus	Blue Crane	Endangered
Aquila verreauxii	Black Eagle	
Ardea cinerea	Grey Heron	
Bostrychia hagedash	Hadeda Ibis	
Bubo africanus	Spotted Eagle Owl	
Bubulcus ibis	Cattle Egret	
Burhinus capensis	Spotted Dikkop	
Buteo rufofuscus	Jackal Buzzards	
Cercomela familiaris	Familiar Chat	
Circus ranivorus	African Marsh Harrier	Vulnerable
Colius striatus	Speckled Mousebird	
Corvus albo	Pied Crow	
Cossypha caffra	Cape Robin	
Elanus caeuleus	Black Shouldered Kite	
Emberiza capensis	Cape Bunting	
Falco naumanni	Lesser Kestrel	Vulnerable
Falco peregrinus	Peregrine falcon	Vulnerable
Falco tinnunculus	Rock Kestel	
Francolinus capensis	Cape Fracolin	
Hirundo fuligula	Rock Martin	
Merops apiaster	European Bee-eater	
Nectarinia chalybea	Lesser Doublecollared Sunbird	
Nectarinia famosa	Malachite Sunbird	
Numida meleagris	Helmeted Guineafowl	
Plectropterus gambensis	Spur-winged Goose	
Plegadis falcinellus	Glossy Ibis	
Polemaetus belllicosus	Martial Eagle	Vulnerable
Pycnonotus capensis	Cape Bulbul	
Spreo bicolor	Pied Starling	
Strepopelia capicola	Cape Turtle Dove	
Strepopelia semitorquata	Redeyed Dove	
Threskiornis aethiopicus	African Sacred Ibis	
Zosterops pallidus	Cape White-eye	

Mammal species within Moutonshoek Valley and surrounds include the following:

Aonyx capensis	Cape Clawless Otter	Protected
Atilax paludinosus	Water Mongoose	
Felis caracal	Caracal	
Felis lybica	African Wild Cat	
Galerella pulverulenta	Small Grey Mongoose	
Genetta genetta	Small-spotted genet	
Hystrix africaeaustralis	Porcupine	

Ictonyx striatus	Striped Polecat	
Mellivora capensis	Honey Badger	Protected
Myosorex varius	Forest Shrew	
Oreotragus oreotragus	Klipspringer	
Otocyon megalotis	Bat Eared Fox	
Otomys irroratus	Vlei Rat	
Otomys saundersiae	Saunders' Vlei Rat	
Panthera pardus	Leopard	Vulnerable
Pelea capreolus	Grey Rhebok	
Phabdomys pumilio	Striped Mouse	
Procavia capensis	Rock Dassie	
Suncus varilla	Lesser Dwarf Shrew	
Vulpes chama	Cape Fox	Protected
	Eland	

Reptile species within Moutonshoek and surrounds include the following:

Acontias lineatus grayi	Striped Legless Skink	
Acontias litoralis	Coastal Legless Skink	
Acontias meleagris meleargris	Cape Legless Skink	
Agama atra atra daudin	Southern Rock Agama	
Agama hispida	Southern Spiny Agama	
Aspidelaps lubricus lubricus	Coral Snake	
Bitis arietans arietans	Puff Adder	
Bradypodion occidentale	Namaqua Dwarf Chameleon	
Chersina angulata	Angulate Tortoise	CapeNature Appendix II CITES Listed Vulnerable
Cordylus cataphractus	Armadillo Girdled Lizard	CITES Appendix II
Cordylus macropholis	Large-scale Girdled Lizard	CITES Appendix II
Cordylus polyzonus	Karoo Girdled Lizard	CITES Appendix II
Dasypeltis scabra	Common Egg Eater	CapeNature Appendix II
Dispholidus typus typus	Boomslang	
Gerrhosaurus typicus	Namaqua Plated Lizard	Rare (Near Threatened)
Goggia hexapora	Cedarberg Dwarf Leaf-toed Gecko	
Goggia lineata	Striped Leaf-toed Gecko	
Homopus signatus cafer	Southern Speckled Padloper	Restricted (Near Threatened) CITES Appendix II
Homoroselaps lacteus	Spotted Harlequin Snake	
Lamprophis gattatus	Spotted House Snake	
Meroles knoxii	Knox's Desert Lizard	
Naja nivea	Cape Cobra	
Nucras livida	Karoo Sandveld Lizard	
Nucras tesselata	Striped Sandveld Lizard	
Pachydactylus austeni	Austen's Gecko	
Pachydactylus bibronii	Bibron's Gecko	

Pachydactylus geitje	Ocellated Thick-toed Gecko	
Psammophis crucifer	Cross-marked Grass Snake	
Psammophis leightoni	Forkmarked Sand Snake	
Psammophis notostictus	Karoo Whip Snake	
Psammophylax rhombeatus rhombeatus	Spotted Skaapsteker	
Pseudaspis cana	Mole Snake	CapeNature Appendix II
Rhinotyphlops lalandei	Delalande's Beaked Blind Snake	
Scelotes caffer	Cape Dwarf Burrowing Skink	
Scelotes kasneri	Kasner's Dwarf Burrowings Skink	Vulnerable
Tetradactylus seps	Short-legged seps	
Tetradactylus tetradactylus	Common Long-tailed seps	
Trachylepis capensis	Cape Skink	
Trachylepis homalocephala	Red-sided Skink	
Trachylepis sulcata	Western Rock Skink	
Trachylepis variegata	Variegated Skink	
Typhlosaurus caecus	Cuvier's Blind Legless Skink	
Pachydactylus formosus	Southern Rough Gecko	
Duberria lutrix lutrix	Common Slugeater	CapeNature Appendix II

Fish species within Moutonshoek valley and surrounds include the following:

Cyprius carpio	Carp	
Galaxias zebratus	Cape Galaxias	
Gilchristella aestuaria	Estuarine round-herring	
Micropterus dolomieu	Smallmouth Bass	
Oreochromis mossambicus	Mozambique Tilapia	
Pseudobarbus burgi	Berg river Redfin	
Sandelia capensis	Cape Kurper	
Tilapia sparrmanii	Banded Tilapia	
	Verlorenvlei Redfin	Endangered

Amphibian species within Moutonshoek and surrounds include the following:

Afrana fuscigula	Cape River Frog	
Breviceps namaquensis	Namaqua Rain Frog	
Breviceps rosei	Sand Rain Frog	
Bufo angusticeps	Sand Toad	
Bufo rangeri	Raucous Toad	
Cacosternum capense	Cape Caco	Vulnerable
Strongylopus grayii	Clicking Stream Frog	
Tomopterna delalandii	Cape Sand Frog	

Appendix D: Annual Audit Schedule for Moutonshoek Protected Environment

Management target	2018/19 Actions & Comments	Yes No NA	Quality H/M/L	2018/19 Actions	Completion date	Responsibility
FIRE MANAGEMENT						
Reduce/Prevent the Spread of Fires:						
Construct Priority Firebreaks according to Schedule.	*Comment:*					
Negotiate Firebreak Agreement with Neighbours.	*Comment:*					
Fuel Reduction around Infrastructure to Minimise Risk.	*Comment:*					
Conduct Pre-Fire Season Fire Audit.	*Comment:*					
Mapping of all Fires and Capture on GIS.	*Comment:*					
Maintain Partnership to Improve Fire Management:						
Attend Local FPA Meetings.	*Comment:*					
Maintain Firebreak Agreements with Neighbours.	*Comment:*					
Attend Pre-Fire Season meetings with local Fire & Rescue Service.	*Comment:*					
Determine and Implement Thresholds of Potential Concern:						
Establish a series of Fixed Point Photography Monitoring Plots.	*Comment:*					
Conduct Permanent Protea spp. Plot Monitoring.	*Comment:*					
Conduct Post-Fire Regeneration Monitoring.	*Comment:*					
Set and Monitor Thresholds of Potential Concern.	*Comment:*					

Management target	2018/19 Actions & Comments		Quality	2018/19 Actions		Responsibility

		Yes No NA	H/M/L		Completion date	
INVASIVE ALIEN MANAGEMENT						
Eradicate Alien and Invasive Species:						
Identify and Map all Alien Invasive Flora Within or Threatening the Protected Environment.	*Comment:*					
Compile a Management Unit Clearing Plan.	*Comment:*					
Identify Areas in Maintenance Phase.	*Comment:*					
Implement Biological Control:						
Identify Potential Biological Control Sites and Prioritise Accordingly.	*Comment:*					
Map and Update Biological Control Sites.	*Comment:*					
Implement New and Supplement Existing Biological Control.	*Comment:*					
Monitor Success of Biological Control.	*Comment:*					
Ensure Accurate Record keeping of Biological Control Data.	*Comment:*					
Ensure Biological Control Site Security.	*Comment:*					
Prevent Further Introduction of Aliens:						
Ensure Surrounding Landowners are aware of Relevant Legislation.	*Comment:*					

Management target	2018/19 Actions & Comments	Yes No NA	Quality H/M/L	2018/19 Actions	Completion date	Responsibility
WILDLIFE MANAGEMENT						
Prevent the Introduction of Alien Species:						
Formulate Policy regarding Domestic Animals in the Protected Environment.	*Comment:*					
No Introduction of Alien Fish Species into River Systems.	*Comment:*					
Control Alien and Invasive Species:						
Identify the Occurrence of Alien Fauna on Moutonshoek Protected Environment.	*Comment:*					
Monitor Populations of Alien Fauna on the Protected Environment.	*Comment:*					
Implement Control Measures where appropriate.	*Comment:*					
Measure Success of Control Methods utilised.	*Comment:*					
Manage the introduction of fauna on the Protected Environment:						
All possible introductions of game needs to be in accordance with all the necessary permits and permissions of CapeNature. This includes the construction of and maintenance of a fence according to the CapeNature policy, after which a Certificate of Adequate Enclosure (CoAE) certificate will be issued	*Comment:*					
Evaluate and monitor the impact of fauna on the Protected Environment:						
Monitoring is to be carried out by a mutually agreed third party, who will prescribe indicators of change to determine when management interventions will be necessary.	*Comment:*					
Hunting of game is permitted under the hunting proclamation and rights obtained from the CoAE in the Protected Environment provided it is to manage the game population and remove surplus game.	*Comment:*					

Management target	2018/19 Actions & Comments	Yes No NA	Quality H/M/L	2018/19 Actions	Completion date	Responsibility
SUSTAINABLE HRVESTING						
Identify Management Zones:						
Map the boundaries of each property	*Comment:*					
Divide each property into management zones.	*Comment:*					
Classify Floral Species according to Vulnerability Index:						
Classify harvestable species according to Vulnerability Index	*Comment:*					
Develop list of harvestable species as per floral licence on the property	*Comment:*					
Classify harvestable species according to their distribution per management zone	*Comment:*					
Minimise Harvesting Impact:						
Harvesting and Best Practice Guidelines must adhered to	*Comment:*					
Pickers/Contractors must be accredited	*Comment:*					
Record Keeping:						
Daily Harvesting Record Maintained	*Comment:*					
Monthly Harvesting Records Submitted	*Comment:*					
Invoice and Delivery Note System Maintained	*Comment:*					
Compliance with Relevant Legislation:						
Possession of Valid CapeNature Flora License	*Comment:*					
Understanding of legislation relevant to protected flora	*Comment:*					
Monitoring:						

Identify and demarcate exclusion zones representative of harvestable species	*Comment:*					
Monitoring Program in place to develop Thresholds of Potential Concern	*Comment:*					

Management target	**2018/19 Actions & Comments**	**Yes No NA**	**Quality H/M/L**	**2018 /19 Actions**	**Completion date**	**Responsibility**
EROSION PREVENTION AND CONTROL						
Prevent and Mitigate Soil Erosion:						
Conduct a Soil Erosion Assessment	*Comment:*					
Map Erosion Sites and Ensure Photographs are available.	*Comment:*					
Compile an Erosion Maintenance Plan.	*Comment:*					
Monitor the affectivity of the Erosion Control Mitigation.	*Comment:*					
Monitor Cost Effectiveness of Maintenance.	*Comment:*					
Monitor Site Recovery	*Comment:*					
Conduct a Roads and Footpath Assessment.	*Comment:*					

Management target	**2018/19 Actions & Comments**	**Yes No NA**	**Quality H/M/L**	**2018/19 Actions**	**Completion date**	**Responsibility**
MONITORING AND BASELINE DATA COLLECTION						
Compile Ecological Plan of Operations and Ecological Matrix::						
Compile an Ecological Plan of Operations.	*Comment:*					
Collate all relevant Monitoring and Research Protocols and Data Sheets.	*Comment:*					

Develop and Implement an Approved Ecological Matrix.	*Comment:*					
Create a Biodiversity Resource Inventory:						
Prioritise Species for inclusion on the Ecological Matrix.	*Comment:*					
Compile and Implement the Ecological Matrix.	*Comment:*					
Collect Specimens and Submit to CapeNature Scientific Services.	*Comment:*					
Analyse data, re-assess and implement Adaptive Management Strategies.	*Comment:*					
Implement Monitoring Programme:						
Review Monitoring Protocols.	*Comment:*					
Identify Monitoring Needs of Moutonshoek Protected Environment in consultation with CapeNature.	*Comment:*					
Establish Indicators for Monitoring.	*Comment:*					
Implement Monitoring Activities as per Ecological Matrix.	*Comment:*					
Report on Monitoring Activities as per Ecological Matrix.	*Comment:*					
Analyse data, re-assess and implement Adaptive Management Strategies.	*Comment:*					
Implement Monitoring Programmes as per Ecological matrix.	*Comment:*					

Management target	**2018/19 Actions & Comments**	**Yes No NA**	**Quality H/M/L**	**2018/19 Actions**	**Completion date**	**Responsibility**
BIODIVERSITY SECURITY						
Improved security and safety of the biodiversity assets on the Protected Environment:						

Ensure Notarial Deed with surveyor diagram and title deed restrictions are registered with the Notary and Surveyor General against the property.	*Comment:*					
Ensure appropriate signage at access points.	*Comment:*					

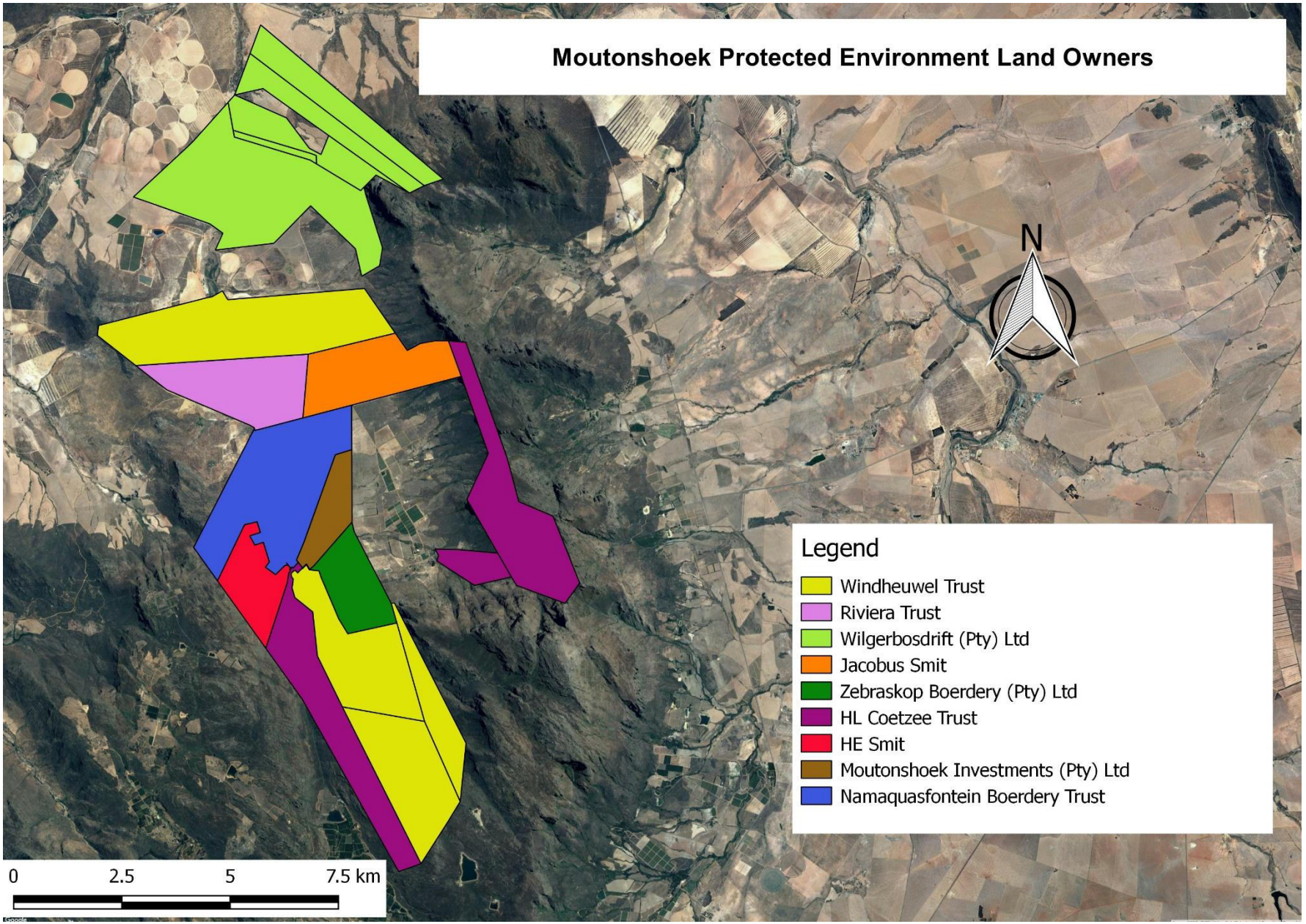
Management target	2018/19 Actions & Comments	Yes No NA	Quality H/M/L	2018/19 Actions	Completion date	Responsibility
LEGAL COMPLIANCE						
Ensure that all legal requirements are met:						
All development needs to be done according to the NEMA principles and follow the applicable legislation and procedures of all relevant stakeholders.	*Comment:*					
All water management within the Protected Environment must comply with the National Water Act (No 36 of 1998).	*Comment:*					
Abstraction of water from water sources originating in the Protected Environment must not affect the biodiversity of the Protected Environment.	*Comment:*					
Creation of cooperative structures with law enforcement officials.	*Comment:*					
Prosecution of any offender caught committing an offence.	*Comment:*					

Management target	2018/19 Actions & Comments	Yes No NA	Quality H/M/L	2018/19 Actions	Completion date	Responsibility
MANAGEMENT EFFECTIVENESS						
Annual audit completed:						
Conduct annual audits.	*Comment:*					
Auditing systems inform management:						
Implementation , annual review and update of management plan	*Comment:*					

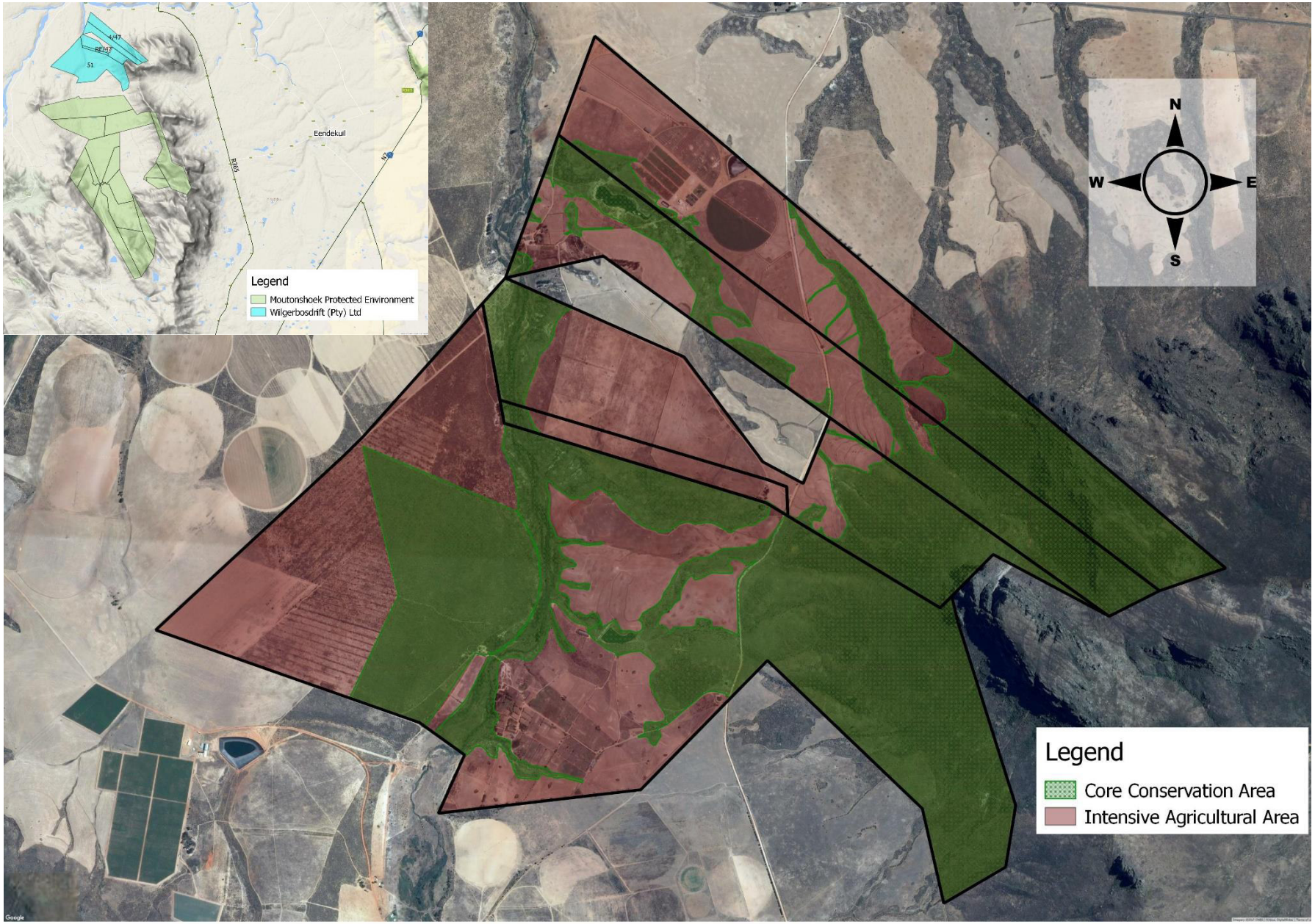
Compile detailed work plan identifying specific targets for achieving management	*Comment:*					

Management target	**2018/19 Actions & Comments**	**Yes No NA**	**Quality H/M/L**	**2018/19 Actions**	**Completion date**	**Responsibility**
INFRASTRUCTURE						
All infrastructures on the Protected Environment is adequately maintained:	*Comment:*					
Develop and implement a scheduled maintenance programme to maintain facilities and infrastructure in a condition that meet relevant environmental, health and safety requirements.	*Comment:*					

Appendix H-1: Moutonshoek Protected Environment Land Owners and their location within the Protected Environment



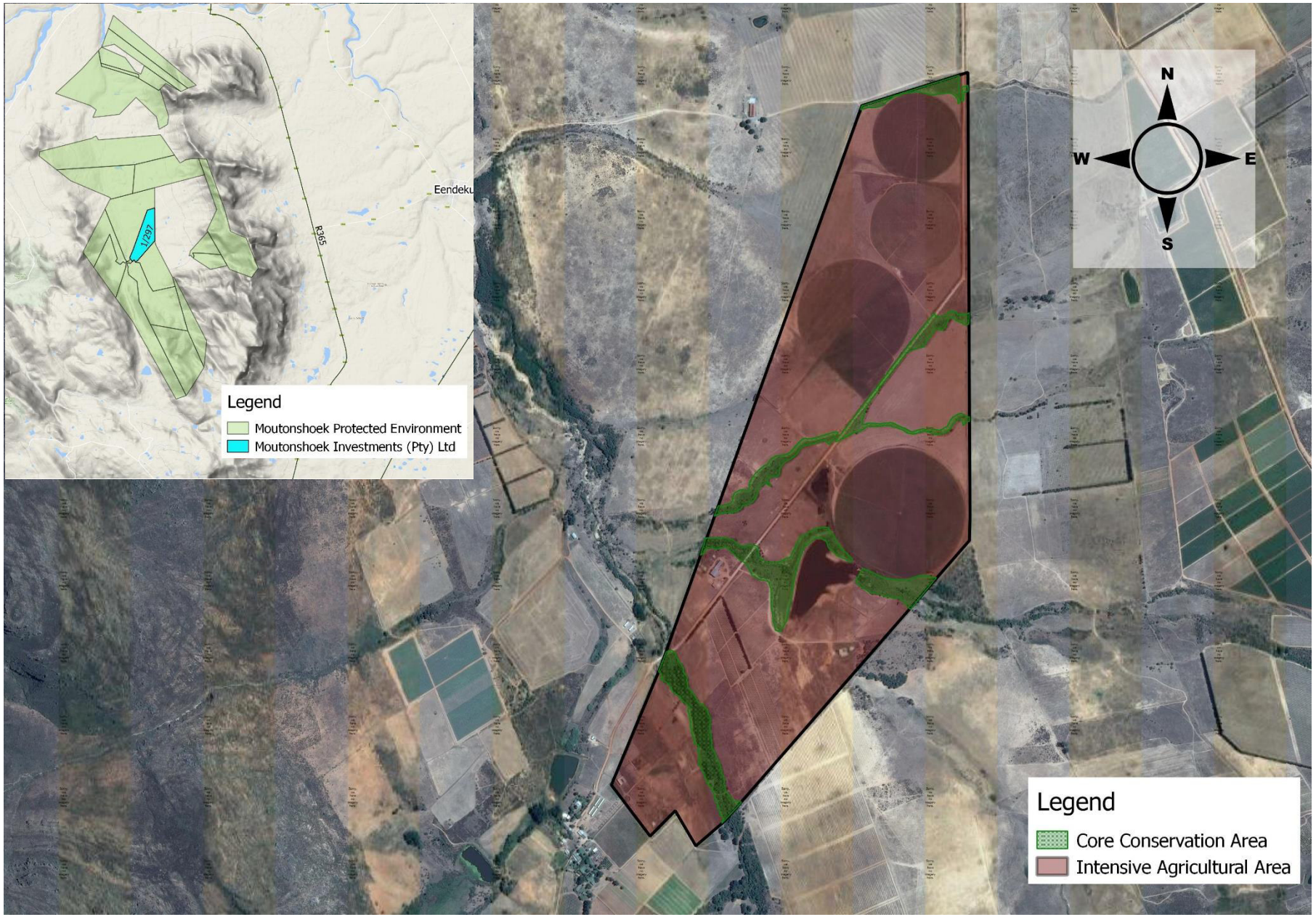
Appendix H-2: Wilgerbosdirft (Pty) Ltd Zonation Map



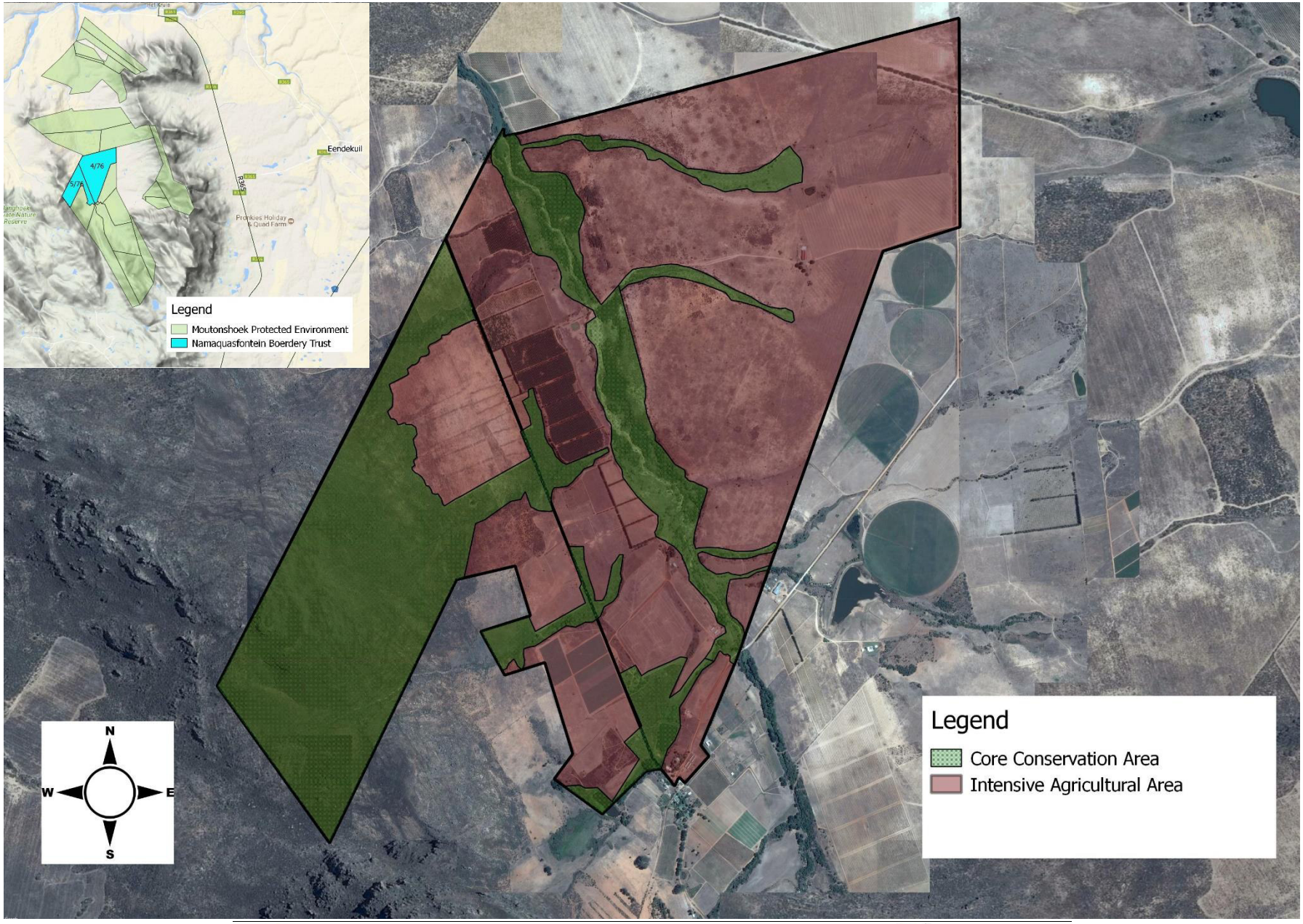
Appendix H-3: Jacobus Smit Zonation Map

Appendix H-4: HE Smit Zonation Map

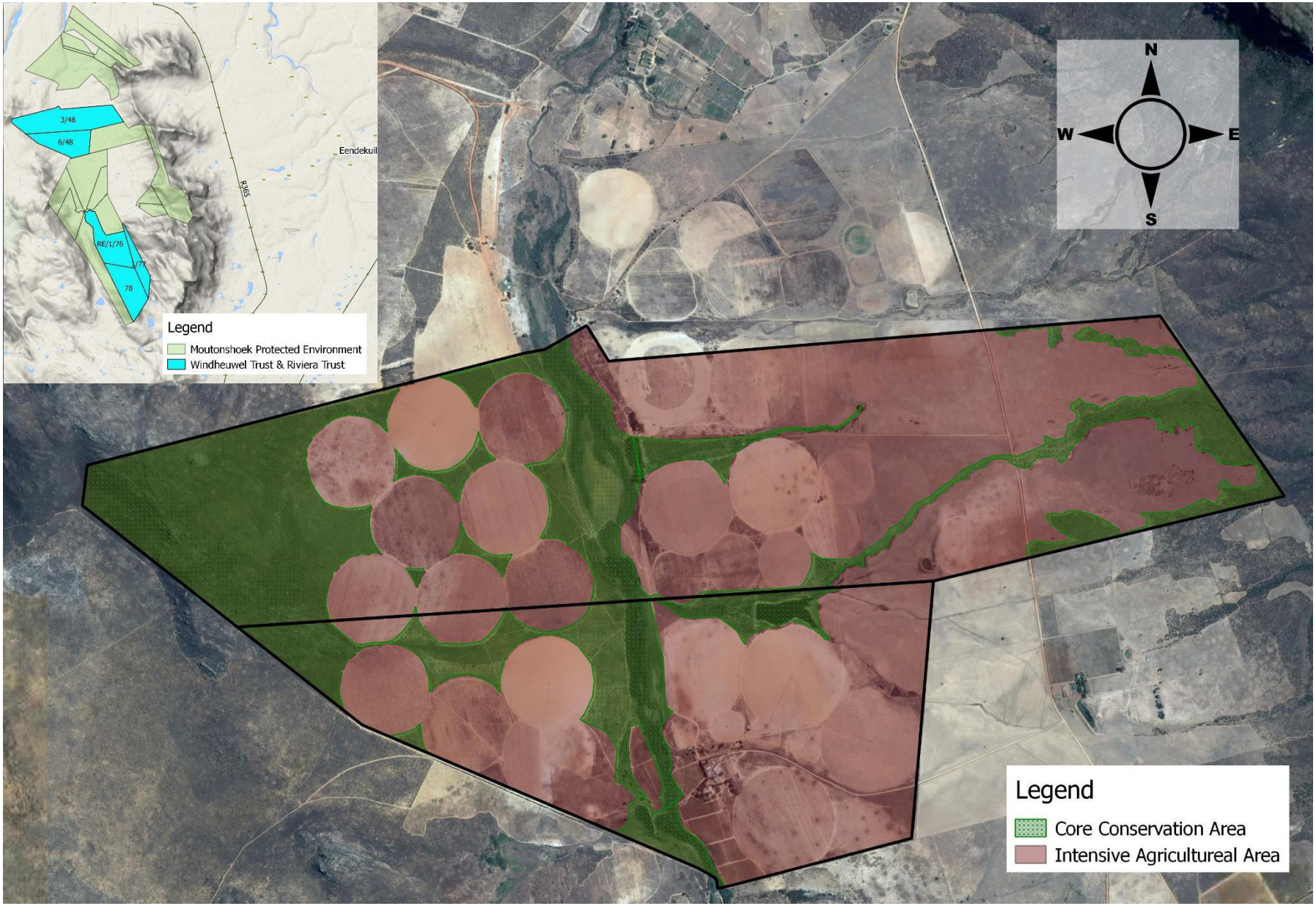
Appendix H-5: Moutonshoek Investments (Pty) Ltd Zonation Map



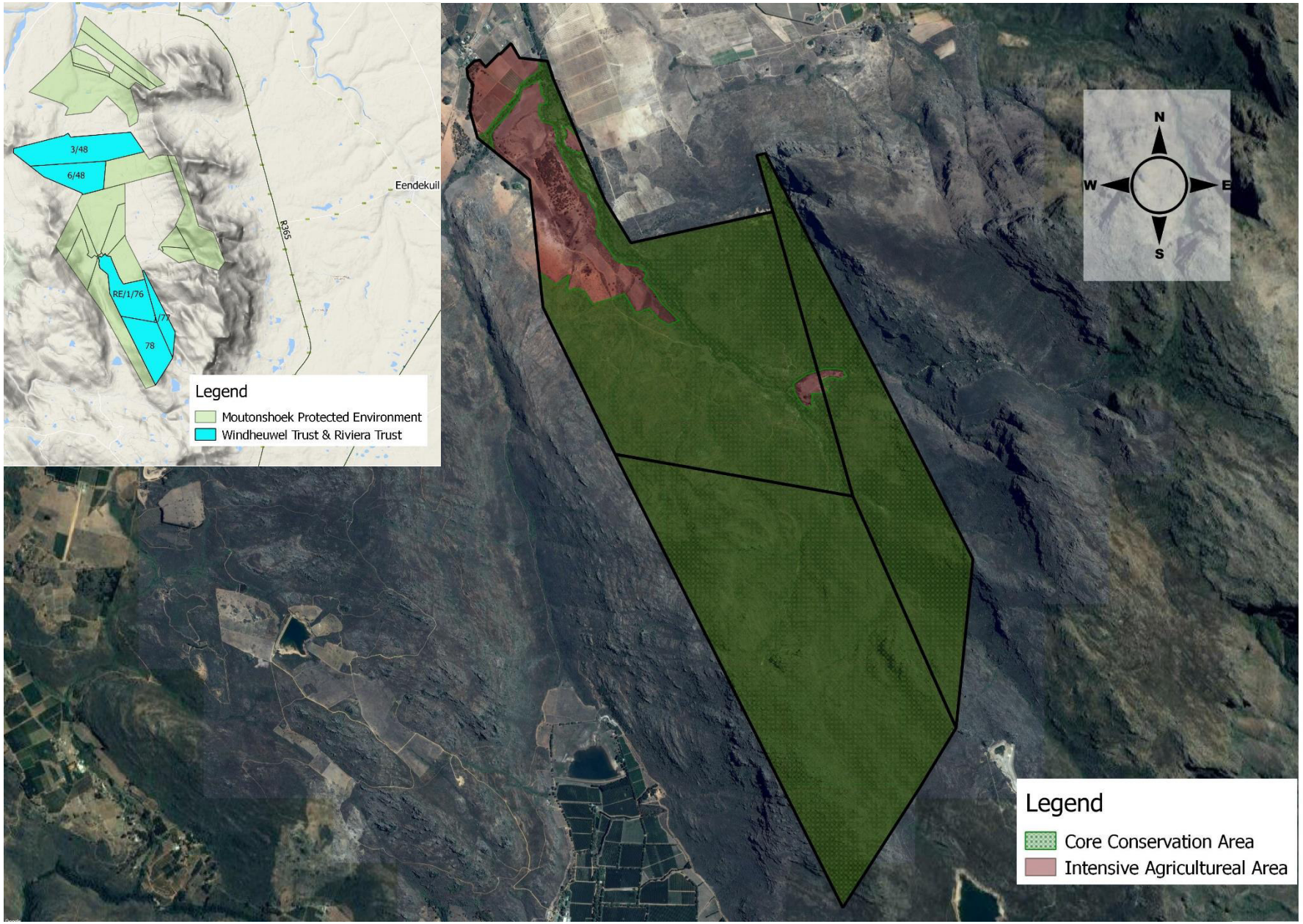
Appendix H-6: Namaquasfontein Boerdery Trust Zonation Map



Appendix H-7.1: Windheuwel Trust & Riviera Trust Zonation Map



Appendix H-7.2: Windheuwel Trust & Riviera Trust Zonation Map



Appendix H-8.1: HL Coetzee Trust & Zebraskop Boerdery (Pty) Ltd