APPENDIX F	ENVIRONMENTAL MANAGEMENT PROGRAMME

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APPENDIX F

ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr)

PROPOSED ESTABLISHMENT OF 21 HECTARES, ROOIBOS CULTIVATION LANDS AT ZONDERWATERKRAAL, FARM 951/0, NIEUWOUDTVILLE
DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

(DENC REFERENCE NUMBER: NC/BA/01/NAM/HAN/NIE1/2017)

THE CLIENT

Northern Cape Department of Agriculture, Land Reform and Rural Development

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Reg.: Cederberg Conservation Services CC – Reg. No 2009/056651/23

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v) Abbreviations

CBA	Critical Biodiversity Area
DENC	Department of Environmental Affairs and Nature Conservation
EA	Environmental Authorization
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
ECO	Environmental Control Officer
EMPr	Environmental Management Programme
FES	FOOTPRINT Environmental Services
GPS	Global Positioning System
GIS	Global Information System
IEM	Integrated Environmental Management
NEMA	The National Environmental Management Act No 107 of 1998 as amended.
NID	Notice of Intend to Develop
OESA	Other ecological Support Areas
PPP	Public Participation Process

SECTION A: OVERVIEW OF THE PROJECT

1. Introduction

A Scoping/EIA process is currently being undertaken on Zonderwaterkraal Farm 951/0, Nieuwoudtville. The landowner, Mr Gerrie Koopman wishes to expand his organic rooibos tea (*Aspalathus linearis*) production capacities with another 21 hectares. Rooibos is an endemic plant to the Fynbos Biome that includes the most northerly section of the Biome – the Nieuwoudtville Plateau in the Northern Cape. The express aim is to addressing economies of scale and ensuring financial sustainability in a market that is characterized by significant volatility in price year on year. Mr. Koopman is part of the Rooibos emerging farmers development Ilima Letsema project.

The landowner seeks permission to develop 21 hectares for Rooibos tea production which will entail the clearance of natural vegetation for the preparation of the production areas. Two areas have been identified as suitable production areas after a comprehensive soil sample study undertaken by BVI Consulting Engineers in 2015. The establishment of the cultivation lands will entail the clearance of natural vegetation, firstly by brush cutting the vegetation and then ploughing it into the soil during the preparation phase. These areas will be cleared across the prevailing wind direction and >10m of natural vegetation strips will be retained between cultivated areas to serve as a refuge for beneficial insects and natural occurring plant species and more importantly to provide a wind beak to prevent erosion, caused by wind. Cleared vegetation will be moved from the developed area and ploughed or distributed to the adjacent natural veld where it will decompose naturally. As the production will be based on organic.

The site is situated within the agricultural farm of The SG digit code for the cadastre is C01500000000095100000 and the site is located at GPS coordinates 31° 51’ 35.48” S & 19° 03’ 50.78” E. Access to the site: Turn right on the R27 (road between Vanrhysdorp and Calvinia), towards the town of Nieuwoudtville, pass Nieuwoudtville and travel towards the Papkuilsfontein turn off, turn right and follow the dirt road towards Zonderwaterkraal. The farm can be reached after travelling 55 kilometres from Nieuwoudtville.

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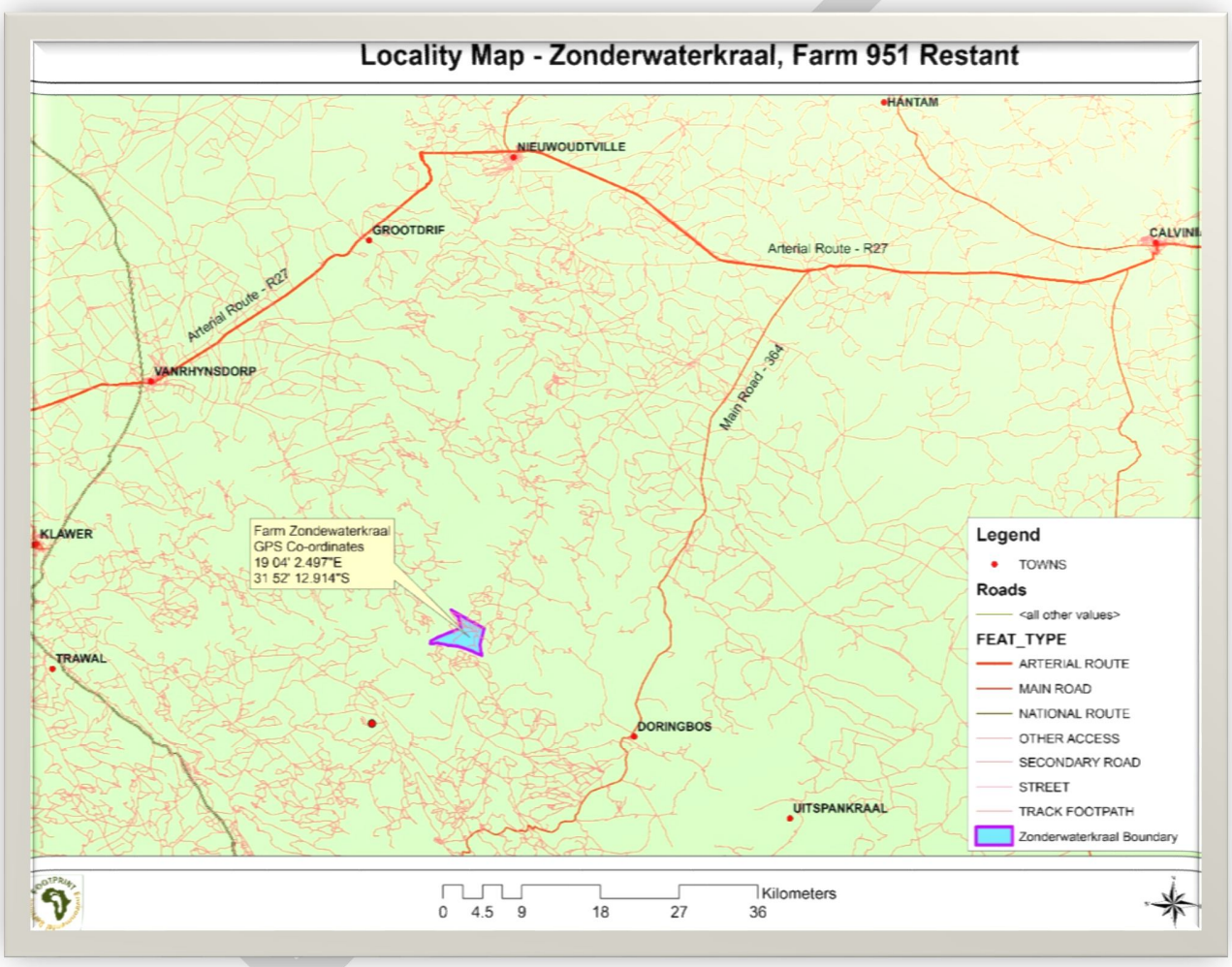
FOOTPRINT Environmental Services (Registered as Cederberg Conservation Services CC – 2009/056651/23) was appointed by Northern Cape Department of Agriculture, Land Reform and Rural as independent Environmental Assessment Practitioners to undertake the Basic Assessment in accordance with the requirements of NEMA; Act No. 107 of 1998 and the 2014 Regulations as amended.

2. Key components of the proposed development

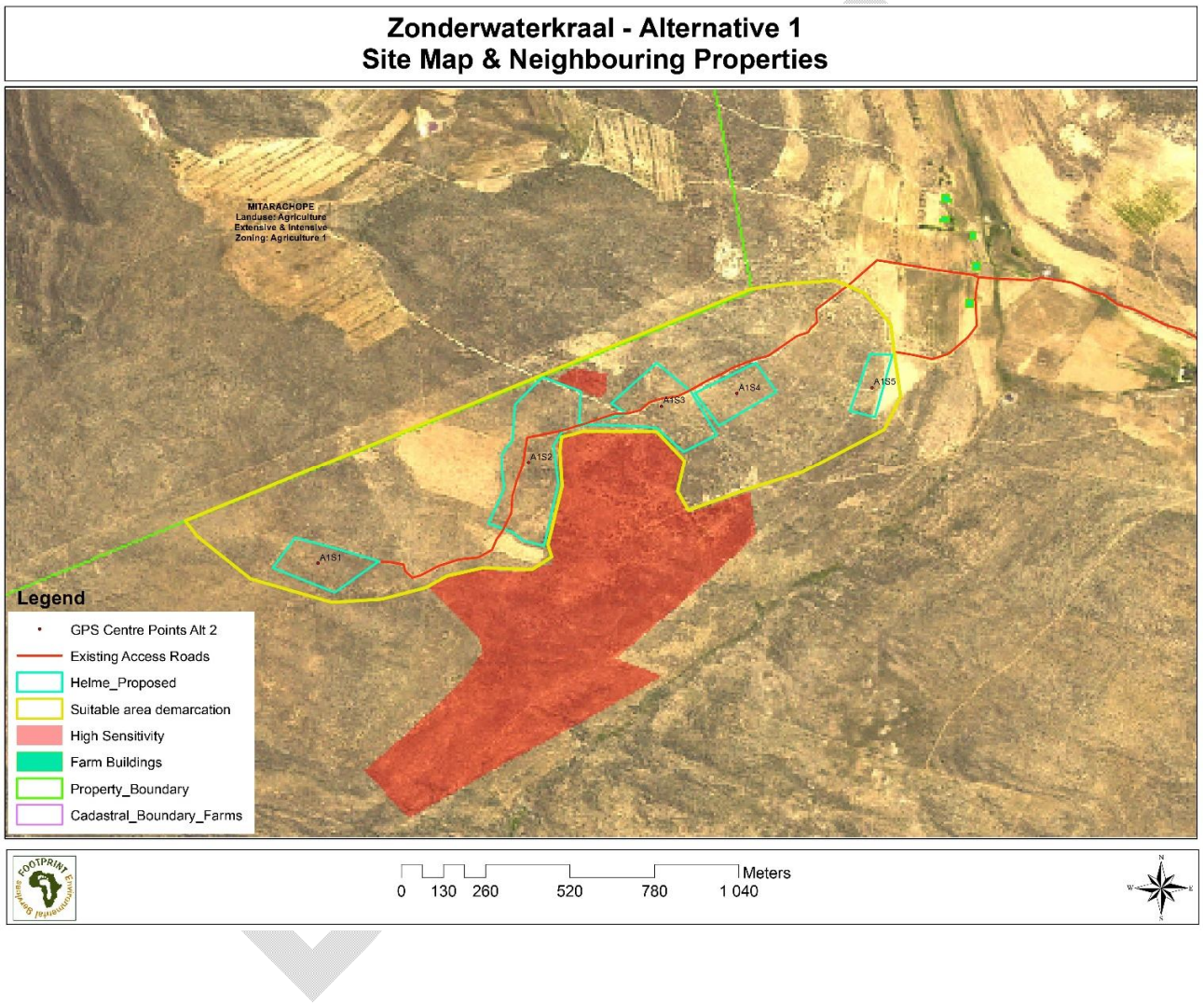
The proposed development will have the following key components / phases and this EMPr describes these in depth.

- *Institutional Arrangements – this describes the various roles and responsibilities of key stakeholders (Project Proponent; the Environmental Control Officer; Project Manager (landowner in this instance), provides administrative and legislative processes and protocols on how the development should unfold;*
- *Planning and design of the cultivated lands – this has been undertaken through a soil investigation study conducted by BVi Consulting Engineers – aspects such the identification and mapping of 'no go" areas and the development of method statements still needs to be undertaken;*
- *The development phase - describes activities to ensure that the owner and the staff become more environmentally sensitive through training and awareness sessions. It also describes how their impacts during the clearance phase can be mitigated for aspects such as the development footprint, faunal species, soils and the substrate, heritages resources and visual values. All these activities and impacts should be monitored and evaluated in order to ensure compliance.*
- *The operational phase - will focus on aspects such as the minimisation of wind erosion, the management of natural strips and adherence to certification protocol and guidelines.*
- *The decommissioning phase - must comply with the South African labour legislation at that future date.*

Map 1 : Locality map – Zonderwaterkraal, Farm 951/0



Map 2 : Site Development Plan – Zonderwaterkraal



3. Findings of the Environmental Impact Assessment Report

Table 1 – Summarise the key findings of the Environmental Impact Assessment Report

3.1 Planning, design and development phase	
Aspect	Description of impacts
Impacts on geographical and physical environment	Soil erosion due to alteration of the surface run-off characteristics. The denuded surface created on site could result in erosion of top soil and ultimately in the alteration of the site scale hydrology.
Loss of topsoil due to poor topsoil management and surface water flows during storms	Loss of soil would translate into a loss of fertility and loss of agricultural potential.
Contamination of groundwater	Contamination of groundwater with toxic or polluting substances may result in water being too polluted for use by humans or toxic to other living organisms should it surface as a spring or a seep.
Degradation of the agricultural lands and surrounding natural vegetation through trampling	Loss of soil and vegetation cover in areas outside of the production footprint.
Loss of vegetation due to development activities	Loss of biodiversity and alteration in surface hydrology and accelerated erosion of soil and topsoil.
Impacts on drainage lines	Loss of flood attenuation, altered surface flows, erosion of riparian areas.
Impacts on biological features	Loss of species already under threat will further enhance the probability of eventual extinction of species.
Establishment of alien invasive plant species	Alien invasive species physically supplanting indigenous species and driving them into local extinction. Cumulatively alien invasives can cause the extinction of species across the full distribution of those species.
Socio-economic impacts	The influx results in local people being unable to compete for job opportunities. Young woman are discriminated against in the work place this results in lack of employment, women feeling

	disempowered. Improved standards of living for the employed. Reduced quality of residential environment for humans, potential illness. Residents are subjected to change in their environment to such a degree that it no longer appears the same to them.
Impacts on Heritage Resources	Loss of heritage resources due to unearthing.
Visual Impacts	A development that is intrusive and objectionable to residents
Noise Impacts	Noise impacts will be associated with the presence of agricultural machinery and the presence of people in the lands. This will only be relevant during the clearing and planting season and then when transporting the cut tea to the Co-ops.
3.2 Impacts during the operational phase	
Geographical and physical aspects	There is a high degree of probability that the impact can be reversed due to the fact that Rooibos is an indigenous crop and as such well adapted to the soils within the area. Therefore it is desirable for the soils to remain in their natural state. Furthermore in the production practice it is common for producers to leave strips of natural vegetation between production rows of Rooibos to serve as windbreaks. If these strips are >10m wide edge effects on the natural vegetation are to a great extent mitigated. The result is that these strips can serve as source areas of species for recolonisation of the disturbed area and the restoration of diversity in the medium to long term. The organic content and soils nutrient cycling could be restored.
Impacts on biological resources	Degradation of vegetative cover adjacent to the site development. Loss of vegetation due to operational activities. The habitat of threatened plants and faunal species lost or disturbed due to operational activities.
Impacts on drainage lines	Loss of ecological functioning along river courses.
Too frequent fires	Reduced diversity resulting from too frequent fires and an inability from

	plant communities to regenerate after fire
Socio-economic impacts	More probability for the agricultural business to remain economically sustainable. Assurance of current employment opportunities and through expansion of the business the need to have greater numbers of temporary staff during harvest thus seasonal work for the currently unemployed in the low skilled job segment
Colonisation by Alien Invasive Plant Species	Loss of biodiversity through physical supplanting of indigenous species by invasive alien plants.
Impacts on Heritage Resources	None expected.
Socio-economic impacts	Change in community resources with the gain of agricultural land. Influx of Skilled People. Young women's social well-being improves through employment. Improved economic and material well being as the skills base of the local population expands and deepens. Increased income into certain households.
Visual impacts	Restricted to the development phase.
Noise impacts	Associated with the presence of agricultural machinery and the presence of people in the field during the growth and harvest periods of the crop. Noise impacts in this remote agricultural community within a landscape with which this development shares an affinity would be generic across most properties.
3.3 Impacts during the decommissioning phase	
Geographical and physical aspects	This impact would be low – The cessation of agricultural activity would allow the natural vegetation to re-establish.
Impacts on biological resources	Restoration of the natural ecosystem that occupied the transformed areas prior to the creation of the agricultural system will be positive.

Socio-economic impacts	Would result in a negative impact as it will negatively influence employment opportunities to unskilled rural poor.
Impacts on Heritage Resources	None
Visual Impacts	None – as the area will be restored to its natural condition – however this could be slow.

SECTION B : PURPOSE, LEGAL REQUIREMENTS, STRUCTURE OF THE EMP

4. Purpose of the EMPr

The EMPr has been included as part of the Environmental Impact Assessment Report (EIAR) to provide a link between the impacts identified in the Environmental Impact Assessment (EIA) process and the actual environmental management on the property during project planning, construction, operation and decommissioning.

5. Legal requirements

In accordance with Section 24N of NEMA (as amended) the Northern Cape Department of Environmental and Nature Conservation, requires the submission of an EMPr. The contents of the EMPr must meet the requirements outlined in Section 24N (2) and (3) of NEMA (as amended) and Appendix 4 of the NEMA EIA Regulations, 2014 (as amended). The EMPr must address the potential environmental impacts of the proposed activity on the environment throughout the project life cycle including an assessment of the effectiveness of monitoring and management arrangements after implementation.

The Department requires that the EMPr be submitted together with the EIAR so that it can be considered simultaneously.

In accordance with Section 24N of NEMA (as amended) the Department of Environmental Affairs, requires the submission of an EMP'r. The contents of the EMPr must meet the requirements outlined in Section 24N (2) and (3) of NEMA (as amended) and Appendix 4 of the NEMA EIA Regulations, 2014 (as Amended). The EMPr must address the potential environmental impacts of the proposed activity on the environment throughout the project life cycle including an assessment of the effectiveness of monitoring and management arrangements after implementation.

The Department requires that the EMPr be submitted together with the EIAR so that it can be considered simultaneously.

Table 2: Section 24N (2) and (3) of the NEMA (as amended) listing the requirements of an EMPr.

24N.(2) the environmental management programme must contain-
(a) information on any proposed management, mitigation, protection or remedial measures that will be undertaken to address the environmental impacts that have been identified in a report contemplated in subsection 24(1A), including environmental impacts or objectives in respect of –
(i) planning and design;
(ii) pre-construction and construction activities;
(iii) the operation or undertaking of the activity in question;
(vi) the rehabilitation of the environment; and
(vii) closure, where relevant.
(b) details of –
(i) the person who prepared the environmental management programme; and
(ii) the expertise of that person to prepare an environmental management programme
(c) a detailed description of the aspects of the activity that are covered by the draft environmental management plan;
(d) information identifying the persons who will be responsible for the implementation of the measures contemplated in paragraph (a);
(e) information in respect of the mechanisms proposed for monitoring compliance with the environmental management programme and for reporting on the compliance.
(f) as far as is reasonable practicable, measures to rehabilitate the environment affected by the undertaking of any listed activity or specified activity to its natural or predetermined state or to a land use which conforms to the generally accepted principle of sustainable development; and
(g) a description of the manner in which it intends to-
(i) modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation;
(ii) remedy the cause of pollution or degradation and mitigation of pollutants; and
(iii) comply with any prescribed environmental management standards or practices.
(3) the environmental management programme must , where appropriate-
(a) set out time periods within which the measures contemplated in the environmental management programme must be implemented;
(b) contain measures regulating responsibilities for any environmental damage, pollution, pumping and treatment of extraneous water or ecological degradation as a result of prospecting or mining operations or related mining activities which may occur inside and outside the boundaries of the prospecting area or mining area in question; and
(c) develop an environmental awareness plan describing the manner in which-
(i) the applicant intends to inform his or her employees of any environmental risk which may result . from their work; and
(ii) risks must be dealt with in order to avoid pollution or the degradation of the environment.

Table 3 : Appendix 4 of the NEMA EIA Regulations (2014)(as Amended), listing the follow requirements for a EMPr.

According to Appendix 4, the contents of an environmental management programme must contain the following information;

(a) details of –

(i) the EAP who prepared the EMPr; and

(ii) the expertise of that EAP to prepare an EMPr, including a curriculum vitae;

(b) a detail description of the aspects of the activity that are covered by the EMPr as identified by the project description;

(c) a map at a appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitiveness of the preferred site, indicating any areas that should be avoided, including buffers;

(d) a description of the impact management outcomes, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development including -

(i) planning and design;

(ii) pre-construction activities

(iii) construction activities;

(iv) rehabilitation of the environment after construction and where applicable post closure'

(v) operation activities;

(e) a description and identification of impact management outcomes required for the aspects contemplated in paragraph (d);

(f) a description of proposed impact management actions, identifying the manner in which the impact management outcomes contemplated in paragraph (d) will be achieved, and must, where applicable, include actions to-

(i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation;

(ii) comply with any prescribed environmental management standards or practices;

(iii) comply with any applicable provisions of the Act regarding closure, where applicable; and

(iv) comply with any provisions of the Act regarding financial provisions for rehabilitation; where applicable;

(g) the method of monitoring the implementation of the impact management actions contemplated in paragraph (f);

(h) the frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);

(i) an identification of the persons who will be responsible for the implementation of the impact management actions;

(j) the time periods within which the impact management actions contemplated in paragraph (f) must be implemented;

(k) the mechanisms for monitoring compliance with the impact management actions contemplated in paragraph (f);

(l) a program for reporting on compliance, taking into account the requirements as prescribe by the Regulations;

(m) an environmental awareness plan describing the manner in which—

(i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and

(ii) risks must be dealt with in order to avoid pollution or the degradation of the environment;
(n) any specific information that may be required by the competent authority measures contemplated in paragraph (b);

6. Structure of the EMPr

As mentioned above the EMPr aims to address environmental management throughout the entire project cycle, from planning, development/construction, operation and decommissioning. The EMPr for the proposed Rooibos Tea cultivated lands is structured in the following way:

- *Project overview;*
- *Purpose, legal requirements, structure of the EMP'r;*
- *Institutional arrangements;*
- *Planning and design;*
- *Social responsibility programme;*
- *Development phase;*
- *Operation phase and decommissioning*

7. Expertise of Environmental Assessment Practitioners

Section 24N (2) and (3) of NEMA (as amended) and Appendix 4 of the NEMA EIA Regulations, 2014 (as amended) requires that an Environmental Management Programme must include the details of the person(s) who prepared the EMPr, and the expertise of that person to prepare an EMPr. In this regard, the *Curriculum Vitae* of the Environmental Assessment Practitioners who compiled this EMPr are included in **Appendix 1**.

Other Specialist used in compiling this Basic Assessment Report;

Name of the company	Specialist	Report
BVi Consulting Engineers	M. Pretorius	Soil study – to determine soil suitability

Nick Helme Botanical Surveys	Helme Nick	Botanical assessment of proposed new cultivation of Rooibos Tea on Zonderwaterkraal, Farm, Suid Bokkeveld, Northern Cape.
ACRM	Jonathan Kaplan	Heritage Impact Assessment, proposed cultivation of Rooibos Tea on Farm 951, Zonderwaterkraal, Nieuwoudtville, Hantam Municipality, Northern Cape.
NATURA VIVA cc	John Almond	PALAEONTOLOGICAL HERITAGE COMMENT, ZONDERWATERKRAAL

See Appendix D – Specialist reports in the Environmental Impact Assessment Report

SECTION C : INSTITUTIONAL ARRANGEMENTS

This EMP'r, once approved by the competent authority, DENC, should be seen as binding to the Applicant and any person acting on the Applicant's behalf, including but not limited to agents, employees, associates, contractors and service providers. The Applicant and all other persons who may be directly involved in the development are also bound by their general Duty of Care, as stated in Section 28 of the National Environmental Management Act, 1998:

Duty of Care

"Every person who causes, has caused, or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm cannot reasonably be avoided or stopped, to minimize and rectify such pollution or degradation of the environment"

This section describes the role and the responsibilities of the key stakeholders that are involved in the development, the implementation and review of the EMPr.

8. Roles and responsibilities

8.1 Project proponent

The Northern Cape Department of Agriculture, Land Reform and Rural Development, the project proponent, is responsible for the implementation of the EMPr and must ensure that conditions of the Environmental Authorisation (EA) are implemented and that these documents are included in all contracts with service providers. Where activities and tasks are undertaken by workers and / or contractors the project proponent remains liable for non-compliance. Therefore the project proponent is responsible for liaising with the relevant authorities in the preparation and implementation of the EMPr and meeting the conditions of the EA.

The EA is only **valid for 3 years** and the development must commence within this timeframe. If the project does not commence within this time period the holder must lodge an application for the amendment of the

valid EA. Such an application will be made to extend the timeline for commencement. The application must be lodged before the expiry date of the current EA.

The Project proponent must appoint an Environmental Control Officer (ECO) for the entire project to ensure that the recommendations of the EA are adhered to. The Environmental Control Officer (**ECO**) must have a degree / diploma in environmental management from a recognised South African University or Technicon, with a minimum of two years' experience in the field of Environmental Management and specifically as an environmental site officer.

8.2 Environmental Control Officer

It is recommended that an Environmental Control Officer (**ECO**) is appointed for the entire duration of the project with the following duties and responsibilities.

- Site inspection at regular intervals to evaluate compliance with the EA and conditions of the EMPr;
- Completion and submission of audit reports to the Project Proponent on implementation and non-compliance of the EA and EMPr (See Appendix 2 – Environmental audit);
- Take the necessary action to ensure compliance with the requirements of the EMPr at all times;
- Attend site meetings (when needed) with the Project Proponent to report, discuss and review performance in the implementation of the EMPr, this to be a standing point on the monthly meeting agenda;
- Communicate and provide information regarding the implementation of the EMPr with the workers / contractor when needed;
- Maintain a register of the dates and times and discussion with project team and various specialists when on site;
- Communicate all aspects of the EMPr to the site staff prior to commencement of any activity that has the potential to cause environmental impact;
- Provide basic environmental awareness training
- Undertake a final audit of the site on completion of the project and submit a report to DEA&DP as per conditions of the EA.

- Must complete the following reports and records (a) site instructions, (b) emergency preparedness and response procedures, (c) incident reports, (d) training records, (e) site inspection reports, (f) work procedures, (g) monitoring reports, (h) auditing reports and (i) complaints received. These records should be kept for at least two years after completion of the project.

8.3 Project Manager

Although the Project Manager **(PM),** in this case the landowner, is responsible for the coordination of various activities during the clearing phase, he must also perform key duties to implement the EMPr. The PM must delegate the implementation of the EMPr to the staff to ensure compliance and must monitor performance from info received from the Environmental Control Officer's monthly reports.

The PM shall be responsible for ensuring that all activities on site are undertaken in accordance with the environmental provisions detailed in this EMPr and the EA – and must ensure that staff are duly informed of their roles and responsibilities in this regard.

The PM and staff have a duty to demonstrate respect and care for the environment in which they are operating and will be responsible for the cost of rehabilitation of any environmental damage that may result from non-compliance with any environmental regulations.

9. Administration

9.1 Location of the EMPr

This EMPr will be a dynamic document and once approved by DENC, may change over time when more information becomes available. However, any substantial changes will be communicated to DENC for acceptance before any such changes are implemented. A copy of the EMPr will be available at the property at all times.

9.2 Site Meetings

The ECO shall attend the progress and/or site meetings on a monthly basis to provide feedback on any outstanding or contentious environmental issues. The ECO must ensure that environmental issues are a standing point on the agenda during these meetings and must keep records of these meetings.

9.3 Failure to comply with the Environmental Considerations

This EMPr shall be binding on all the parties involved in this development and shall be enforceable at all levels within the project. Work shall at all times be approached with due concern to the conservation of the local natural environment. Management and site procedures shall be directed towards minimising environmental impact and / or damage in all aspects of the work.

The ECO may order the Project Proponent and or the Project Manager to suspend part or all of the work if the contractors / workers cause damage to the environment by not adhering to the conditions and specifications set. The suspension will be enforced until such time as the offending parties' actions, procedure and/or equipment are corrected.

Failure to show adequate consideration to the environmental aspects of the EMPr as well as the conditions of approval by DENC will result in the suspension of all work until such time as the offending actions or procedures are corrected. No extension of time will be granted for such delays and all costs will be borne by the project proponent.

Please see Appendix 3 – Fines and penalties.

SECTION D : PLANNING AND DESIGN

10. Planning and design of the cultivated lands

BVi Consulting Engineers completed a soil investigation survey to ascertain its suitability for the cultivation production of Rooibos Tea at Zonderwaterkraal. Three sites were identified on the property that are suitable for Rooibos tea production (BVi 2016). **See Appendix D – Specialist reports in the EIAR.**

The contractor and the ECO must plan, map and develop the site establishment process using the following criteria;

- *Take environmental sensitivity into consideration (See EIAR);*
- *Identify and map all the cultivated areas as well as the strips to be retained.*
- *Natural strips should be no go areas – and should be clearly marked*
- *Identify areas where cut vegetation will be placed;*
- *Compile a waste management strategy that focuses on waste reduction, re-use and recycling and*
- *Identify and implement activities that focus on the minimisation of the development footprint;*

11. "No go" areas

The areas outside the development footprint and the natural vegetation strips will be no go areas. These areas must be clearly identified and demarcated.

12. Method statements

Method statements which are a written submission by the Contractor in response to an environmental specification / request by the Project Manager set out a plan, materials, labour and methods that the Contractor will use to complete a specific activity.

Specific areas that will need method statements are;

- *The site establishment process and plan;*
- *Site preparation plan;*
- *Management of strips; and*

- *Fire prevention.*

SECTION E : SOCIAL RESPONSIBILITY PROGRAMME

13. Local employment

The PM, the landowner in this instance, must ensure that opportunities and benefits associated with the establishment of the cultivated lands will create local employment (women should get preference) and will improve capacity building – this will ensure growth of the local economy.

In order to ensure growth in the local economy the following must be implemented;

- *Preference given to local unskilled labour;*
- *Facilitate mechanisms to enable these local people to access more long term employment opportunities;*
- *Where practically possible reserve a set number of jobs for young women;*
- *Facilitate mechanisms to enable women to access these employment opportunities;*
- *Ensure that equity of remuneration for men and women doing the same job;*

SECTION F : DEVELOPMENT PHASE

Before site clearing commences Northern Cape Department of Agriculture, Land Reform and Rural Development must **provide DENC with seven (7) calendar days'** notice of intent to commence with the development phase. The notice must contain proof of **compliance with any specifications of the Environmental Authorization (EA).**

14. Environmental awareness training

In order to achieve environmental management goals and objectives it is important that contractors and other services providers are aware of their responsibility toward environmental legislation, the conditions of the EA and the content of this EMP. The PM must ensure that his staff are well informed about their responsibilities and must at all times ensure that they obey these.

The PM and employees must attend an environmental awareness training session presented by the ECO. This must include information on the key environmental features, the project's environmental requirements, possible environmental impacts, the do's and don'ts, the no go areas, prevention of fires. This must be held within the first week from the commencement date. Thereafter regular training sessions should be arranged to improve awareness levels.

Training records must be regularly updated and monitored to ensure that staff is well informed.

15. The development footprint

In order to minimise the impacts on fauna, flora and ecological process the development footprint should be kept to the proposed 19 hectares.

In order to keep to the smallest possible footprint, the following must be implemented;

- *A site development plan as identified in Section 10 must be adhered to;*
- *Fenced off "no go areas" areas where practical;*

- *No impacts (driving, trampling or any other disturbance) must be allowed in the remainder of the site and in "no go" areas;*
- *Implement activities to mitigate impacts outside the footprint;*
- *Monitor any impacts outside the development footprint;*

16. Mitigation of site clearing impacts

16.1 Faunal and flora Impact Management

The increase of sound levels, clearing of natural vegetation and human presence will have a direct impact on faunal species. The EIAR demonstrated that with the actual removal of the vegetation -the impact is permanent loss, however the production practice of strip cultivation (strips > 10m natural veld remains between the planting rows) together with the nature of Rooibos and good management practice and adherence to layout criteria could retain the plant, vertebrate and invertebrate communities and the diversity of the present day.

The result is that these strips can serve as source areas of species for recolonisation of the disturbed area and the restoration of diversity in the medium to long term. There is a good chance therefore that the present terrestrial plant and animal diversity may be restored if the production of Rooibos was to cease for some reason. Ecological functioning at these small scales such as pollination services should be maintained through the retention of the natural strips of vegetation and by virtue of the fact that there are very extensive tracts of natural veld in the surrounding landscape, thus ensuring the propagation of seed from the resident plant communities. The natural vegetation is fire adapted and if left undisturbed for two years after the fire should recover.

To mitigate the impact on the faunal and floras species, the following must be implemented;

- *Remove animals from the affected site to adjacent safe areas;*
- *No fauna species may be collected and removed from the property;*
- *Enforcement of conditions of the EMPr by PM;*
- *Prevent illegal hunting and*

- *No burning of cleared vegetation is allowed during the summer;*

16.2 Substrate Management

The soil is sensitive to erosion (wind and water) and the following guidelines should be implemented to prevent erosion;

- *Ensure regular road maintenance which would include immediately stabilizing unstable portions of access roads. This can be achieved through an effective system of run-off control from hardened or denuded surfaces or where water flows down slope.*
- *Regular monitoring of the site for signs of sheet and gulley erosion would be the most effective mitigatory measure.*
- *In instance where accelerated levels of erosion are occurring, stabilizing these areas either with natural vegetation, or geotextiles and in serious instances with basket gabions*
- *Establish the natural strips (>10m);*
- *Avoid activities that could impact on the functionality and the condition of these natural strips;*

16.3 Heritage Resource Management

No possible impacts where identified by the specialist - **See Appendix D – Specialist reports in the EIAR.**

However the following procedures should be adhered to;

- *If any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal or ash concentrations), fossils or other categories of heritage resources are found during the proposed development, SAHRA APM Units (Natasha Higgiitt /John Gribble 021 462 5402) must be alerted;*
- *If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Itumeleng Masiteng / Mimi Seetelo 012 320 8490) must be alerted;*
- *A professional archaeologist or palaeontologist, depending on the nature of the finds, must be contracted as soon as possible to inspect the findings;*
- *If the newly discovered heritage resources prove to be of archaeological or paleontological significance, a Phase 2 rescue operation may be required.*

- *If any other unmarked human remains, or ostrich eggshell caches, for example, are exposed or uncovered during excavations these must immediately be reported to South African Heritage Resource Agency (Natasha Higgitt 021 462 4509), or the contracted archaeologist (Jonathan Kaplan 082 321 0172).*

16.4 Visual impact management

The levels of visual impact are significant but are aligned with the general look of the surrounding landscape. The surroundings are almost exclusively used as Rooibos and small stock production systems.

Required Mitigation Measures:

- *Disturbed areas should be kept to a minimum.*
- *The development footprint should be clearly demarcated and no development outside of the footprint should be allowed.*
- *Only existing tracks and roads should be used in preference wherever possible.*
- *Strip cultivation where the windrows of natural vegetation should be >10m wide must be maintained at all times.*

16.5 Storage and handling of fuels and chemicals

During the establishment of the cultivated lands fuel and oil will used by machinery. In order to prevent contamination of drainage lines, water and soils the following must be implemented;

- *The PM must ensure that fuels (e.g. drums of fuel, grease, oil, brake fluid, hydraulic fluid) are stored and handled in a bunded area to prevent spillage;*
- *In the event of a spill, appropriate steps must be undertaken to prevent widespread pollution;*
- *Regular maintenance of vehicles and equipment is needed to prevent leaks - No equipment or vehicles with leaks is allowed to work on the site;*

16.6 Spills

The contractor shall set up a procedure (method statement) for dealing with spills, which will include notifying the ECO and the relevant authorities immediately following the spillage event. These procedures must be developed in consultation with the ECO. The clean- up of spills caused as a result of the development activities, and any damage to the environment, shall be for the PM own account. A record must be kept of all spills and the corrective action taken.

16.7 Waste management

Waste that will be generated during the development phase would be the cut vegetation and general household waste (tins, paper and plastic) and hazardous waste (fuel and oils). The following guidelines should be implemented to prevent any environmental impacts and contamination of drainage lines and groundwater;

- *Identify and designate temporary waste management areas – away from no-go areas;*
- *Implement waste reduction, re-use and recycling principles and activities;*
- *Remove all household waste on a daily basis*
- *No refuse or any other waste will be dumped, buried or burned on the property;*

16.8 Increased noise and dust levels

Noise and dust will be generated during the establishment of the cultivated lands – however the impacts of noise and dust in this remote agricultural community would be generic across most properties within the landscape.

17. Monitoring and evaluation

A photographic record of the site and its immediate surrounds must be kept as part of the EMPr to serve as a baseline of all future visual impacts and as an aid to the full rehabilitation of the site should the development be decommissioned in the future. During the site clearing phase it will be important to monitor and evaluate all activities to ensure that these activities are aligned with the EA and this EMPr. Monitoring must also identify other impacts that may cause significant environmental impacts for which corrective

actions should be developed and implemented. The frequency of monitoring will be determined by the E.A., but is it recommended that is done in a quarterly basis.

The ECO will be responsible for the monitoring and evaluation of activities and will include the following;

- *Compliance to the environmental specifications;*
- *Develop and implement appropriate interventions to address noncompliance;*
- *Develop and implement interventions to address environmental degradation;*
- *Ensure adequate record keeping relating to environmental compliance is in place;*
- *Ensure communication channels to authorities and stakeholders are open and transparent.*
- *Ensure that the PM adhere to the method statements*.

******** See Appendix 2 – Environmental audit report and Appendix 3 – Fines and penalties.

Based on these the ECO will report to the Project manager and will use Non-compliance-, Monitoring- and the Final Audit reports. The Non-compliance Report describes the non-compliance issues by the contractor, will contain fines and penalties and will prescribe actions and activities that should be implemented to rectify the non-compliance activity. The Monitoring Report will be compiled on a monthly basis and submitted to DENC as part of the Completion Report. The Final Audit report must be submitted to DENC when the construction and rehabilitation phases are completed. This report should contain a date, details of the auditor and outcome of the audit in terms of compliance with the EA and this EMPr.

SECTION G: OPERATIONAL PHASE

Once the Rooibos Tea lands are productive operations should focus on, minimising soil erosion, management and protection of the natural strips and adherence to best practice guidelines.

18. Minimise soil erosion

During the operational phase accelerated soil erosion can result from;

- *Strong winds;*
- *An event e.g. thunderstorms and*
- *When existing drainage systems become ineffective due to bad maintenance programmes.*

The following activities should be implemented to avoid impact soil;

- *Ensure that the natural strips remain intact and are not disturbed;*
- *Ensure that no negative impacts occur on the remaining natural areas e.g. driving off roads, overgrazing, too frequent fires;*
- *Regular monitoring of the site for signs of wind, sheet and gulley erosion and implement mitigatory measure immediately;*
- *Maintain drainage and erosion control systems (run-offs, drainage channels, contours) on a monthly basis during the rainy season.*

19. Management of natural vegetation strips

The remaining strips that contain indigenous vegetation are important to minimise erosion and to ensure that natural processes and pattern are maintained and protected – the following guidelines should be implemented to ensure that the condition of these strip are maintained;

- *Prevent overgrazing and trampling when fallow lands are grazed by domestic stock;*
- *Prevent too frequent fires or burning these strips to enlarge production areas;*
- *Prevent wildfires by education and fire awareness strategies;*
- *Adhere to good practice guidelines when using biocides;*

- *Trampling by people and or vehicle's and machinery must be prevented;*

20. Best Practice guidelines

The owner of Zonderwaterkraal, is a member of the 74 member Heiveld Co-operative and is therefore a certified organic producer. The Co-operative was founded in 2003 and became the first rooibos producer in the world to be certified by Fairtrade Labelling Organisations International (FLO) and by Naturland - this is still applicable and therefore the production practice will adhere to international requirements. As a member of the Co-op, the owner will ensure that best practice guidelines are implemented on the property.

SECTION H : DECOMMISIONING

When considering the purpose, need and objective for the establishment of the cultivated Rooibos Tea lands it is not envisaged that the operation will be decommissioned. However if decommissioning is needed it should comply to environmental legislation applicable at that time and should keep the following in mind;

- *Demarcation of the decommissioning site,*
- *Erosion control,*
- *Regular road maintenance of the roads that will remain after decommissioning,*
- *Regular monitoring of the site for signs of sheet, wind and gulley erosion would be the most effective mitigatory measure,*

SECTION I : CONCLUSION

In our assessment of impacts the cost benefit of the development favours proceeding as the majority of negative impacts are low. Importantly, many of the negative impacts can be mitigated successfully through the implementation and adherence to this EMP'r which will further diminish the significance of impact. The clear cost benefit for the proposed development is related to the socio-economic benefits that have the potential to empower the landowner (an emerging farmer) to establish and economical sustainable business while providing sustainable employment opportunities for local labour.

SECTION J : REFERENCES

Almond, J. 2017. Proposed rooibos tea agricultural developments on farms Zonderwaterkraal and Tweerivier near Nieuwoudtville, Calvinia District, Northern Cape. PALAEONTOLOGICAL HERITAGE COMMENT

Helme NA. 2016. Botanical assessment of proposed new cultivation of Rooibos Tea on Tweeriviere, Farm, Suid Bokkeveld, Northern Cape. Nick Helme Botanical Surveys

Kaplan, J 2016, Heritage Impact Assessment, proposed cultivation of Rooibos Tea on Farm 958, Tweeriviere, Nieuwoudtville, Hantam Municipality, Northern Cape.

Pretorius, M. 2015. A complete soil investigation survey to ascertain the suitability for the cultivation of virgin soil for the production of Rooibos Tea at Sonderwaterkraal and Tweeriviere in the Nieuwoudtville Area, BVi Consulting Engineers, Upington.

SECTION K : APPROVAL

_____	_____	_____
Name	Signature	Dated

Northern Cape Department of Agriculture, Land Reform and Rural Development

APPENDIX 1: CURRICULUM VITAE OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONERS

The following information on the directors of FOOTPRINT Environmental Services clearly indicates that extensive experience and expertise exists within the consultancy to compile Environmental Management Programmes.

Sean Ranger holds an MSc in Sustainable Environmental Management the thesis dealing with a Bayesian GIS model for species distributions in the Western Cape. On leaving University he gained eight years experience in Research & Development for Bayer (Pty) Ltd and five years of contractual experience in Stewardship and the varied fields of conservation development & strategic planning, implementation and management and has successfully co-founded and co-managed FOOTPRINT Environmental Services that is now nearing its third year.

He has been very active in the Stewardship Arena for a number of years and was a team member on the first Stewardship Pilot Project that was initiated in 2001/2002 in the Western Cape. He managed the Agter Groenberg Pilot Site one of two pilot sites identified through use of the CAPE Lowlands Fine-scale Conservation Plan. The pilot phase of stewardship was regarded as a highly successful project and produced some of the first Contract Nature Reserves in South Africa. One of them, the Elandsberg Nature Reserve an in perpetuity contract which saw the conservation of significant sections of Critically Endangered Swartland Shale Renosterveld. The experience gained during this period included the use fine scale conservation plans (at that time the CAPE Lowlands Project) to identify priority sites for stewardship interventions, designing pamphlets and presentations on stewardship for the intervention, succeeding in on the ground negotiation with landowners in an agricultural setting for the establishment of stewardship sites, including testing and refining contractual agreements with landowners, assisting with the development of the stewardship database, developing Environmental Management Plans and contributing to the Stewardship Operational Manual for the CapeNature Stewardship program.

From here he joined the Greater Cederberg Biodiversity Corridor (CAPE Landscape Scale Conservation Intervention) as a project manager, an in this capacity used the initial experience gained from the

Stewardship Pilot Project to develop a stewardship implementation methodology in a landscape scale conservation intervention context and undertook the development of framework for the engagement of the agricultural sector to mainstream biodiversity conservation. Here the stewardship focus was on the establishment of biodiversity corridors in two key areas, the Sandveld Core Corridor and the Cederberg Core Corridor. The character of these two sites differed dramatically in that the Sandveld Core Corridor is an area that was rapidly transformed for Potato & Rooibos production, while the Cederberg Core Corridor was based within the boundaries of a well established conservancy, the Cederberg Conservancy. Additional experience gained here included developing a strategic approach to stewardship within a broadly focussed landscape initiative, this included the integration of an Area-wide planning process with stewardship, developing and initiating the core corridor concept, developing a corridor database, the development of a 12-step negotiation process for stewardship, refinement of Environmental Management Plans, co-authoring the first drafts of an operational approach to corridor formation, chairing multi-stakeholder task teams (Sandveld Task Team) and later as a Senior Project Manager and as the Acting Co-ordinator of the GCBC exposure to writing of project proposals, sourcing international funding, strategic planning and management and personnel management, budgeting, preparing workplans and action plans etc.

As the owner of Ranger Consulting CC he has contributed to the development of a biodiversity best practices guideline for both the potato and Rooibos tea industries this built on initial experience obtained on the Steering Committee of the Biodiversity and Wine initiative. It included the development of the terms of reference for the consultants and later the development of an implementation strategy for the potato best practices project and the development of an Environmental Management Plan, Project plans and an auditing system. He has been responsible for the piloting and implementation of these guidelines since March 2008 on 35 producer farms. He has authored a Legal Compliance Strategy for the industry that is currently being implemented through an Intergovernmental Task Team.

Charl du Plessis holds a National Diploma and National Higher Diploma in Nature Conservation and has 17 years experience in conservation management on statutory conservation areas as well as on private and communal properties. He was the manager of the Cederberg Wilderness, a World Heritage Site for 12

years. During this time he gained an in depth knowledge of long and short term strategic biodiversity conservation planning, and implementation issues. He compiled various integrated action plans that focus on the implementation of conservation issues with timeframes and budgets. This was not done only for CapeNature but also for private landowners within conservancies. He was also responsible for the management of staff, contractors, management of ecological systems and processes (aliens, fire, footpaths, erosion, water systems and wetlands, rehabilitation and infrastructure development and maintenance as well as research and monitoring) within this Wilderness and surrounding conservancies and communities.

During the 2004 – 2008 he was involved in the Greater Cederberg Biodiversity Corridor acting as a negotiator and establishing a network of privately and communal owned contract nature reserves but was also part of the team that completed the 20 year stewardship strategy for CapeNature in the Greater Cederberg Biodiversity Corridor. The establishment and management of the contract nature reserve also entailed the completion of vision and mission statements, management objectives and action plans, budget allocations and finding co-funding to improve management of these areas. He also establishes the Greater Cederberg Fire Protection Association (GCFPA) and various community based tourism initiates and biodiversity related projects such as the Northern Cederberg Donkey Cart Route and the Algeria Buchu nursery. The Algeria Buchu nursery was established with co-funding that he secured. All these projects were based on Community Based Natural Resource Management (CBNRM) principles. During this period he was also responsible for the supervision of a international funded RARE education and awareness campaign in the Cederberg region that focus on conservation education and awareness.

Since 2008 – 2010 he is the manager of the GCFPA that focused on integrated fire management in the region – this comprises of fire preparedness, reduction in fires, the implementation of risk mitigation action plans and strategies.

Over the last couple of years, FES have produce various reports such as the Bergrivier Municipality LAB Biodiversity Report (2010), Biodiversity Assessments, Risk Mitigation Plans for Agricultural producers including aspects like accreditation, erosion control, rehabilitation and monitoring, Fire Management Plans,

Integrated Fire and Invasive Alien Plant species Clearing Plans, Area-wide Planning for the Nieuwoudtville Plateau, Erosion and Footpath Management Plan for the Groot - Winterhoek World heritage Site and a Environmental management Plan for Rooibos Limited and various licence arrangements for landowners - ***Please visit www.footprintservices.co.za***

ENVIRONMENTAL MANAGEMENT PROGRAMME AUDIT CHECKLIST

Project name: Rooibos development at Zonderwaterkraal Farm 951/0 Nieuwoudtville	Date: _____/_____/20___
Name of the Auditor:	Landowner Representative:

	AUDIT QUESTION	YES	NO	ACTION	COMMENTS
METHOD STATEMENTS					
1	Are all method statements developed and signed of				
2	Are all actions described in the method statement implemented				
SOCIAL RESPONSIBILITY					
3	Are local contractors and workers employed				
4	Are women employed				
5	Are training and capacity building programmes in place				
6	Are women and men doing the same job equally remunerated.				
ENVIRONMENTAL AWARENESS					
7	Are environmental awareness programmes developed and implemented				

8	Did all the contractors and employers attend awareness training sessions				
FAUNA AND FLORA MANAGEMENT					
9	Is there any visible evidence of disturbance to fauna and flora				
DEMARCATION AND SITE CLEARANCE					
10	Is the footprint and grave site demarcated				
11	Are the no go and drainage areas fenced off				
12	Have construction activities remained within the designated working areas?				
13	Were all construction materials stored in the appropriate designated area?				
14	Have all decommissioned materials been removed from site?				
15	Have all surplus materials from the excavation site been removed				
16	Are the footprint within the proposed 19.9 ha				
SUBSTRATE MANAGEMENT					
17	Is erosion visible				
18	Has the demarcated access route/s been used?				
19	Are these roads effectively managed				
20	Is erosion visible				

21	Are erosion control mechanisms in place				
22	Are erosion control mechanisms working effectively				
HERITAGE MANAGEMENT					
23	Have any archaeological and heritage resources been exposed during the excavation process				
24	Has the contractor followed the prescribed steps to inform the component authority about the exposure.				
VISUAL IMPACT MANAGEMENT					
25	Has disturbance been kept to the minimum				
26	Is there any evidence of new road / pathways being established?				
27	Are complaints from the community adequately resolved?				
STORAGE AND HANDELING OF FUELS AND CHEMICALS					
28	Are steps and mechanisms in place to handled spills?				
29	Are there any visible signs of spillage of oil and /or diesoline				
WASTE MANAGEMENT					
30	Have temporary waste storage areas been identified				
31	Any visible evidence of waste lying around.				
NOISE AND DUST MANAGEMENT					

32	Is a system in place that the community can lodge their complaints				
33	Are these complaints adequately resolved?				
34	Is an effective road maintenance programmes in place				

APPENDIX 3: SCHEDULE OF FINES FOR ENVIRONMENTAL DAMAGE OR EMP TRANSGRESSIONS

EMP TRANSGRESSION OR RESULTANT ENVIRONMENTAL DAMAGE	MIN. FINE	MAX. FINE
Failure to comply with prescriptions regarding appointment of an ECO and monitoring of EMP compliance.	R500	R1000
Failure to comply with prescriptions regarding environmental awareness training.	R500	R5000
Failure to comply with prescriptions regarding method statements.	R500	R5000
Failure to report environmental damage or EMP transgressions to the ECO.	R500	R1000
Failure to carry out instructions of the ECO regarding the environment or the EMP.	R500	R1000
Failure to comply with prescriptions posting of emergency numbers.	R500	R5000
Failure to comply with prescriptions regarding a complaints register.	R500	R1000
Failure to comply with prescriptions regarding information boards.	R500	R1000
Failure to comply with prescriptions regarding site demarcation and enforcement of 'no go'	R500	R5000
Failure to comply with prescriptions regarding site clearing.	R500	R5000
Failure to comply with prescriptions for supervision for loading and off loading of delivery vehicles.	R500	R1000
Failure to comply with prescriptions for securing of loads to ensure safe passage of delivery vehicles.	R500	R1000
Failure to comply with prescriptions for the storage of imported materials within a designated	R500	R1000
Failure to comply with prescribed administration, storage or handling of hazardous substances.	R500	R1000
Failure to comply with prescriptions regarding equipment maintenance and storage.	R500	R1000
Failure to comply with fuel storage, refueling, or cleanup prescriptions.	R500	R1000
Failure to comply with prescriptions regarding procedures for emergencies (spillages and fires).	R1000	R5000
Failure to comply with prescriptions regarding construction camp.	R500	R5000
Failure to comply with prescriptions for the use of ablution facilities.	R500	R1000
Failure to comply with prescriptions regarding water provision.	R500	R1000
Failure to comply with prescriptions for the use of designated eating areas, heating source for cooking or presence of fire extinguishers	R500	R1000
Failure to comply with prescriptions regarding fire control.	R500	R5000
Failure to comply with prescriptions for solid waste management.	R500	R5000
Failure to comply with prescriptions regarding road surfacing.	R500	R5000
Failure to comply with prescriptions to prevent water pollution and sedimentation	R500	R5000
Failure to comply with prescriptions to the protection of natural features, flora, fauna and archaeology and palaeontology	R500	R5000
Failure to comply with prescriptions regarding speed limits.	R500	R1000
Failure to comply with prescriptions regarding noise levels of construction activities.	R500	R5000
Failure to comply with prescriptions regarding working hours.	R500	R5000
Failure to comply with prescriptions regarding aesthetics.	R500	R1000
Failure to comply with prescriptions regarding dust control.	R500	R1000
Failure to comply with prescriptions regarding security and access onto private property	R500	R1000
Failure to comply with prescriptions regarding cement and concrete batching	R500	R5000

APPENDIX G	EAPS RELEVANT EXPERIENCE

Sean Ranger is a registered Pri. Sci. Nat – Ecological Scientist, Certified Environmental Assessment Practitioner with (EAPSA) and holds an Masters Degree in Sustainable Environmental Management.

On leaving University he gained eight years experience in Research & Development for Bayer (Pty) Ltd and five years of contractual experience in Stewardship and the varied fields of conservation development & strategic planning, implementation and management and has successfully co-founded and co-managed FOOTPRINT Environmental Services that is now nearing its seventh year of operation as an environmental consultancy.

He was very active in the Stewardship Arena for a number of years and was a team member on the first Stewardship Pilot Project that was initiated in 2001/2002 in the Western Cape. He managed the Agter Groenberg Pilot Site one of two pilot sites identified through use of the CAPE Lowlands Fine-scale Conservation Plan. The pilot phase of stewardship was regarded as a highly successful project and produced some of the first Contract Nature Reserves in South Africa. One of them, the Elandsberg Nature Reserve an in perpetuity contract which saw the conservation of significant sections of Critically Endangered Swartland Shale Renosterveld. The experience gained during this period included the use fine scale conservation plans (at that time the CAPE Lowlands Project) to identify priority sites for stewardship interventions, designing pamphlets and presentations on stewardship for the intervention, succeeding in on the ground negotiation with landowners in an agricultural setting for the establishment of stewardship sites, including testing and refining contractual agreements with landowners, assisting with the development of the stewardship database, developing Environmental Management Plans and contributing to the Stewardship Operational Manual for the CapeNature Stewardship program. Much of this planning required the use of spatial datasets and experience was gained in the practical application of a GIS, ArcView

From here he joined the Greater Cederberg Biodiversity Corridor (CAPE Landscape Scale Conservation Intervention) as a project manager, an in this capacity used the initial experience gained from the Stewardship Pilot Project to develop a stewardship implementation methodology in a landscape scale conservation intervention context and undertook the development of framework for the engagement of the agricultural sector to mainstream biodiversity conservation. Here the stewardship focus was on the establishment of biodiversity corridors in two key areas, the Sandveld Core Corridor and the Cederberg Core Corridor. The character of these two sites differed dramatically in that the Sandveld Core Corridor is an area that was rapidly transformed for Potato & Rooibos production, while the Cederberg Core Corridor was based within the boundaries of a well established

conservancy, the Cederberg Conservancy. Additional experience gained here included developing a strategic approach to stewardship within a broadly focussed landscape initiative, this included the integration of an Area-wide planning process with stewardship, developing and initiating the core corridor concept, developing a corridor database, the development of a 12-step negotiation process for stewardship, refinement of Environmental Management Plans, co-authoring the first drafts of an operational approach to corridor formation, chairing multi-stakeholder task teams (Sandveld Task Team) and later as a Senior Project Manager and as the Acting Co-ordinator of the GCBC exposure to writing of project proposals, sourcing international funding, strategic planning and management and personnel management, budgeting, preparing workplans and action plans etc. All forward planning for this project required the development of a spatial plan (GIS) and as the project manager he developed these plans using various spatial datasets available to CapeNature, the Dept of Agriculture etc. using the in house CapeNature GIS software Arcview 3.2.

As the owner of Ranger Consulting he has contributed to the development of a biodiversity best practices guideline for both the potato and Rooibos tea industries this built on initial experience obtained on the Steering Committee of the Biodiversity and Wine initiative. It included the development of the terms of reference for the consultants and later the development of an implementation strategy for the potato best practices project and the development of an Environmental Management Plan, Project plans and an auditing system. He has been responsible for the piloting and implementation of these guidelines since March 2008 on 35 producer farms. GIS was used extensively to produce detailed farm landuse and infrastructure maps, monitor the rate of transformation of natural and threatened ecosystems year to year. Additionally the development of GIS databases for Fire Protection Agencies. In early 2012 he developed the GIS database and mapping products for the Greater Cederberg FPA and in collaboration with the management of the GCFPA has maintained this database and associated mapping products for the last three years. The GIS software program used here was ArcGIS 10. Recently this GCFPA GIS database has been seamlessly uploaded to the AFIS system.

As a co-owner and Director with Charl du Plessis of FOOTPRINT Environmental Services he has successfully concluded numerous Environmental Applications and obtained Record of Decisions (RoD) for clients. These include a number of environmental assessments for bulk infrastructure for the Department of Public Works, bulk services supply for the City of Cape Town, Eco-tourism developments, agricultural expansion developments both irrigated and dryland, weir developments on rivers in the Cederberg Wilderness, Basic Assessment for the Kromrivier Weir (PGR Developments Pty Ltd.) and a Basic Assessment for the Rondegat Weir (CapeNature) for private individuals and CapeNature. We recently successfully concluded a

residential application in Ceres that required the diversion of the river channel to its historical course after it was canalised. Additionally the consultancy has significant experience in the compilation of Environmental Management Programmes both for the management of development sites and for conservation and agricultural management sectors. We have experience in Rectification applications under Section 24 (g) and compliance monitoring experience as Environmental Control Officers. A short synopsis of environmental assessments successfully concluded has been forwarded to you.

The consultancy has in-depth knowledge and experience in the Public Participation Process (PPP) as described by DEA&DP Public Participation Guidelines during the application process. However we were additionally responsible for, and facilitated, the approval of five (5) CapeNature Protected Area Management Plans trough a PPP - ***Please visit www.footprintservices.co.za*** for more information or contact either of the directors – see contact information above.

The Interim Certification Board

for

Environmental Assessment Practitioners
of
South Africa

Sean Keith Ranger

was certified as an

ENVIRONMENTAL ASSESSMENT PRACTITIONER

on this 4th day of February 2016

Chairperson

Secretary

APPENDIX H	ADDITIONAL INFORMATION

Keith Sean Ranger

3 Laborie Str

Courtrai

South Paarl

7646

Cell: +27832948776

Fax: 0866558060

E-mail: sean.ranger1@gamil.com

P e r s o n a l I n f o r m a t i o n

Marital status:	*Married with two children*
	Wife: Nanette Ranger
	Son: Dylan
	Daughter: Adrian
Nationality:	*South African*
Age:	*47*
Place of Birth:	*Bloemfontein*
ID:	*6712105043081*
Date of Birth:	*10 December 1967*
Parents:	*Mr. I.D.K. Ranger & Mrs. A.M Ranger*
Drivers license:	*Yes - code 08*

Home language: English / Afrikaans (Fully bilingual)

Other Languages: South Sotho (Spoken)

Summary of qualifications

School :	*Std 10*		*Grey College Bloemfontein*
University:	*B.Sc.*	-	*University of Orange Free State*
	B.Sc. Hons	-	*University of Orange Free State*
	M Inst Agrar	-	*University of Pretoria*

E d u c a t i o n

Grey Primary School **Std 5 : 1979 -1980**

: Special award for sportsmanship.

: Award for academic achievement**.**

Grey College **Std 10 : 1980 – 1985**

: Matriculated with University pass: Math's, Science, Biology, Geography, English & Afrikaans.

U.O.F.S **B.Sc. : (1989 - 1992)**

Distinctions : (Entomology 226,315,325,334 & 344. Computer use 131)

: Merit award (U.O.F.S.) for academic achievement (1992)

B.Sc. Hons : (1993)

Distinctions : All written courses for honors degree.

: Merit award (U.O.F.S.) for academic achievement (1993)

: SNO bursary awarded for further studies (1993). Bursary was not used as I began work with Bayer (Pty) Ltd.

MSc : Environmental Sustainability Management (1999)

Distinctions : Ecological Sustainability, African Agriculture & Human Health.

: University of Pretoria Academic merit bursary, for studies in 1999 & 2000.

Special courses : GLENKOVS plant protections course (1993).

: AVCASA plant protection course (1996).

: Presentation skills (1994).

: Advanced presentation skills (1994).

: Time management (1995).

: Advanced course Excel (1998)

: Intermediate course Lotus Notes (1998)

: Advanced course Microsoft Word (1999)

: Advanced course PowerPoint (1999)

: Fire Boss Course Forestry Dept (2003)

: Advanced Arcview GIS (CapeNature 2003)

: Problem Animal Control WCNCB (2004)

: Community Based Natural Resource Management - Rhodes University (2004)

: Insights – Business Presentation Group (BPG) (2005)

: Audience Thought Model - BPG (2005)

P r o f e s s i o n a l e x p e r i e n c e

SENTRAOES **:** 1992 - Wheat assessor

Duties **:** Assessment of wheat for cold and hail damage within the Free State borders.

U.O.F.S. **:** T.D. Lab assistant (1993)

Duties **:** Presenting of insect physiology practical classes for second year students in Entomology.

BAYER (Pty) Ltd. **: Agriculturist (1994-2002)**

Main Duties **:**

Research and Development of agro-chemicals for the South African & International agricultural market. The three major responsibilities were:

1. Field screening of newly discovered compounds for the mother company Bayer AG in Monheim. From (1994) this included fungicide, insecticide and herbicide screening. And reporting findings as a formal publication.

2. Development of existing registered compounds on new indications i.e. pests or as product label expansions to include pest indications on developing crops. Such development to be conducted after market research had been conducted to determine the viability of such a registration. Interaction with research institutions for input on how to proceed with trials. Reports as above.

3. Putting forward proposals of development opportunities with existing compounds and active participation in problem solving in instances where compounds failed.

Work experience gained includes knowledge of disease and pest complexes of: Citrus, Apples, Pears, Wine Grapes, Wheat, Barley, Maize, Tobacco, Cotton, Peas, Potatoes, Soybeans, Groundnuts and Cruciferae. Knowledge of the main weed species of cultivated land for the Northern Province and the Western Cape. A broad knowledge on the use of chemicals for the control of these indications as well as cultivation per crop. An ongoing education in the technical aspects of compounds in use at present. Assisting Sales support management with the education of farmers, technical support institutions and agents on the use of compounds in the market place.

CapeNature/ Botanical Society Stewardship Pilot Project (2003-2004)

Main Duties:

Appointed on contract as a team member to develop and test a new conservation framework called the Stewardship Program for CapeNature. The Stewardship Program was developed in partnership with the Botanical Society of South Africa. Key responsibilities of the position included.

1. Negotiating Stewardship Contracts with landowners for critically threatened habitat, primarily Renosterveld.

2. As part of the team was responsible for the production of a Stewardship operations manual, Management Plan Proforma, Audit Proforma, Biodiversity Assessment Proforma, Landowner factsheets, Stewardship pamphlets, Stewardship Video for CapeNature to assist them with the roll-out the Stewardship Program, among others.

3. Field tested biodiversity assessment proforma on potential Stewardship Sites and served on the review committee to assign stewardship status based on biodiversity value.

4. Wrote management plans for Stewardship Sites. This included drawing up the framework, mapping using Arcview GIS, drawing up schedules and determining management costs for conservation interventions (alien invasive plants, erosion and fire), sustainable game management, monitoring systems and auditing among others.

5. Capacity building – primarily through presentations and support to staff within CapeNature engaged in Stewardship negotiations. Also some support to other conservation initiatives such as the Gouritz Initiative, Garden Route and Baviaanskloof Wilderness Area.

6. Building partnerships – primarily with the Dept of Agriculture (LandCare AreaWide Planning), Department of Water Affairs and Forestry, Local Government and community lead organizations such as conservancies and farmer organizations.

7. Partnering with other (Critical Ecosystem Partnership Fund) CEPF funded projects such as the Care of Rare & Endangered Wildflowers project and the Putting Conservation Plans to Work project of the Botanical Society.

8. Developed a biodiversity plan for Boland region using the outputs of a fine scale conservation plan (Lowlands Rensoterveld Project – Botsoc)

9. Wrote funding proposals for conservation interventions on Stewardship Sites and Capacity building to support the stewardship effort in the Boland region – funds received amounted to R200 000-00 over a 12 month period.

10. Assisted Dept. of Agriculture in writing proposals for CEPF funded botanical survey of Slanghoek – R 58 000-00 and Capacity building position (contract) R 94 000-00

11. Assisting extension staff of the Dept of Agriculture with LandCare Area-wide Mapping and drafting of funding proposals for Landcare funding – primarily for alien clearing support to landowners in the Agtergroenberg (Wellington) and Paarl Mountain

12. Co-ordinator for Biodiversity & Wine Initiative (BWI) for Paarl Mountain and served as the CapeNature representative on the technical work group for the BWI. Served on the steering committee of the BWI in 2005.

1 3 . Attended and contributed to various workshops hosted by the Botanical Society, Cape Action Plan for People and the Environment, and was a member of the Fynbos Forum Working Group.

Project Manager / Acting Co-ordinator – Greater Cederberg Biodiversity Corridor (2005-2007)

1. **Strategic Direction : Expansion of Protected Areas. Contributions to date:**

    a. Main responsibility - Tasked with developing a framework and process for the establishment of protected areas outside of the statutory reserves within a Biodiversity Corridor. Contributions to date:

        i. A first for South Africa - The conceptualization and development of a twelve step process using the CapeNature Stewardship Framework for the planning, engagement with landowners, and establishment of a core biodiversity corridor. This included developing and refining tools such as the legal agreements, management plans, notarial deed agreements etc.

        ii. Implementation of this process is ongoing with staff of the GCBC Project Management Unit in two core corridors approx. 64 owners and 100 properties in the GCBC.

        iii. Using this process - the successful conclusion of stewardship agreements on 13 properties in the Cederberg Core Corridor and the Sandveld Core Corridor (approx. 30 000 ha's). This afforded the very first protection to two endangered habitat types – Leipoldtville Sand Fynbos and Graafwater Sandstone Fynbos and provided a corridor that links the Cederberg Wilderness Area to the Matjiesrivier Nature Reserve – this included preparation of contractual agreements and EMP's for the contracted reserves.

iv. Currently negotiations are well advanced with approx. 16 landowners, including the Augsberg Landbou School in Clanwilliam and the Redelinghuis Municipality. Additional to this has been work with the two communities of Algeria & Wupperthal.

v. Advisory (BSP Advisory Committee) and mentoring role to the Botanical Societies Bokkeveld Stewardship Project (BSP) in terms of planning and implementing a stewardship pilot project on the Nieuwoudtville Plateau with DTEC in the Northern Cape.

vi. Ongoing capacity building – training GCBC & CapeNature colleagues on the technical aspects of stewardship agreements and process.

2. Strategic Direction : Mainstreaming & Industry Engagement. Contributions to date:

i. Served on the Biodiversity and Wine Steering Committee (2005).

ii. The conceptualization and development of a biodiversity and business framework based on IUCN guidelines which was used for the GCBC strategy for mainstreaming biodiversity into Potato South Africa & South African Rooibos Council.

iii. Initiation, procurement, support and advisory roles in developing a strategic document aimed at mainstreaming biodiversity best practices into the Rooibos sector. Use of the GCBC Small Grants Fund - This included drawing up TOR's, appointing and managing a consultant, concluding partnership contracts with the South African Rooibos Council (SARC) and supporting and advising the SARC during the development, review and finalization of the report, which has become known as the Rooibos Biodiversity Initiative (RBI).

iv. Serving member on the Geographic Indication Committee – Assistance, support and advisory role in partnership with the SARC in their bid to register Rooibos as a Geographic Indication with the European Union. The application for this international accreditation will contain biodiversity best practice criteria.

v. Assistance in the production of a brochure to raise awareness among producers regarding the RBI.

vi. Currently support and advisory role in partnership with the SARC for a project manager appointed (CEPF Grant) in the Rooibos Council & with Potato SA.

3. Strategic Direction : GCBC Small Grants Fund. Contributions to date:

a. Assisted with the development and management of following GCBC Small Grants projects:

i. Rooibos Biodiversity Initiative – TOR's, contracting and the management of the consultant and the review process. Support to the sector with project development in particular management systems and assessment systems.

ii. Potato Best practice Initiative – Framework for TOR's for consultants. Project development and funding, as a consultant the implementation of the project, development of management tools for the project, monitoring and assessment of the project, undertaking industry audits, providing the sector with a strategic plan to engage with the government resource departments around illegal development i.e. a Legal Compliance Strategy in terms of national South African Legislation.

iii. Game Management Guideline - TOR's, contracting and the management of the consultant and the review process.

iv. Reviewed numerous LOI's for the GEF GCBC Small Grants Fund.

4. Strategic Direction : Awareness Raising. Contributions to date:

i. Assisted with the development of the GCBC Awareness Raising Project including Corridor Establishment Brochure, GCBC Bulletin, GCBC Website, media releases, branding materials etc.

5. Strategic Direction : Co-ordination (Acting Co-ordinator GCBC):

i. Served as Acting Co-ordinator from May 2007 to Feb 2008 with full responsibilities of the Co-ordinator and project management from the 1st May 2007, this included all of the project managers responsibilities and co-ordination responsibilities:

ii. Preparing quarterly workplans from May 2007 to June 2009 for operational budget, salaries, procurement, and recruitment for the GEF grant funding. This included quarterly reporting on targets.

iii. Management and reporting on seven additional funded budget lines used to expand the activities of the project.

iv. Attendance and contributions to both CAPE and CapeNature governance structures and components, including CapeNature: Business Unit meetings, Quarterly Ecological Management meeting, Project Management Unit meetings, Stewardship Review meetings, Task Team meetings – CAPE: Task Team meetings, Forums, CIC's etc.

v. Prepared agenda's and assisted with the logistics for GCBC Steering Comm. meetings. Chaired weekly Project Management Unit (PMU) meetings - supervision, technical assistance and management of contracted staff and CapeNature managers deployed within the different strategic directions including weekly workplans and performance management.

vi. Supervision, technical assistance and management of appointed project managers, contracted consultants and other funded projects outside of the PMU, e.g. GCBC Small Grants Fund and industry engagements etc. and project progress and financial reporting as required by the funders.

vii. Procurement of required equipment and staff recruitment including developing TOR's and adverts, interviewing and appointing staff following both CapeNature and World Bank procurement procedures.

viii. Developed and submitted proposals for co-funding streams – Conservation International Sandveld Incentives Fund (R 120 000-00l) and recently the WWF Corridor establishment for the conservation of priority aquatic ecosystems and species (in process – Approx. R 990 000-00), SKEP Investigate innovative mechanisms to restore and retain high priority succulent Karoo in the Cederberg Conservancy (Approx. R 700 000-00).

ix. Chair of the Sandveld Task Team – Conceptualized and drafted the Sandveld Action Plan, a multi-stakeholder action plan submitted to the MEC of DEA&DP aimed at addressing the resource issues in the Northern Sandveld.

Director and owner Ranger Consulting (2008-present)

Project Conceptualisation, development, implementation and auditing of Biodiversity Best Practices in the Agricultural Sector of the Western Cape. Included engagement with strategic levels of the government resource departments of the Western Cape and developing an industry legal compliance strategy for submission to a Ministerial Task Team – ongoing consultation form 2008. Development of a GIS database for the Greater Cederberg Fire Protection Association (GCFPA). Currently developing the GIS database for both the GCFPA and Southern Cape FPA.

Director and owner FOOTPRINT Environmental Services (2008-present)

Please see www.footprintservcies.co.za for information on the services we offer through the consultancy.

Projects Completed include:

(2010)

- Operational Management Guideline for the Cederberg Conservancy
- Consultation for the establishment of a Private Nature Reserve DEVCO
- Erosion Management Plan for the CapeNature Grootwinterhoek Wilderness Area
- Consultation and facilitation of Botanical Assessments for Laingshoogte, Graafwater

- Application for Mining Permit Clanwilliam
- Environmental and Risk Mitigation Plan for Loubser Landgoed – aligned to international certification requirements
- Basic Environmental Assessments for Agricultural Applications – Graafwater, Leipoldtville, Paleisheuwel, Dwarskersbos, Lamberts Bay and Nardouwsberg.
- Environmental Management Plan Wedderwell Estate, Somerset West

(2011)

- Biodiversity Report for Berg River Municipality
- Stewardship Management Plan Template CapeNature
- Corridor, World Heritage Site and Biosphere Reserve Policy for Cape Nature
- Best Practice Guideline for World Heritage Sites CapeNature
- Best Practice Guideline for Biosphere Reserves CapeNature
- Fundraising Strategy for Corridors, World Heritage Sites and Biosphere Reserves for CapeNature.
- Research Gap Analysis for Corridors, World Heritage Sites and Biosphere Reserves for CapeNature.
- Stewardship Best Practice Guidelines for Corridors, World Heritage Sites and Biosphere Reserves for CapeNature.
- Integrated Alien and Fire Management Plan for Knorhoek, Somerset West

- Environmental Authorisation for Cederberg Tourist Resort, PGR Developments
- Environmental Authorisation for the Construction of a weir on the Kromrivier PGR Developments
- Policy Scoping Report in Collaboration with Enact International for the Global Pollination Project
- Environmental Management Plan for film set Karukareb, Cederberg
- Integrated Alien and Fire Management Plan, Casa Maris, Somerset West
- Area-wide Planning of the Nieuwoudvuille Plateau, Department of Environment, Tourism and Conservation, Northern Cape
- Stewardship Management Plan for a CapeNature Contract Nature Reserve, Altona Developments, Worcester
- Environmental Risk Management Plan Rooibos PTY Ltd., Clanwilliam
- Environmental Rectification for Trans Hex Operations, Sendelingsdrift, Richtersveld.
- Rapid Capacity audit of Natural Resource Departments for the Western Cape, WWF

(2012)

- Application for Environmental Rectification Bushmanskloof
- Application for Environmental Authorisation for a weir on the Rondegat River, CapeNature.

- Stakeholder Engagement for Protected Area Management Plan – Cederberg Nature Reserve Complex, CapeNature

- Stakeholder Engagement for Protected Area Management Plan – Kogelberg Nature Reserve Complex, CapeNature

- Stakeholder Engagement for Protected Area Management Plan – Limietberg Nature Reserve Complex, CapeNature

- Stakeholder Engagement for Protected Area Management Plan – Dassen Island Nature Reserve, CapeNature

- Application for Environmental Authorisation, expansion of irrigation business, Paleisheuwel.

- Application for Environmental Authorisation, expansion of Rooibos Tea Business, Bo Brakfontein, Nardouwsberg

- Biodiversity and Conservation Importance Report - Rooi Cederberg Karoo Park

- Biodiversity and Conservation Importance Report – Bakkrans & Mooiberg, Cederberg

- 3 x Applications for Environmental Authorisations for Bulk water supply expansion for Drakenstein, Paardeberg and Riebeeck Wes Prisons, MLH

- Environmental Authorisation for a New Sick Bay and the Military Academy on the Saldanha Military Academy, MLH

- Facilitation of the Legal Compliance Strategy for Potatoes South Africa in Collaboration with the DEA&DP Ministerial Task Team.

- Application for Environmental Authorisation, 1MW Solar Array, Ceres.

- Estimated contribution for biodiversity conservation and strategic prioritization of conservation effort for the Sustainable Farming Programme, WWF.

(2013 - current)

- Rooibos (Pty) Ltd. Environmental Audit

- Management Effectiveness Tracking Tool audit Eastern Cape Parks and Tourism Agency (2013, 2014 and 2015)

- Environmental Authorisation Vineyard Development, Driehoek, Cederberg.

- Business and Biodiversity, Green Choice Alliance presentation KZN, Conservation International.

- Environmental Authorisation, Rondegat Weir, CapeNature.

- Environmental Audit, Altona, Worcester.

- Environmental Authorisation, Residential Development, Kleinbegin, Ceres.

- Environmental Authorisation 20MW Solar PV Array, Carolusberg, Northern Cape.

- Environmental Authorisation 150MW Solar PV Array, Klipdam, Northern Cape.

- ArcGIS Database, Greater Cederberg Fire Protection Association.

- Environmental Opinion McGregor Small Scale Farmers – Casidra : Dept of Agriculture

- Environmental Control, Rocher Pan, CapeNature.

- Environmental Management Plan Diosma Nature Reserve – Mossel Bay Municipality

- Environmental Authorisation Mossel Bay Municipal Cemetery

- Environmental Authorisation Bulk Water Supply – City of Cape Town

Previous Local Government Experience:

The National Environmental Management Act Environmental Impact Assessment Regulations require interaction with Local Government (Local Municipalities and District Municipalities) for each of the environmental authorizations mentioned above.

Municipality specific experience includes:

- Drafting of the Biodiversity Report for the Berg River Municipality – This comprised of a broad scale assessment of biodiversity resources at a municipal scale for the Local Authority, the compilation of a glossy report and its publication. The project was aligned to the ICLEI – IUCN - Local Action for Biodiversity Initiative.

- Environmental Authorisation for Bulk Water Supply Drakenstein Prison – The application was required for the expansion of bulk water supply to the Drakenstein Prison.

- Environmental Authorisation for Bulk Water Supply Paardeberg Prison – The application was required for the expansion of bulk water supply to the Paardeberg Prison.

- Environmental Authorisation for Bulk Water Supply Riebeeck Wes Prison – The application was required for the expansion of bulk water supply to the Riebeeck Wes Prison.

- Environmental Management Plan Diosma Nature Reserve – This project required the compilation of a Protected Area Management Plan for a municipal reserve in accordance with the requirements of the National Environmental Management Act Protected Areas Act (NEMPAA) as a first step in the process of proclaiming the nature reserve as a Contract nature Reserve under the NEMPAA Act.

- Environmental Authorisation Mossel bay Municipal Cemetery – The application for environmental authorisation was required for the establishment of a new municipal cemetery within the urban edge of the Mossel bay Municipality.

- Currently FES is undertaking a Scoping EIA application for the City of Cape Town for a bulk water supply project on Zevenwacht.

- Additionally FES is imitating a project for the development of a SDF in collaboration with MLH Architects and Planners and a number of other consulting firms for the De Grendel Wine Estate.

Joint Ventures

- .PGR Developments – Cederberg Tourist Park : The development of tourism accommodation within a Contract Nature Reserve on the farm Kromrivier in the Cederberg comprising and a new camping facility, 25 new houses for accommodation, reception and conference facility and associated service supply. Project was undertaken in a Joint Venture with ZII Consulting Engineers, Nu Plan Africa (Town & Regional Planners) and Wayne Parker Architects.

- PGR Developments – Kromriver Weir : The development of a weir in the Kromrivier in the Cederberg to prevent the further colonization of the river by invasive alien fish species. The project was undertaken in a joint venture with ZII Consulting Engineers.

- Policy Development for the Global Pollination Project in a Joint Venture with EnAct International.

- Red Carantion Hotels International – Bushmanskloof Section 24G Rectification Application undertake in a joint venture with M2K Architects.

- Department of Public Works - Bulk Water Supply Drakenstein Prison : Expansion of the Bulk Water Supply to Drakenstein Prison. The project was undertaken in a Joint venture with MLH Architects and Planners, Aurecon and Paarl based Survey Company.

- Department of Public Works - Bulk Water Supply Paardeberg Prison : Expansion of the Bulk Water Supply to Drakenstein Prison. The project was undertaken in a Joint venture with MLH Architects and Planners and Aurecon.

- Department of Public Works - Bulk Water Supply Riebeeck Wes : Expansion of the Bulk Water Supply to Riebeeck West Prison. The project was undertaken in a Joint venture with MLH Architects and Planners and Aurecon.

- Witzenberg Properties (Pty) Ltd. – Residential Development Ceres : The development on a new residential development within the urban edge of Ceres. The project was undertaken in a Joint Venture with MLH Architects and Planners, GLS Consulting Engineers.

Lecturing experience:

Presented Insect Physiology practical classes to second year students at University of Orange Free State (1993).

Presented two lectures on the impact for life on earth of global warming and ozone depletion to fourth year Chemical Engineering students – University of Stellenbosch (2004).

Presented a portion of the course work on problem animal management to final year Cape Technicon Students (2004).

Presented lectures to Masters students at Institute for Sustainability, University of Stellenbosch on biodiversity Best Practice in the agricultural sector (2009 & 2010)

P u b l i c a t i o n s

Formal

Presented a poster at the biannual entomology congress held at Wits University (1993).

Presented results of research into control of the fungal leaf diseases of Groundnuts (*Cercospora sp, Phoma sp & Cercosporillium*.)Bayer AGM (1994).

Presented results on *Aphis gossyphi* research done in cotton at the Bayer AGM (!995).

Presented research results on *Aphis gossyphi* research in cotton and Black spot control on citrus at Bayer AGM (1996).

Presented a product portfolio for a company fungicide Folicur 250 EW (Tebuconazole) after having compiled the portfolio Bayer AGM (1998).

Presented research results on a new Bayer own herbicide for the control of mono/ dicots in wheat, including phytotoxic data, withholding period and efficacy data Bayer AGM (1999).

Presented “Planning Conservation Extension” – Fynbos Forum (2003).

Presented “Stewardship Video” – Fynbos Forum (2004).

Presented “Integrating Fine Scale Conservation Planning with LandCare Areawide Planning” – International Landcare Conference (2004).

Presented “Mainstreaming Biodiversity and Stakeholder Collaboration – Top down & bottom up” at the Managing Africa’s natural Ecosystems Information & Best practice Workshop, Serengeti National Park (2006).

Presented GCBC corridor formation process and stakeholder engagement at the Conservation International CSP Workshop in Chengdu China (2007).

Informal : Articles in Free State Ornithological Society magazine *Mirafra* (1984).

Articles for the departmental magazine UOFS (Zoology) Kovshaan (1993).

Articles for the Endangered wildlife trust magazine Talon talk (1996-1997)

Contributed 60 articles for Mweb Online SA Encyclopedia including Carbon dioxide and other greenhouse gases influence on climatic change, Plant response to elevated levels of CO_2, Community and Ecosystem response to elevated concentrations of CO_2, The Rock Cycle, The Carbon Cycle, The Nitrogen Cycle, The Water Cycle, Respiration, Photosynthesis comparison, Respiration – Aerobic and Anaerobic, The Influence of Area Related Process and Extinction on Biodiversity, The generation and maintenance (Evolution) of species and Biodiversity, Carbon dioxide an other greenhouse gases influence on climatic change, Concepts in Ecology, Protected areas as sources of non market goods and services, Protected Areas as a source of marketable goods and services, Biotic components influencing ecosystem function, Hierarchical Patch Dynamics, Succession The Flow of Energy in the Web, Trophic Cascades, Forest Biome, Arid and semi-arid biomes, The Fynbos Biome, Savannah Biome Grassland Biome Sunken “Treasure” a threat to penguins, Southern Right Whale sanctuary in Walker Bay etc.

Contributed weekly articles to the Farmers Weekly from December 2002 to April 2004 – content was of agricultural interest and a short series on alien invasive plants in South Africa approx. 40 articles to date.

Professional memberships

Member of IAIA sa, Certified Environmental Assessment Practitioner with EAPSA, Registered Ecological Scientist SACNASP.

Extracurricular activities

School : Diving School Team, second place Free State inter schools (1985).

Hockey School U15 A (1979 - 1982), Second team (1982-1985).

Tennis, Biology club, Judo, School choir.

University : Hangliding, Hiking, Aikido, Bird watching, Founder member and President of the Free State Falconry Club (1993).

: Safari Tour Guide – Botswana, Namibia, and Zambia - Getaway Safaris (2000 & 2002)

Current : Photography, Kayaking, Hiking, Travel, Bird Watching .

Hobbies

Taikwondo, Scuba diving (1998), bird watching, botanizing, photography, fly fishing and hiking.

Volunteer experience

At school I was involved with the bird atlas of the Orange Free State.

E.W.T. Endangered Wildlife Trust (1996-1997) - Bushveld Raptor project. Sponsorship of R12000-00 received from Janssen Pharmaceuticals. Involved a road census of the birds of prey of the Northern Transvaal for the Raptor conservation group an affiliate of the above mentioned Trust. (1997) The project was terminated after 7 months due to a transfer to the Western Cape. Sponsorship was transferred to another project.

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Charl Philip du Plessis

EDUCATION	
1986	Senior Certificate – Huguenot High School
1999-1990	National Diploma – Cape Peninsula University of Technology
1990-1991 Student	Practical Experience - Department of Nature Conservation stationed at Cecilia State Forest. Finish practical year with distinction.
1993-1995	National Higher Diploma – Nature Conservation Nelson Mandela Metropolitan University (Saaveld Campus)
CONSERVATION MANAGEMENT	
1991-1992 Nature Conservator	**Clanwilliam Yellow fish Station and Cederberg Wilderness** • Aquatic management (assistance and planning of monitoring and research programs, extension to landowners) • Successful artificial breeding of the endangered Clanwilliam Yellow Fish, - saw fin and sand fish, maintenance of necessary infrastructure and the re-introduction of these fish into suitable systems • Leopard management – Extension to farmers and the management of problem leopards • Tourism management at Algeria – maintaining infrastructure, tourism personal management and law enforcement
1993-1995 Assistant Manager	**Cederberg Wilderness** ▪ Tourism management - Normal management functions and communication of CPA views and objectives to surrounding communities and committees. During this time Algeria was nominated as the 11th best holiday resort in South Africa by the Caravan and Outdoor Magazine. ▪ Assisted in the building of the new office and interpretation center at Goegap Nature Reserve in the Northern Cape. ▪ Field Ranger Management – Baseline Data Collection and the upkeep of associated infrastructure and databases. ▪ Other responsibilities also included day to day management of the leopard conservation area and extension to landowners regarding fish conservation measures.

CONSERVATION MANAGEMENT (Cont)	
1996-2002 Manager Cederberg Wilderness	**Management of Formal Protected Areas** • Cederberg Wilderness- Ecological, wilderness, personnel and tourism • Matjiesrivier – Reserve planning and negotiations with the adjacent landowners about the future of the reserve • Management of satellite reserves like Bird Island, Verlorenvlei and Clanwilliam Yellow Fish Station. • The management of 30 staff **Off reserve conservation and extension** • Established the Cederberg, Lamberts Bay, Sneeuberg and Northern Cederberg Conservancies thus involving landowners and communities in biodiversity conservation. • Initiated and managed the Olifantsriver Working for Water Project to 2001 • Managed the Cederberg and Wuppertal Working for Water Projects for two years • Successfully motivated for funding to clear alien vegetation and to relieve poverty in the region of the reserve. Funds were obtained from Working for Water (1 project), Landcare (2 projects) and Poverty Relief (3 projects) • Involved the Algeria community in an income generating project - selling fresh produce to visitors in the campsite • Successfully motivated for the use the Heuningvlei road during the Cederberg Festival to enable the Heuningvlei community to benefit from the festival.
STRATEGIC PLANNING	
	Strategic planning and formulating policy • Drew up management plans for Matjiesrivier Nature Reserve, Cederberg Wilderness, contract nature reserves, biodiversity agreements and conservancies • Assisted in the formulation of the new CapeNature wilderness policy • Assisted in the formulation of the Integrated Conservation and Development Plan for the Greater Cederberg Wilderness • Drew up annual plan of operations, business and action plans during the budget processes

COMMUNITY CONSERVATION MANAGEMENT	
2003-2008 Community Conservation Manager	**Community Based natural resource management (CBNRM) and Local Economic Development (LED)** • Established the Northern Cederberg Donkey cart route – A community based tourism initiative. • Established the Algeria Buchu cultivation unit, income generated from this business is used to fund smaller community projects. • Assisted in the establishment of the Cederberg heritage route a community based tourism product in the Wuppertal area. • Establish two CBNRM forums. • Secured funding to employ 24 people for two years to maintain foot paths in the Cederberg Wilderness **Integrated fire management** Established the Greater Cederberg Fire Protection Association (co-operative management with landowners, formulated business plans, developed the management structure, compiled action plans in instances of wild fire, provided strategic support to the Executive Committee. **Environmental Education** Oversaw the planning and implement of the Cederberg RARE education campaign. This included the design of materials, the writing of reports to donors, the monitoring and implementation of the project and the mentoring the Conservation Educator. **Greater Cederberg Biodiversity Corridor** • Acted as an integral part of the Project Management Unit where I provided strategic inputs during the planning phases. • During the implementation phase I was responsible for the establishment of the Cederberg Core Corridor. Here we successfully established four contract nature reserves (>10 000 hectares in extent) and two biodiversity agreements. • Completed Area-wide Planning for the Cederberg Conservancy, the Algeria Community as well as for the entire Wupperthal property.
OTHER EXPERIENCE	
	• Computer skills, Microsoft Word, Excel, Outlook, PowerPoint and ARC View (GiS) • Working with landowners to improve land management and integrated fire management • Established partnerships within other Departments and NGO's to implement community based projects. • Project planning, budgeting and implementation scheduled to specific timeframes • Designed and implemented internationally funded awareness campaigns

TRAINING	
	Internal training • GIS (Arc view) **Courses and congresses** • Multi Stakeholder Workshop Facilitation Skills – Business Presentation Group • Presentation Skills – Business Presentation Group • Insights into Personal Effectiveness - Business Presentation Group • Community Based Natural Resource Management – Rhodes University • Insights Project Management – CS Holdings • Responsible Tourism Destination Congress **Exchange visit** • Seaflower Biosphere Reserve in the Caribbean to share lessons learned between biospheres

2008-2012 Manager Greater Cederberg Fire Protection Association	The management of the GCFPA focuses on co-operative management with government agencies, landowners, communities and role players involved in fire management including Working on Fire, Cape Nature, District Municipalities and the Western Cape Umbrella FPA, Responsibilities include the following: • Management and coordination of fire management planning and implementation within the domain; • Formulation of the business plan and fire management plans that are used to apply for exemption from the Veld and Forest Fire Act (Act 101 of 1998) requirement to establish firebreaks on all properties boundaries; • Ensuring that members comply with the Veld and Forest Fire Act (Act 101 of 1998) by implementing a sphere of integrated fire management actions; • Strategic alignment of project activities and actions with other departments or institutions; • Management of the GCFPA as a business, an ensuring that its current financial sustainability is perpetuated; • The establishment of a partnership with Working on Fire Program to obtain a team of trained fire fighters who assist FPA members with adhering to the requirements to the VFFA. • Drafting funding applications to implement specific projects;
2008-2012 Director Cedarberg Conservation Services	Over the last four years as Director of FOOTPRINT Environmental Services I was the co-author of various plans: • Area-wide Planning for the Nieuwoudtville Plateau, • Biodiversity Assessment for the entire Bergrivier Municipality, • Policy and management framework for CapeNaure for the Management of Biosphere Reserve and World Heritage Sites. • Management Plans for World Heritage Sites, • Rapid capacity audit for the Western Cape Natural Resource Departments • Risk Mitigation Plans for the Agricultural Sector including aspects such as erosion control, rehabilitation and environmental monitoring; • Fire Management Plans, • Integrated Fire and Alien Clearing Plans, • Environmental Impact Assessments for ecotourism developments and agricultural developments.
REFERENCES	
	• Peter Dorrington 0836308217 • Ernst Hartwig 0832863400