SITE SENSITIVITY VERIFICATION & TERRESTRIAL ECOLOGY COMPLIANCE STATEMENT

PROPOSED CONSTRUCTION OF 132 KV POWERLINES BETWEEN THE AUTHORISED LOERIESFONTEIN 3 PV SOLAR ENERGY FACILITY (12/12/20/2321/2/AM4) AND THE AUTHORISED DWARSRUG WIND ENERGY FACILITY (14/12/16/3/3/2/690/AM4), AND FROM THE DWARSRUG WIND ENERGY FACILITY TO THE AUTHORISED NAROSIES SUBSTATION (12/12/20/2049/3), LOCATED NEAR LOERIESFONTEIN IN THE HANTAM LOCAL MUNICIPALITY, NAMAKWA DISTRICT IN THE NORTHERN CAPE PROVINCE OF SOUTH AFRICA

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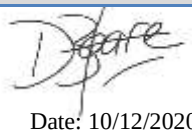
Table of Contents

Specialist Details & Declaration

This report has been prepared in accordance with Section 13: General Requirements for Environmental Assessment Practitioners (EAPs) and Specialists as well as per Appendix 6 of GNR 982 – Environmental Impact Assessment Regulations and the National Environmental Management Act (NEMA, No. 107 of 1998 as amended 2017) and Government Notice 704 (GN 704). It has been prepared independently of influence or prejudice by any parties.

The details of Specialists are as follows –

Table 1: Details of Specialist

Specialist	Qualification and accreditation	Client	Signature
Dr David Hoare (Pr.Sci.Nat.)	PhD Botany	SiVest	 Date: 10/12/2020

Details of Author:
Dr David Hoare

PhD (Botany) – Nelson Mandela Metropolitan University, Port Elizabeth

Main areas of specialisation

- Vegetation and general ecology (grasslands, savanna, Albany thicket, fynbos, coastal systems, wetlands).
- Plant biodiversity and threatened plant species specialist.
- Alien plant identification and control / management plans.
- Remote sensing, analysis and mapping of vegetation.
- Specialist consultant for environmental management projects.

Professional Natural Scientist, South African Council for Natural Scientific Professions, Reg. no. 400221/05 (Ecology, Botany)
Member, International Association of Vegetation Scientists (IAVS)
Member, Ecological Society of America (ESA)
Member, International Association for Impact Assessment (IAIA)
Member, Herpetological Association of Africa (HAA)

Employment history

- 1 December 2004 – present, Director, David Hoare Consulting (Pty) Ltd. Consultant, specialist consultant contracted to various companies and organisations.
- 1January 2009 – 30 June 2009, Lecturer, University of Pretoria, Botany Dept.
- 1January 2013 – 30 June 2013, Lecturer, University of Pretoria, Botany Dept.
- 1 February 1998 – 30 November 2004, Researcher, Agricultural Research Council, Range and Forage Institute, Private Bag X05, Lynn East, 0039. Duties: project management, general vegetation ecology, remote sensing image processing.

Declaration of independence:

David Hoare Consulting (Pty) Ltd in an independent consultant and hereby declare that it does not have any financial or other vested interest in the undertaking of the proposed activity, other than remuneration for the work performed in terms of the National Environmental Management Act, 1998 (Act 107 of 1998). In addition, remuneration for services provided by David Hoare Consulting (Pty) Ltd is not subjected to or based on approval of the proposed project by the relevant authorities responsible for authorising this proposed project.

Disclosure:

David Hoare Consulting (Pty) Ltd undertake to disclose, to the competent authority, any material information that has or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the National Environmental Management Act, 1998 (Act 107 of 1998) and will provide the competent authority with access to all information at its disposal regarding the application, whether such information is favourable to the applicant or not.

Based on information provided to David Hoare Consulting (Pty) Ltd by the client and in addition to information obtained during the course of this study, David Hoare Consulting (Pty) Ltd present the results and conclusion within the associated document to the best of the author's professional judgement and in accordance with best practise.

Dr David Hoare

10 December 2020

Date

1. INTRODUCTION

Project Background and Description of the Activity

South Africa Mainstream Renewable Power Developments (Pty) Ltd (herein after referred to as "Mainstream") appointed SiVEST to undertake a Basic Assessment (BA) Process for the proposed construction of 132 kV overhead powerlines between the proposed (and authorised) 100MW Loeriesfontein 3 Photovoltaic (PV) Solar Energy Facility (SEF) (12/12/20/2321/2/AM4) and proposed (and authorised) 140MW Dwarsrug Wind Energy Facility (WEF) (14/12/16/3/3/2/690/AM4); and between the Dwarsrug WEF and the proposed (and authorised) Narosies Substation (12/12/20/2049/3) located near Loeriesfontein in the Northern Cape Province of South Africa.

Mainstream are proposing the construction of a 132 kV overhead powerlines between the proposed (and authorised) 100 MW Loeriesfontein 3 PV SEF (12/12/20/2321/2/AM4) and proposed (and authorised) 140 MW Dwarsrug WEF (14/12/16/3/3/2/690/AM4); and between the Dwarsrug WEF and the proposed (and authorised) Narosies Substation (12/12/20/2049/3) (See Figure 2). The powerline from the Loeriesfontein 3 PV SEF to the Dwarsrug WEF is proposed to link the SEF to the WEF in order to create a hybrid renewable energy facility, which will ensure that electricity is constantly supplied to the national grid by at least one or both technologies (namely solar PV and wind), at any given time. The powerline from the Dwarsrug WEF is proposed to tie the, above mentioned, hybrid renewable energy facility into the approved Narosies substation to feed the National grid.

Two (2) powerline alternatives will be assessed to link the Loeriesfontein 3 PV SEF to the Dwarsrug WEF and a single powerline is proposed to link these two (2) facilities to the National grid from the Dwarsrug WEF. All three (3) powerline route alignments will be assessed within a 300m wide assessment corridor (150m on either side of powerline). The Power lines which are being proposed and assessed are shown in Figure 1 below.

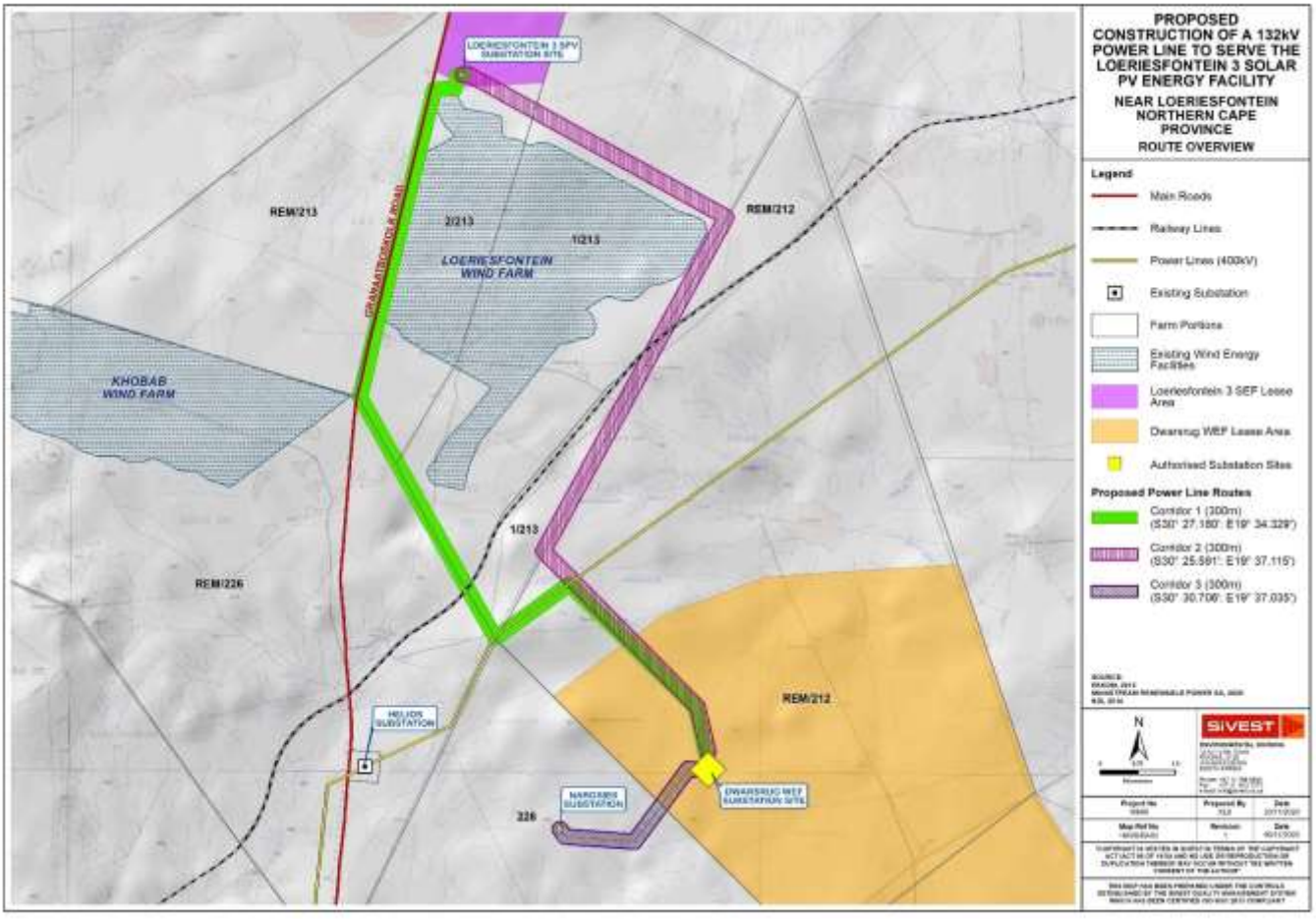


Figure 1: Power line alternatives proposed to link Loeriesfontein 3 PV SEF to Dwarsrug WEF and the Dwarsrug WEF to Narosies Substation.

The ‘no-go’ alternative is the option of not constructing the powerline project, which would prevent the realization of the hybrid facility and thus prevent electricity generated from renewable sources being fed into the national grid. This alternative would result in no additional environmental impact other than that assessed during the BA for the Renewable Energy (RE) facilities.

Terms of Reference

As per the screening tool, the proposed development area environmental sensitivity is considered to have a VERY HIGH sensitivity for the terrestrial biodiversity theme, and HIGH for the animal species theme. As such, the following scope of works are required:

1.1. The site sensitivity verification must be undertaken by an environmental assessment practitioner or a specialist.

1.2. The site sensitivity verification must be undertaken through the use of:
(a) A desk top analysis, using satellite imagery;
(b) A preliminary on-site inspection; and
(c) Any other available and relevant information.

1.3. The outcome of the site sensitivity verification must be recorded in the form of a report that:
(a) Confirms or disputes the current use of the land and the environmental sensitivity as identified by the screening tool, such as new developments or infrastructure, the change in vegetation cover or status etc.;
(b) Contains a motivation and evidence (e.g. photographs) of either the verified or different use of the land and environmental sensitivity; and
(c) Is submitted together with the relevant assessment report prepared in accordance with the requirements of the Environmental Impact Assessment Regulations (EIA Regulations).

It is further important that the compliance statement must:

- Be applicable to the preferred site and the proposed development footprint;
- Confirm that the site is of “very high” sensitivity for terrestrial biodiversity and "high" for animal species"; and
- Indicate whether or not the proposed development will have an impact on the terrestrial biodiversity and animal species.

i. The compliance statement must contain, as a minimum, the following information:
  - contact details of the specialist, their SACNASP registration number, their field of expertise and a *curriculum vitae*;
  - a signed statement of independence by the specialist;
  - a statement on the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment;
  - a baseline profile description of biodiversity and ecosystems of the site;
  - the methodology used to verify the sensitivities of the terrestrial biodiversity and plant species features on the site including the equipment and modelling used where relevant;
  - in the case of a linear activity, confirmation from the terrestrial biodiversity specialist that, in their opinion, based on the mitigation and remedial measures proposed, the land can be returned to the current state within two years of completion of the construction phase;
  - where required, proposed impact management outcomes or any monitoring requirements for inclusion in the EMPr;
  - a description of the assumptions made as well as any uncertainties or gaps in knowledge or data; and
  - any conditions to which this statement is subjected.
  - A signed copy of the compliance statement must be appended to the Basic Assessment Report or Environmental Impact Assessment Report.

Identified Theme Sensitivities

The site sensitivity as identified by the National Web-Based Environmental Screening Tool Shows that the terrestrial biodiversity theme is **very high sensitivity** and the animal species theme is of **high sensitivity**. The sensitivity for the terrestrial theme is due to it being a quaternary catchment, a critical biodiversity area level 2, and it being an ecological support area. The sensitivity for the animal species theme is due to the presence of three threatened bird species, which are assessed in a separate specialist study. No other animal species are flagged in the screening tool, indicating that, other than birds, the animal species theme has "low" sensitivity.

Table 2: Site sensitivity themes for Loeriesfontein 3 - Dwarsrug OHL

Theme	Very High Sensitivity	High Sensitivity	Medium Sensitivity	Low Sensitivity
Agriculture Theme			**X**	
Animal Species Theme		**X**		
Aquatic Biodiversity Theme	**X**			
Archaeological and Cultural Heritage Theme		**X**		
Civil Aviation Theme		**X**		
Defense Theme				**X**

Paleontology Theme	**X**			
Plant Species Theme			**X**	
Terrestrial Biodiversity Theme	**X**			

1. METHODOLOGY

A detailed description of the methods has been provided. The regional context and desktop analysis were used as the point of departure. A detailed site visit was undertaken by SiVEST in 2014 (Todd, 2014), prior to the approval of the Solar PV project. Much of this information was used to confirm the sensitivity of this site.

The verification assessment of these systems considered the following databases where relevant (Table 2):

Table 2 Data type and source for the site verification assessment

Data Type	Year	Source/Reference
Aerial Imagery	1984 - present	Google Earth
1:50 000 Topographical	2011	Surveyor General
Land Cover	2014, 2018	SANBI
Previous Assessments	2014	SiVest (Todd, 2014)
Field data from adjacent project	2016	Personal
On-line databases	present	POSA, Red List, iNaturalist

*Data will be provided on request

The following methods were used to undertake the site verification:

- General area desktop site inspection;
- Site photographs from previous studies;
- Satellite imagery (Google Earth);
- Review of existing approvals/authorisations for the site.

The following methods were used to undertake the compliance statement:

- Assessment of alternative corridors for the proposed new powerline;
- Use previous assessment of the terrestrial ecology as the basis for this evaluation;
- Summary of impacts of the new powerline; and
- Final recommendations and compliance statement.

2. LIMITATIONS AND ASSUMPTIONS

In order to apply generalised and often rigid scientific methods or techniques to natural, dynamic environments, a number of assumptions are made. Furthermore, a number of limitations exist when assessing such complex ecological systems. The following assumptions and constraints may have affected this assessment –

- An extensive site visit has already been undertaken by SiVest (Todd, 2014), but an additional site visit was undertaken by a botanical specialist to confirm any habitat constraints that were not included in the original survey.
- The impacts for the site are specific to the proposed corridors (Options 1 and 2) for the powerline.
- The databases used may not, at times, be complete or up to date, as is the nature of such databases.
- This statement assumes that the work undertaken by SiVEST (2014) is unbiased and the methods adopted appropriately followed.

3. SITE DESCRIPTION

The study area (as described by Todd, 2014) occurs on flat and gently undulating topography and this is one of the important reasons for the development of the alternative energy projects in the area. To the south, the Helios Substation is the link between the proposed development and the national electricity grid.

The study area is considered to be mostly natural Karoo shrubland where low intensity sheep grazing (low stocking rate of around 1 SSM (small stock unit) per 6 hectares) is the main agricultural activity with some wildlife associated with the area. With regards to the human footprint, it is considered to be relatively low in the larger district. In the landscape the vast grazing land is interspersed with seasonal pans and non-perennial streams. The non-perennial streams feed into the pans and are considered to be sensitive habitat. Access to the area is along the Loeriesfontein/Granaatboskolk Road and another important feature is the Sishen/Saldanha railway line that traverses the corridor for the proposed new power line.

There are no threatened reptiles or amphibians likely to occur in the study area. On the basis of historical distribution records, there is a very small chance that one of the following mammal species of conservation concern could occur in the general area: Cape Clawless Otter (*Aonyx capensis*, Near Threatened - no suitable habitat), Black-footed Cat (*Felis nigripes*, Vulnerable - not previously recorded anywhere nearby), Brown Hyaena (*Parahyaena brunnea*, Near Threatened - not previously recorded anywhere nearby), Leopard (*Panthera pardus*, Vulnerable - possible but unlikely), and African Striped Weasel (*Poecilogale albinucha*, Near Threatened - not previously recorded anywhere nearby). On this basis, no animal species of conservation concern (other than birds, which are assessed by another specialist) are likely to be affected by the proposed project.

The general study area includes one small area of a CBA1 and two small patches of CBA2, as well as a number of fragments of Ecological Support Areas, the latter of which are associated with a number of irregularly shaped pan-like structures. These are shown in Figure 1. The majority of the area designated as having very high sensitivity in the terrestrial biodiversity theme is associated with the quaternary catchment, which covers a broad region that includes the entire project and surrounding projects, all of which have already obtained authorisation or are already operational.

4. SITE SENSITIVITY VERIFICATION

The site verification aims to confirm or dispute the **High Sensitivity** identified by the screening tool for the Animal Species theme and the **Very High Sensitivity** for the Terrestrial Biodiversity Theme. This is done through a desktop investigation using more recent databases and aerial/remote imaging. It also includes information from a brief walk-down survey undertaken by the botanical specialist.

Confirmation of Site Sensitivity

Through the interrogation of various databases, imagery and the previous ecological assessment, it is clear that few sensitive features are present within or near the proposed footprint of the proposed powerlines. As such, it is hereby confirmed that the majority of the site should be considered to have **Low Sensitivity.** The exception is the small pan-like structures, most of which are designated as ESAs. Where possible, impacts on these should be avoided by locating powerline pylons appropriately.

5. ASSESSMENT OF IMPACTS

Significance of impacts

The key impacts identified for the proposed powerline are:

- Construction impacts on small pan-like structures, defined as ESAs.

Table 3 Impact assessment

Nature of the impact		Significance of potential impact BEFORE mitigation								Mitigation Measures	Significance of potential impact AFTER mitigation							
		Probability	Duration	Extent	Magnitude	Reversibility	Loss of Resources	Significance			Probability	Duration	Extent	Magnitude	Reversibility	Loss of Resources	Significance	
Construction Phase																		
Construction impacts on pans (Ecological Support Areas)	-	3	3	1	2	3	2	**24**	**Medium**	Locate infrastructure outside sensitive zones. If impact unavoidable, rehabilitate disturbed areas.	2	3	1	1	2	1	**10**	**Low**

Environmental Management Programme (EMPr) Input

The objectives of the amendment to the EMPr is to ensure that any impacts remain at a low risk/sensitivity.

Table 4: Rehabilitation actions for inclusion into the EMPr

Objective	Action	Timing
Manage alien invasive plants	1. Rehabilitate any disturbed areas within pans (ESAs).	With immediate effect

6. TERRESTRIAL BIODIVERSITY AND ANIMAL SPECIES COMPLIANCE STATEMENT

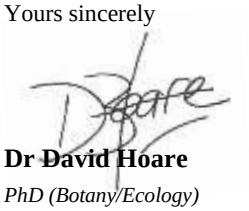
Through the site verification, background investigation and impact assessment, the following are confirmed by the specialist:

1. The powerline servitudes are mostly **low sensitivity** in a terrestrial biodiversity and animal species context, with the exception of the ESAs (pans), which are **high sensitivity**.
2. The proposed alignment alternatives would have similar to one another due to the relative uniformity of the habitat.
3. Impacts have been identified with proposed mitigation measures. Should these measures be adhered to, the impacts of the proposed powerline would have a low significance.
4. Conditions have been provided that should be included in the EMPr. Where relevant, additional measures unrelated to terrestrial biodiversity systems should be extended from the original EMPr.

7. IMPACT STATEMENT

The overall impacts of the Loeriesfontein 3 PV - Dwarsrug powerline and Dwarsrug- Narosies powerline, on the terrestrial biodiversity and animal species resources, is seen as acceptably low after the recommendations have been implemented and therefore, impacts can be mitigated to acceptable levels allowing for all powerlines to be authorised.

Yours sincerely



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8. REFERENCES

Todd, S. 2014. Mainstream South Africa Dwarsrug Wind Energy Facility: Fauna & Flora Specialist Impact Assessment Report. SiVEST, Pietermaritzburg.